VIRGINIA REGISTER OF REGULATIONS

VOL. 36 ISS. 6 | PUBLISHED EVERY OTHER WEEK BY THE VIRGINIA CODE COMMISSION | NOVEMBER 11, 2019

TABLE OF CONTENTS

THE VIRGINIA REGISTER OF REGULATIONS (USPS 001-831) is published biweekly for $263.00 per year by Matthew Bender & Company, Inc., 3 Lear Jet Lane, Suite 102, P.O. Box 1710, Latham, NY 12110. Periodical postage is paid at Easton, MD and at additional mailing offices. POSTMASTER: Send address changes to The Virginia Register of Regulations, 4810 Williamsburg Road, Unit 2, Hurlock, MD 21643.

VIRGINIA REGISTER INFORMATION PAGE

THE VIRGINIA REGISTER OF REGULATIONS is an official state publication issued every other week throughout the year. Indexes are published quarterly, and are cumulative for the year. The *Virginia Register* has several functions. The new and amended sections of regulations, both as proposed and as finally adopted, are required by law to be published in the *Virginia Register*. In addition, the *Virginia Register* is a source of other information about state government, including petitions for rulemaking, emergency regulations, executive orders issued by the Governor, and notices of public hearings on regulations.

ADOPTION, AMENDMENT, AND REPEAL OF REGULATIONS

An agency wishing to adopt, amend, or repeal regulations must first publish in the *Virginia Register* a notice of intended regulatory action; a basis, purpose, substance and issues statement; an economic impact analysis prepared by the Department of Planning and Budget; the agency's response to the economic impact analysis; a summary; a notice giving the public an opportunity to comment on the proposal; and the text of the proposed regulation.

Following publication of the proposal in the Virginia Register, the promulgating agency receives public comments for a minimum of 60 days. The Governor reviews the proposed regulation to determine if it is necessary to protect the public health, safety and welfare, and if it is clearly written and easily understandable. If the Governor chooses to comment on the proposed regulation, his comments must be transmitted to the agency and the Registrar no later than 15 days following the completion of the 60-day public comment period. The Governor's comments, if any, will be published in the *Virginia Register*. Not less than 15 days following the completion of the 60-day public comment period, the agency may adopt the proposed regulation.

The Joint Commission on Administrative Rules (JCAR) or the appropriate standing committee of each house of the General Assembly may meet during the promulgation or final adoption process and file an objection with the Registrar and the promulgating agency. The objection will be published in the *Virginia Register*. Within 21 days after receipt by the agency of a legislative objection, the agency shall file a response with the Registrar, the objecting legislative body, and the Governor.

When final action is taken, the agency again publishes the text of the regulation as adopted, highlighting all changes made to the proposed regulation and explaining any substantial changes made since publication of the proposal. A 30-day final adoption period begins upon final publication in the *Virginia Register*.

The Governor may review the final regulation during this time and, if he objects, forward his objection to the Registrar and the agency. In addition to or in lieu of filing a formal objection, the Governor may suspend the effective date of a portion or all of a regulation until the end of the next regular General Assembly session by issuing a directive signed by a majority of the members of the appropriate legislative body and the Governor. The Governor's objection or suspension of the regulation, or both, will be published in the *Virginia Register*. If the Governor finds that changes made to the proposed regulation have substantial impact, he may require the agency to provide an additional 30-day public comment period on the changes. Notice of the additional public comment period required by the Governor will be published in the *Virginia Register*.

The agency shall suspend the regulatory process for 30 days when it receives requests from 25 or more individuals to solicit additional public comment, unless the agency determines that the changes have minor or inconsequential impact.

A regulation becomes effective at the conclusion of the 30-day final adoption period, or at any other later date specified by the promulgating agency, unless (i) a legislative objection has been filed, in which event the regulation, unless withdrawn, becomes effective on the date specified, which shall be after the expiration of the 21-day objection period; (ii) the Governor exercises his authority to require the agency to provide for additional public comment, in which event the regulation, unless withdrawn, becomes effective on the date specified, which shall be after the expiration of the period for which the Governor has provided for additional public comment; (iii) the Governor and the General Assembly exercise their authority to suspend the effective date of a regulation until the end of the next regular legislative session; or (iv) the agency suspends the regulatory process, in which event the regulation, unless withdrawn, becomes effective on the date specified, which shall be after the expiration of the 30-day public comment period and no earlier than 15 days from publication of the readopted action.

A regulatory action may be withdrawn by the promulgating agency at any time before the regulation becomes final.

FAST-TRACK RULEMAKING PROCESS

Section 2.2-4012.1 of the Code of Virginia provides an exemption from certain provisions of the Administrative Process Act for agency regulations deemed by the Governor to be noncontroversial. To use this process, Governor's concurrence is required and advance notice must be provided to certain legislative committees. Fast-track regulations will become effective on the date noted in the regulatory action if no objections to using the process are filed in accordance with § 2.2-4012.1.

EMERGENCY REGULATIONS

Pursuant to § 2.2-4011 of the Code of Virginia, an agency, upon consultation with the Attorney General, and at the discretion of the Governor, may adopt emergency regulations that are necessitated by an emergency situation. An agency may also adopt an emergency regulation when Virginia statutory law or the appropriation act or federal law or federal regulation requires that a regulation be effective in 280 days or less from its enactment. The emergency regulation becomes operative upon its adoption and filing with the Registrar of Regulations, unless a later date is specified. Emergency regulations are limited to no more than 18 months in duration; however, may be extended for six months under certain circumstances as provided for in § 2.2-4011 D. Emergency regulations are published as soon as possible in the *Register*.

During the time the emergency status is in effect, the agency may proceed with the adoption of permanent regulations through the usual procedures. To begin promulgating the replacement regulation, the agency must (i) file the Notice of Intended Regulatory Action with the Registrar within 60 days of the effective date of the emergency regulation and (ii) file the proposed regulation with the Registrar within 180 days of the effective date of the emergency regulation. If the agency chooses not to adopt the regulations, the emergency status ends when the prescribed time limit expires.

STATEMENT

The foregoing constitutes a generalized statement of the procedures to be followed. For specific statutory language, it is suggested that Article 2 (§ 2.2-4006 et seq.) of Chapter 40 of Title 2.2 of the Code of Virginia be examined carefully.

CITATION TO THE *VIRGINIA REGISTER*

The *Virginia Register* is cited by volume, issue, page number, and date. **34:8 VA.R. 763-832 December 11, 2017,** refers to Volume 34, Issue 8, pages 763 through 832 of the *Virginia Register* issued on December 11, 2017.

The Virginia Register of Regulations is published pursuant to Article 6 (§ 2.2-4031 et seq.) of Chapter 40 of Title 2.2 of the Code of Virginia.

PUBLICATION SCHEDULE AND DEADLINES

This schedule is available on the Virginia Register of Regulations website (http://register.dls.virginia.gov).

December 2019 through December 2020

Volume: Issue	Material Submitted By Noon*	Will Be Published On
36:8	November 18, 2019 **(Monday)**	December 9, 2019
36:9	December 4, 2019	December 23, 2019
36:10	December 16, 2019 **(Monday)**	January 6, 2020
36:11	January 1, 2020	January 20, 2020
36:12	January 15, 2020	February 3, 2020
36:13	January 29, 2020	February 17, 2020
36:14	February 12. 2020	March 2, 2020
36:15	February 26, 2020	March 16, 2020
36:16	March 11, 2020	March 30, 2020
36:17	March 25, 2020	April 13, 2020
36:18	April 8, 2020	April 27, 2020
36:19	April 22. 2020	May 11, 2020
36:20	May 6, 2020	May 25, 2020
36:21	May 20, 2020	June 8, 2020
36:22	June 3, 2020	June 22, 2020
36:23	June 17, 2020	July 6, 2020
36:24	July 1, 2020	July 20, 2020
36:25	July 15, 2020	August 3, 2020
36:26	July 29, 2020	August 17, 2020
37:1	August 12, 2020	August 31, 2020
37:2	August 26, 2020	September 14, 2020
37:3	September 9, 2020	September 28, 2020
37:4	September 23, 2020	October 12, 2020
37:5	October 7, 2020	October 26, 2020
37:6	October 21, 2020	November 9, 2020
37:7	November 4, 2020	November 23, 2020
37:8	November 16, 2020 **(Monday)**	December 7, 2020
37:9	December 2, 2020	December 21, 2020

*Filing deadlines are Wednesdays unless otherwise specified.

TITLE 12. HEALTH

STATE BOARD OF BEHAVIORAL HEALTH AND DEVELOPMENTAL SERVICES

Agency Decision

Title of Regulation: **12VAC35-105. Rules and Regulations for Licensing Providers by the Department of Behavioral Health and Developmental Services.**

Statutory Authority: § 37.2-203 of the Code of Virginia.

Name of Petitioner: R.C. Carter.

Nature of Petitioner's Request: To amend 12VAC35-105-520 (Risk management) in accordance with the Virginia Court of Appeals in Gregory Allen Moyer v. Commonwealth of Virginia (2000), "when interpreting the law one must consider other sections of law in determining legislative intent," in order that the new Office of Licensing Associate Director of State Operations develop and coordinate the oversight of the interpretation and implementation of the additional 42 policies and procedures that providers are required to have in writing in accordance with the HIPAA Act under Risk Analysis and Risk Management which can be found under the following sections 45 CFR 164.306, 45 CFR 164.308, 45 CFR 164.310, 45 CFR 164.312, 45 CFR 164.314, and 45 CFR 164.316.

Agency Decision: No action.

Statement of Reason for Decision: The petition was considered by the board at the regular meeting held on Wednesday, October 9, 2019, at Western State Hospital in Staunton, Virginia. After reviewing all of the information received, the board declined to pursue the suggestions on the matter for the following reasons:

1. Regulation 12VAC35-105-870 B 4 already states that the provider's record management policy be consistent with applicable state and federal laws including the Health Insurance Portability and Accountability Act (HIPAA) (Public Law 104-191) and implementing regulations (45 CFR Parts 160, 162, and 164). Therefore, technically, compliance with these provisions is already required under DBHDS licensing regulations.

2. There are federal agencies tasked with enforcement of HIPAA including the U.S. Department of Health and Human Services (HHS) Office for Civil Rights (OCR) and Centers for Medicare and Medicaid Services (CMS).

3. Currently, the way the Licensing Regulations (12VAC35-105) are written, any changes that occur at the federal level are automatically captured in the regulations because providers are only required compliance with the federal law and do not include specific provisions. If the regulations are changed to specifically include text from HIPAA, the regulations will have to be changed every time that the federal laws change.

Agency Contact: Ruth Anne Walker, Director of Regulatory Affairs, Department of Behavioral Health and Developmental Services, 1220 Bank Street, 11th Floor, Richmond, VA 23219, telephone (804) 225-2252, or email ruthanne.walker@dbhds.virginia.gov.

VA.R. Doc. No. R20-05 Filed October 17, 2019, 12:56 p.m.

Agency Decision

Title of Regulation: **12VAC35-105. Rules and Regulations for Licensing Providers by the Department of Behavioral Health and Developmental Services.**

Statutory Authority: § 37.2-203 of the Code of Virginia.

Name of Petitioner: R.C. Carter.

Nature of Petitioner's Request: To develop a new regulation requiring providers to (i) obtain verification from the Virginia Employment Commission required under the Virginia Unemployment Compensation Act, § 60.2-212 C of the Code of Virginia and (ii) submit an SS-8 Form to the Internal Revenue Service.

Agency Decision: No action.

Statement of Reason for Decision: The petition was considered by the board at the regular meeting held on Wednesday, October 9, 2019, at Western State Hospital in Staunton, Virginia. After reviewing all of the information received, the board declined to pursue the suggestions on the matter for the following reasons:

1. DBHDS does not enforce compliance with the Virginia Unemployment Compensation Act, other state employment law, or federal tax law.

2. The Office of Regulatory Affairs conducted substantial research related to the use of contract employees (for the response to periodic review draft) and as a result, draft regulations propose amendments (during the planned response to periodic review 'overhaul' of the regulations) to account for the misuse of contract employees in licensed services.

Agency Contact: Ruth Anne Walker, Director of Regulatory Affairs, Department of Behavioral Health and Developmental Services, Jefferson Building, 1220 Bank Street, 11th Floor, Richmond, VA 23219, telephone (804) 225-2252, or email ruthanne.walker@dbhds.virginia.gov.

VA.R. Doc. No. R20-01 Filed October 17, 2019, 1:04 p.m.

TITLE 16. LABOR AND EMPLOYMENT

SAFETY AND HEALTH CODES BOARD

Agency Decision

Title of Regulation: **16VAC25-60. Administrative Regulation for the Virginia Occupational Safety and Health Program.**

Statutory Authority: §§ 40.1-6 and 40.1-22 of the Code of Virginia.

Name of Petitioner: Robert R. Payne, University of Alabama at Birmingham.

Nature of Petitioner's Request: 16VAC25-60-120 currently provides as follows: "The employer shall comply with the manufacturer's specifications and limitations applicable to the operation, training, use, installation, inspection, testing, repair and maintenance of all machinery, vehicles, tools, materials and equipment, unless specifically superseded by a more stringent corresponding requirement in 29 CFR Part 1910. The use of any machinery, vehicle, tool, material or equipment that is not in compliance with any applicable requirement of the manufacturer is prohibited, and shall either be identified by the employer as unsafe by tagging or locking the controls to render them inoperable or be physically removed from its place of use or operation." The petition requests the following language be added to the end of the current regulation: "Any employer who is using machinery, vehicles, tools, materials or equipment as part of a Process Safety Management (PSM) covered process, as defined in 29 CFR 1910.119, may adjust the operation, training, use, installation, inspection, testing, repair or maintenance after completion of the following:

- Documenting the adjustment from the Manufacturer's Specifications and Limitations (MS&L) in the Process Safety Information (PSI),
- Completing the Management of Change (MOC) requirement described in 29 CFR 1910.119(l) and
- Certification from a company executive that they have examined this adjustment and that to the best of their knowledge the information is true, accurate and complete."

Agency Decision: No action.

Statement of Reason for Decision: Having given due consideration to the December 8, 2017, petition to amend the referenced Virginia Occupational Safety and Health (VOSH) regulation, the Virginia Safety and Health Codes Board at its meeting on June 14, 2018, voted unanimously to deny the petition based on a briefing from the Commissioner of Labor and Industry.

Summary of the Petition to Amend Process: On December 8, 2017, Robert R. Payne, University of Alabama at Birmingham, submitted to the Department of Labor and Industry a petition to amend 16VAC25-60-120 B pursuant to § 2.2-4007 of the Code of Virginia (see Attachment A).

The Department of Labor and Industry's initial response to the petition was filed on the Virginia Regulatory Town Hall on December 18, 2017. The agency's plan to address the petition provided as follows: "In accordance with § 2.2-4007 B of the Code of Virginia, the petition has been filed with the Registrar of Regulations and will be published on January 8, 2018. Comment on the petition may be sent by email, regular mail or posted on the Virginia Regulatory Town Hall at www.townhall.virginia.gov. Comments will be requested until January 28, 2018. Following receipt of all comments on the petition to amend the regulation, the Safety and Health Codes Board will decide whether to make any changes to the regulatory language. This matter will be on the board's agenda for its next regularly scheduled meeting following the end of the comment period. The board does not currently have a meeting scheduled. The board will issue a written decision on the petition within 90 days of the close of the comment period, or within 14 days of its next meeting should the board not meet within the initial 90 day period."

The petition was published in the Virginia Register of Regulations on January 8, 2018, with a 21 day comment period ending January 28, 2018. No comments were received.

The board considered the petition at its meeting on June 14, 2018, (see pages 45-50 of the agenda posted to Town Hall from the June 14, 2018, SHCB meeting at: https://townhall.virginia.gov/L/GetFile.cfm?File=meeting\92\27752\Agenda_DOLI_27752_v3.pdf.)

Summary of the Petition: The petition seeks to amend 16VAC25-60-120 B, which provides as follows: "B. The employer shall comply with the manufacturer's specifications and limitations applicable to the operation, training, use, installation, inspection, testing, repair and maintenance of all machinery, vehicles, tools, materials and equipment, unless specifically superseded by a more stringent corresponding requirement in 29 CFR Part 1910. The use of any machinery, vehicle, tool, material or equipment that is not in compliance with any applicable requirement of the manufacturer is prohibited and shall either be identified by the employer as unsafe by tagging or locking the controls to render them inoperable or be physically removed from its place of use or operation."

The petition asks that the following language be added to 16VAC25-60-120 B: Any employer who is using machinery, vehicles, tools, materials or equipment as part of a Process Safety Management (PSM) covered process, as defined in 29 CFR (Code of Federal Regulations) 1910.119, may adjust the operation, training, use, installation, inspection, testing, repair or maintenance after completion of the following:

• Documenting the adjustment from the Manufacturer's Specifications and Limitations (MS&L) in the Process Safety Information (PSI)

• Completing the Management of Change (MOC) requirement described in 29 CFR 1910.119 (1) and

• Certification from a company executive that they have examined this adjustment and that to the best of their knowledge the information is true, accurate and complete.

Decision: The board finds the following:

1. While the petitioner has identified one or more scenarios where an employer operating a process safety management (PSM) work site may be negatively impacted by 16VAC25-60.120 B, he is incorrect in stating that VOSH regulations do not provide an option for employers to vary from the requirements of 16VAC25-60.120 B.

The VOSH Administrative Regulations describe procedures for employers to seek variances from VOSH regulations to address exactly the kind of situations described by the petitioner: 16VAC25-60-190 (General provisions), 16VAC25-60-210 (Permanent variances), and 16VAC25-60-220 (Interim order).

The variance procedures provide employers the opportunity to apply to the commissioner for either an interim order and/or a permanent variance from an existing VOSH regulation. The application requires no special form. The information can be forwarded by letter with attachments (e.g., written procedures, photographs, videos, diagrams, manufacturer's specifications, etc.).

16VAC25-60-190 through 16VAC25-60-220 explain the different forms of variances and describe the process for obtaining an interim order from the Commissioner of Labor and Industry. Permanent variances are addressed in 16VAC25-60-210. Temporary variances are addressed in 16VAC25-60-200, but are only used in special instances where an employer is unable to comply with a standard before its effective date.

Interim orders are addressed in 16VAC25-60-220 and can be obtained for a limited amount of time without going through the full notice and comment procedures required for a permanent variance. Because interim orders are not subject to public comment and receive expedited review by the commissioner, the burden of proof for the employer in support of its interim order request is higher than for a permanent variance (see 16VAC25-60-220 C which requires "clear and convincing evidence" that employees will be protected).

The variance application must address the general requirements contained in 16VAC25-60-190 B l to 16VAC25-60-190 B 3 concerning notification to employees and this department, and then specify the type of variance requested: permanent variance, temporary variance and/or interim order. The application must also address each of the documentation requirements listed in 16VAC25-60-210 B for permanent variances and, as applicable, the requirements in 16VAC25-60-220 B and 16VAC25-60-220 C for interim orders.

Once the commissioner issues a decision on the variance request, any party may, within 15 days, file a notice of appeal with the Safety and Health Codes Board.

2. Section 40.1-22(5) of the Code of Virginia provides that in deciding whether to adopt or amend a regulation the Safety and Health Codes Board shall take into consideration "experiences gained under this and other health and safety laws." The Process Safety Management of Highly Hazardous Chemicals (PSM) Standard, 1910.119, was originally adopted by OSHA and the Safety and Health Codes Board in 1992. 16VAC25-60-120 B was adopted by the board in 2006 after multiple notice and comment periods and a public hearing. To the knowledge of department staff, no Virginia employer responsible for operating a PSM covered work site has ever applied for a variance from 16VAC25-60-120 B or requested an interpretation of 16VAC25-60-120 B and its application to a PSM covered work site in Virginia. Nor does the petitioner identify a specific PSM work site in Virginia negatively impacted by 16VAC25-60-120 B.

Based on the "experiences gained" under § 1910.119 and 16VAC25-60-120 B, it does not appear that a significant enough number of PSM employers/employees are impacted negatively in Virginia by 16VAC25-60-120 B to warrant the undertaking of a potentially costly and time consuming regulatory amendment process; particularly when VOSH variance procedures discussed above may be used by PSM employers on a case-by-case basis to address the situations described by the petitioner. Should the department ultimately receive a significant number of variance requests on this issue, it stated that it will reconsider its recommendation on this petition to amend.

3. While the department has not researched in depth the ramifications of an amendment to 16VAC25-60-120 B that would permit an employer to violate manufacturer's specifications and limitations without first contacting the manufacturer and/or a governing body, such as the VOSH Program, it would appear that there would be significant legal and liability ramifications and complexities involved in any proposed rulemaking that could affect such a potentially broad range of manufactured items.

PSM facilities by their very nature also involve the handling of large amounts of highly hazardous chemicals, and in the event of a failure can result in catastrophic consequences for the worksite, its employees and potentially the surrounding community and the environment. The advantages of addressing the petitioner's concerns with employers on a case-by-case basis through a

relatively stream-lined process, and one which includes the opportunity for interaction with the manufacturer, as well as notice and comment to affected employees and the general public, are apparent.

ATTACHMENT A

§ 2.2-4007 of the Code of Virginia. Petitions for new or amended regulations; opportunity for public comment.

A. Any person may petition an agency to request the agency to develop a new regulation or amend an existing regulation. The petition shall state (i) the substance and purpose of the rulemaking that is requested, including reference to any applicable Virginia Administrative Code sections, and (ii) reference to the legal authority of the agency to take the action requested.

B. Within 14 days of receiving a petition, the agency shall send a notice identifying the petitioner, the nature of the petitioner's request and the agency's plan for disposition of the petition to the Registrar for publication in the Virginia Register of Regulations in accordance with the provisions of subsection B of § 2.2-4031 C of the Code of Virginia. A 21-day period for acceptance of written public comment on the petition shall be provided after publication in the Virginia Register. The agency shall issue a written decision to grant or deny the petitioner's request within 90 days following the close of the comment period. However, if the rulemaking authority is vested in an entity that has not met within that 90-day period, the entity shall issue a written decision no later than 14 days after it next meets. The written decision issued by the agency shall include a statement of its reasons and shall be submitted to the Registrar for publication in the Virginia Register of Regulations. Agency decisions to initiate or not initiate rulemaking in response to petitions shall not be subject to judicial review.

Agency Contact: Jay Withrow, Director, Division of Legal Support, VPP, ORA, OPP, Department of Labor and Industry, Main Street Centre, 600 East Main Street, Richmond, VA 23219, telephone (804) 786-9873, or email jay.withrow@doli.virginia.gov.

VA.R. Doc. No. R18-14 Filed October 9, 2019, 12:57 p.m.

TITLE 18. PROFESSIONAL AND OCCUPATIONAL LICENSING

BOARD OF MEDICINE

Initial Agency Notice

Title of Regulation: **18VAC85-80. Regulations Governing the Practice of Physician Assistants.**

Statutory Authority: § 54.1-2400 of the Code of Virginia.

Name of Petitioner: Virginia Academy of Physician Assistants.

Nature of Petitioner's Request: To eliminate the requirement for the name of a patient care team physician to appear on a prescription written by a physician assistant for a controlled substance in Schedules II through V.

Agency Plan for Disposition of Request: In accordance with Virginia law, the petition has been filed with the Virginia Registrar of Regulations and will be published on November 11, 2019, and posted on the Virginia Regulatory Town Hall at www.townhall.virginia.gov. Comment on the petition will be requested until December 11, 2019, and may be posted on the Town Hall or sent to the board. Following receipt of all comments on the petition to amend regulations, the matter will be considered by the Advisory Board on Physician Assistants at its next meeting following the close of comment.

Public Comment Deadline: December 11, 2019.

Agency Contact: William L. Harp, M.D., Executive Director, Board of Medicine, 9960 Mayland Drive, Suite 300, Richmond, VA 23233, telephone (804) 367-4558, or email william.harp@dhp.virginia.gov.

VA.R. Doc. No. R20-14 Filed October 15, 2019, 8:53 a.m.

TITLE 9. ENVIRONMENT

STATE AIR POLLUTION CONTROL BOARD

Report of Findings

Pursuant to § 2.2-4007.1 of the Code of Virginia, the State Air Pollution Control Board conducted a small business impact review of **9VAC5-91, Regulations for the Control of Motor Vehicle Emissions in the Northern Virginia Area**, and determined that this regulation should be retained in its current form. The State Air Pollution Control Board is publishing its report of findings dated October 1, 2019, to support this decision in accordance with § 2.2-4007.1 F of the Code of Virginia.

The regulation continues to be needed. Motor vehicles are the single greatest source of pollutants in the northern Virginia area. This program helps to ensure that vehicles operate as cleanly as possible by periodically verifying vehicle emissions control systems are operating properly. Maintenance and repair of emissions control systems on vehicles minimizes the impact vehicle emissions have on air quality.

No comments were received during the comment period.

The regulations specify the requirements for motor vehicle emissions inspections in the northern Virginia area and include the frequency of inspection, the type of testing to be conducted, and the emission standards that must be met. Most newer vehicles subject to the program have their on-board diagnostic systems tested while other subject vehicles have their tailpipe emissions tested. Certain vehicles may also be tested using remote sensing technology and may be required to have a confirmation test conducted at an emissions inspection station based on their on-road emission results. Due to the numerous types of tests that may be used to evaluate a vehicle's emissions, the regulations may be viewed as complex.

The Clean Air Act Amendments passed by the U.S. Congress in 1990 required Virginia's Department of Environmental Quality (DEQ) to enhance the vehicle emissions inspection program in order to keep improving air quality and to reduce emissions further. In compliance with this federal mandate, DEQ has designed the program for maximum convenience, efficiency and reliability. Virginia's program does not conflict with federal or state laws or regulations.

These regulations were last amended in 2018 and were also amended in 2015, 2013, 2012, 2008, 2007, 2005, and 2002. These regulations have been periodically updated to maintain consistency with requirements of state law and to incorporate advancements in vehicle emissions testing technology.

These regulations contain a provision that allows certain vehicles to be tested using remote sensing technology. This provision helps minimize the impact the regulations have on some vehicle owners, including vehicles owned by small businesses.

Contact Information: Melissa Porterfield, Office of Regulatory Affairs, Department of Environmental Quality, P.O. Box 1105, Richmond, VA 23218, telephone (804) 698-4238, FAX (804) 698-4019, or email melissa.porterfield@deq.virginia.gov.

STATE WATER CONTROL BOARD

Report of Findings

Pursuant to § 2.2-4007.1 of the Code of Virginia, the Board of Counseling conducted a small business impact review of **9VAC25-650, Closure Plans and Demonstration of Financial Capability**, and determined that this regulation should be amended.

The fast-track regulatory action to amend 9VAC25-650, which is published in this issue of the Virginia Register, serves as the report of findings.

Agency Contact: Melissa Porterfield, Office of Regulatory Affairs, Department of Environmental Quality, P.O. Box 1105, Richmond, VA 23218, telephone (804) 698-4238, FAX (804) 698-4019, or email melissa.porterfield@deq.virginia.gov.

TITLE 12. HEALTH

STATE BOARD OF BEHAVIORAL HEALTH AND DEVELOPMENTAL SERVICES

Agency Notice

Pursuant to Executive Order 14 (as amended July 16, 2018) and §§ 2.2-4007.1 and 2.2-4017 of the Code of Virginia, **12VAC35-225, Requirements for Virginia Early Intervention System**, is undergoing a periodic review. The review of this regulation will be guided by the principles in Executive Order 14 (as amended July 16, 2018).

The purpose of this review is to determine whether this regulation should be repealed, amended, or retained in its current form. Public comment is sought on the review of any issue relating to this regulation, including whether the regulation (i) is necessary for the protection of public health, safety, and welfare or for the economical performance of important governmental functions; (ii) minimizes the economic impact on small businesses in a manner consistent with the stated objectives of applicable law; and (iii) is clearly written and easily understandable.

Comments must include the commenter's name and address (physical or email) information in order to receive a response

to the comment from the agency. Following the close of the public comment period, a report of both reviews will be posted on the Town Hall and a report of the small business impact review will be published in the Virginia Register of Regulations.

Contact Information: Catherine Hancock, Part C Administrator, Jefferson Building, State Board of Behavioral Health and Developmental Services, 1220 Bank Street, 9th Floor, Richmond, VA 23219, telephone (804) 371-6592, FAX (804) 371-7959, TDD (804) 371-8977, or email catherine.hancock@dbhds.virginia.gov.

TITLE 16. LABOR AND EMPLOYMENT

SAFETY AND HEALTH CODES BOARD

Report of Findings

Pursuant to § 2.2-4007.1 of the Code of Virginia, the Safety and Health Codes Board conducted a small business impact review of **16VAC25-35, Regulation Concerning Certified Lead Contractors Notification, Lead Project Permits and Permit Fees**, and determined that this regulation should be retained in its current form. The Safety and Health Codes Board is publishing its report of findings dated September 18, 2019, to support this decision in accordance with § 2.2-4007.1 F of the Code of Virginia.

The regulation has three goals:

1. Reduce the incidence of material impairment of the health of Virginians due to exposure to lead in the workplace or as an environmental pollutant.

2. Require certified lead abatement contractors to notify the government of lead abatement projects and pay fees to cover the cost of administering the program.

3. The protection of the public's health, safety, and welfare with the least possible cost and intrusiveness.

The regulation provides the identification of certain lead abatement projects and the tracking of active projects. Section 40.1-51.21 of the Code of Virginia requires that at least once a year, during an actual project, the Department of Labor and Industry conduct an on-site, unannounced inspection of each certified lead abatement contractor's procedures in regard to the removal of lead-based paint. This inspection ensures protection of the health of the work. The regulation provides the identification of certain lead abatement projects and the tracking of active projects. Section 40.1-51.21 of the Code of Virginia requires that at least once a year, during an actual project, the Department of Labor and Industry conduct an on-site, unannounced inspection of each certified lead abatement contractor's procedures in regard to the removal of lead-based paint. This inspection ensures protection of the health of the workers and also the health of the general public by controlling the release of lead into the environment or residence.

The regulation also provides a concise procedure for the notification and payment of fees associated with lead projects. The fees generated are designed to cover the costs associated with the compliance inspections conducted by the Department.

This regulation is not overly complex and does not overlap, duplicate, or conflict with federal or state law or regulation. The regulation is clearly written and easily understandable.

The regulation also provides a concise procedure for the notification and payment of fees associated with lead projects. The fees generated are designed to cover the costs associated with the compliance inspections conducted by the department.

Contact Information: Jay Withrow, Director of Legal Support, VPP, ORA, OPP, OWP, Safety and Health Codes Board, 600 East Main Street, Suite 207, Richmond, VA 23233, telephone (804) 786-9873, or email jay.withrow@doli.virginia.gov.

TITLE 18. PROFESSIONAL AND OCCUPATIONAL LICENSING

BOARD FOR ARCHITECTS, PROFESSIONAL ENGINEERS, LAND SURVEYORS, CERTIFIED INTERIOR DESIGNERS, AND LANDSCAPE ARCHITECTS

Report of Findings

Pursuant to § 2.2-4007.1 of the Code of Virginia, the Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers, and Landscape Architects conducted a small business impact review of **18VAC10-11, Public Participation Guidelines**, and determined that this regulation should be retained in its current form. The Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers, and Landscape Architects is publishing its report of findings dated September 25, 2019, to support this decision in accordance with § 2.2-4007.1 F of the Code of Virginia.

The current regulation is necessary for the board to comply with § 2.2-4007.02 of the Code of Virginia. No public comments were received. The regulation is not complex in nature. The regulation does not overlap, duplicate, or conflict with federal or state laws or regulations. No small business impact has been identified. The last periodic review of the regulation occurred March, 2016.

On September 10, 2019, the board reviewed the regulation and determined that the regulation should not be amended or repealed, but retained in its current form.

Contact Information: Kathleen R. Nosbisch, Executive Director, Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers, and Landscape Architects, 9960 Mayland Drive, Suite 400, Richmond, VA 23233, telephone (804) 367-8514, FAX (866) 465-6206, or email apelscidla@dpor.virginia.gov.

Report of Findings

Pursuant to § 2.2-4007.1 of the Code of Virginia, the Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers, and Landscape Architects conducted a small business impact review of **18VAC10-20, Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers, and Landscape Architects Regulations**, and determined that this regulation should be retained in its current form. The Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers, and Landscape Architects is publishing its report of findings dated September 25, 2019, to support this decision in accordance with § 2.2-4007.1 F of the Code of Virginia.

Section 54.1-201.5 of the Code of Virginia mandates that the Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers, and Landscape Architects promulgate regulations. The continued need for the regulation is established in statute. Repeal of the regulation would remove the current public protections provided by the regulation. The Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers, and Landscape Architects provides protection to the safety and welfare of the citizens of the Commonwealth by ensuring that only those individuals and businesses who meet specific criteria set forth in the statutes and regulations are eligible to receive a license, certification, or registration. The board is also tasked with ensuring that its regulants meet standards of practice that are set for the in the regulations.

No comments or complaints were received during the public comment period. The regulation is clearly written, easily understandable, and does not overlap, duplicate, or conflict with federal or state law or regulation. The most recent periodic review of the regulation occurred in 2015.

On September 10, 2019, the board discussed the regulation and for the reasons stated in this section, determined that regulation should not be amended or repealed, but retained in its current form.

Contact Information: Kathleen R. Nosbisch, Executive Director, Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers, and Landscape Architects, 9960 Mayland Drive, Suite 400, Richmond, VA 23233, telephone (804) 367-8514, FAX (866) 465-6206, or email apelscidla@dpor.virginia.gov.

AUCTIONEERS BOARD

Report of Findings

Pursuant to § 2.2-4007.1 of the Code of Virginia, the Auctioneers Board conducted a small business impact review of **18VAC25-11, Public Participation Guidelines**, and determined that this regulation should be retained in its current form. The Auctioneers Board is publishing its report of findings dated October 10, 2019, to support this decision in accordance with § 2.2-4007.1 F of the Code of Virginia.

The current regulation is necessary for the board to comply with § 2.2-4007.02 of the Code of Virginia. No public comments were received. The regulation is not complex in nature. The regulation does not overlap, duplicate, or conflict with federal or state laws or regulations. No small business impact has been identified. The last periodic review of the regulation occurred January, 2016.

On October 8, 2019, the board reviewed the regulation and, for the reasons stated in this section, determined that the regulation should not be amended or repealed, but retained in its current form.

Contact Information: Kathleen R. Nosbisch, Executive Director, Auctioneer's Board, 9960 Mayland Drive, Suite 400, Richmond, VA 23233, telephone (804) 367-8514, FAX (866) 465-6206, email auctioneers@dpor.virginia.gov.

Report of Findings

Pursuant to § 2.2-4007.1 of the Code of Virginia, the Auctioneers Board conducted a small business impact review of **18VAC25-21, Regulations of the Virginia Auctioneers Board**, and determined that this regulation should be retained in its current form. The Auctioneers Board is publishing its report of findings dated October 10, 2019, to support this decision in accordance with § 2.2-4007.1 F of the Code of Virginia.

Section 54.1-201.5 of the Code of Virginia mandates the Auctioneers Board promulgate regulations. The continued need for the regulation is established in statute. Repeal of the regulation would remove the current public protections provided by the regulation. The Auctioneers Board provides protection to the safety and welfare of the citizens of the Commonwealth by ensuring that only those individuals and businesses who meet specific criteria set forth in the statutes and regulations are eligible to receive a license. The board is also tasked with ensuring that its regulants meet standards of practice that are set for the in the regulations.

No comments or complaints were received during the public comment period. The regulation is clearly written, easily understandable, and does not overlap, duplicate, or conflict

with federal or state law or regulation. The most recent periodic review of the regulation occurred in 2016.

On October 8, 2019, the board discussed the regulation and for the reasons stated in this section, determined that regulation should not be amended or repealed, but retained in its current form.

Contact Information: Kathleen R. Nosbisch, Executive Director, Auctioneer's Board, 9960 Mayland Drive, Suite 400, Richmond, VA 23233, telephone (804) 367-8514, FAX (866) 465-6206, email auctioneers@dpor.virginia.gov.

BOARD FOR BRANCH PILOTS

Report of Findings

Pursuant to § 2.2-4007.1 of the Code of Virginia, the Board for Branch Pilots conducted a small business impact review of **18VAC45-11, Public Participation Guidelines**, and determined that this regulation should be retained in its current form. The Board for Branch Pilots is publishing its report of findings dated September 25, 2019, to support this decision in accordance with § 2.2-4007.1 F of the Code of Virginia.

The current regulation is necessary for the board to comply with § 2.2-4007.02 of the Code of Virginia. No public comments were received. The regulation is not complex in nature. The regulation does not overlap, duplicate, or conflict with federal or state laws or regulations. No small business impact has been identified. The last periodic review of the regulation occurred January, 2016.

On September 13, 2019, the board reviewed the regulation and, for the reasons stated in this section, determined that the regulation should not be amended or repealed, but retained in its current form.

Contact Information: Kathleen R. Nosbisch, Executive Director, Board for Branch Pilots, 9960 Mayland Drive, Suite 400, Richmond, VA 23233, telephone (804) 367-8514, FAX (866) 465-6206, or email branchpilots@dpor.virginia.gov.

Report of Findings

Pursuant to § 2.2-4007.1 of the Code of Virginia, the Board for Branch Pilots conducted a small business impact review of **18VAC45-20, Board for Branch Pilots Regulations**, and determined that this regulation should be retained in its current form. The Board for Branch Pilots is publishing its report of findings dated September 25, 2019, to support this decision in accordance with § 2.2-4007.1 F of the Code of Virginia.

Section 54.1-201.5 of the Code of Virginia mandates the Board for Branch Pilots promulgate regulations. The continued need for the regulation is established in statute. Repeal of the regulation would remove the current public protections provided by the regulation. The Board for Branch Pilots provides protection to the safety and welfare of the citizens of the Commonwealth by ensuring that only those individuals who meet specific criteria set forth in the statutes and regulations are eligible to receive a license. The board is also tasked with ensuring that its regulants meet standards of practice that are set for the in the regulations.

No comments or complaints were received during the public comment period. The regulation is clearly written, easily understandable, and does not overlap, duplicate, or conflict with federal or state law or regulation. The most recent periodic review of the regulation occurred in 2015.

On September 13, 2019, the board discussed the regulation and for the reasons stated in this section, determined that regulation should not be amended or repealed, but retained in its current form.

Contact Information: Kathleen R. Nosbisch, Executive Director, Board for Branch Pilots, 9960 Mayland Drive, Suite 400, Richmond, VA 23233, telephone (804) 367-8514, FAX (866) 465-6206, or email branchpilots@dpor.virginia.gov.

BOARD OF COUNSELING

Report of Findings

Pursuant to § 2.2-4007.1 of the Code of Virginia, the Board of Counseling conducted a small business impact review of **18VAC115-40, Regulations Governing the Certification of Rehabilitation Providers**, and determined that this regulation should be amended.

The Notice of Intended Regulatory Action to amend 18VAC115-40, which is published in this issue of the Virginia Register, serves as the report of findings.

Agency Contact: Jaime Hoyle, Executive Director, Board of Counseling, 9960 Mayland Drive, Suite 300, Richmond, VA 23233, telephone (804) 367-4406, or email jaime.hoyle@dhp.virginia.gov.

REAL ESTATE APPRAISER BOARD

Report of Findings

Pursuant to § 2.2-4007.1 of the Code of Virginia, the Real Estate Appraiser Board conducted a small business impact review of **18VAC130-11, Public Participation Guidelines**, and determined that this regulation should be retained in its current form. The Real Estate Appraiser Board is publishing its report of findings dated October 9, 2019, to support this decision in accordance with § 2.2-4007.1 F of the Code of Virginia.

Section 2.2-4007.02 of the Code of Virginia mandates the agency to solicit the input of interested parties in the formation and development of its regulations. Therefore, the continued need for the regulation is established in statute. The regulation is necessary to protect public health, safety, and

welfare by establishing public participation guidelines that promote public involvement in the development, amendment, or repeal of an agency's regulation. By soliciting the input of interested parties, the agency is better equipped to effectively regulate the occupation or profession.

No comments or complaints were received during the public comment period. The regulation is clearly written, easily understandable, and does not overlap, duplicate, or conflict with federal or state law or regulation. The most recent periodic review of the regulation occurred in 2015.

On October 8, 2019, the board discussed the regulation and, for the reasons stated in this section, determined that the regulation should not be amended or repealed, but retained in its current form.

Contact Information: Christine Martine, Executive Director, Real Estate Appraiser Board, 9960 Mayland Drive, Suite 400, Richmond, VA 23233, telephone (804) 367-8552, FAX (866) 826-8863, or email reappraisers@dpor.virginia.gov.

Report of Findings

Pursuant to § 2.2-4007.1 of the Code of Virginia, the Real Estate Appraiser Board conducted a small business impact review of **18VAC130-20, Real Estate Appraiser Board Rules and Regulations**, and determined that this regulation should be retained in its current form. The Real Estate Appraiser Board is publishing its report of findings dated October 9, 2019, to support this decision in accordance with § 2.2-4007.1 F of the Code of Virginia.

Section 54.1-201.5 of the Code of Virginia mandates the Real Estate Appraiser Board to promulgate regulations. The continued need for the regulation is established in statute. Repeal of the regulation would remove the current public protections provided by the regulation. The Real Estate Appraiser Board provides protection to the safety and welfare of the citizens of the Commonwealth by ensuring that only those individuals that meet specific criteria set forth in the statutes and regulations are eligible to receive a real estate appraiser license and business registration. The board is also tasked with ensuring that its regulants meet standards of practice that are set forth in the regulations.

No comments or complaints were received during the public comment period. The regulation is clearly written, easily understandable, and does not overlap, duplicate, or conflict with federal or state law or regulation. The most recent periodic review of the regulation occurred in 2015.

On October 8, 2019, the board discussed the regulation and, for the reasons stated in this section, determined that the regulation should not be amended or repealed, but retained in its current form.

Contact Information: Christine Martine, Executive Director, Real Estate Appraiser Board, 9960 Mayland Drive, Suite 400, Richmond, VA 23233, telephone (804) 367-8552, FAX (866) 826-8863, or email reappraisers@dpor.virginia.gov.

Report of Findings

Pursuant to § 2.2-4007.1 of the Code of Virginia, the Real Estate Appraiser Board conducted a small business impact review of **18VAC130-30, Appraisal Management Company Regulations**, and determined that this regulation should be retained in its current form. The Real Estate Appraiser Board is publishing its report of findings dated October 9, 2019, to support this decision in accordance with § 2.2-4007.1 F of the Code of Virginia.

Section 54.1-201.5 of the Code of Virginia mandates the Real Estate Appraiser Board to promulgate regulations. The continued need for the regulation is established in statute. Repeal of the regulation would remove the current public protections provided by the regulation. The Real Estate Appraiser Board provides protection to the safety and welfare of the citizens of the Commonwealth by ensuring that only those persons that meet specific criteria set forth in the statutes and regulations are eligible to receive an appraisal management company license. The board is also tasked with ensuring that its regulants meet standards of practice that are set forth in the regulations.

No complaints were received during the public comment period. The regulation is clearly written, easily understandable, and does not overlap, duplicate, or conflict with federal or state law or regulation.

This is the first periodic review of the regulation. On October 8, 2019, the board discussed the regulation and, for the reasons stated in this section, determined that the regulation should not be amended or repealed, but retained in its current form.

Contact Information: Christine Martine, Executive Director, Real Estate Appraiser Board, 9960 Mayland Drive, Suite 400, Richmond, VA 23233, telephone (804) 367-8552, FAX (866) 826-8863, or email reappraisers@dpor.virginia.gov.

TITLE 22. SOCIAL SERVICES

STATE BOARD OF SOCIAL SERVICES

Report of Findings

Pursuant to § 2.2-4007.1 of the Code of Virginia, the State Board of Social Services conducted a small business impact review of **22VAC40-680, Virginia Energy Assistance Program - Low Income Home Energy Assistance Program (LIHEAP)**, and determined that this regulation should be retained in its current form. The State Board of Social Services is publishing its report of findings dated July

17, 2019, to support this decision in accordance with § 2.2-4007.1 F of the Code of Virginia.

Because this regulation makes revenue available to over 500 vendors, the impact of the regulation on small business is positive. The regulation provides eligible Energy Assistance Program (EAP) vendors, which includes vendors from the small business community, access to revenue made available through the federally funded LIHEAP. The regulation is not complex and does not overlap, duplicate, or conflict with other federal or state laws or regulations. The last evaluation of this regulation occurred in 2015. Business entities that provide EAP goods and services are eligible to participate as vendors in the EAP. Payments to vendors are determined by their respective products, self-designated service areas, and by customer selection. There is no need to amend or repeal the regulation to minimize the economic impact on small businesses.

Contact Information: Denise Surber, Energy Assistance Program Consultant, State Board of Social Services, 801 East Main Street, Richmond, VA 23219, telephone (804) 726-7386, FAX (804) 726-7358, or email denise.t.surber@dss.virginia.gov.

Report of Findings

Pursuant to § 2.2-4007.1 of the Code of Virginia, the State Board of Social Services conducted a small business impact review of **22VAC40-780, Eligibility for Direct Social Services**, and determined that this regulation should be retained in its current form. The State Board of Social Services is publishing its report of findings dated October 16, 2019, to support this decision in accordance with § 2.2-4007.1 F of the Code of Virginia.

This regulation is necessary in that it provides the authority for local departments of social services to provide direct services to children and families. There were no complaints or comments received from the public concerning this regulation. This regulation does not conflict with federal or state law or regulations and there are no requirements that exceed applicable federal requirements. This regulation was last reviewed and amended in 2015. There are no impacts on small businesses.

Contact Information: Nikki Clarke Callaghan, Program Manager, Legislation and Regulations, State Board of Social Services, 801 East Main Street, Richmond, VA 23219, telephone (804) 726-7943, FAX (804) 726-7499, or email nikki.clarke@dss.virginia.gov.

TITLE 24. TRANSPORTATION AND MOTOR VEHICLES

DEPARTMENT OF MOTOR VEHICLES

Report of Findings

Pursuant to § 2.2-4007.1 of the Code of Virginia, the Department of Motor Vehicles (DMV) conducted a small business impact review of **24VAC20-121, Virginia Driver Training Schools Regulations**, and determined that this regulation should be retained in its current form. The Department of Motor Vehicles is publishing its report of findings dated October 7, 2019, to support this decision in accordance with § 2.2-4007.1 F of the Code of Virginia.

DMV did not receive any comments during the comment period indicating a need to repeal or amend the regulation to minimize the economic impact on small businesses. DMV has determined to retain the regulation at this time. DMV has determined that the regulation is not overly complex and conforms to the Code of Virginia. DMV has also determined that the regulation does not overlap, duplicate, or conflict with federal or state law or regulation. DMV considered the degree to which technology, economic conditions, or other factors have changed in the area affected by the regulation and has determined that no changes are necessary at this time.

Contact Information: Domica Winstead, Senior Policy Analyst, Department of Motor Vehicles, 2300 West Broad Street, Suite 724, Richmond, VA 23220, telephone (804) 367-1864, FAX (804) 367-4336, or email domica.winstead@dmv.virginia.gov.

MOTOR VEHICLE DEALER BOARD

Agency Notice

Pursuant to Executive Order 14 (as amended July 16, 2018) and §§ 2.2-4007.1 and 2.2-4017 of the Code of Virginia, the listed regulations are undergoing a periodic review. The review of these regulations will be guided by the principles in Executive Order 14 (as amended July 16, 2018).

24VAC22-11, Public Participation Guidelines

24VAC22-20, Motor Vehicle Dealer Fees

24VAC22-30, Motor Vehicle Dealer Advertising Practices and Enforcement Regulations

24VAC22-40, Independent Motor Vehicle Dealer Operator Recertification Regulations

The purpose of this review is to determine whether each regulation should be repealed, amended, or retained in its current form. Public comment is sought on the review of any issue relating to each regulation, including whether each regulation (i) is necessary for the protection of public health, safety, and welfare or for the economical performance of

important governmental functions; (ii) minimizes the economic impact on small businesses in a manner consistent with the stated objectives of applicable law; and (iii) is clearly written and easily understandable.

Comments must include the commenter's name and address (physical or email) information in order to receive a response to the comment from the agency. Following the close of the public comment period, a report of both reviews will be posted on the Town Hall and a report of the small business impact review will be published in the Virginia Register of Regulations.

Contact Information: William Childress, Executive Director, Motor Vehicle Dealer Board, 2201 West Broad Street, Suite 104, Richmond, VA 23220, telephone (804) 367-6745, FAX (804) 367-1053, or email william.childress@mvdb.virginia.gov.

TITLE 9. ENVIRONMENT

STATE WATER CONTROL BOARD

Notice of Intended Regulatory Action

Notice is hereby given in accordance with § 2.2-4007.01 of the Code of Virginia that the State Water Control Board intends to consider amending **9VAC25-610, Groundwater Withdrawal Regulations** and adopting a new chapter, **9VAC25-910, General Permit for Use of Surficial Aquifer on the Eastern Shore**. The purpose of the proposed action is to authorize the development of a general permit and create a new general permit regulation to promote use of the surficial aquifer on the Eastern Shore for nonpotable purposes.

The agency does not intend to hold a public hearing on the proposed action after publication in the Virginia Register.

Statutory Authority: § 62.1-262.1 of the Code of Virginia.

Public Comment Deadline: January 6, 2020.

Agency Contact: Scott Kudlas, Department of Environmental Quality, 1111 East Main Street, Suite 1400, P.O. Box 1105, Richmond, VA 23218, telephone (804) 698-4456, or email scott.kudlas@deq.virginia.gov.

VA.R. Doc. No. R20-6091; Filed October 22, 2019, 12:08 p.m.

TITLE 18. PROFESSIONAL AND OCCUPATIONAL LICENSING

BOARD OF COUNSELING

Notice of Intended Regulatory Action

Notice is hereby given in accordance with § 2.2-4007.01 of the Code of Virginia that the Board of Counseling intends to consider amending **18VAC115-40, Regulations Governing the Certification of Rehabilitation Providers**. The purpose of the proposed action is to update regulations, clarify language, and achieve some consistency among standards of practice and renewal requirements for certified and registered professions. The board will consider requiring hours of continuing education for renewal and adding grounds for disciplinary actions that are found in all other chapters for other professions regulated by the board.

This Notice of Intended Regulatory Action serves as the report of the findings of the regulatory review pursuant to § 2.2-4007.1 of the Code of Virginia.

The agency intends to hold a public hearing on the proposed action after publication in the Virginia Register.

Statutory Authority: § 54.1-2400 of the Code of Virginia.

Public Comment Deadline: December 11, 2019.

Agency Contact: Jaime Hoyle, Executive Director, Board of Counseling, 9960 Mayland Drive, Suite 300, Richmond, VA 23233, telephone (804) 367-4406, FAX (804) 527-4435, or email jaime.hoyle@dhp.virginia.gov.

VA.R. Doc. No. R20-6208; Filed October 15, 2019, 3:39 p.m.

REGULATIONS

For information concerning the different types of regulations, see the Information Page.

Symbol Key

Roman type indicates existing text of regulations. Underscored language indicates proposed new text. Language that has been stricken indicates proposed text for deletion. Brackets are used in final regulations to indicate changes from the proposed regulation.

TITLE 1. ADMINISTRATION

STATE BOARD OF ELECTIONS

Final Regulation

Title of Regulation: **1VAC20-90. Campaign Finance and Political Advertisements (adding 1VAC20-90-30).**

Statutory Authority: § 24.2-103 of the Code of Virginia.

Effective Date: January 1, 2020.

Agency Contact: David Nichols, Director of Election Services, Department of Elections, 1100 Bank Street, Richmond, VA 23219, telephone (804) 864-8952, or email david.nichols@elections.virginia.gov.

Summary:

The amendment adopts a definition of "express advocacy."

Summary of Public Comments and Agency's Response: No public comments were received by the promulgating agency.

1VAC20-90-30. Express advocacy.

When used in Chapter 9.3 (§ 24.2-945 et seq.) and Chapter 9.5 (§ 24.2-955 et seq.) of Title 24.2 of the Code of Virginia, "expressly advocating" or any variation thereof shall mean any communication that uses phrases such as "vote for," "elect," "support," "cast your ballot for," "Smith for Congress," "vote against," "defeat," "reject," or any variation thereof or any communication when taken as a whole and with limited reference to external events, such as the proximity to the election, that could only be interpreted by a reasonable person as containing advocacy of the election or defeat of one or more clearly identified candidates because (i) the electoral portion of the communication is unmistakable, unambiguous, and suggestive of only one meaning and (ii) reasonable minds could not differ as to whether it encourages actions to elect or defeat one or more clearly identified candidates.

VA.R. Doc. No. R19-5607; Filed October 23, 2019, 11:08 a.m.

TITLE 4. CONSERVATION AND NATURAL RESOURCES

MARINE RESOURCES COMMISSION

Final Regulation

REGISTRAR'S NOTICE: The Marine Resources Commission is claiming an exemption from the Administrative Process Act in accordance with § 2.2-4006 A 11 of the Code of Virginia; however, the commission is required to publish the full text of final regulations.

Title of Regulation: **4VAC20-490. Pertaining to Sharks (amending 4VAC20-490-40).**

Statutory Authority: § 28.2-201 of the Code of Virginia.

Effective Date: November 1, 2019.

Agency Contact: Jennifer Farmer, Regulatory Coordinator, Marine Resources Commission, 380 Fenwick Road, Fort Monroe, VA 23651, telephone (757) 247-2248, or email jennifer.farmer@mrc.virginia.gov.

Summary:

The amendments increase the recreational minimum size limits for shortfin mako sharks to 83 inches straight line fork length for females and 71 inches straight line fork length for males.

4VAC20-490-40. Recreational harvest limitations.

A. Recreational fishing vessels are allowed a maximum possession limit of one recreationally permitted shark, excluding smooth dogfish, per trip, regardless of the number of people on board the vessel. In addition, each recreational vessel angler may possess one bonnethead and one Atlantic sharpnose per trip. The possession aboard a vessel of more than one recreationally permitted shark, excluding smooth dogfish, or the possession of more than one Atlantic sharpnose shark or one bonnethead shark, per person, shall constitute a violation of this regulation. When fishing from any boat or vessel where the entire catch is held in a common hold or container, the possession limits for Atlantic sharpnose shark or bonnethead shark shall be for the boat or vessel and shall be equal to the number of persons on board legally eligible to fish, plus one additional recreationally permitted shark. The captain or operator of the boat or vessel shall be responsible for any boat or vessel possession limits.

B. A recreational shore angler is allowed a maximum possession limit of one recreationally permitted shark,

excluding smooth dogfish, per calendar day. In addition, a recreational shore angler may harvest one additional bonnethead and one additional Atlantic sharpnose per calendar day. The possession of more than one recreationally permitted shark, excluding smooth dogfish, or the possession of more than one bonnethead and one Atlantic sharpnose, by any person, shall constitute a violation of this regulation.

C. It shall be unlawful for any person to possess any recreationally prohibited shark.

D. It shall be unlawful for any person to possess any recreationally permitted shark landed under the recreational harvest limitations described in this section that is less than 54 inches in fork length except as described in subdivisions 1, 2, and ~~2~~ 3 of this subsection:

1. It shall be unlawful for any person to possess any recreationally caught female shortfin mako shark that is less than 83 inches in fork length or any male shortfin mako shark that is less than 71 inches in fork length.

2. It shall be unlawful for any person to possess any recreationally caught great hammerhead, scalloped hammerhead, or smooth hammerhead shark that is less than 78 inches in fork length.

~~2.~~ 3. Atlantic sharpnose, bonnethead, finetooth, blacknose, and smooth dogfish sharks are exempt from the recreational size limit described in this subsection.

E. It shall be unlawful for any person to take, harvest, land, or possess any blacktip, bull, great hammerhead, lemon, nurse, scalloped hammerhead, smooth hammerhead, spinner or tiger shark from May 15 through July 15 of any calendar year.

F. All sharks must have heads, tails and fins attached naturally to the carcass. Anglers may gut and bleed the carcass as long as the head and tail are not removed. Filleting any shark is prohibited until that shark is offloaded at the dock or on shore.

VA.R. Doc. No. R20-6220; Filed October 23, 2019, 10:41 a.m.

Final Regulation

REGISTRAR'S NOTICE: The Marine Resources Commission is claiming an exemption from the Administrative Process Act in accordance with § 2.2-4006 A 11 of the Code of Virginia; however, the commission is required to publish the full text of final regulations.

Title of Regulation: **4VAC20-510. Pertaining to Amberjack and Cobia (amending 4VAC20-510-25).**

Statutory Authority: § 28.2-201 of the Code of Virginia.

Effective Date: October 23, 2019.

Agency Contact: Jennifer Farmer, Regulatory Coordinator, Marine Resources Commission, 380 Fenwick Road, Fort Monroe, VA 23651, telephone (757) 247-2248, or email jennifer.farmer@mrc.virginia.gov.

Summary:

The amendment establishes closure of the commercial cobia fishery on October 1, 2019.

4VAC20-510-25. Commercial fishery possession limits and season.

A. It shall be unlawful for any person fishing commercially to possess more than two amberjack or more than two cobia at any time, except as described in 4VAC20-510-33. Any amberjack or cobia caught after the possession limit has been reached shall be returned to the water immediately. When fishing from any boat or vessel where the entire catch is held in a common hold or container, the possession limit shall be for the boat or vessel and shall be equal to the number of valid commercial fisherman registration licensees on board multiplied by two, except there is a maximum vessel limit of six cobia per vessel per day. The captain or operator of the boat or vessel shall be responsible for any boat or vessel possession limit.

B. In ~~2018~~ 2019 it shall be unlawful for any person fishing commercially to harvest or possess any cobia after September 30.

VA.R. Doc. No. R20-6183; Filed October 23, 2019, 9:53 a.m.

Emergency Regulation

Title of Regulation: **4VAC20-910. Pertaining to Scup (Porgy) (amending 4VAC20-910-45).**

Statutory Authority: §§ 28.2-201 and 28.2-210 of the Code of Virginia.

Effective Dates: October 23, 2019, through November 22, 2019.

Agency Contact: Jennifer Farmer, Regulatory Coordinator, Marine Resources Commission, 380 Fenwick Road, Fort Monroe, VA 23651, telephone (757) 247-2248, or email jennifer.farmer@mrc.virginia.gov.

Preamble:

The amendment decreases the landing limit per trip for the October 1 through December 31 commercial scup fishery to 27,000 pounds.

4VAC20-910-45. Possession limits and harvest quotas.

A. During the Winter I period January 1 through April 30 of each year, it shall be unlawful for any person to do any of the following:

1. Possess aboard any vessel in Virginia more than 50,000 pounds of scup;

2. Land in Virginia more than a total of 50,000 pounds of scup during each consecutive seven-day landing period, with the first seven-day period beginning on January 1; or

3. When it is projected and announced that 80% of the coastwide quota for the Winter I period has been attained, possess aboard any vessel or land in Virginia more than a total of 1,000 pounds of scup.

B. During the Winter II period October 1 through December 31 of each year, it shall be unlawful for any person to possess aboard any vessel or to land in Virginia more than ~~28,500~~ 27,000 pounds of scup.

C. During the Summer period May 1 through September 30 of each year, the commercial harvest and landing of scup in Virginia shall be limited to 14,296 pounds, and it shall be unlawful for any person to possess aboard any vessel in Virginia more than 5,000 pounds of scup.

D. For each of the time periods set forth in this section, the Marine Resources Commission will give timely notice to the industry of calculated poundage possession limits and quotas and any adjustments thereto. It shall be unlawful for any person to possess or to land any scup for commercial purposes after any winter period coastwide quota or summer period Virginia quota has been attained and announced as such.

E. It shall be unlawful for any buyer of seafood to receive any scup after any commercial harvest or landing quota has been attained and announced as such.

F. It shall be unlawful for any person fishing with hook and line, rod and reel, spear, gig, or other recreational gear to possess more than 30 scup. When fishing is from a boat or vessel where the entire catch is held in a common hold or container, the possession limit shall be for the boat or vessel and shall be equal to the number of persons on board legally eligible to fish multiplied by 30. The captain or operator of the boat or vessel shall be responsible for any boat or vessel possession limit. Any scup taken after the possession limit has been reached shall be returned to the water immediately.

VA.R. Doc. No. R20-6218; Filed October 23, 2019, 10:02 a.m.

Final Regulation

REGISTRAR'S NOTICE: The Marine Resources Commission is claiming an exemption from the Administrative Process Act in accordance with § 2.2-4006 A 11 of the Code of Virginia; however, the commission is required to publish the full text of final regulations.

Title of Regulation: **4VAC20-960. Pertaining to Tautog (amending 4VAC20-960-10, 4VAC20-960-20, 4VAC20-960-45; adding 4VAC20-960-48, 4VAC20-960-49, 4VAC20-960-60).**

Statutory Authority: § 28.2-201 of the Code of Virginia.

Effective Date: January 1, 2020.

Agency Contact: Jennifer Farmer, Regulatory Coordinator, Marine Resources Commission, 380 Fenwick Road, Fort Monroe, VA 23651, telephone (757) 247-2248, or email jennifer.farmer@mrc.virginia.gov.

Summary:

The amendments establish a tautog commercial permit and Atlantic States Marine Fisheries Commission mandated tagging system.

4VAC20-960-10. Purpose.

The purpose of this chapter is to (i) reduce fishing mortality in the tautog fishery to assure that overfishing does not occur ~~and,~~ (ii) increase the spawning stock biomass, and (iii) establish criteria for monitoring commercially harvested tautog.

4VAC20-960-20. Definitions.

The following words and terms, when used in this chapter, shall have the following meaning unless the context clearly indicates otherwise.

"Commercial fishing" or "fishing commercially" or "commercial purposes" means fishing by any person where the catch is for sale, barter, or trade or is intended for sale, barter, or trade.

"Commission" means the Marine Resources Commission.

"Land" or "landing" means to move finfish, shellfish, crustaceans, or other marine seafood from the water to the land.

"Snout" means the most forward projection from a fish's head that includes the upper and lower jaw.

"Tautog" means any fish of the species Tautoga onitis.

"Total length" means the length of a fish measured from the most forward projection of the snout, with the mouth closed, to the tip of the longer lobe of the tail (caudal) fin, measured with the tail compressed along the midline, using a straight-line measure, not measured over the curve of the body.

4VAC20-960-45. Recreational fishing season and possession limits.

A. It shall be unlawful for any person fishing with hook and line, rod and reel, spear, gig or other recreational gear to possess more than four tautog. When fishing is from a boat or vessel where the entire catch is held in a common hold or container, the possession limit shall be for the boat or vessel and shall be equal to the number of persons on board legally eligible to fish multiplied by four. The captain or operator of the boat or vessel shall be responsible for any boat or vessel possession limit. Any tautog taken after the possession limit has been reached shall be returned to the water immediately.

~~B. Possession of any quantity of tautog that exceeds the possession limit described in subsection A of this section shall be presumed to be for commercial purposes.~~

~~C.~~ B. The recreational fishing season shall be closed from May 16 through June 30.

~~D.~~ C. It shall be unlawful for any person fishing recreationally to take, catch, or possess any tautog during any closed recreational fishing season.

4VAC20-960-48. Commercial permitting and tagging requirements.

A. It shall be unlawful for any registered commercial fisherman to take, catch, or possess any tautog without obtaining a valid Tautog Commercial Permit.

B. It shall be unlawful to land or possess for commercial purposes any tautog that has not been identified with a tag issued by the commission for the current calendar year, applied by the following conditions, except as specified in subsections D and E of this section:

1. Tags must be affixed to the bony portion of the gill cover (operculum) of a whole fish such that the tag number faces outward from the body.

2. Processed or filleted tautog must be accompanied by the tags removed from the fish when processed.

C. It shall be unlawful for any dealer to buy, sell, barter, or trade or offer to buy, sell, barter, or trade any untagged tautog.

D. After the last day of February of the current calendar year, it shall be unlawful for any dealer to buy, sell, barter, or trade or offer to buy, sell, barter, or trade any tautog with a tag issued for any previous calendar year, except to the final consumer.

E. Any person, other than the original harvester, may only possess tautog with a tag issued by a state other than Virginia provided that it is for the purpose of resale and is accompanied by a bill of sale that shall include the name of the seller and the permit or license number of the seller if such permit or license is required in the jurisdiction of harvest.

F. Tags are valid only for use by the permittee to whom the tags were allotted. The permittee shall be on board the vessel when tautog are harvested and tags are applied.

G. It shall be unlawful for any person to possess tags on board a vessel during a closed season or that were issued for any year other than the current calendar year.

H. Possession of any quantity of tautog that exceeds the recreational possession limit described in 4VAC20-960-45 shall be presumed to be for commercial purposes. The possession of any untagged tautog shall be prima facie evidence of a violation of this chapter and subject to the provisions of 4VAC20-960-50 and 4VAC20-960-60.

I. It shall be unlawful for a person to possess commercially harvested tautog in a quantity greater than the number of tags in the person's possession. If a permittee violates this section, the entire amount of untagged tautog shall be confiscated or returned to the water.

J. Altering or attempting to alter any tag for the purpose of reuse shall constitute a violation of this chapter.

K. An annual fee of $25 for tags shall be assessed prior to an individual being eligible for a Tautog Commercial Permit.

L. A tautog commercial permittee shall be required to have returned all unused tags from the previous calendar year to the commission by February 15 of the current calendar year. Any unused tags that cannot be returned shall be accounted for by the harvester submitting a notarized affidavit that explains the disposition of the tags. Each individual with any unused tags that are not returned shall be required to pay a processing fee of $25, plus $0.28 per tag.

4VAC20-960-49. Commercial reporting.

A. All permitted commercial harvesters shall report daily harvest of tautog to the commission in accordance with 4VAC20-610, specifying the number of tags used each day on forms provided by the commission. Such reports shall be submitted to the commission no later than the fifth day of the following month.

B. Harvest of tautog from beyond Virginia's tidal waters and sold to a federally permitted dealer shall be reported through the mandatory harvest reporting program as provided by subsection A of this section and is not subject to the exemption in 4VAC20-610-60 K.

4VAC20-960-60. Sanctions.

A. Any person failing to submit any report or account for any unused tags as required by this chapter shall be denied a Tautog Commercial Permit until the person complies with the requirements of 4VAC20-960-48 L and 4VAC20-960-49.

B. It shall be unlawful for any person who has been found guilty of violating any provision of this chapter to receive additional tag distributions as described in 4VAC20-960-48.

C. Any person found guilty of violating any provision of this chapter may have his permit revoked at any time upon review by the commission as provided for in § 28.2-232 of the Code of Virginia.

NOTICE: Forms used in administering the regulation have been filed by the agency. The forms are not being published; however, online users of this issue of the Virginia Register of Regulations may click on the name of a form with a hyperlink to access it. The forms are also available from the agency contact or may be viewed at the Office of the Registrar of Regulations, 900 East Main Street, 11th Floor, Richmond, Virginia 23219.

FORMS (4VAC20-960)

Mandatory Reporting Form (eff. 12/2009)

VA.R. Doc. No. R20-6221; Filed October 23, 2019, 10:56 a.m.

TITLE 9. ENVIRONMENT

STATE WATER CONTROL BOARD

Notice of Effective Date

Title of Regulation: **9VAC25-260. Water Quality Standards (amending 9VAC25-260-140, 9VAC25-260-170).**

Statutory Authority: § 62.1-44.15 of the Code of Virginia; Clean Water Act (33 USC § 1251 et seq.); 40 CFR Part 131.

Effective Date: October 21, 2019.

On August 21, 2018, the State Water Control Board adopted revisions to the Water Quality Standards in 9VAC25-260-140 and 9VAC25-260-170. The revisions related to freshwater aquatic life criteria for cadmium and 94 human health criteria in 9VAC25-260-140 and bacteria criteria in 9VAC25-260-170.

The amendments were published as final regulations on June 24, 2019, in Volume 35, Issue 22 of the Virginia Register (35:22 VA.R. 2559-2582 June 24, 2019) to be effective upon the agency filing notice of U.S. Environmental Protection Agency (EPA) approval with the Registrar of Regulations. The State Water Control Board received approval of all of the amendments from the EPA by letter dated October 18, 2019, and filed notice with the Registrar.

Copies are available online at http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs, by calling toll free at (800) 592-5482 ext. 4121 or local at (804) 698-4121, or by written request or email request to the agency contact.

Agency Contact: David Whitehurst, Department of Environmental Quality, 1111 East Main Street, Suite 1400, P.O. Box 1105, Richmond, VA 23218, telephone (804) 698-4121, FAX (804) 698-4032, or email david.whitehurst@deq.virginia.gov.

VA.R. Doc. No. R18-2148; Filed October 21, 2019, 2:28 p.m.

Fast-Track Regulation

Title of Regulation: **9VAC25-650. Closure Plans and Demonstration of Financial Capability (amending 9VAC25-650-70, 9VAC25-650-90).**

Statutory Authority: §§ 62.1-44.15 and 62.1-44.18:3 and of the Code of Virginia.

Public Hearing Information: No public hearings are scheduled.

Public Comment Deadline: December 11, 2019.

Effective Date: December 26, 2019.

Agency Contact: Melissa Porterfield, Department of Environmental Quality, 1111 East Main Street, Suite 1400, P.O. Box 1105, Richmond, VA 23218, telephone (804) 698-4238, FAX (804) 698-4019, or email melissa.porterfield@deq.virginia.gov.

Basis: The State Water Control Board is directed by § 62.1-44.18:3 of the Code of Virginia to adopt regulations that require privately owned sewerage systems and sewerage treatment works that discharge more than 1,000 gallons per day and less than 40,000 gallons per day to develop closure plans and provide financial assurance for closure of the sewerage systems or sewage treatment works.

Purpose: This regulation is being amended to revise financial assurance requirements related to the transfer of the permit to a new owner or operator. Currently the previous owner or operator is required to provide financial assurance until the new owner or operator provides financial assurance. The regulation is being amended to require the new owner or operator to provide financial assurance prior to the transfer of the permit. This change is consistent with the requirement for a new facility to provide financial assurance prior to the facility beginning to operate. This change will reduce the regulatory burden on former permit holders by requiring the new owner or operator to provide financial assurance before the permit transfer occurs.

The regulation is also being revised to include a missing word in 9VAC25-650-90.

Rationale for Using Fast-Track Rulemaking Process: The agency conducted a periodic review for this regulation and recommended this regulation be amended to address financial assurance requirements related to the transfer of the permit to a new owner or operator. Currently the previous owner or operator is required to provide financial assurance until the new owner or operator provides financial assurance. The regulation is being amended to require the new owner or operator to provide financial assurance prior to the transfer of the permit. This change is consistent with the requirement for a new facility to provide financial assurance prior to the facility beginning to operate.

This amendment is expected to be noncontroversial since it reduces the regulatory burden on former owners and operators to continue to provide financial assurance after the permit has been transferred to a new owner or operator. The new owner or operator was previously required to provide financial assurance within six months of the permit transfer. This regulatory change makes the new owner or operator provide financial assurance prior to the permit transfer

occurring. This maintains consistency with the requirement for an owner or operator of a new permit to provide financial assurance prior to starting operation of the privately owned sewerage systems and sewerage treatment works.

Substance: The regulation is being amended to require the new owner or operator to provide financial assurance prior to the transfer of the permit. 9VAC25-650-90 is also being amended to include a missing word.

Issues: The primary advantage to the public is protection from closure costs associated with the abandonment of a privately owned sewerage systems and sewerage treatment works that discharge more than 1,000 gallons per day and less than 40,000 gallons per day. The financial assurance provision of this regulation provides funding for the costs to close the facility in the event the facility is abandoned. Former owners and operators would also benefit from this change since they would be no longer be required to maintain financial assurance after they have transferred the permit to another entity.

Requiring financial assurance to be demonstrated by the new owner or operator is consistent with the requirements placed on owners or operators seeking a permit to operate sewerage systems and sewerage treatment works that discharge more than 1,000 gallons per day and less than 40,000 gallons per day.

There are no disadvantages to the public, agency, or Commonwealth.

Small Business Impact Review Report of Findings: This fast-track regulatory action serves as the report of the findings of the regulatory review pursuant to § 2.2-4007.1 of the Code of Virginia.

Department of Planning and Budget's Economic Impact Analysis:

Summary of the Proposed Amendments to Regulation. The State Water Control Board (Board) proposes to revise financial assurance requirements related to the transfer of a Virginia Pollutant Discharge Elimination System (VPDES) permit to a new owner or operator.

Result of Analysis. The benefits likely exceed the costs for all proposed changes.

Estimated Economic Impact. Section 9VAC25-650-20 of the regulation states that:

> The purpose of this regulation is to require owners or operators of certain privately owned sewerage systems[2] that treat sewage from private residences to file with the board a plan to abate, control, remove, or contain any substantial or imminent threat to public health or the environment that is reasonably likely to occur if the facility ceases operations. For the purposes of this regulation, such a plan shall be termed a closure plan. Such plan shall also include the demonstration of financial assurance …

The financial assurance is to ensure that the costs associated with protecting public health and the environment are recovered from the owner or operator in the event that the facility ceases operation. Financial assurance can be demonstrated by one or a combination of the following mechanisms: trust agreement, surety bond, letter of credit, certificate of deposit, corporate financial test, and corporate guarantee.

The current regulation requires that when a transfer of ownership or operational control occurs,

> the old owner or operator shall comply with the requirements of this chapter until the new owner or operator has demonstrated that he is complying with the requirements of this chapter. The new owner or operator shall demonstrate compliance with this chapter within six months of the date of the change of ownership or operational control of the facility.

The Board proposes to instead require that the "new owner or operator shall demonstrate compliance with this chapter and the board shall approve the financial mechanism prior to the transfer of the permit." Former owners and operators would benefit from this change since they would no longer be required to maintain financial assurance after they have transferred the permit to another entity. The public would benefit in that there would be assurance prior to the transfer that new owners are financially capable of covering the costs associated with protecting public health and the environment in the event that the facility ceases operation. New owners would have to incur the expense of acquiring a trust agreement, surety bond, letter of credit, certificate of deposit, corporate financial test, or corporate guarantee sooner under the proposed language. However, that could be taken into account in the agreed on price in the sale of the facility.

Businesses and Entities Affected. The proposed amendments potentially affect current owners of the 32 privately owned sewerage systems and sewerage treatment works that discharge more than 1,000 gallons per day and less than 40,000 gallons per day, as well as potential future owners.

Localities Particularly Affected. The proposed amendments do not disproportionately affect particular localities.

Projected Impact on Employment. The proposed amendments are unlikely to significantly affect employment.

Effects on the Use and Value of Private Property. The proposed amendments would not likely significantly affect the use and value of private property.

Real Estate Development Costs. The proposed amendments are unlikely to affect real estate development costs.

Small Businesses:

Definition. Pursuant to § 2.2-4007.04 of the Code of Virginia, small business is defined as "a business entity, including its affiliates, that (i) is independently owned and operated and (ii) employs fewer than 500 full-time employees or has gross annual sales of less than $6 million."

Costs and Other Effects. The proposed amendments are unlikely to significantly affect costs for small businesses.

Alternative Method that Minimizes Adverse Impact. The proposed amendments do not adversely affect small businesses.

Adverse Impacts:

Businesses. The proposed amendments do not adversely affect businesses.

Localities. The proposed amendments do not adversely affect localities.

Other Entities. The proposed amendments do not adversely affect other entities.

---

[2]Privately owned sewerage systems subject to the Virginia Pollutant Discharge Elimination System Permit Regulation (9VAC25-31) that treat sewage generated by private residences and discharge more than 1,000 gallons per day and less than 40,000 gallons per day to state waters.

Agency's Response to Economic Impact Analysis: The department has reviewed the economic impact analysis prepared by the Department of Planning and Budget and has no comment.

Summary:

The amendments require a new owner or operator of a privately owned sewerage system or sewerage treatment works that discharges more than 1,000 gallons per day and less than 40,000 gallons per day to provide financial assurance prior to the transfer of the permit issued by the State Water Control Board to the new owner or operator.

9VAC25-650-70. Transfer of ownership or permit.

A. If a privately owned sewerage system subject to this regulation is to be sold or if ownership is to be transferred in the normal course of business, the owner or operator shall notify the board, in written form through certified mail, of such intended sale or transfer at least 30 days prior to such sale or transfer. The notification shall provide the full name, address, and telephone number of the person to whom the facility is to be sold or transferred. The notice shall include a written agreement between the existing and the new permittee containing a specific date for transfer of permit responsibilities, coverage, and liabilities between them.

B. Changes in the ownership or operational control of a facility may be made as a minor modification with prior written approval of the board in accordance with 9VAC25-31-380, except as otherwise provided in this section. When a transfer of ownership or operational control occurs, the ~~old owner or operator shall comply with the requirements of this chapter until the new owner or operator has demonstrated that he is complying with the requirements of this chapter. The new owner or operator shall demonstrate compliance with this chapter within six months of the date of the change of ownership or operational control of the facility.~~ new owner or operator shall demonstrate compliance with this chapter and the board shall approve the financial mechanism prior to the transfer of the permit. Upon demonstration to the board by the new owner or operator of compliance with this chapter, the board shall notify the old owner or operator that ~~he or she~~ the old owner or operator no longer needs to comply with this chapter as of the date of demonstration.

9VAC25-650-90. Trust Agreement.

A. An owner or operator of a privately owned sewerage system may satisfy the requirements of this chapter by establishing an irrevocable trust fund that conforms to the requirements of this section and by submitting an originally signed duplicate of the trust agreement to the board. The trustee shall be an entity that has the authority to act as a trustee and whose trust operations are regulated and examined by a federal agency or the State Corporation Commission (Commonwealth of Virginia).

B. The trust agreement shall be irrevocable and shall continue until terminated at the written direction of the grantor, the trustee, and the board, or by the trustee and the board if the grantor ceases to exist. Upon termination of the trust, all remaining trust property, less final administration expenses, shall be delivered to the grantor. The wording of the trust agreement shall be identical to the wording as follows, except that instructions in parentheses are to be replaced with the relevant information and the parentheses deleted. The trust agreement shall be accompanied by a formal letter of certification of acknowledgement as specified in this chapter.

TRUST AGREEMENT

Trust agreement, the "Agreement," entered into as of (date) by and between (name of the owner or operator), a (name of state) (insert "corporation," "partnership," "association," "proprietorship," or appropriate identification of type of entity), the "Grantor," and (name of corporate trustee), (insert "Incorporated in the state of _____" or "a national bank"), the "Trustee."

Whereas, the State Water Control Board of the Commonwealth of Virginia has established certain regulations applicable to the Grantor, requiring that an owner or operator of a private sewage treatment facility shall provide assurance that funds will be available when needed for implementation of a closure plan. The attached Schedule

A contains the name and address of the facility covered by this trust agreement;

Whereas, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this agreement, and the Trustee is willing to act as trustee;

Now, therefore, the Grantor and the Trustee agree as follows:

Section 1. Definitions. As used in this Agreement:

(a) The term "Grantor" means the owner or operator who enters into this Agreement and any successors or assigns of the Grantor.

(b) The term "Trustee" means the Trustee who enters into this Agreement and any successor Trustee.

Section 2. Establishment of Fund.

The Grantor and the Trustee hereby establish a trust fund, the "Fund," for the benefit of the Department of Environmental Quality of the Commonwealth of Virginia. The Grantor and the Trustee intend that no third party have access to the Fund. Payments made by the provider of financial assurance pursuant to the Director of the Department of Environmental Quality's instruction are transferred to the Trustee and are referred to as the Fund, together with all earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, IN TRUST, as hereinafter provided. The Trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor as provider of financial assurance, any payments necessary to discharge any liability of the Grantor established by the State Water Control Board.

Section 3. Payment for Implementation of the Closure Plan.

The Trustee shall make payments from the Fund as the Director, Department of Environmental Quality shall direct, in writing, to provide for the payment of the costs of implementation of the closure plan for the facility covered by the financial assurance mechanism identified in this Agreement.

The Trustee shall reimburse the Grantor, or other persons as specified by the State Water Control Board, from the Fund for implementation of the closure plan in such amounts as the Director of the Department of Environmental Quality shall direct in writing. In addition, the Trustee shall refund to the Grantor such amounts as the Director of the Department of Environmental Quality specifies in writing. Upon refund, such funds shall no longer constitute part of the Fund as defined herein.

Section 4. Payments Comprising the Fund.

Payments made to the Trustee for the Fund shall consist of cash and securities acceptable to the Trustee.

Section 5. Trustee Management.

The Trustee shall invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this Section. In investing, reinvesting, exchanging, selling, and managing the Fund, the Trustee shall discharge his duties with respect to the trust fund solely in the interest of the beneficiaries and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; except that:

(i) Securities or other obligations of the Grantor, or any other operator of the facility, or any of their affiliates as defined in the Investment Company Act of 1940, as amended, 15 USC § 80a-2(a), shall not be acquired or held, unless they are securities or other obligations of the federal or a state government;

(ii) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the federal or state government; and

(iii) Trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

Section 6. Commingling and Investment.

The Trustee is expressly authorized in its discretion:

(a) To transfer from time to time any or all of the assets of the Fund to any common, commingled, or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

(b) To purchase shares in any investment company registered under the Investment Company Act of 1940, 15 USC § 80a-1 et seq., including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote such shares in its discretion.

Section 7. Express Powers of Trustee.

Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

(a) To sell, exchange, convey, transfer, or otherwise dispose of any property held by it, by public or private sale. No person dealing with the Trustee shall be bound to see to the application of the purchase money or to inquire into the validity or expediency of any such sale or other disposition;

(b) To make, execute, acknowledge, and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;

(c) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depository even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depository with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States Government, or any agency or instrumentality thereof, with a Federal Reserve bank, but the books and records of the Trustee shall at all times show that all such securities are part of the Fund;

(d) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the federal or state government; and

(e) To compromise or otherwise adjust all claims in favor of or against the Fund.

Section 8. Taxes and Expenses.

All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor, and all other proper charges and disbursements of the Trustee shall be paid from the Fund.

Section 9. Advice of Counsel.

The Trustee may from time to time consult with counsel, who may be counsel to the Grantor, with respect to any questions arising as to the construction of this Agreement or any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting upon the advice of counsel.

Section 10. Trustee Compensation.

The Trustee shall be entitled to reasonable compensation for its services as agreed upon in writing from time to time with the Grantor.

Section 11. Successor Trustee.

The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the Grantor has appointed a successor trustee and this successor accepts the appointment. The successor trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor trustee's acceptance of the appointment, the Trustee shall assign, transfer, and pay over to the successor trustee the funds and properties then constituting the Fund. If for any reason the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor trustee or for instructions. The successor trustee shall specify the date on which it assumes administration of the trust in writing sent to the Grantor and the present Trustee by certified mail 10 days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this Section shall be paid as provided in Section 9.

Section 12. Instructions to the Trustee.

All orders, requests, and instructions by the Grantor to the Trustee shall be in writing, signed by such persons as are designated in the attached Schedule B or such other designees as the Grantor may designate by amendment to Schedule B. The trustee shall be fully protected in acting without inquiry in accordance with the Grantor's orders, requests, and instructions. All orders, requests and instructions by the State Water Control Board to the Trustee shall be in writing, signed by the Director of the Department of Environmental Quality, and the Trustee shall act and shall be fully protected in acting in accordance with such orders, requests, and instructions. The Trustee shall have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the Grantor or the State Water Control Board hereunder has occurred. The Trustee shall have no duty to act in the absence of such orders, requests, and instructions from the Grantor and/or the State Water Control Board, except as provided for herein.

Section 13. Irrevocability and Termination.

Subject to the right of the parties to amend this Agreement as provided in Section 17, this Trust shall be irrevocable and shall continue until terminated at the written direction of the Grantor and the Trustee, or by the Trustee and the Director of the Department of Environmental Quality, if the Grantor ceases to exist. Upon termination of the Trust, all remaining

trust property, less final trust administration expenses, shall be delivered to the Grantor.

Section 14. Immunity and Indemnification.

The Trustee shall not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this Trust, or in carrying out any directions by the Grantor or the State Water Control Board issued in accordance with this Agreement. The Trustee shall be indemnified and saved harmless by the Grantor, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.

Section 15. Choice of Law.

This Agreement shall be administered, construed, and enforced according to the laws of the Commonwealth of Virginia.

Section 16. Amendment of Agreement.

This Agreement may be amended by an instrument executed in writing executed by the Grantor, the Trustee, and the Director of the Department of Environmental Quality, Commonwealth of Virginia, or by the Trustee and the Director of the Department of Environmental Quality, Commonwealth of Virginia, if the Grantor ceases to exist.

Section 17. Annual Valuation.

The Trustee will annually, at the end of the month coincident with or preceding the anniversary date of establishment of the Fund, furnish the Grantor and to the Director of the Department of Environmental Quality, Commonwealth of Virginia, a statement confirming the value of the Trust. Any securities in the Fund will be valued at market value as of no more than 30 days prior to the date of the statement. The failure of the Grantor to object in writing to the Trustee within 90 days after the statement has been furnished to the Grantor and the Director of the Department of Environmental Quality, Commonwealth of Virginia will constitute a conclusively binding assent by the Grantor, barring the Grantor from asserting any claim or liability against the Trustee with respect to matters disclosed in the statement.

Section 18. Interpretation.

As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings for each section of this Agreement shall not affect the interpretation or the legal efficacy of this Agreement.

In Witness whereof the parties have caused this Agreement to be executed by their respective officers duly authorized and their corporate seals (if applicable) to be hereunto affixed and attested as of the date first above written. The parties below certify that the wording of this Agreement is identical to the wording specified in 9VAC25-650-90 B as such regulations were constituted on the date written above.

(Signature of Grantor)

(Name of the Grantor)

(Title)

Attest:

(Signature of Trustee)

(Name of the Trustee)

(Title)

(Seal)

(Signature of Witness)

(Name of Witness)

(Title)

(Seal)

CERTIFICATE OF ACKNOWLEDGMENT

State of _____

County of _____

On this (date), before me personally came (owner's or operator's representative) to me known, who, being by me duly sworn, did depose and say that she/he resides at (address), that she/he is (title) of (corporation), the corporation described in and which executed the above instrument; that she/he knows the seal of said corporation; that the seal affixed to such instrument is such corporate seal; that is was so affixed by order of the Board of Directors of said corporation; and that she/he signed her/his name thereto by like order.

(Signature of Notary Public)

(Name of Notary Public)

My Commission expires:_____

SCHEDULE A

Name of Facility

Address of facility

Closure Cost Estimate

VPDES Permit Number

C. The irrevocable trust fund, when established, shall be funded for the full required amount of coverage, or funded for part of the required amount of coverage and used in combination with other ~~mechanism(s)~~ mechanisms that provide the remaining required coverage. Schedule A of the trust agreement shall be updated within 60 days after a

change in the amount of the approved cost estimate covered by the agreement.

D. If the value of the trust fund is greater than the required amount of coverage, the owner or operator may submit a written request to the board for release of the excess.

E. If other financial assurance as specified in this chapter is substituted for all or part of the trust fund, the owner or operator may submit a written request to the ~~Director~~ director for release of the excess.

F. Within 60 days after receiving a request from the owner or operator for release of funds as specified in subsection D or E of this section, the board will instruct the trustee to release to the owner or operator such funds, if any, that the board determines to be eligible for release and specifies in writing.

G. Whenever the cost estimate changes, the owner or operator shall compare the new estimate with the trustee's most recent annual valuation of the trust fund. If the value of the fund is less than the amount of the new cost estimate, the owner or operator shall, within 10 days of the change in the approved cost estimate, deposit a sufficient amount into the trust so that its value after payment at least equals the amount of the new estimate, or obtain other financial assurance as specified in this article to cover the difference. If the value of the trust fund is greater than the total amount of the cost estimate, the owner or operator may submit a written request to the board for release of the amount that is in excess of the cost estimate.

H. After beginning implementation of the closure plan, an owner or operator or any other person authorized to implement the closure plan~~,~~ may request reimbursement for implementation expenditures by submitting itemized bills to the board. Within 60 days after receiving bills for plan implementation activities, the board shall instruct the trustee to make reimbursements in those amounts as the board determines are in accordance with the closure plan or are otherwise justified.

I. The board shall agree to terminate the trust when:

1. The owner or operator substitutes alternate financial assurance as specified in this article; or

2. The board notifies the owner or operator that he is no longer required to maintain financial assurance for the implementation of the closure plan.

VA.R. Doc. No. R20-5633; Filed October 22, 2019, 10:26 a.m.

◆ ◆

TITLE 11. GAMING

VIRGINIA RACING COMMISSION

Final Regulation

REGISTRAR'S NOTICE: The Virginia Racing Commission is claiming an exemption from the Administrative Process Act pursuant to § 2.2-4002 A 17 of the Code of Virginia regarding the promulgation of technical regulations governing actual live horse racing at race meetings licensed by the commission and § 2.2-4002 B 12 of the Code of Virginia, which exempts agency action relating to instructions for application or renewal of a license, certificate, or registration required by law.

Title of Regulation: **11VAC10-60. Participants (amending 11VAC10-60-15).**

Statutory Authority: § 59.1-369 of the Code of Virginia.

Effective Date: January 1, 2020.

Agency Contact: Kimberly Mackey, Regulatory Coordinator, Virginia Racing Commission, 5707 Huntsman Road, Suite 201-B, Richmond, VA 23250, telephone (804) 966-7406, or email kimberly.mackey@vrc.virginia.gov.

Summary:

The amendments eliminate horse racing permit fees in 11VAC10-60-15.

11VAC10-60-15. Fee schedule for permit holders.

Type of Permit	Fee
Apprentice Jockey	~~$25~~ $0
Assistant General Manager	~~$25~~ $0
Assistant Racing Secretary	~~$25~~ $0
Assistant Starter	~~$25~~ $0
Assistant Trainer	~~$25~~ $0
Authorized Agent	~~$25~~ $0
Claims Clerk	~~$25~~ $0
Clerk of Scales	~~$25~~ $0
Clerk of the Course	~~$25~~ $0
Clocker	~~$25~~ $0
Concessionaire/Vendor	~~$25~~ $0
Concessionaire/Vendor Employee	~~$25~~ $0
Custodian of Jockeys' Room	~~$25~~ $0
Director of Security	~~$25~~ $0
Driver	~~$25~~ $0

Entry Clerk	~~$25~~ $0
Exercise Rider	~~$25~~ $0
Farrier	~~$25~~ $0
Foreman	~~$25~~ $0
Gap Attendant	~~$25~~ $0
General Manager	~~$25~~ $0
Groom/Hotwalker	~~$10~~ $0
Horse Identifier	~~$25~~ $0
Horsemen's Bookkeeper	~~$25~~ $0
Horse Owner	~~$25~~ $0
Jockey	~~$25~~ $0
Jockey Agent	~~$25~~ $0
Licensee-Administrative Employee	~~$25~~ $0
Licensee-Marketing Employee	~~$25~~ $0
Licensee-Medical Employee	~~$25~~ $0
Licensee-Operations Employee	~~$25~~ $0
Licensee-Plant Employee	~~$25~~ $0
Licensee-Staff Employee	~~$25~~ $0
Mutuel Clerk	~~$25~~ $0
Mutuel Manager	~~$25~~ $0
Outrider	~~$25~~ $0
Paddock Judge	~~$25~~ $0
Patrol Judge	~~$25~~ $0
Photo-Finish Camera Operator	~~$25~~ $0
Placing Judge	~~$25~~ $0
Pony Rider	~~$25~~ $0
Program Director	~~$25~~ $0
Racing Secretary	~~$25~~ $0
Security Officer	~~$25~~ $0
Stable Name	~~$25~~ $0
Stall Superintendent	~~$25~~ $0
Starter	~~$25~~ $0
Timer	~~$25~~ $0
Track Superintendent	~~$25~~ $0
Trainer	~~$25~~ $0
Trainer/Driver (Harness Racing)	~~$25~~ $0
Valet	~~$25~~ $0
Veterinarian (Licensee)	~~$25~~ $0
Veterinarian (Private Practice)	~~$25~~ $0
Video Patrol Personnel	~~$25~~ $0

VA.R. Doc. No. R20-6181; Filed October 10, 2019, 10:42 a.m.

◆ ◆

TITLE 12. HEALTH

STATE BOARD OF HEALTH

Final Regulation

REGISTRAR'S NOTICE: The State Board of Health is claiming an exemption from Article 2 of the Administrative Process Act in accordance with § 2.2-4006 A 4 a of the Code of Virginia, which excludes regulations that are necessary to conform to changes in Virginia statutory law or the appropriation act where no agency discretion is involved. The State Board of Health will receive, consider, and respond to petitions by any interested person at any time with respect to reconsideration or revision.

Title of Regulation: **12VAC5-80. Regulations for Administration of the Virginia Hearing Impairment Identification and Monitoring System (amending 12VAC5-80-10, 12VAC5-80-80, 12VAC5-80-85, 12VAC5-80-90; adding 12VAC5-80-150).**

Statutory Authority: § 32.1-64.1 of the Code of Virginia.

Effective Date: September 1, 2020.

Agency Contact: Robin Buskey, Policy Analyst, Virginia Department of Health, 109 Governor Street, Richmond, VA 23219, telephone (804) 864-7253, or email robin.buskey@vdh.virginia.gov.

Summary:

As required by Chapter 423 of the 2019 Acts of Assembly, the amendments require hospitals and other birthing centers to screen for congenital cytomegalovirus in newborns who fail the newborn hearing screen and include changing the notification time for results to the infant's primary care provider and the department to one week after birth.

12VAC5-80-10. Definitions.

The following words and terms when used in this chapter shall have the following meanings~~,~~ unless the context clearly indicates otherwise:

"ABR" means an objective, electrophysiologic measurement of the brainstem's response to acoustic stimulation of the ear.

"At risk" means considered to be in a status with a significant probability of having or developing hearing loss as a result of the presence of one or more factors identified or manifested at birth.

"Audiological evaluation" means those physiologic and behavioral procedures required to evaluate and diagnose hearing status.

"Audiologist" means an audiologist as defined in § 54.1-2600 of the Code of Virginia.

"Board" means the State Board of Health.

"CDC" means the Centers for Disease Control and Prevention.

"CMV" means cytomegalovirus infection.

"Chief medical officer" means the highest position of authority on the medical staff of the hospital or other birthing place or center as defined in the organization's bylaws or applicable governance structure.

"Child" means any person from birth to 18 years of age.

"Commissioner" means the State Health Commissioner, his duly designated officer, or agent.

"Congenital cytomegalovirus" or "cCMV" means when an infant is born with cytomegalovirus infection.

"Department" means the Virginia Department of Health.

"Discharge" means release from the hospital after birth to the care of the parent or guardian.

"EHDI" means early hearing detection and intervention.

"Failed newborn hearing screening" means the final newborn hearing screening that resulted in a refer or fail in one or both ears prior to discharge from hospital or other birthing place or center.

"Family-to-family support" means the provision of information and peer support among families having experience with family members having hearing loss.

"Guardian" means a parent-appointed, court-appointed, or clerk-appointed guardian of the person.

"Hearing screening" means an objective physiological measure to be completed in order to determine the likelihood of hearing loss.

"Hospital" means any facility as defined in § 32.1-123 of the Code of Virginia.

"Infant" means a child under the age of one year.

"Neonatal intensive care services" means those services provided by a hospital's newborn services that are designated as either specialty level or subspecialty level as defined in 12VAC5-410-443 B 3 and B 4 of the Regulations for the Licensure of Hospitals in Virginia.

"Newborn" means an infant who is 28 days old or less.

"Newborn services" means care for infants in one or more of the service levels designated in 12VAC5-410-443 B of the Regulations for the Licensure of Hospitals in Virginia.

"OAE" means an objective, physiologic response from the cochlea. This term may include transient evoked otoacoustic emissions and distortion product otoacoustic emissions.

"Other birthing place or center" means a place or facility outside of a hospital that provides maternity services.

"Parent" means a biological ~~or~~ parent, adoptive parent, or a stepparent.

"Part C" means the state early intervention services program that provides medically necessary speech and language therapy, occupational therapy, physical therapy, and assistive technology services and devices for children from birth to age three who are eligible for services under Part C of the Individuals with Disabilities Education Act (20 USC §§ 1431-1444) and Virginia law.

"Primary health care provider" means the person to whom the infant will go for primary health care following hospital discharge.

"Resident" means an individual who resides within the geographical boundaries of the Commonwealth.

"Risk indicator" means a factor known to place an infant at increased risk for being born with or developing a hearing loss.

"Title V" means the U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Services Block Grant (Title V (42 USC 701 et seq.) of the Social Security Act).

"Virginia Hearing Impairment Identification and Monitoring System" means a coordinated and comprehensive group of services including education; screening; ~~follow-up~~ follow-up; diagnosis; appropriate early intervention including treatment, therapy, training, and education; and program evaluation managed by the department's Virginia Early Hearing Detection and Intervention Program for safeguarding the health of children born in Virginia.

12VAC5-80-80. Responsibilities of the chief medical officer of hospitals.

The chief medical officer of a hospital providing newborn services or his designee shall:

1. Cause all infants to be given a hearing screening test prior to discharge after birth as appropriate for the level of newborn services provided as defined in 12VAC5-410-443

B of the Regulations for the Licensure of Hospitals in Virginia.

a. Infants in general or intermediate newborn services shall have both ears screened at the same time for hearing using either ABR or OAE testing prior to discharge after birth, but no later than one month of age.

b. Infants in neonatal intensive care services who receive this level of newborn service care for more than five days shall have both ears screened at the same time using ABR testing prior to discharge after birth or transfer to a lower level of newborn services. Infants should receive newborn hearing screening as early as development or medical stability will permit such screening. The hearing screening performed for infants requiring neonatal intensive care services for more than five days using ABR testing shall be reported as the initial hearing screen regardless of whether the infant is transferred to another lower level of newborn services within the same facility or to another facility.

c. Infants in neonatal intensive care services who receive this level of newborn service care for five days or less shall have both ears screened at the same time for hearing using either ABR or OAE testing prior to discharge after birth, but no later than one month of age.

2. Identify all infants who fail hearing screening in one or both ears.

a. Infants who fail hearing screening in one or both ears using ABR testing shall not be rescreened using OAE testing. These infants shall be referred for an audiological evaluation.

b. Infants who fail hearing screening in one or both ears using OAE testing may be rescreened using ABR testing. If the infant fails subsequent ABR testing in one or both ears, the infant shall be referred for an audiological evaluation.

3. Identify all infants not receiving an appropriate hearing screening test.

a. For infants who did not receive a hearing screening test due to transfer to another facility, written notification shall be made upon transfer to the health care provider in charge of the infant's care that testing was not completed. The hospital discharging the infant after birth is responsible for conducting an appropriate hearing screening test, except for infants who have been transferred to a lower level of newborn service care from another facility providing neonatal intensive care services to that infant for more than five days.

b. For infants who did not receive a hearing screening test prior to discharge after birth, inform the parent prior to discharge of the need for hearing screening and provide a mechanism by which screening can occur at no additional cost to the family.

c. For infants who did not receive screening due to refusal by the parent or guardian because the screening conflicts with religious convictions, documentation shall be made in the medical record.

4. Cause all infants to be assessed for risk indicators associated with hearing loss prior to discharge after birth as defined in 12VAC5-80-75. For infants who are found to have one or more risk indicators associated with hearing loss, inform the parent of the need for a diagnostic audiological assessment by 24 months of age.

5. Provide written information to the parent or guardian of each infant that includes purposes and benefits of newborn hearing screening, risk indicators of hearing loss, procedures used for hearing screening, results of the hearing screening, recommendations for further testing, where further testing can be obtained, and contact information for the Virginia EHDI program;

6. Notify the infant's primary health care provider~~,~~ within ~~two weeks~~ one week of discharge after birth~~,~~ of (i) the status of the hearing screening including if the infant was not tested, (ii) procedures used for hearing screening, (iii) identified risk indicators associated with hearing loss as defined in 12VAC5-80-75, (iv) the results of the hearing screening, and (v) the recommendations for further testing in writing or through an electronically secure method that meets all applicable state and federal privacy laws;

7. Provide the department with information~~,~~ as required by the board pursuant to § 32.1-64.1 F of the Code of Virginia and in a manner devised by the department, which may be electronic, on the hearing screening and risk indicator status of infants born at their hospital. This information shall be provided within ~~two weeks~~ one week of discharge after birth unless otherwise stated and includes~~, but may not be limited to~~:

a. Demographic information on infants including name, date of birth, race, ethnicity, and gender;

b. Primary contact information including address, telephone number, and relationship type;

c. Primary health care provider name, address, and telephone number;

d. Risk indicators identified as defined in 12VAC5-80-75;

e. Special circumstances regarding infants as needed by the department to provide follow-up;

f. Screening methodology used, date screened, and both right and left ear results;

g. Screening status for pass with risk indicator, fail, unable to test, refusal, and inconclusive results;

h. Status of infants not screened prior to discharge that includes~~, but may not be limited to,~~ infants who were transferred to other facilities and parents who refused screening;

i. Hearing rescreening information including date, type of screening methodology used, results in both left and right ears, and further recommendations within two weeks after the hospital rescreening date; and

j. Confirmatory data on the status of all infants born in the hospital facility. The department shall receive confirmation that infants not reported as passed with risk, failed, transferred, refused testing, not tested prior to discharge, expired, or other final disposition have had a negative assessment for risk indicators and that physiological hearing screening was conducted with passing results in both ears within 30 days after birth; and

k. cCMV screening results if performed as defined in 12VAC5-80-150.

8. Report to the department~~,~~ on a yearly basis~~,~~ hospital specific information including (i) the test procedures used by the newborn hearing screening program, (ii) the name of the program director, (iii) the name of the advising audiologist, (iv) equipment calibration records, (v) screening protocols, and (vi) referral procedures;

9. Develop written policies and procedures to implement hearing screening in ~~their~~ the chief medical officer's facility in accordance with 12VAC5-80 including separate protocols for specialty and subspecialty newborn services; and

10. Ensure that training of staff on newborn hearing screening test procedures, ~~follow-up~~ follow-up, and reporting requirements is implemented in a way that an adequately trained and knowledgeable workforce is maintained to conduct hearing screening program requirements.

12VAC5-80-85. Responsibilities of other birthing places or centers.

The chief medical officer of other birthing places or centers or his designee or the attending practitioner shall:

1. Cause all infants to be assessed for risk indicators associated with hearing loss as defined in 12VAC5-80-75;

2. Provide written information to the parent or guardian of each infant that includes purposes and benefits of newborn hearing screening, risk indicators for hearing loss, procedures used for hearing screening, providers where hearing screening can be obtained, and contact information for the Virginia EHDI program;

3. Notify the infant's primary health care provider~~,~~ within ~~two weeks~~ one week after birth~~,~~ of (i) the status of the hearing screening including if the infant was not tested, (ii) identified risk indicators associated with hearing loss as defined in 12VAC5-80-75, and (iii) the recommendations for testing in writing or through an electronically secure method that meets all applicable state and federal privacy laws; and

4. Provide the department with information~~,~~ as required by the board pursuant to § 32.1-64.1 F of the Code of Virginia and in a manner devised by the department on the hearing screening and risk indicator status of infants born at the other birthing place or center. This information shall be provided within ~~two weeks~~ one week after birth unless otherwise stated and includes~~, but may not be limited to~~:

a. Demographic information on infants including name, date of birth, race, ethnicity, and gender;

b. Primary contact information including address, telephone number, and relationship type;

c. Primary health care provider name, address, and telephone number;

d. Risk indicators identified as defined in 12VAC5-80-75;

e. Special circumstances regarding infants as needed by the department to provide follow-up;

f. Screening methodology used, date screened, and both right and left ear results if applicable;

g. Screening status for pass with risk indicator, failures, unable to test, refusals, and inconclusive results if applicable;

h. Status of infants not screened that includes~~, but may not be limited to,~~ infants who were transferred to other facilities and parents who refused screening;

i. Hearing rescreening information including date, type of screening methodology used, results in both left and right ears, and further recommendations within two weeks after the rescreening date if applicable; ~~and~~

j. Confirmatory data on the status of all infants born in the birthing place or center. The department shall receive confirmation that infants not reported with a screening status have had a negative assessment for risk indicators and have been referred for a hearing screening; and

k. cCMV screening results if performed as defined in 12VAC5-80-150.

12VAC5-80-90. Scope and content of Virginia Early Hearing Detection and Intervention Program.

A. The mission of the Virginia EHDI program is to identify hearing loss at the earliest possible age and to assure that

appropriate early intervention services are received to reduce the risk of developmental delays.

B. The scope of the Virginia EHDI program shall include the following:

1. Provide hospitals and other birthing places or centers with a secure reporting system, which may be electronic, that meets all applicable federal and state privacy laws. This electronic system may include existing demographic data captured by other department population-based systems and the commissioner may authorize hospitals required to report to view existing data to facilitate accurate reporting and increase the department's ability to conduct successful ~~follow-up~~ follow-up and identify infants at risk for hearing loss pursuant to § 32.1-127.1:04 of the Code of Virginia;

2. Collect, maintain and evaluate hospital newborn hearing screening data in a database including~~, but not limited to,~~ initial screening, risk indicators, rescreening, and diagnostic audiological evaluations, in a secure data management information system;

3. Provide follow-up of results of screening for cCMV and for infants whose results indicate screening failure, identified risk indicators, inconclusive or missing results, or other circumstances requiring follow up. Follow-up includes~~, but is not limited to~~:

a. Communicating with the parent or guardian for those infants who failed the hearing screening, those who were not screened, and those who are at risk for progressive hearing loss in order to advise of the need for audiological services as well as to provide information on locating an approved center that provides diagnostic audiological services or a licensed audiologist;

b. Communicating with audiologists, hospitals, other birthing places or centers, primary health care providers, and others as needed to ascertain follow up status and receive results of audiological evaluations and intervention referrals, including Part C services;

c. Communicating with the parent or guardian for any child found to have a hearing loss in order to provide information about hearing loss and appropriate resources including family-to-family support and referral to the Part C program; and

d. Communicating to the Part C program regarding any child found to have hearing loss in order to facilitate early intervention services;

4. Provide training and technical assistance to hospitals and other birthing places or centers;

5. Develop and disseminate protocols for hospitals, audiologists, and primary health care providers;

6. Develop and disseminate parent education materials;

7. Maintain an approved list of audiological providers meeting program criteria;

8. Evaluate Virginia Hearing Impairment Identification and Monitoring System components, including ~~but not limited to~~ screening, referral and follow-up rates, referral mechanisms and tracking indicators;

9. Communicate critical performance data to hospitals and other birthing places or centers on a quarterly basis; and

10. Collect and report data required annually for Title V national performance measures, CDC national EHDI goals, and other funding sources as needed that measure how well the system functions.

C. Title V national performance measures and the CDC national EHDI goals, as required by the Government Performance and Results Act (GPRA; ~~Public Law~~ Pub. L. 103-62), shall be used to establish newborn hearing screening goals. The goals are:

1. All infants who are born in Virginia hospitals shall be screened for hearing loss prior to hospital discharge. Residents of Virginia who do not pass screening, do not receive screening, or who have an identified risk indicator shall receive appropriate evaluation, diagnostic, ~~follow-up~~ follow-up, and early intervention services. Infants who are not residents of Virginia and who do not pass screening, do not receive screening, or who have an identified risk indicator will be referred to their state of residence for appropriate evaluation, diagnostic, follow up, and early intervention services;

2. All infants born in Virginia shall receive a hearing screening prior to one month of age;

3. Infants who are referred shall receive a diagnostic audiological evaluation before three months of age; and

4. All infants identified with a hearing loss shall receive appropriate early intervention services before six months of age.

The goals shall change as needed to be consistent with federally required performance measures.

12VAC5-80-150. Screening for congenital cytomegalovirus.

A. If a newborn has a failed newborn hearing screening, the discharging hospital or other birthing center shall collect and submit a sample for cCMV testing prior to discharge. If the newborn is under the care of a specialty level or subspecialty level nursery, the cCMV screening shall be performed in accordance with the protocols.

To ensure full implementation of cCMV testing, the department may establish contracts with a designated testing laboratory to ensure testing, and the established contracts shall comply with all federal assurances.

B. The department shall develop or approve and publish informational materials for the general public, healthcare providers, women who may become pregnant, expectant parents, and parents of infants regarding:

1. The incidence of CMV;

2. The transmission and prevention of CMV to pregnant women and women who may become pregnant;

3. Birth defects caused by cCMV;

4. Methods of diagnosing cCMV;

5. Potential benefits of screening for and diagnosis of cCMV;

6. Available methods of treating cCMV; and

7. Resources available for families of children born with cCMV.

C. Healthcare providers providing prenatal care are encouraged to provide patients with information about cCMV.

D. Birthing facilities providing care to an infant who was screened for cCMV are required to report to the Department of Health identification and monitoring system within one week of discharge.

VA.R. Doc. No. R20-6070; Filed October 22, 2019, 10:22 a.m.

Fast-Track Regulation

Title of Regulation: **12VAC5-90. Regulations for Disease Reporting and Control (amending 12VAC5-90-10, 12VAC5-90-80, 12VAC5-90-90, 12VAC5-90-103, 12VAC5-90-107, 12VAC5-90-140, 12VAC5-90-215, 12VAC5-90-225, 12VAC5-90-280, 12VAC5-90-370).**

Statutory Authority: §§ 32.1-12, 32.1-35, and 32.1-42 of the Code of Virginia.

Public Hearing Information: No public hearings are scheduled.

Public Comment Deadline: December 11, 2019.

Effective Date: December 26, 2019.

Agency Contact: Kristin Collins, Policy Analyst, Office of Epidemiology, Virginia Department of Health, 109 Governor Street, Richmond, VA 23219, telephone (804) 864-7298, or email kristin.collins@vdh.virginia.gov.

Basis: Chapter 2 of Title 32.1 of the Code of Virginia, §§ 32.1-12 and 32.1-35 through 32.1-73, contains mandatory language authorizing the State Board of Health to promulgate the regulations.

Specifically, § 32.1-35 directs the Board of Health to promulgate regulations specifying which diseases occurring in the Commonwealth are to be reportable and the method by which they are to be reported.

Further, § 32.1-42 of the Code of Virginia authorizes the Board of Health to promulgate regulations and orders to prevent a potential emergency caused by a disease dangerous to public health. The Board of Health is empowered to adopt such regulations as are necessary to carry out provisions of laws of the Commonwealth administered by the state health commissioner by § 32.1-12 of the Code of Virginia

Purpose: The changes are essential to protect the health and safety of citizens because the changes will improve the ability of the Virginia Department of Health (VDH) to conduct surveillance and implement disease control for conditions of public health concern. The changes will position the agency to better detect and respond to these illnesses to protect the health of the public.

Rationale for Using Fast-Track Rulemaking Process: The impetus for this regulatory action is a board decision to bring the regulations into compliance with recent changes in the field of communicable disease detection and control and to provide greater flexibility with respect to reporting requirements.

This regulatory action is being promulgated as a fast-track rulemaking action because the changes are expected to be noncontroversial. The changes assure timelier reporting of diseases while at the same time reducing the overall burden of disease reporting.

Substance: Amendments to current regulations:

1. Add, remove, and update definitions to enhance clarity;

2. Specify new timelines for submission of isolates or specimens for state public health laboratory testing;

3. Remove the list of isolates or specimens that must be forwarded for public health laboratory testing from 12VAC5-90-90 because the list was added to 12VAC5-90-80 in a separate regulatory action effective November 14, 2018;

4. Remove the requirement that physicians and directors of medical care facilities submit weekly counts of cases of influenza;

5. Replace reporting by way of the Form Epi-1, Confidentiality Morbidity Report, with reporting through the online morbidity reporting portal of VDH;

6. Add language that states that if a laboratory ascertains that the reference laboratory that tests a specimen reports to VDH electronically, then those reference laboratory findings do not need to be reported by the laboratory of origin;

7. Add language that clarifies that if a facility director reports on behalf of the laboratory, the laboratory is still responsible for submitting isolates or specimens for public health testing unless the laboratory has submitted an exemption request that has been approved by the department, thereby providing a process for opting out of the specimen forwarding requirement;

8. Remove language referencing the commissioner's role in enforcement of isolation and quarantine to conform to the Code of Virginia;

9. Modify language to refer only to medications that are available in the United States for the treatment of ophthalmia neonatorum;

10. Clarify that confirmatory testing is not required for blood lead levels that are below the Centers for Disease Control and Prevention (CDC) reference range on screening test;

11. Limit the reporting of select agents to only an annual report and those scenarios in which such agents are released, lost, or stolen; and

12. Require that health care facilities share with VDH any data they supply to CDC as a result of a requirement of the Centers for Medicare and Medicaid Services and not limited to the Hospital Inpatient Quality Reporting Program of that agency.

Issues: The primary advantages to the public are the improved ability of the agency to control the risk of disease in the community based on timelier reporting through the VDH online morbidity reporting portal as well as removing the requirement to report weekly influenza counts or to report routine, nonemergency changes in select agent inventory.

The primary advantage to the agency is that the proposed changes improve the focus of surveillance and ability of VDH to conduct surveillance and implement disease control for conditions of public health concern in a timely manner. The changes will position the agency to better detect and respond to these illnesses to protect the health of the public.

No disadvantages to the public or the agency have been identified.

Department of Planning and Budget's Economic Impact Analysis:

Summary of the Proposed Amendments to Regulation. The State Board of Health (Board) proposes to: 1) reduce the required time within which laboratories must submit specimens to the Division of Consolidated Laboratory Services when specified diseases are detected, 2) amend the frequency of influenza reporting, 3) require laboratories to submit results of tests for tuberculosis infection, 4) change the required method of reporting morbidity (electronic rather than paper), 5) eliminate redundant reporting, 6) amend one of the criteria for testing a child's blood level, and 7) make several clarifying amendments.

Background. The Regulations for Disease Reporting and Control provide information about the process and procedures for reporting diseases to the Virginia Department of Health (VDH), including what diseases must be reported, who must report them and other details related to reporting and disease control.

Estimated Benefits and Costs. Under the current regulation, when a laboratory identifies evidence of any of numerous conditions listed in the regulation, it must submit the initial isolate (preferred) or other initial specimen to the Division of Consolidated Laboratory Services within seven days of identification. The Board proposes to instead require that the initial isolate be submitted within five days or the clinical specimen within two days of a positive result.

Under the current regulation, each individual case of influenza does not need to be reported to VDH (only the number of cases). Under the proposed regulation, each individual confirmed case of influenza would need to be reported to VDH.

The Board also proposes to newly require that laboratories submit results of tests for tuberculosis infection. VDH does not believe that this will require significant additional staff time. As the majority of major hospital systems and commercial labs in Virginia report to VDH electronically, these systems would need to update their algorithm to include results of tests for tuberculosis infection in the reports that they send.

These three proposed changes are moderately more burdensome for regulated entities, but enable VDH to more quickly be aware of disease outbreaks and to take appropriate action.

The Board proposes to change the required method of reporting morbidity from paper to electronic. According to VDH, the time required to complete a report through their electronic portal is comparable to that required to complete the paper form. Reporters are able to save time and money as entering into the portal removes the need to mail the paper form.

The current regulation requires that laboratory directors report any laboratory examination of any clinical specimen, whether performed in-house or referred to a reference laboratory, which yields evidence, by the laboratory method(s) indicated or any other confirmatory test, of diseases specified in the regulation. The Board proposes to no longer require that the director of the laboratory of origin report to VDH if the laboratory director ascertains that the reference laboratory that tests a specimen reports to VDH electronically. This would save staff time for the laboratory of origin, and have no negative impact.

The Regulations for Disease Reporting and Control state that every child shall be tested to determine the blood lead level at 12 months and 24 months of age if the health care provider determines that the child meets any of the criteria listed in the regulation. Additionally, children 25 months through 72 months of age who present for medical care and meet any of the specified criteria shall also be tested if they have either not previously been tested for blood lead level or were previously tested but experienced a change since testing that

has resulted in an increased risk of lead exposure. One of the criteria under the current regulation is "The child is living in or regularly visiting a house, apartment, dwelling, structure, or child care facility built before 1960." The Board proposes to replace "1960" with "1950." According to VDH, this change is based upon the U.S. Centers for Disease Control and Prevention's determination that it is the homes built before 1950 that have high lead risk.

Businesses and Other Entities Affected. The proposed amendments potentially affect the 654 medical laboratories, 4,471 physician offices, 188 hospitals, 291 nursing homes, 184 assisted living facilities, and correctional facilities in Virginia, as well as the directors of these facilities, physicians, and administrative staff.[2] To the extent that the proposed amendments improve public health, all citizens of the Commonwealth are potentially affected.

The proposals to reduce the required time within which laboratories must submit specimens, and to newly require that laboratories submit results of tests for tuberculosis infection, would moderately increase costs for labs. The proposal to require that each individual confirmed case of influenza be reported would moderately increase costs for physician offices and other medical facilities. The proposal to change the required method of reporting morbidity from paper to electronic would save reporting entities time and money as entering into the portal removes the need to mail the paper form. The proposal to no longer require that the director of the laboratory of origin report to VDH if the laboratory director ascertains that the reference laboratory that tests a specimen reports to VDH electronically would save staff time for the laboratory of origin.

Localities[3] Affected.[4] The proposed amendments potentially affect all localities, and are not known to disproportionally affect particular localities. To the extent that some of the affected entities may be associated with local governments, the proposed amendments that affect costs, either positively or negatively as described above, would affect local governments.

Projected Impact on Employment. The proposed amendments do not appear to substantially affect total employment.

Effects on the Use and Value of Private Property. The proposed amendments do not substantially affect the use and value of private property. The proposed amendments do not affect real estate development costs.

Adverse Effect on Small Businesses[5]:

Types and Estimated Number of Small Businesses Affected. The proposed amendments potentially affect the 651 small medical laboratories, 4,466 small physician offices, 134 small hospitals, 290 small nursing homes, 180 small assisted living facilities, and correctional facilities in the Commonwealth, as well as the directors of these facilities, physicians, and administrative staff.[6]

Costs and Other Effects. The proposals to reduce the required time within which laboratories must submit specimens, and to newly require that laboratories submit results of tests for tuberculosis infection, would moderately increase costs for small labs. The proposal to require that each individual confirmed case of influenza be reported would moderately increase costs for small physician offices and other small medical facilities.

Alternative Method that Minimizes Adverse Impact. There are no clear alternative methods that both reduce adverse impact and meet the intended policy goals.

---

[2]Data source: Virginia Employment Commission

[3]"Locality" can refer to either local governments or the locations in the Commonwealth where the activities relevant to the regulatory change are most likely to occur.

[4]§ 2.2-4007.04 defines "particularly affected" as bearing disproportionate material impact.

[5]Pursuant to § 2.2-4007.04 of the Code of Virginia, small business is defined as "a business entity, including its affiliates, that (i) is independently owned and operated and (ii) employs fewer than 500 full-time employees or has gross annual sales of less than $6 million."

[6]Data source: Virginia Employment Commission

Agency's Response to Economic Impact Analysis: The economic impact analysis prepared by the Department of Planning and Budget for the fast-track amendment to the Regulations for Disease Reporting and Control, 12VAC5-90, reported an adverse impact resulting from the regulations. The "Adverse Effect on Small Businesses" section of the economic impact analysis indicates that the amendments could potentially impact assisted living and correctional facilities. The regulations specify that assisted living and correctional facilities have requirements specified in 12VAC5-90-90 subsection D, which require them to report immediately to the local health department the presence or suspected presence in this program, service, facility, school, child care center, or summer camp of persons who have common symptoms suggesting an outbreak situation. Additionally, the regulations require that these types of facilities must notify the person practicing funeral services or the person's agent when transferring a dead body that was known to have an infectious disease that may be transmitted through exposure to any bodily fluids, as indicated in 12VAC5-90-90 subsection F. There were no amendments made to either of these subsections; therefore, the Virginia Department of Health (VDH) does not anticipate that there will be any effect on the directors of assisted living and correctional facilities, their physicians, or their administrative staff.

The regulations previously required that any suspected or confirmed case of influenza be reported to VDH (12VAC5-90-80 subsection A); however, the regulations clarified in 12VAC5-90-90 subsections A and C that "each physician

who treats or examines any person who is suffering from or who is suspected of having a reportable disease or condition shall report" the information specified, except that "influenza should be reported by number of cases only (and type of influenza, if available)." In the fall of 2018, VDH submitted an amendment to the regulations, which among other things, changed the requirement in 12VAC5-90-80 subsection A so that only confirmed cases of influenza were required to be reported to VDH. This amendment was approved and went into effect October 15, 2018. The intent of this amendment was to reduce the influenza reporting burden, but the change created confusion because the requirements in 12VAC5-90-90 subsections A and C still included language about reporting suspected number of cases. As a result, providers and facilities continued to send weekly influenza reports to VDH, which included cases that have not been confirmed. The amendments made during this regulatory action seek to reduce confusion and reduce the reporting burden by removing any language that causes the persons responsible for reporting to believe they need to submit weekly counts of influenza diagnoses. The economic impact analysis indicates that "the proposal to require that each individual confirmed case of influenza be reported would moderately increase costs for physician offices and other medical facilities." VDH believes that the amendments will actually reduce the costs for physician offices and other medical facilities by clarifying that there is no longer a requirement to send weekly counts of influenza, rather only laboratory confirmed cases of influenza.

Summary:

The amendments include (i) updating and clarifying terms and definitions; (ii) specifying new timelines for submission of isolates or specimens for state public health laboratory testing; (iii) removing the list of isolates or specimens that must be forwarded for public health laboratory testing from 12VAC5-90-90 to avoid redundancy with 12VAC5-90-80; (iv) removing the requirement to report weekly counts of influenza diagnoses; (v) establishing morbidity reporting through the Virginia Department of Health (VDH) online reporting portal instead of reporting by way of the Form Epi-1, Confidentiality Morbidity Report; (vi) providing that reference laboratory findings do not need to be reported by the laboratory of origin if the laboratory ascertains that the reference laboratory reports to VDH electronically; (vii) clarifying that if a facility director reports on behalf of the laboratory, the laboratory is still responsible for submitting isolates or specimens for public health testing unless the laboratory has submitted an exemption request that has been approved by the department; (viii) referring only to medications that are available in the United States for the treatment of ophthalmia neonatorum; (ix) clarifying that confirmatory testing is not required for blood lead levels that are below the Centers for Disease Control and Prevention (CDC) reference range on screening test; (x) limiting the reporting of select agents to only an annual report and those scenarios in which such agents are released, lost, or stolen; and (xi) requiring that health care facilities share with VDH data supplied to CDC due as a result of a requirement of the Centers for Medicare and Medicaid Services and not limited to the Hospital Inpatient Quality Reporting Program of that agency.

Part I
Definitions

12VAC5-90-10. Definitions.

The following words and terms when used in this chapter shall have the following meanings unless the context clearly indicates otherwise:

"Affected area" means any part or the whole of the Commonwealth, ~~which~~ that has been identified as where persons reside, or may be located, who are known to have been exposed to or infected with, or who are reasonably suspected to have been exposed to or infected with, a communicable disease of public health threat. "Affected area" shall include~~, but not be limited to,~~ cities, counties, towns, and subsections of such areas, public and private property, buildings, and other structures.

"Arboviral infection" means a viral illness that is transmitted by a mosquito, tick, or other arthropod. This includes~~, but is not limited to,~~ chikungunya (CHIK), dengue, eastern equine encephalitis (EEE), LaCrosse encephalitis (LAC), also known as California encephalitis, St. Louis encephalitis (SLE), West Nile virus (WNV), and Zika virus (Zika) infection.

"Board" means the State Board of Health.

"Cancer" means all carcinomas, sarcomas, melanomas, leukemias, and lymphomas excluding localized basal and squamous cell carcinomas of the skin, except for lesions of the mucous membranes.

"CDC" means the Centers for Disease Control and Prevention of the U.S. Department of Health and Human Services.

"Child care center" means a child day center, child day program, family day home, family day system, or registered family day home as defined by § 63.2-100 of the Code of Virginia, or a similar place providing day care of children by such other name as may be applied.

"Clinic" means any facility, freestanding or associated with a hospital, that provides preventive, diagnostic, therapeutic, rehabilitative, or palliative care or services to outpatients.

"Commissioner" means the State Health Commissioner or his duly designated officer or agent, unless stated in a provision of this chapter that it applies to the State Health Commissioner in his sole discretion.

"Communicable disease" means an illness due to an infectious agent or its toxic products ~~which~~ that is transmitted, directly or indirectly, to a susceptible host from an infected person, animal, or arthropod or through the agency of an intermediate host or a vector or through the inanimate environment.

"Communicable disease of public health significance" means an illness caused by a specific or suspected infectious agent that may be transmitted directly or indirectly from one individual to another. This includes ~~but is not limited to~~ infections caused by human immunodeficiency viruses, bloodborne pathogens, and tubercle bacillus. The State Health Commissioner may determine that diseases caused by other pathogens constitute communicable diseases of public health significance.

"Communicable disease of public health threat" means an illness of public health significance, as determined by the State Health Commissioner in accordance with this chapter, caused by a specific or suspected infectious agent that may be reasonably expected or is known to be readily transmitted directly or indirectly from one individual to another and has been found to create a risk of death or significant injury or impairment; this definition shall not, however, be construed to include human immunodeficiency viruses or the tubercle bacilli, unless used as a bioterrorism weapon.

"Companion animal" means, consistent with the provisions of § 3.2-6500 of the Code of Virginia, any domestic or feral dog, domestic or feral cat, nonhuman primate, guinea pig, hamster, rabbit not raised for human food or fiber, exotic or native animal, reptile, exotic or native bird, or any feral animal or any animal under the care, custody, or ownership of a person or any animal that is bought, sold, traded, or bartered by any person. Agricultural animals, game species, or any animals regulated under federal law as research animals shall not be considered companion animals for the purpose of this chapter.

"Condition" means any adverse health event, such as a disease, an infection, a syndrome, or as indicated by a procedure (including ~~but not limited to~~ the results of a physical exam, laboratory test, or imaging interpretation) suggesting that an exposure of public health importance has occurred.

"Contact" means a person or animal known to have been in such association with an infected person or animal as to have had an opportunity of acquiring the infection.

"Contact services" means a broad array of services that are offered to persons with infectious diseases and their contacts. Contact services include contact tracing, providing information about current infections, developing risk reduction plans to reduce the chances of future infections, and connecting to appropriate medical care and other services.

"Contact tracing" means the process by which an infected person or health department employee notifies others that they may have been exposed to the infected person in a manner known to transmit the infectious agent in question.

"Coronavirus infection, severe" means suspected or confirmed infection with severe acute respiratory syndrome (SARS)-associated coronavirus (SARS-CoV), Middle East respiratory syndrome (MERS)-associated coronavirus (MERS-CoV), or another coronavirus causing a severe acute illness.

"Decontamination" means the use of physical or chemical means to remove, inactivate, or destroy hazardous substances or organisms from a person, surface, or item to the point that such substances or organisms are no longer capable of causing adverse health effects and the surface or item is rendered safe for handling, use, or disposal.

"Department" means the State Department of Health, also referred to as the Virginia Department of Health ~~(VDH)~~ or VDH.

"Designee" or "designated officer or agent" means any person, or group of persons, designated by the State Health Commissioner~~,~~ to act on behalf of the commissioner or the board.

"Ehrlichiosis/Anaplasmosis" means human infections caused by Ehrlichia chaffeensis (formerly included in the category "human monocytic ehrlichiosis" or "HME"), Ehrlichia ewingii, or Anaplasma phagocytophilum (formerly included in the category "human granulocytic ehrlichiosis" or "HGE").

"Epidemic" means the occurrence in a community or region of cases of an illness clearly in excess of normal expectancy.

"Essential needs" means basic human needs for sustenance including ~~but not limited to~~ food, water, clothing, and health care (e.g., medications, therapies, testing, and durable medical equipment).

"Exceptional circumstances" means the presence, as determined by the commissioner in his sole discretion, of one or more factors that may affect the ability of the department to effectively control a communicable disease of public health threat. Factors to be considered include ~~but are not limited to:~~ (i) characteristics or suspected characteristics of the disease-causing organism or suspected disease-causing organism such as virulence, routes of transmission, minimum infectious dose, rapidity of disease spread, the potential for extensive disease spread, and the existence and availability of demonstrated effective treatment; (ii) known or suspected risk factors for infection; (iii) the potential magnitude of the effect of the disease on the health and welfare of the public; and (iv) the extent of voluntary compliance with public health recommendations. The determination of exceptional circumstances by the commissioner may take into account the

experience or results of investigation in Virginia, another state, or another country.

"Foodborne outbreak" means two or more cases of a similar illness acquired through the consumption of food contaminated with chemicals or an infectious agent or its toxic products. Such illnesses include ~~but are not limited to~~ heavy metal intoxication, staphylococcal food poisoning, botulism, salmonellosis, shigellosis, Clostridium perfringens food poisoning, hepatitis A, and Shiga toxin-producing Escherichia coli infection.

"Healthcare-associated infection" (also known as nosocomial infection) means a localized or systemic condition resulting from an adverse reaction to the presence of an infectious agent ~~or agents~~ or its toxin ~~or toxins~~ that (i) occurs in a patient in a health care ~~setting~~ facility (e.g., a ~~hospital~~ medical care facility or outpatient clinic), and (ii) was not found to be present or incubating at the time of admission unless the infection was related to a previous admission to the same setting~~, and (iii) if the setting is a hospital, meets the criteria for a specific infection site as defined by CDC~~.

~~"Hepatitis C, acute" means the following clinical characteristics are met: (i) discrete onset of symptoms indicative of viral hepatitis and (ii) jaundice or elevated serum aminotransferase levels and the following laboratory criteria are met: (a) serum alanine aminotransferase levels (ALT) greater than 200 IU/L; (b) IgM anti HAV negative (if done); (c) IgM anti HBc negative (if done); and (d) hepatitis C virus antibody (anti HCV) positive, HCV antigen positive, or HCV RNA positive by nucleic acid test.~~

~~"Hepatitis C, chronic" means that the laboratory criteria specified in clauses (b), (c) and (d) listed above for an acute case are met but clinical signs or symptoms of acute viral hepatitis are not present and serum alanine aminotransferase (ALT) levels do not exceed 200 IU/L. This category will include cases that may be acutely infected but not symptomatic.~~

"Immunization" means a procedure that increases the protective response of an individual's immune system to specified pathogens.

"Independent pathology laboratory" means a nonhospital or a hospital laboratory performing surgical pathology, including fine needle aspiration biopsy and bone marrow specimen examination services, ~~which~~ that reports the results of such tests directly to physician offices~~,~~ without reporting to a hospital or accessioning the information into a hospital tumor registry.

"Individual" means a person or companion animal. When the context requires it, "person or persons" shall be deemed to include any individual.

"Infection" means the entry and multiplication or persistence of a disease-causing organism (prion, virus, bacteria, fungus, parasite, or ectoparasite) in the body of an individual. An infection may be inapparent (i.e., without recognizable signs or symptoms but identifiable by laboratory means) or manifest (clinically apparent).

"Influenza A, novel virus" means infection of a human with an influenza A virus subtype that is different from currently circulating human influenza H1 and H3 viruses. Novel subtypes include H2, H5, H7, and H9 subtypes or influenza H1 and H3 subtypes originating from a nonhuman species or from genetic reassortment of human and animal influenza viruses.

"Invasive" means the organism is affecting a normally sterile site, including ~~but not limited to~~ blood or cerebrospinal fluid.

"Investigation" means an inquiry into the incidence, prevalence, extent, source, mode of transmission, causation of, and other information pertinent to a disease occurrence.

"Isolation" means the physical separation, including confinement or restriction of movement, of an individual ~~or individuals~~ who ~~are~~ is infected with, or ~~are~~ is reasonably suspected to be infected with, a communicable disease in order to prevent or limit the transmission of the communicable disease to uninfected and unexposed individuals.

"Isolation, complete" means the full-time confinement or restriction of movement of an individual ~~or individuals~~ infected with, or reasonably suspected to be infected with, a communicable disease in order to prevent or limit the transmission of the communicable disease to uninfected and unexposed individuals.

"Isolation, modified" means a selective, partial limitation of freedom of movement or actions of an individual ~~or individuals~~ infected with, or reasonably suspected to be infected with, a communicable disease. Modified isolation is designed to meet particular situations and includes ~~but is not limited to~~ the exclusion of children from school, the prohibition or restriction from engaging in a particular occupation or using public or mass transportation, or requirements for the use of devices or procedures intended to limit disease transmission.

"Isolation, protective" means the physical separation of a susceptible individual ~~or individuals~~ not infected with, or not reasonably suspected to be infected with, a communicable disease from an environment where transmission is occurring, or is reasonably suspected to be occurring, in order to prevent the individual ~~or individuals~~ from acquiring the communicable disease.

"Laboratory" means a clinical laboratory that examines materials derived from the human body for the purpose of

providing information on the diagnosis, prevention, or treatment of disease.

"Laboratory director" means any person in charge of supervising a laboratory conducting business in the Commonwealth of Virginia.

"Law-enforcement agency" means any sheriff's office, police department, adult or youth correctional officer, or other agency or department that employs persons who have law-enforcement authority that is under the direction and control of the Commonwealth or any local governing body. "Law-enforcement agency" shall include, by order of the Governor, the Virginia National Guard.

~~"Lead, reportable levels" means any detectable blood lead level in children 15 years of age and younger and levels greater than or equal to 5 µg/dL in a person older than 15 years of age.~~

"Least restrictive" means the minimal limitation of the freedom of movement and communication of an individual while under an order of isolation or an order of quarantine that also effectively protects unexposed and susceptible individuals from disease transmission.

"Medical care facility" means any hospital or nursing home licensed in the Commonwealth, or any hospital operated by or contracted to operate by an entity of the United States government or the Commonwealth of Virginia.

"Midwife" means any person who is licensed as a nurse midwife by the Virginia Boards of Nursing and Medicine or who is licensed by the Board of Medicine as a certified professional midwife.

"National Healthcare Safety Network" or "NHSN" means a surveillance system created by the CDC for accumulating, exchanging, and integrating relevant information on infectious adverse events associated with health care delivery.

"Nucleic acid detection" means laboratory testing of a clinical specimen to determine the presence of deoxyribonucleic acid (DNA) or ribonucleic acid (RNA) specific for an infectious agent using any method, including hybridization, sequencing, or amplification such as polymerase chain reaction.

"Nurse" means any person licensed as a professional nurse or as a licensed practical nurse by the Virginia Board of Nursing.

"Occupational outbreak" means a cluster of illness or disease that is indicative of a work-related exposure. Such conditions include ~~but are not limited to~~ silicosis, asbestosis, byssinosis, pneumoconiosis, and tuberculosis.

"Outbreak" means the occurrence of more cases of a disease than expected.

"Period of communicability" means the time ~~or times~~ during which the etiologic agent may be transferred directly or indirectly from an infected person to another person, or from an infected animal to a person.

"Physician" means any person licensed to practice medicine or osteopathy by the Virginia Board of Medicine.

"Quarantine" means the physical separation, including confinement or restriction of movement, of an individual ~~or individuals~~ who ~~are~~ is present within an affected area or who ~~are~~ is known to have been exposed, or may reasonably be suspected to have been exposed, to a communicable disease and who do not yet show signs or symptoms of infection with the communicable disease in order to prevent or limit the transmission of the communicable disease of public health threat to unexposed and uninfected individuals.

"Quarantine, complete" means the full-time confinement or restriction of movement of an individual ~~or individuals~~ who ~~do~~ does not have signs or symptoms of infection but may have been exposed, or may reasonably be suspected to have been exposed, to a communicable disease of public health threat in order to prevent the transmission of the communicable disease of public health threat to uninfected individuals.

"Quarantine, modified" means a selective, partial limitation of freedom of movement or actions of an individual ~~or individuals~~ who ~~do~~ does not have signs or symptoms of the infection but ~~have~~ has been exposed to, or ~~are~~ is reasonably suspected to have been exposed to, a communicable disease of public health threat. Modified quarantine may be designed to meet particular situations and includes ~~but is not limited to~~ limiting movement to the home, work, or one or more other locations, the prohibition or restriction from using public or mass transportation, or requirements for the use of devices or procedures intended to limit disease transmission.

"Reportable disease" means an illness due to a specific toxic substance, occupational exposure, or infectious agent, ~~which~~ that affects a susceptible individual, either directly, as from an infected animal or person, or indirectly through an intermediate host, vector, or the environment, as determined by the board.

"School" means (i) any public school from kindergarten through grade 12 operated under the authority of any locality within the Commonwealth~~,~~; (ii) any private or religious school that offers instruction at any level or grade from kindergarten through grade 12; and (iii) any private or religious nursery school or preschool, or any private or religious child care center required to be licensed by the Commonwealth.

"Serology" means the testing of blood, serum, or other body fluids for the presence of antibodies or other markers of an infection or disease process.

"Surveillance" means the ongoing systematic collection, analysis, and interpretation of outcome-specific data for use in the planning, implementation, and evaluation of public health practice. A surveillance system includes the functional capacity for data analysis as well as the timely dissemination of these data to persons who can undertake effective prevention and control activities.

"Susceptible individual" means a person or animal who is vulnerable to or potentially able to contract a disease or condition. Factors that affect an individual's susceptibility include ~~but are not limited to~~ physical characteristics, genetics, previous or chronic exposures, chronic conditions or infections, immunization history, or use of medications.

"Toxic substance" means any substance, including any raw materials, intermediate products, catalysts, final products, or ~~by products~~ byproducts of any manufacturing operation conducted in a commercial establishment, that has the capacity, through its physical, chemical or biological properties, to pose a substantial risk of death or impairment either immediately or over time, to the normal functions of humans, aquatic organisms, or any other animal but not including any pharmaceutical preparation ~~which~~ that deliberately or inadvertently is consumed in such a way as to result in a drug overdose.

"Tubercle bacilli" means disease-causing organisms belonging to the Mycobacterium tuberculosis complex and includes Mycobacterium tuberculosis, Mycobacterium ~~bovis~~ africanum, ~~and~~ Mycobacterium ~~africanum~~ bovis, Mycobacterium canetti, Mycobacterium microti, Mycobacterium caprae, or other members as may be established by the commissioner.

~~"Tuberculin skin test (TST)" means a test for demonstrating infection with tubercle bacilli, performed according to the Mantoux method, in which 0.1 ml of 5 TU strength tuberculin purified protein derivative (PPD) is injected intradermally on the volar surface of the arm. Any reaction is observed 48-72 hours after placement and palpable induration is measured across the diameter transverse to the long axis of the arm. The measurement of the indurated area is recorded in millimeters and the significance of the measured induration is based on existing national and department guidelines.~~

~~"Tuberculosis" means a disease caused by tubercle bacilli.~~

"Tuberculosis, active disease" (also "active tuberculosis disease" and "active TB disease"), as defined by § 32.1-49.1 of the Code of Virginia, means a communicable disease caused by an airborne microorganism and characterized by the presence of either (i) a specimen of sputum or other bodily fluid or tissue that has been found to contain tubercle bacilli as evidenced by culture or nucleic acid amplification, including preliminary identification by rapid methodologies; (ii) a specimen of sputum or other bodily fluid or tissue that is suspected to contain tubercle bacilli as evidenced by smear, and where sufficient clinical and radiographic evidence of active tuberculosis disease is present as determined by a physician licensed to practice medicine in Virginia; or (iii) sufficient clinical and radiographic evidence of active tuberculosis disease as determined by the commissioner is present, but a specimen of sputum or other bodily fluid or tissue containing, or suspected of containing, tubercle bacilli is unobtainable.

"Tuberculosis infection ~~in children age <4 years~~" means a ~~significant reaction resulting from a tuberculin skin test (TST) or other approved test for latent infection without~~ positive result from a test for tuberculosis infection without clinical or ~~radiographic~~ other evidence of active tuberculosis disease~~, in children from birth up to their fourth birthday~~.

"Vaccinia, disease or adverse event" means vaccinia infection or serious or unexpected events in persons who received the smallpox vaccine or their contacts, including ~~but not limited to~~ bacterial infections, eczema vaccinatum, erythema multiforme, generalized vaccinia, progressive vaccinia, inadvertent inoculation, post-vaccinial encephalopathy or encephalomyelitis, ocular vaccinia, and fetal vaccinia.

"Waterborne outbreak" means two or more cases of a similar illness acquired through the ingestion of or other exposure to water contaminated with chemicals or an infectious agent or its toxic products. Such illnesses include ~~but are not limited to~~ giardiasis, viral gastroenteritis, cryptosporidiosis, hepatitis A, cholera, and shigellosis. A single case of laboratory-confirmed primary amebic meningoencephalitis or of waterborne chemical poisoning is considered an outbreak.

Part III
Reporting of Disease

12VAC5-90-80. Lists of diseases that shall be reported.

A. Reportable disease list. The board declares suspected or confirmed cases of the following named diseases, toxic effects, and conditions to be reportable by the persons enumerated in 12VAC5-90-90. Conditions identified by an asterisk (*) require immediate communication to the local health department by the most rapid means available upon suspicion or confirmation, as defined in subsection C of this section. Other conditions should be reported within three days of suspected or confirmed diagnosis, unless otherwise specified in this section. Neonatal ~~Abstinence Syndrome~~ abstinence syndrome shall be reported as specified in subsection E of this section.

Amebiasis (Entamoeba histolytica)

*Anthrax (Bacillus anthracis)

Arboviral infections (e.g., CHIK, dengue, EEE, LAC, SLE, WNV, Zika)

Babesiosis (Babesia spp.)

*Botulism (Clostridium botulinum)

*Brucellosis (Brucella spp.)

Campylobacteriosis (Campylobacter spp.)

Candida auris, infection or colonization

Carbapenemase-producing organism, infection or colonization

Chancroid (Haemophilus ducreyi)

Chickenpox (Varicella virus)

Chlamydia trachomatis infection

*Cholera (Vibrio cholerae O1 or O139)

*Coronavirus infection, severe

Cryptosporidiosis (Cryptosporidium spp.)

Cyclosporiasis (Cyclospora spp.)

*Diphtheria (Corynebacterium diphtheriae)

*Disease caused by an agent that may have been used as a weapon

Ehrlichiosis/Anaplasmosis (Ehrlichia spp., Anaplasma phagocytophilum)

Giardiasis (Giardia spp.)

Gonorrhea (Neisseria gonorrhoeae)

Granuloma inguinale (Calymmatobacterium granulomatis)

*Haemophilus influenzae infection, invasive

Hantavirus pulmonary syndrome

Hemolytic uremic syndrome (HUS)

*Hepatitis A

Hepatitis B (acute and chronic)

Hepatitis C (acute and chronic)

Hepatitis, other acute viral

Human immunodeficiency virus (HIV) infection

Influenza, confirmed

*Influenza-associated deaths if younger than 18 years of age

Lead, blood levels

Legionellosis (Legionella spp.)

Leprosy (Hansen's disease) (Mycobacterium leprae)

Leptospirosis (Leptospira interrogans)

Listeriosis (Listeria monocytogenes)

Lyme disease (Borrelia spp.)

Lymphogranuloma venereum (Chlamydia trachomatis)

Malaria (Plasmodium spp.)

*Measles (Rubeola)

*Meningococcal disease (Neisseria meningitidis)

Mumps

Neonatal abstinence syndrome (NAS)

Ophthalmia neonatorum

*Outbreaks, all (including foodborne, health care-associated, occupational, toxic substance-related, waterborne, and any other outbreak)

*Pertussis (Bordetella pertussis)

*Plague (Yersinia pestis)

*Poliovirus infection, including poliomyelitis

*Psittacosis (Chlamydophila psittaci)

*Q fever (Coxiella burnetii)

*Rabies, human and animal

Rabies treatment, post-exposure

*Rubella, including congenital rubella syndrome

Salmonellosis (Salmonella spp.)

Shiga toxin-producing Escherichia coli infection

Shigellosis (Shigella spp.)

*Smallpox (Variola virus)

Spotted fever rickettsiosis (Rickettsia spp.)

Streptococcal disease, Group A, invasive or toxic shock

Streptococcus pneumoniae infection, invasive if younger than five years of age

Syphilis (Treponema pallidum) report *congenital, *primary, *secondary, and other

Tetanus (Clostridium tetani)

Toxic substance-related illness

Trichinosis (Trichinellosis) (Trichinella spiralis)

*Tuberculosis, active disease (Mycobacterium tuberculosis complex)

Tuberculosis infection

*Tularemia (Francisella tularensis)

*Typhoid/Paratyphoid infection (Salmonella Typhi, Salmonella Paratyphi)

*Unusual occurrence of disease of public health concern

*Vaccinia, disease or adverse event

Vancomycin-intermediate or vancomycin-resistant Staphylococcus aureus infection

*Vibriosis (Vibrio spp.)

*Viral hemorrhagic fever

*Yellow fever

Yersiniosis (Yersinia spp.)

B. Conditions reportable by directors of laboratories. Laboratories shall report all test results indicative of and specific for the diseases, infections, microorganisms, conditions, and toxic effects specified in this subsection for humans. Such tests include microbiological culture, isolation, or identification; assays for specific antibodies; and identification of specific antigens, toxins, or nucleic acid sequences. Additional condition-specific requirements are noted in this subsection and subsection D of this section. Conditions identified by an asterisk (*) require immediate communication to the local health department by the most rapid means available upon suspicion or confirmation, as defined in subsection C of this section. Other conditions should be reported within three days of suspected or confirmed diagnosis.

Amebiasis (Entamoeba histolytica)

*Anthrax (Bacillus anthracis)

Arboviral infection, for example, CHIK, dengue, EEE, LAC, SLE, WNV, or Zika

Babesiosis (Babesia spp.)

*Botulism (Clostridium botulinum)

*Brucellosis (Brucella spp.)

Campylobacteriosis (Campylobacter spp.)

Candida auris - Include available antimicrobial susceptibility findings in report.

Carbapenemase-producing organism - Include available antimicrobial susceptibility findings in report.

Chancroid (Haemophilus ducreyi)

Chickenpox (Varicella virus)

Chlamydia trachomatis infection

*Cholera (Vibrio cholerae O1 or O139)

*Coronavirus infection, severe (e.g., SARS-CoV, MERS-CoV)

Cryptosporidiosis (Cryptosporidium spp.)

Cyclosporiasis (Cyclospora spp.)

*Diphtheria (Corynebacterium diphtheriae)

Ehrlichiosis/Anaplasmosis (Ehrlichia spp., Anaplasma phagocytophilum)

Giardiasis (Giardia spp.)

Gonorrhea (Neisseria gonorrhoeae) - Include available antimicrobial susceptibility findings in report.

*Haemophilus influenzae infection, invasive

Hantavirus pulmonary syndrome

*Hepatitis A

Hepatitis B (acute and chronic) - For All hepatitis B patients, also report available results of serum alanine aminotransferase (ALT) and all available results from the hepatitis panel.

Hepatitis C (acute and chronic) - For all patients with any positive HCV test, also report all results of HCV viral load tests, including undetectable viral loads and report available results of serum alanine aminotransferase (ALT) and all available results from the hepatitis panel.

Hepatitis, other acute viral - Any finding indicative of acute infection with hepatitis D, E, or other cause of viral hepatitis. For any reportable hepatitis finding, submit all available results from the hepatitis panel.

Human immunodeficiency virus (HIV) infection - For HIV-infected patients, report all results of CD4 and HIV viral load tests, including undetectable viral loads. For HIV-infected patients, report all HIV genetic nucleotide sequence data associated with HIV drug resistance tests by electronic submission. For children younger than three years of age, report all tests regardless of the test findings (e.g., negative or positive).

Influenza, confirmed - By culture, antigen detection by direct fluorescent antibody (DFA), or nucleic acid detection.

Lead, blood levels - All lead results from tests of venous or capillary blood performed by a laboratory certified by the Centers for Medicare and Medicaid Services in accordance with 42 USC § 263a, the Clinical Laboratory Improvement Amendment of 1988 (CLIA-certified).

Legionellosis (Legionella spp.)

Leptospirosis (Leptospira interrogans)

Listeriosis (Listeria monocytogenes), invasive or if associated with miscarriage or stillbirth from placental or fetal tissue

Lyme disease (Borrelia spp.)

Malaria (Plasmodium spp.)

*Measles (Rubeola)

*Meningococcal disease (Neisseria meningitidis), invasive - Include identification of gram-negative diplococci.

Mumps

*Mycobacterial diseases - (See 12VAC5-90-225 B) Report any of the following:

1. Acid fast bacilli;

2. M. tuberculosis complex or any other mycobacteria; or

3. Antimicrobial susceptibility results for M. tuberculosis complex.

*Pertussis (Bordetella pertussis)

*Plague (Yersinia pestis)

*Poliovirus infection

*Psittacosis (Chlamydophila psittaci)

*Q fever (Coxiella burnetii)

*Rabies, human and animal

*Rubella

Salmonellosis (Salmonella spp.)

Shiga toxin-producing Escherichia coli infection

Shigellosis (Shigella spp.)

*Smallpox (Variola virus)

Spotted fever rickettsiosis (Rickettsia spp.)

Streptococcal disease, Group A, invasive or toxic shock

Streptococcus pneumoniae infection, invasive if younger than five years of age

*Syphilis (Treponema pallidum)

Toxic substance-related illness - By blood or urine laboratory findings above the normal range, including heavy metals, pesticides, and industrial-type solvents and gases. When applicable and available, report speciation of metals when blood or urine levels are elevated in order to differentiate the chemical species (elemental, organic, or inorganic).

Trichinosis (Trichinellosis) (Trichinella spiralis)

Tuberculosis infection

*Tularemia (Francisella tularensis)

*Typhoid/Paratyphoid infection (Salmonella Typhi, Salmonella Paratyphi A, Salmonella Paratyphi B, Salmonella Paratyphi C)

*Vaccinia, disease or adverse event

Vancomycin-intermediate or vancomycin-resistant Staphylococcus aureus infection - Include available antimicrobial susceptibility findings in report.

*Vibriosis (Vibrio spp., Photobacterium damselae, Grimontia hollisae), other than toxigenic Vibrio cholera O1 or O139, which are reportable as cholera

*Viral hemorrhagic fever

*Yellow fever

Yersiniosis (Yersinia spp.)

C. Reportable diseases requiring rapid communication. Certain of the diseases in the list of reportable diseases because of their extremely contagious nature, potential for greater harm, or availability of a specific intervention that must be administered in a timely manner require immediate identification and control. Reporting of persons confirmed or suspected of having these diseases, listed in this subsection, shall be made immediately by the most rapid means available, preferably by telephone to the local health department. (These same diseases are also identified by an asterisk (*) in subsections A and B, where applicable, of this section.)

Anthrax (Bacillus anthracis)

Botulism (Clostridium botulinum)

Brucellosis (Brucella spp.)

Cholera (Vibrio cholerae O1 or O139)

Coronavirus infection, severe

Diphtheria (Corynebacterium diphtheriae)

Disease caused by an agent that may have been used as a weapon

Haemophilus influenzae infection, invasive

Hepatitis A

Influenza-associated deaths if younger than 18 years of age

Influenza A, novel virus

Measles (Rubeola virus)

Meningococcal disease (Neisseria meningitidis)

Outbreaks, all

Pertussis (Bordetella pertussis)

Plague (Yersinia pestis)

Poliovirus infection, including poliomyelitis

Psittacosis (Chlamydophila psittaci)

Q fever (Coxiella burnetii)

Rabies, human and animal

Rubella, including congenital rubella syndrome

Smallpox (Variola virus)

Syphilis, congenital, primary, and secondary (Treponema pallidum)

Tuberculosis, active disease (Mycobacterium tuberculosis complex)

Tularemia (Francisella tularensis)

Typhoid/Paratyphoid infection (Salmonella Typhi, Salmonella Paratyphi (all types))

Unusual occurrence of disease of public health concern

Vaccinia, disease or adverse event

Vibriosis (Vibrio spp., Photobacterium damselae, Grimontia hollisae), other than toxigenic Vibrio cholerae O1 or O139, which are reportable as cholera

Viral hemorrhagic fever

Yellow fever

D. Submission of initial isolate or other specimen for further public health testing. A laboratory identifying evidence of any of the conditions in this subsection shall notify the local health department of the positive culture or other positive test result within the timeframes specified in subsection B of this section and submit the initial isolate (preferred) ~~or other initial specimen~~ within five days or the clinical specimen within two days of a positive result to the Division of Consolidated Laboratory Services or other public health laboratory where specified in this subsection ~~within seven days of identification~~. All specimens must be identified with the patient and physician information required in 12VAC5-90-90 B.

Anthrax (Bacillus anthracis)

Botulism (Clostridium botulinum)

Brucellosis (Brucella sp.)

Candida auris

Candida haemulonii

Carbapenem-resistant Enterobacteriaceae

Carbapenem-resistant Pseudomonas aeruginosa

Cholera (Vibrio cholerae O1 or O139)

Coronavirus infection, severe (e.g., SARS-CoV, MERS-CoV)

Diphtheria (Corynebacterium diphtheriae)

Haemophilus influenzae infection, invasive

Influenza, unsubtypeable

Listeriosis (Listeria monocytogenes)

Meningococcal disease (Neisseria meningitidis)

Plague (Yersinia pestis)

Poliovirus infection

Q fever (Coxiella burnetii)

Salmonellosis (Salmonella spp.)

Shiga toxin-producing E. coli infection (Laboratories that identify a Shiga toxin but do not perform simultaneous culture for Shiga toxin-producing E. coli should forward all positive stool specimens or positive enrichment broths to the Division of Consolidated Laboratory Services for confirmation and further characterization.)

Shigellosis (Shigella spp.)

Streptococcal disease, Group A, invasive

Tuberculosis (A laboratory identifying Mycobacterium tuberculosis complex (see 12VAC5-90-225) shall submit a representative and viable sample of the initial culture to the Division of Consolidated Laboratory Services or other laboratory designated by the board to receive such specimen.)

Tularemia (Francisella tularensis)

Typhoid/Paratyphoid infection (Salmonella Typhi, Salmonella Paratyphi (all types))

Vancomycin-intermediate or vancomycin-resistant Staphylococcus aureus infection

Vibriosis (Vibrio spp., Photobacterium damselae, Grimontia hollisae)

Yersiniosis (Yersinia spp.)

Other diseases as may be requested by the health department.

E. Neonatal abstinence syndrome. Neonatal abstinence syndrome shall be reported by physicians and directors of medical care facilities when a newborn has been diagnosed with neonatal abstinence syndrome, a condition characterized by clinical signs of withdrawal from exposure to prescribed or illicit drugs. Reports shall be submitted within one month of diagnosis by entering the information into the Department of Health's online Confidential Morbidity Report portal (http://www.vdh.virginia.gov/clinicians).

F. Outbreaks. The occurrence of outbreaks or clusters of any illness that may represent a group expression of an illness that may be of public health concern shall be reported to the local health department immediately by the most rapid means available, preferably by telephone.

G. Toxic substance-related illnesses. All toxic substance-related illnesses, including pesticide and heavy metal poisoning or illness resulting from exposure to an occupational dust or fiber or radioactive substance, shall be reported.

If such illness is verified or suspected and presents an emergency or a serious threat to public health or safety, the report of such illness shall be made immediately by the most rapid means available, preferably by telephone.

H. Unusual occurrence of disease of public health concern. Unusual or emerging conditions of public health concern shall be reported to the local health department immediately by the most rapid means available, preferably by telephone. In addition, the commissioner or the commissioner's designee may establish surveillance systems for diseases or conditions that are not on the list of reportable diseases. Such surveillance may be established to identify cases (delineate the magnitude of the situation), to identify the mode of transmission and risk factors for the disease, and to identify and implement appropriate action to protect public health. Any person reporting information at the request of the department for special surveillance or other epidemiological studies shall be immune from liability as provided by § 32.1-38 of the Code of Virginia.

12VAC5-90-90. Those required to report.

A. Physicians. Each physician who treats or examines any person who is suffering from or who is suspected of having a reportable disease or condition shall report, at a minimum, that person's name, address, age, date of birth, race, sex, and pregnancy status for females; name of disease diagnosed or suspected; the date of onset of illness; available laboratory tests and results; and the name, address, and telephone number of the physician and medical facility where the examination was made~~, except that influenza should be reported by number of cases only (and type of influenza, if available)~~. Reports are to be made to the local health department serving the jurisdiction where the physician practices. A physician may designate someone to report on his behalf, but the physician remains responsible for ensuring that the appropriate report is made. Any physician, designee, or organization making such report as authorized herein shall be immune from liability as provided by § 32.1-38 of the Code of Virginia.

Such reports shall be made ~~on a Form Epi 1, a computer generated printout containing the data items requested on Form Epi 1,~~ within the timeframes specified in 12VAC5-90-80 to the local health department serving the jurisdiction in which the facility is located. Reports shall be made via the Department of Health's online Confidential Morbidity Report portal (http://www.vdh.virginia.gov/clinicians) or a CDC or VDH disease-specific surveillance form ~~that provides the same information and shall be made within three days of the suspicion or confirmation of disease except that those identified in 12VAC5-90-80 C shall be reported immediately by the most rapid means available, preferably by telephone, to the local health department serving the jurisdiction in which the facility is located~~. Reporting may be done by means of secure electronic transmission upon agreement of the physician and the department.

Additional elements are required to be reported for individuals with confirmed or suspected active tuberculosis disease. Refer to Part X (12VAC5-90-225 et seq.) for details on these requirements.

B. Directors of laboratories. Laboratory directors shall report any laboratory examination of any clinical specimen~~, whether performed in-house or referred to an out-of-state laboratory, which~~ that yields evidence~~, by the laboratory method(s) indicated or any other confirmatory test,~~ of a disease listed in 12VAC5-90-80 B. Laboratory directors shall report results that are performed in-house or referred to a reference laboratory, with the following exception: if the laboratory director ascertains that the reference laboratory that tests a specimen reports to the department electronically, then those reference laboratory findings do not need to be reported by the laboratory of origin.

Each report shall give the source of the specimen and the laboratory method and result; the name, address, age, date of birth, race, sex, and pregnancy status for females (if known) of the person from whom the specimen was obtained; and the name, address, and telephone number of the physician at whose request and medical facility at which the examination was made. When the influenza virus is isolated, the type should be reported, if available. Reports shall be made within ~~three days of identification of evidence of disease, except that those identified in 12VAC5-90-80 C shall be reported immediately by the most rapid means available, preferably by telephone,~~ the timeframes specified in 12VAC5-90-80 to the local health department serving the jurisdiction in which the laboratory is located. Reports shall be made ~~on Form Epi 1~~ via the Department of Health's online Confidential Morbidity Report portal at http://www.vdh.virginia.gov/surveillance-and-investigation/commonwealth-of-virginiastate-board-of-health/ or on the laboratory's own form if ~~it~~ the form includes the required information. Computer generated reports containing the required information may be submitted. Reporting may be done by means of secure electronic transmission upon agreement of the laboratory director and the department. Reports of HIV genetic nucleotide sequence data associated with HIV drug resistance tests must be submitted electronically. Any person making such report as authorized herein shall be immune from liability as provided by § 32.1-38 of the Code of Virginia.

~~A laboratory identifying evidence of any of the following conditions shall notify the local health department of the positive culture or other positive test result within the timeframes specified in 12VAC5-90-80 and submit the initial isolate or other initial specimen to the Division of Consolidated Laboratory Services within seven days of identification. All specimens must be identified with the patient and physician information required in this subsection.~~

~~Anthrax~~

~~Botulism~~

~~Brucellosis~~

~~Cholera~~

~~Diphtheria~~

~~E. coli infection, Shiga toxin producing. (Laboratories that use a Shiga toxin EIA methodology but do not perform simultaneous culture for Shiga toxin producing E. coli should forward all positive stool specimens or positive enrichment broths to the Division of Consolidated Laboratory Services for confirmation and further characterization.)~~

~~Haemophilus influenzae infection, invasive~~

~~Influenza A, novel virus~~

~~Listeriosis~~

~~Meningococcal disease~~

~~Pertussis~~

~~Plague~~

~~Poliovirus infection~~

~~Q fever~~

~~Salmonellosis~~

~~Shigellosis~~

~~Streptococcal disease, Group A, invasive~~

~~Tuberculosis (A laboratory identifying Mycobacterium tuberculosis complex (see 12VAC5-90-225) shall submit a representative and viable sample of the initial culture to the Division of Consolidated Laboratory Services or other laboratory designated by the board to receive such specimen.)~~

~~Tularemia~~

~~Typhoid/Paratyphoid fever~~

~~Vancomycin intermediate or vancomycin resistant Staphylococcus aureus infection~~

~~Vibrio infection, including infections due to Photobacterium damselae and Grimontia hollisae~~

~~Yersiniosis~~

~~Other diseases as may be requested by the health department~~

When a clinical specimen yields evidence indicating the presence of a select agent or toxin as defined by federal regulations in 42 CFR Part 73, the person in charge of the laboratory shall contact the Division of Consolidated Laboratory Services and arrange to forward an isolate for confirmation. If a select agent or toxin has been confirmed in a clinical specimen, the laboratory director shall consult with Division of Consolidated Laboratory Services or CDC regarding isolate transport or destruction.

Laboratories operating within a medical care facility shall be considered to be in compliance with the requirement to notify the local health department when the director of that medical care facility assumes the reporting responsibility; however, laboratories are still required to submit isolates to the Division of Consolidated Laboratory Services or other designated laboratory as noted in ~~this subsection~~ 12VAC5-90-80 D unless the laboratory has submitted an exemption request that has been approved by the department.

C. Persons in charge of a medical care facility. Any person in charge of a medical care facility shall make a report to the local health department serving the jurisdiction where the facility is located of the occurrence in or admission to the facility of a patient with a reportable disease listed in 12VAC5-90-80 A unless he has evidence that the occurrence has been reported by a physician. Any person making such report as authorized herein shall be immune from liability as provided by § 32.1-38 of the Code of Virginia. The requirement to report shall include all inpatient, outpatient, and emergency care departments within the medical care facility. Such report shall contain the patient's name, address, age, date of birth, race, sex, and pregnancy status for females; name of disease being reported; available laboratory tests and results; the date of admission; hospital chart number; date expired (when applicable); and attending physician. ~~Influenza should be reported by number of cases only (and type of influenza, if available).~~ Reports shall be made within ~~three days of the suspicion or confirmation of disease except that those identified in 12VAC5-90-80 C shall be reported immediately by the most rapid means available, preferably by telephone,~~ the timeframes specified in 12VAC5-90-80 to the local health department serving the jurisdiction in which the facility is located. Reports shall be made ~~on Form Epi-1, a computer generated printout containing the data items requested on Form Epi-1,~~ via the Department of Health's online Confidential Morbidity Report portal (http://www.vdh.virginia.gov/clinicians), or a CDC or VDH disease-specific surveillance form ~~that provides the same information~~. Reporting may be done by means of secure electronic transmission upon agreement of the medical care facility and the department.

A person in charge of a medical care facility may assume the reporting responsibility on behalf of the director of the laboratory operating within the facility.

D. Persons in charge of a residential or day program, service, or facility licensed or operated by any agency of the Commonwealth, or a school, child care center, or summer camp. Any person in charge of a residential or day program, service, or facility licensed or operated by any agency of the Commonwealth, or a school, child care center, or summer camp as defined in § 35.1-1 of the Code of Virginia shall report immediately to the local health department the presence or suspected presence in his program, service, facility, school, child care center, or summer camp of persons

who have common symptoms suggesting an outbreak situation. Such persons may report additional information, including identifying and contact information for individuals with communicable diseases of public health concern or individuals who are involved in outbreaks that occur in their facilities, as necessary to facilitate public health investigation and disease control. Any person so reporting shall be immune from liability as provided by § 32.1-38 of the Code of Virginia.

E. Local health directors. The local health director shall forward any report of a disease or report of evidence of a disease ~~which~~ that has been made on a resident of his jurisdiction to the Office of Epidemiology within three days of receipt. This report shall be submitted immediately by the most rapid means available if the disease is one requiring rapid communication, as required in 12VAC5-90-80 C. All such rapid reporting shall be confirmed in writing and submitted to the Office of Epidemiology, by either a paper report or entry into a shared secure electronic disease surveillance system, within three days. Furthermore, the local health director shall immediately forward to the appropriate local health director any disease reports on individuals residing in the ~~latter's~~ appropriate local health director's jurisdiction or to the Office of Epidemiology on individuals residing outside Virginia. The Office of Epidemiology shall be responsible for notifying other state health departments of reported illnesses in their residents and for notifying CDC as necessary and appropriate.

F. Persons in charge of hospitals, nursing facilities or nursing homes, assisted living facilities, and correctional facilities. In accordance with § 32.1-37.1 of the Code of Virginia, any person in charge of a hospital, nursing facility or nursing home, assisted living facility, or correctional facility shall, at the time of transferring custody of any dead body to any person practicing funeral services, notify the person practicing funeral services or his agent if the dead person was known to have had, immediately prior to death, an infectious disease ~~which~~ that may be transmitted through exposure to any bodily fluids. These include any of the following infectious diseases:

Creutzfeldt-Jakob disease

Human immunodeficiency virus (HIV) infection

Hepatitis B (acute and chronic)

Hepatitis C (acute and chronic)

Rabies

Smallpox (Variola virus)

Syphilis, infectious (Treponema pallidum)

Tuberculosis, active disease (Mycobacterium tuberculosis complex)

Vaccinia, disease or adverse event

Viral hemorrhagic fever

G. Employees, conditional employees, and persons in charge of food establishments. 12VAC5-421-80 of the Food Regulations requires a food employee or conditional employee to notify the person in charge of the food establishment when diagnosed with certain diseases that are transmissible through food and requires the person in charge of the food establishment to notify the regulatory authority. Refer to 12VAC5-421-80 for further guidance and clarification regarding these reporting requirements.

12VAC5-90-103. Isolation for communicable disease of public health threat.

A. Application. The commissioner, in his sole discretion, may invoke the provisions of Article 3.02 (§ 32.1-48.05 et seq.) of Chapter 2 of Title 32.1 of the Code of Virginia and may declare the isolation of any individual ~~or individuals~~ upon a determination that:

1. Such individual ~~or individuals are~~ is known to have been infected with or ~~are~~ is reasonably suspected to have been infected with a communicable disease of public health threat;

2. Exceptional circumstances render the procedures of Article 3.01 (§ 32.1-48.01 et seq.) of Chapter 2 of Title 32.1 of the Code of Virginia to be insufficient, or the individual ~~or individuals have~~ has failed or refused to comply voluntarily with the control measures directed by the commissioner in response to a communicable disease of public health threat; and

3. Isolation is the necessary means to contain a communicable disease of public health threat, to ensure that such isolated individual ~~or individuals receive~~ receives appropriate medical treatment subject to the provisions of § 32.1-44 of the Code of Virginia, or to protect health care providers and others who may come into contact with such an infected individual ~~or individuals~~.

The commissioner, in his sole discretion, may also order the isolation of an affected area if, in addition to the above, the Governor has declared a state of emergency for such affected area of the Commonwealth.

B. Documentation. For isolation for a communicable disease of public health threat, information about the infection or suspected infection, the individual~~, individuals, and/or~~ or affected area, and the nature or suspected nature of the exposure shall be duly recorded by the local health department in consultation with the Office of Epidemiology. This information shall be sufficient to enable documenting a record of findings and to enable the commissioner to prepare the order of isolation, including the information required in § 32.1-48.12 of the Code of Virginia. In addition, sufficient information on individuals shall be maintained by the local health department to enable appropriate follow-up of individuals for health status evaluation and treatment as well as compliance with the order of isolation.

The commissioner shall ensure that the protected health information of any individual ~~or individuals~~ subject to the order of isolation is disclosed only in compliance with state and federal law.

C. Means of isolation. The local health department shall assess the situation, and in consultation with the Office of Epidemiology, identify the least restrictive means of isolation that effectively protects unexposed and susceptible individuals. The place of isolation selected shall allow the most freedom of movement and communication with family members and other contacts without allowing disease transmission to other individuals and shall allow the appropriate level of medical care needed by isolated individuals to the extent practicable. The commissioner, in his sole discretion, may order the isolated individual ~~or individuals~~ to remain in ~~their residences~~ his residence, to remain in another place where ~~they are present~~ he is present, or to report to a place ~~or places~~ designated by the commissioner for the duration of ~~their~~ the individual's isolation.

The commissioner's order of isolation shall be for a duration consistent with the known period of communicability of the communicable disease of public health threat or, if the course of the disease is unknown or uncertain, for a period anticipated as being consistent with the period of communicability of other similar infectious agents. In the situation where an area is under isolation, the duration of isolation shall take into account the transmission characteristics and known or suspected period of communicability.

D. Delivery. The local health department shall deliver the order of isolation, or ensure its delivery by an appropriate party such as a law-enforcement officer or health department employee, to the affected individual ~~or individuals~~ in person to the extent practicable. If, in the opinion of the commissioner, the scope of the notification would exceed the capacity of the local health department to ensure individual notification in a timely manner, then print, radio, television, Internet, ~~and/or~~ or other available means shall be used to inform those affected.

E. Enforcement. ~~Upon finding that there is probable cause to believe that any individual or individuals who are subject to an order of isolation may fail or refuse to comply with such order, the commissioner in his sole discretion may include in the order a requirement that such individual or individuals are to be taken immediately into custody by law enforcement agencies and detained for the duration of the order of isolation or until the commissioner determines that the risk of noncompliance is no longer present.~~ For any individual ~~or individuals~~ identified as, or for whom probable cause exists that ~~he~~ the individual may be, in violation of any order of isolation, or for whom probable cause exists that ~~he~~ the individual may fail or refuse to comply with any such order, the enforcement authority directed by the commissioner to law-enforcement agencies shall include ~~but need not be limited to~~ the power to detain or arrest.

Any individual ~~or individuals~~ so detained shall be held in the least restrictive environment that can provide any required health care or other services for such individual. The commissioner shall ensure that law-enforcement personnel responsible for enforcing an order ~~or orders~~ of isolation are informed of appropriate measures to take to protect themselves from contracting the disease of public health threat.

F. Health status monitoring. The local health department shall monitor the health of those under isolation either by regular telephone calls, visits, self-reports, or by reports of caregivers or ~~healthcare~~ health care providers or by other means.

G. Essential needs. Upon issuance of an order of isolation to an individual ~~or individuals~~ by the commissioner, the local health department shall manage the isolation, in conjunction with local emergency management resources, such that individual essential needs can be met to the extent practicable. Upon issuance of an order of isolation by the commissioner for an affected area, existing emergency protocols pursuant to Chapter 3.2 (§ 44-146.13 et seq.) of Title 44 of the Code of Virginia shall be utilized for mobilizing appropriate resources to ensure essential needs are met.

H. Appeals. Any individual ~~or individuals~~ subject to an order of isolation or a court-ordered confirmation or extension of any such order may file an appeal of the order of isolation in accordance with the provisions of § 32.1-48.13 of the Code of Virginia. An appeal shall not stay any order of isolation.

I. Release from isolation. Once the commissioner determines that an individual ~~or individuals~~ no longer ~~pose~~ poses a threat to the public health, the order of isolation has expired, or the order of isolation has been vacated by the court, the individual ~~or individuals~~ under the order of isolation shall be released immediately. If the risk of an infected individual transmitting the communicable disease of public health threat to other individuals continues to exist, an order of isolation may be developed to extend the restriction prior to release from isolation.

J. Affected area. If the criteria in subsection A of this section are met and an area is known or suspected to have been affected, then the commissioner shall notify the Governor of the situation and the need to order isolation for the affected area during the known or suspected time of exposure. In order for an affected area to be isolated, the Governor must declare a state of emergency for the affected area.

If an order of isolation is issued for an affected area during the known or suspected time of exposure, the commissioner

shall cause the order of isolation to be communicated to the individuals residing or located in the affected area. The use of multiple forms of communication, including ~~but not limited to~~ radio, television, internet, ~~and/or~~ or other available means, may be required in order to reach the individuals who were in the affected area during the known or suspected time of exposure.

The provisions for documentation, means of isolation, enforcement, health status monitoring, essential needs, and release from isolation described above will apply to the isolation of affected areas. Appropriate management of a disease of public health threat for an affected area may require the coordinated use of local, regional, state, and national resources. In specifying one or more affected areas to be placed under isolation, the objective will be to protect as many people as possible using the least restrictive means. As a result, defining the precise boundaries and time frame of the exposure may not be possible, or may change as additional information becomes available. When this occurs, the commissioner shall ensure that the description of the affected area is in congruence with the Governor's declaration of emergency and shall ensure that the latest information is communicated to those in or exposed to the affected area.

12VAC5-90-107. Quarantine.

A. Application. The commissioner, in his sole discretion, may invoke the provisions of Article 3.02 (§ 32.1-48.05 et seq.) of Chapter 2 of Title 32.1 of the Code of Virginia and may order a complete or modified quarantine of any individual ~~or individuals~~ upon a determination that:

1. Such individual ~~or individuals are~~ is known to have been exposed to or ~~are~~ is reasonably suspected to have been exposed to a communicable disease of public health threat;

2. Exceptional circumstances render the procedures of Article 3.01 (§ 32.1-48.01 et seq.) of Chapter 2 of Title 32.1 of the Code of Virginia to be insufficient, or the individual ~~or individuals have~~ has failed or refused to comply voluntarily with the control measures directed by the commissioner in response to a communicable disease of public health threat; and

3. Quarantine is the necessary means to contain a communicable disease of public health threat to which an individual ~~or individuals have~~ has been or may have been exposed and thus may become infected.

The commissioner, in his sole discretion, may also order the quarantine of an affected area if, in addition to the above, the Governor has declared a state of emergency for such affected area of the Commonwealth.

B. Documentation. For quarantine for a communicable disease of public health threat, information about the infection or suspected infection; the individual~~, individuals, and/or~~ or affected area; and the nature or suspected nature of the exposure shall be duly recorded by the local health department, in consultation with the Office of Epidemiology. This information shall be sufficient to enable documenting a record of findings and enable the commissioner to prepare a written order of quarantine, including the information required in § 32.1-48.09 of the Code of Virginia. In addition, sufficient information on individuals shall be maintained by the local health department to enable appropriate follow-up of individuals for health status evaluation and treatment as well as compliance with the order of quarantine.

The commissioner shall ensure that the protected health information of any individual ~~or individuals~~ subject to the order of quarantine is disclosed only in compliance with state and federal law.

C. Means of quarantine. The local health department shall assess the situation, and in consultation with the Office of Epidemiology, shall recommend to the commissioner the least restrictive means of quarantine that effectively protects unexposed and susceptible individuals. The place of quarantine selected shall allow the most freedom of movement and communication with family members and other contacts without allowing disease transmission to others.

The commissioner, in his sole discretion, may order the quarantined individual ~~or individuals~~ to remain in ~~their residences~~ his residence, to remain in another place where ~~they are~~ the individual is present, or to report to a place ~~or places~~ designated by the commissioner for the duration of ~~their~~ his quarantine.

The commissioner's order of quarantine shall be for a duration consistent with the known incubation period of the communicable disease of public health threat or, if the incubation period is unknown or uncertain, for a period anticipated as being consistent with the incubation period for other similar infectious agents. In the situation where an area is under quarantine, the duration of quarantine shall take into account the transmission characteristics and known or suspected incubation period.

D. Delivery. The local health department shall deliver the order of quarantine, or ensure its delivery by an appropriate party such as a law-enforcement officer or health department employee, to the affected individual ~~or individuals~~ in person to the extent practicable. If, in the opinion of the commissioner, the scope of the notification would exceed the capacity of the local health department to ensure notification in a timely manner, then print, radio, television, Internet, ~~and/or~~ or other available means shall be used to inform those affected.

E. Enforcement. ~~Upon finding that there is probable cause to believe that any individual or individuals who are subject to an order of quarantine may fail or refuse to comply with such order, the commissioner in his sole discretion may include in~~

~~the order a requirement that such individual or individuals are to be taken immediately into custody by law enforcement agencies and detained for the duration of the order of quarantine or until the commissioner determines that the risk of and from noncompliance is no longer present.~~ For any individual ~~or individuals~~ identified as, or for whom probable cause exists that he may be, in violation of any order of quarantine, or for whom probable cause exists that he may fail or refuse to comply with any such order, the enforcement authority directed by the commissioner to law-enforcement agencies shall include ~~but need not be limited to~~ the power to detain or arrest.

Any individual ~~or individuals~~ so detained shall be held in the least restrictive environment that can provide any required health care or other services for such individual. The commissioner shall ensure that law-enforcement personnel responsible for enforcing an order ~~or orders~~ of quarantine are informed of appropriate measures to take to protect themselves from contracting the disease of public health threat.

F. Health status monitoring. The local health department shall monitor the health of those under quarantine either by regular telephone calls, visits, self-reports, or by reports of caregivers or ~~healthcare~~ health care providers or by other means. If an individual ~~or individuals develop~~ develops symptoms compatible with the communicable disease of public health threat, then 12VAC5-90-103 would apply to the individual ~~or individuals~~.

G. Essential needs. Upon issuance of an order of quarantine to an individual ~~or individuals~~ by the commissioner, the local health department shall manage the quarantine, in conjunction with local emergency management resources, such that individual essential needs can be met to the extent practicable. Upon issuance of an order of quarantine by the commissioner for an affected area, existing emergency protocols pursuant to Chapter 3.2 (§ 44-146.13 et seq.) of Title 44 of the Code of Virginia shall be utilized for mobilizing appropriate resources to ensure essential needs are met.

H. Appeals. Any individual ~~or individuals~~ subject to an order of quarantine or a court-ordered confirmation or extension of any such order may file an appeal of the order of quarantine in accordance with the provisions of § 32.1-48.10 of the Code of Virginia. An appeal shall not stay any order of quarantine.

I. Release from quarantine. Once the commissioner determines that an individual ~~or individuals are~~ is no longer at risk of becoming infected and ~~pose~~ poses no risk of transmitting the communicable disease of public health threat to other individuals, the order of quarantine has expired, or the order of quarantine has been vacated by the court, the ~~individuals~~ individual under the order of quarantine shall be released immediately. If the risk of an individual becoming infected and transmitting the communicable disease of public health threat to other individuals continues to exist, an order of quarantine may be developed to extend the restriction prior to release from quarantine.

J. Affected area. If the criteria in subsection A of this section are met and an area is known or suspected to have been affected, then the commissioner shall notify the Governor of the situation and the need to order quarantine for the affected area. In order for an affected area to be quarantined, the Governor must declare a state of emergency for the affected area.

If an order of quarantine is issued for an affected area, the commissioner shall cause the order of quarantine to be communicated to the individuals residing or located in the affected area. The use of multiple forms of communication, including ~~but not limited to~~ radio, television, Internet, ~~and/or~~ or other available means, may be required in order to reach the individuals who were in the affected area during the known or suspected time of exposure.

The provisions for documentation, means of quarantine, enforcement, health status monitoring, essential needs, and release from quarantine described above will apply to the quarantine of affected areas. Appropriate management of a disease of public health threat for an affected area may require the coordinated use of local, regional, state, and national resources. In specifying one or more affected areas to be placed under quarantine, the objective will be to protect as many people as possible using the least restrictive means. As a result, defining the precise boundaries and time frame of the exposure may not be possible, or may change as additional information becomes available. When this occurs, the commissioner shall ensure that the description of the affected area is in congruence with the Governor's declaration of emergency and shall ensure that the latest information is communicated to those in or exposed to the affected area.

Part VII
Prevention of Blindness from Ophthalmia Neonatorum

12VAC5-90-140. Procedure for preventing ophthalmia neonatorum.

The physician, nurse, or midwife in charge of the infant's care after delivery of a baby shall ensure that ~~one of the following is administered in each eye of that newborn baby as soon as possible after birth: (i) two drops of a 1.0% silver nitrate solution; (ii) a 1-cm ribbon of 1.0% tetracycline ophthalmic ointment; or (iii)~~ a 1-cm ribbon of 0.5% erythromycin ophthalmic ointment is administered in each eye of that newborn baby as soon as possible. This treatment shall be recorded in the medical record of the infant.

Part X
Protocol for Identification of Children with Elevated Blood Lead Levels

12VAC5-90-215. Schedule and criteria for and confirmation of blood lead testing and information to be provided.

A. Schedule for testing. Every child shall be tested to determine the blood lead level at 12 months and 24 months of age if the health care provider determines that the child meets any of the criteria listed in subsection B of this section. Children 25 months through 72 months of age who present for medical care and meet any of criteria of subsection B of this section shall also be tested if they have either not previously been tested for blood lead level or were previously tested but experienced a change since testing that has resulted in an increased risk of lead exposure based on the criteria listed in subsection B of this section.

B. Criteria for testing.

1. The child is eligible for or receiving benefits from Medicaid or the Special Supplemental Nutrition Program for Women, Infants and Children (WIC);

2. The child is living in or regularly visiting a house, apartment, dwelling, structure, or child care facility built before ~~1960~~ 1950;

3. The child is living in or regularly visiting a house, apartment, dwelling, structure, or child care facility built before 1978 that has(i)peeling or chipping paint or (ii)recent (within the last six months) ongoing or planned renovations;

4. The child is living in or regularly visiting a house, apartment, dwelling, or other structure in which one or more persons have blood lead testing yielding evidence of lead exposure;

5. The child is living with an adult whose job, hobby, or other activity involves exposure to lead;

6. The child is living near an active lead smelter, battery recycling plant, or other industry likely to release lead;

7. The child's parent, guardian, or other person standing in loco parentis requests the child's blood be tested due to any suspected exposure; or

8. The child is a recent refugee or immigrant or is adopted from outside of the United States.

C. Exceptions. A child who does not meet any of the schedule or criteria provided in subsection A or B of this section is considered to be at low risk, and testing is not required but may be conducted at the discretion of the health care provider. The testing requirement shall be waived if the parent, guardian, or other person standing in loco parentis of a child objects to the testing on the basis that the procedure conflicts with his religious tenets or practices.

D. Confirmation of blood lead levels. Blood lead level testing shall be performed on venous or capillary blood. Tests of venous blood performed by a laboratory certified by the federal Centers for Medicare ~~&~~ and Medicaid Services in accordance with 42 USC § 263a, the Clinical Laboratory Improvement Amendment of 1988 (CLIA-certified), are considered confirmatory. Tests of venous blood performed by any other laboratory and tests of capillary blood shall be confirmed by a repeat blood test, preferably venous, performed by a CLIA-certified laboratory. Such confirmatory testing shall be performed in accordance with the following schedule:

1. Confirmatory testing is not required if the result of the capillary test is below CDC's reference value.

~~1.~~ 2. Within one to three months if the result of the capillary test is at or above the CDC's reference value and up to 9 micrograms of lead per deciliter of whole blood (µg/dL).

~~2.~~ 3. Within one week to one month if the result of the capillary test is 10-44 µg/dL. The higher this test result, the more urgent the need for a confirmatory test.

~~3.~~ 4. Within 48 hours if the result of the capillary test is 45-59 µg/dL.

~~4.~~ 5. Within 24 hours if the result of the capillary test is 60-69 µg/dL.

~~5.~~ 6. Immediately as an emergency laboratory test if the result of the capillary test is 70 µg/dL or higher.

E. Information to be provided. As part of regular well-check visits for all children, the health care provider shall make available to parents, guardians, or other persons standing in loco parentis information on the dangers of lead poisoning, potential sources of lead and ways to prevent exposure, and a list of available lead-related resources. When blood lead level testing is performed, the health care provider shall share the child's blood lead level test result with the child's parent, guardian, or other person standing in loco parentis and report to the local health department in accordance with the requirements of 12VAC5-90-80.

Part XI
Tuberculosis Control

12VAC5-90-225. Additional data to be reported related to persons with active tuberculosis disease (confirmed or suspected).

A. Physicians and directors of medical care facilities are required to submit all of the following:

1. An initial report to be completed when there are reasonable grounds to suspect that a person has active TB

disease, but no later than when antituberculosis drug therapy is initiated. The reports must include the following: the affected person's name; age; date of birth; gender; address; pertinent clinical, radiographic, microbiologic and pathologic reports, whether pending or final; such other information as may be needed to locate the patient for follow-up; and name, address, and telephone number of the treating physician.

2. A secondary report to be completed simultaneously or within one to two weeks following the initial report. The report must include~~:~~ (i) the date, method, and results of ~~tuberculin skin test (TST)~~ tests for tuberculosis infection; (ii) the date and results of the initial and any follow-up chest radiographs; (iii) the dates and results of bacteriologic or pathologic testing, the antituberculosis drug regimen, including names of the drugs, dosages and frequencies of administration, and start date; (iv) the date and results of drug susceptibility testing; (v) HIV status; (vi) contact screening information; and (vii) name, address, and telephone number of treating physician.

3. Subsequent reports are to be made when updated information is available. Subsequent reports are required when~~:~~ clinical status changes, the treatment regimen changes; treatment ceases for any reason; or there are any updates to laboratory results, treatment adherence, name, address, and telephone number of current provider, patient location or contact information, or other additional clinical information.

4. Physicians ~~and/or~~ or directors of medical care facilities responsible for the care of a patient with active tuberculosis disease are required to develop and maintain a written treatment plan. This plan must be in place no later than the time when antituberculosis drug therapy is initiated. Patient adherence to this treatment plan must be documented. The treatment plan and adherence record are subject to review by the local health director or his designee at any time during the course of treatment.

5. The treatment plan for the following categories of patients must be submitted to the local health director or his designee for approval no later than the time when antituberculosis drug therapy is started or modified:

a. For individuals who are inpatients or incarcerated, the responsible provider or facility must submit the treatment plan for approval prior to discharge or transfer.

b. Individuals, whether inpatient, incarcerated, or outpatient, who also have one of the following conditions:

(1) HIV infection.

(2) Known or suspected active TB disease resistant to rifampin, rifabutin, rifapentine or other rifamycin with or without resistance to any other drug.

(3) A history of prior treated or untreated active TB disease, or a history of relapsed active TB disease.

(4) A demonstrated history of nonadherence to any medical treatment regimen.

B. Laboratories are required to submit the following:

1. Results of smears that are positive for acid fast bacilli.

2. Results of cultures positive for any member of the Mycobacterium tuberculosis complex ~~(i.e., M. tuberculosis, M. bovis, M. africanum)~~ or any other mycobacteria.

3. Results of rapid methodologies, including acid hybridization or nucleic acid amplification, which are indicative of M. tuberculosis complex or any other mycobacteria.

4. Results of tests for antimicrobial susceptibility performed on cultures positive for ~~tubercle bacilli~~ M. tuberculosis complex.

5. Results of tests for tuberculosis infection.

~~5.~~ 6. Laboratories, whether testing is done in-house or referred to an out-of-state laboratory, shall submit a representative and viable sample of the initial culture positive for any member of the M. tuberculosis complex to the Virginia Division of Consolidated Laboratory Services or other laboratory designated by the board to receive such specimen.

Part XIII
Reporting of Dangerous Microbes and Pathogens

12VAC5-90-280. Reporting of dangerous microbes and pathogens.

A. Definitions. The following ~~words and terms~~ term when used in this part shall have the following ~~meanings~~ meaning unless the context clearly indicates otherwise:

~~"Biologic agent" means any microorganism (including, but not limited to, bacteria, viruses, fungi, rickettsiae, or protozoa), or infectious substance, or any naturally occurring, bioengineered, or synthesized component of any such microorganism or infectious substance, capable of causing death, disease, or other biological malfunction in a human, an animal, a plant, or other living organism; deterioration of food, water, equipment, supplies, or material of any kind; or deleterious alteration of the environment.~~

~~"CDC" means the Centers for Disease Control and Prevention of the U.S. Department of Health and Human Services.~~

~~"Diagnosis" means the analysis of specimens for the purpose of identifying or confirming the presence or characteristics of a select agent or toxin, provided that such analysis is directly related to protecting the public health or safety.~~

~~"Proficiency testing" means a sponsored, time-limited analytical trial whereby one or more analytes, previously confirmed by the sponsor, are submitted to the testing laboratory for analysis and where final results are graded, scores are recorded and provided to participants, and scores for participants are evaluated.~~

~~"Responsible official" means any person in charge of directing or supervising a laboratory conducting business in the Commonwealth of Virginia. At colleges and universities, the responsible official shall be the president of the college or university or his designee. At private, state, or federal organizations, the responsible official shall be the laboratory director or a chief officer of the organization or his designee.~~

"Select agent or toxin" or "select agent and toxin" means all those biological agents or toxins as defined by federal regulations in 42 CFR Part 73, including Health and Human Services select agents and toxins and overlap select agents and toxins. "Dangerous microbes and pathogens" will be known as "select agents and toxins."

~~"Toxin" means the toxic material or product of plants, animals, microorganisms (including but not limited to bacteria, viruses, fungi, rickettsiae, or protozoa); or infectious substances; or a recombinant or synthesized molecule, whatever the origin and method of production; and includes any poisonous substance or biological product that may be engineered as a result of biotechnology or produced by a living organism; or any poisonous isomer or biological product, homolog, or derivative of such a substance.~~

~~"Verification" means the process required to assure the accuracy, precision, and the analytical sensitivity and specificity of any procedure used for diagnosis.~~

~~B. Administration. The dangerous microbes and pathogens will be known as "select agents and toxins." The select agent and toxin registry will be maintained by the Virginia Department of Health, Office of Epidemiology, Division of Surveillance and Investigation.~~

~~C. Reportable agents. The board declares the select agents and toxins and overlap select agents and toxins outlined in 42 CFR Part 73 to be reportable and adopts it herein by reference including subsequent amendments and editions. The select agents and toxins are to be reportable by the persons enumerated in subsection F of this section.~~

~~D.~~ B. Items to report. Each report shall ~~be made on a form determined by the department and shall~~ contain the following: name, source, and characterization information on select agents and toxins and quantities held; ~~objectives of the work with the agent; location (including building and room) where each select agent or toxin is stored or used; identification information of persons with access to each agent; identification information of the person in charge of each of the agents;~~ and the name and address of the laboratory and the name, position, and identification information of one responsible official as a single point of contact for the organization. ~~The report shall also indicate whether the laboratory is registered with the CDC Select Agent Program and may contain additional information as required by 42 CFR Part 73 or the department.~~

~~E.~~ C. Timing of reports. ~~Reports shall be made to the department within seven calendar days of submission of an application to the CDC Select Agent Program.~~ By January 31 of every year, ~~laboratories~~ the responsible official at a laboratory as designated by the federal select agent program shall provide a written update to the ~~department, which shall include a copy of the federal registration certificate received through the CDC Select Agent Program~~ Division of Surveillance and Investigation in the VDH Office of Epidemiology containing the information specified in subsection B of this section.

~~In the event that a select agent or toxin that has previously been reported to the department is destroyed, a copy of federal forms addressing the destruction of the select agent or toxin must be submitted to the department within seven calendar days of submission to the CDC Select Agent Program.~~

~~In the event that a select agent or toxin, or a specimen or isolate from a specimen containing a select agent or toxin, has previously been reported to the department and is subsequently transferred to a facility eligible for receiving the items, a copy of federal forms addressing the transfer of the select agent or toxin must be submitted to the department within seven calendar days of submission to the CDC Select Agent Program.~~

In the event of a suspected release, loss, or theft of any select agent or toxin, the responsible official at a laboratory as designated by the federal select agent program shall make a report to the department immediately by the most rapid means available, preferably by telephone. The report shall be submitted to the Division of Surveillance and Investigation in the VDH Office of Epidemiology. The rapid report shall be followed up by a written report within seven calendar days and shall include the following information:

1. The name of the biologic agent and any identifying information (e.g., strain or other characterization information);

2. An estimate of the quantity released, lost, or stolen;

3. An estimate of the time during which the release, loss, or theft occurred; and

4. The location (building, room) from or in which the release, loss, or theft occurred. The report may contain additional information as required by 42 CFR Part 73 or the department.

If a release has occurred, the report shall also include the nature, environment, and location of the release; number,

names, and position of exposed individuals; and actions taken as a result of the release.

~~The department shall be notified in writing of any change to information previously submitted to the department. If a new application or an amendment to an existing application is filed with the CDC Select Agent Program, a copy of the application or amendment shall be submitted to the department within seven calendar days of submission to the CDC Select Agent Program.~~

~~F. Those required to report. The laboratory director shall be responsible for annual reporting of select agents and toxins to the Virginia Department of Health and for the reporting of any changes within the time periods as specified within these regulations. Such reports shall be made on forms to be determined by the department. Any person making such reports as authorized herein shall be immune from liability as provided by § 32.1-38 of the Code of Virginia.~~

~~G. Exemption from reporting. A person who detects a select agent or toxin for the purpose of diagnosing a disease, verification, or proficiency testing and either transfers the specimens or isolates containing the select agent or toxin to a facility eligible for receiving them or destroys them on site is not required to make a report except as required by 12VAC5-90-80 and 12VAC5-90-90. Proper destruction of the agent shall take place through autoclaving, incineration, or by a sterilization or neutralization process sufficient to cause inactivation. The transfer or destruction shall occur within seven calendar days after identification of a select agent or toxin used for diagnosis or testing and within 90 calendar days after receipt for proficiency testing.~~

~~Any additional exemptions from reporting under 42 CFR Part 73, including subsequent amendments and editions, are also exempt from reporting under this regulation; however, the department shall be notified of the exemption by submitting a copy of federal forms addressing the exemption within seven calendar days of submission to the CDC Select Agent Program.~~

~~H.~~ D. Release of reported information. Reports submitted to the select agent and toxin registry shall be confidential and shall not be a public record pursuant to the Freedom of Information Act, regardless of submitter. Release of information on select agents or toxins shall be made only by order of the State Health Commissioner to the CDC and state and federal law-enforcement agencies in any investigation involving the release, theft, or loss of a select agent or toxin required to be reported to the department under this regulation. Any person making such reports as authorized in 12VAC5-90-90 shall be immune from liability as provided by § 32.1-38 of the Code of Virginia.

Part XIV
Reporting of Healthcare-Associated Infections

12VAC5-90-370. Reporting of healthcare-associated infections.

A. Reportable infections. ~~Facilities~~ Health care facilities that report data into the Centers for Disease Control and Prevention's National Healthcare Safety Network (NHSN) ~~for~~ as a requirement of the Centers for Medicare and Medicaid Services ~~Hospital Inpatient Quality Reporting Program~~ shall share the data, through the NHSN, with the department.

B. Liability protection and data release. Any person making such report as authorized herein shall be immune from liability as provided by § 32.1-38 of the Code of Virginia. Infection rate data may be released to the public by the department upon request. Data shall be aggregated to ensure that no individual patient may be identified.

FORMS (12VAC5-90)

~~Confidential Morbidity Report, Epi-1 (rev. 10/2011)~~

~~Virginia Cancer Registry Reporting Form (rev. 1/1998)~~

VA.R. Doc. No. R20-5357; Filed October 9, 2019, 2:52 p.m.

Forms

REGISTRAR'S NOTICE: Forms used in administering the regulation have been filed by the agency. The forms are not being published; however, online users of this issue of the Virginia Register of Regulations may click on the name of a form with a hyperlink to access it. The forms are also available from the agency contact or may be viewed at the Office of the Registrar of Regulations, 900 East Main Street, 11th Floor, Richmond, Virginia 23219.

Title of Regulation: **12VAC5-408. Certificate of Quality Assurance of Managed Care Health Insurance Plan Licensees.**

Contact Information: Rebekah Allen, Senior Policy Analyst, Office of Licensure and Certification, Virginia Department of Health, 9960 Mayland Drive, Suite 401, Richmond, VA 23233, telephone (804) 367-2157, or email rebekah.allen@vdh.virginia.gov.

FORMS (12VAC5-408)

~~Application for Certificate of Quality Assurance – Managed Care Health Insurance Plan Licensee (eff. 12/99).~~

Application for Certificate of Quality Assurance, OLC-4210-F (eff. 11/2019)

VA.R. Doc. No. R20-6162; Filed October 9, 2019, 4:30 p.m.

Proposed Regulation

Title of Regulation: **12VAC5-590. Waterworks Regulations (amending 12VAC5-590-10, 12VAC5-590-40, 12VAC5-590-50, 12VAC5-590-70, 12VAC5-590-100 through 12VAC5-590-150, 12VAC5-590-190 through 12VAC5-590-270, 12VAC5-590-290 through 12VAC5-590-392, 12VAC5-590-405, 12VAC5-590-421, 12VAC5-590-430, 12VAC5-590-440, 12VAC5-590-450, 12VAC5-590-470 through 12VAC5-590-580, 12VAC5-590-600, 12VAC5-590-610, 12VAC5-590-630, 12VAC5-590-640, 12VAC5-590-660, 12VAC5-590-670, 12VAC5-590-680, 12VAC5-590-700, 12VAC5-590-720, 12VAC5-590-730, 12VAC5-590-760, 12VAC5-590-770, 12VAC5-590-790, 12VAC5-590-810, 12VAC5-590-820, 12VAC5-590-840, 12VAC5-590-850, 12VAC5-590-860, 12VAC5-590-880, 12VAC5-590-900 through 12VAC5-590-960, 12VAC5-590-990 through 12VAC5-590-1020, 12VAC5-590-1040, 12VAC5-590-1050, 12VAC5-590-1080, 12VAC5-590-1090, 12VAC5-590-1110 through 12VAC5-590-1180, 12VAC5-590-1210, 12VAC5-590-1220, 12VAC5-590-1230; adding 12VAC5-590-35, 12VAC5-590-45, 12VAC5-590-55, 12VAC5-590-115, 12VAC5-590-372, 12VAC5-590-373, 12VAC5-590-374, 12VAC5-590-376, 12VAC5-590-377, 12VAC5-590-378, 12VAC5-590-382, 12VAC5-590-383, 12VAC5-590-384, 12VAC5-590-388, 12VAC5-590-391, 12VAC5-590-395, 12VAC5-590-401, 12VAC5-590-411, 12VAC5-590-415, 12VAC5-590-461, 12VAC5-590-475, 12VAC5-590-476, 12VAC5-590-515, 12VAC5-590-531, 12VAC5-590-532, 12VAC5-590-546, 12VAC5-590-565, 12VAC5-590-725, 12VAC5-590-865, 12VAC5-590-871 through 12VAC5-590-875, 12VAC5-590-881, 12VAC5-590-882, 12VAC5-590-883, 12VAC5-590-895, 12VAC5-590-975, 12VAC5-590-985, 12VAC5-590-1001 through 12VAC5-590-1005, 12VAC5-590-1065, 12VAC5-590-1081, 12VAC5-590-1082, 12VAC5-590-1235; repealing 12VAC5-590-20, 12VAC5-590-30, 12VAC5-590-60, 12VAC5-590-80, 12VAC5-590-160, 12VAC5-590-170, 12VAC5-590-180, 12VAC5-590-280, 12VAC5-590-400, 12VAC5-590-410, 12VAC5-590-420, 12VAC5-590-425, 12VAC5-590-460, 12VAC5-590-590, 12VAC5-590-620, 12VAC5-590-650, 12VAC5-590-690, 12VAC5-590-710, 12VAC5-590-740, 12VAC5-590-750, 12VAC5-590-780, 12VAC5-590-800, 12VAC5-590-870, 12VAC5-590-890, 12VAC5-590-970, 12VAC5-590-980, 12VAC5-590-1030, 12VAC5-590-1060, 12VAC5-590-1070, 12VAC5-590-1100, 12VAC5-590-1190, 12VAC5-590-1200, 12VAC5-590-1240 through 12VAC5-590-1280, Appendices A through E, Appendix G, Appendix I, Appendix L through P).**

Statutory Authority: §§ 32.1-12 and 32.1-170 of the Code of Virginia.

Public Hearing Information: No public hearings are scheduled.

Public Comment Deadline: January 10, 2020.

Agency Contact: Dwayne Roadcap, Office Director, Office of Drinking Water, Virginia Department of Health, 109 Governor Street, Richmond, VA 23219, telephone (804) 864-7522, or email dwayne.roadcap@vdh.virginia.gov.

Basis: Section 32.1-169 of the Code of Virginia provides that the State Board of Health shall have general supervision and control over all water supplies and waterworks in the Commonwealth insofar as the bacteriological, chemical, radiological, and physical quality of waters furnished for human consumption may affect the public health and welfare and may require that all water supplies be pure water. In exercising such supervision and control, the board shall recognize the relationship between an owner's financial, technical, managerial, and operational capabilities and capacity to comply with state and federal drinking water standards.

Section 32.1-170 of the Code of Virginia authorizes the board to promulgate regulations to govern waterworks, water supplies, and pure water to protect the public health and promote the public welfare. Sections 32.1-167 and 32.1-168 and §§ 32.1-171 through 32.1-176 of the Code of Virginia provide additional details regarding the board's authority and responsibilities for regulating waterworks in Virginia.

Purpose: The purpose of this action is to amend the Waterworks Regulations to update and clarify the requirements for waterworks. The proposed amendments will provide the requirements necessary for waterworks to protect public health, safety, and welfare by supplying safe drinking water to Virginians.

The State Board of Health promulgated the Waterworks Regulations in 1991 and significantly amended them in 1993. Since 1993, sections of the Waterworks Regulations, primarily the definitions (12VAC5-590-10) and Part II (12VAC5-590-340 et seq.), have been amended to incorporate federal requirements in the Safe Drinking Water Act (42 USC § 300f et seq.) and National Primary Drinking Water Regulations (40 CFR Parts 141, 142, and 143). The Virginia Department of Health (VDH) completed the most recent amendment in November 2016 to incorporate the requirements in the Revised Total Coliform Rule (40 CFR 141.851 through 141.861) into the Waterworks Regulations. These amendments were necessary for the state to retain primary enforcement responsibility for waterworks in Virginia. From 1993 to the present, the balance of the Waterworks Regulations have remained largely unchanged and as a result have become outdated and inefficient for the regulated community to use.

The VDH Office of Drinking Water, the Waterworks Advisory Committee, and a regulatory advisory panel consisting of waterworks stakeholders collectively recommend that Parts I (12VAC5-590-10 et seq.) and III (12VAC5-590-640 et seq.) of the Waterworks Regulations be updated in the areas of permitting, design, and construction,

and Part II be amended to clarify operating requirements and improve overall readability. As part of the agency's effort to clarify provisions and improve the readability of the Waterworks Regulations, VDH is addressing consistent use of defined terms and technical terms across the entire chapter. The current regulatory action follows these recommendations and also incorporates the following: current water treatment technologies, current monitoring and control technologies, changes to water consumption patterns resulting from shifts in consumer use and water-saving plumbing fixtures, changes to source water quality and availability due to increased water demands, and new state laws and regulations governing source water supply planning and withdrawal.

Substance: The proposed amendments reorganize provisions, add new sections to expand or clarify existing requirements or incorporate new ones, remove obsolete information and duplication, update citations, and correct sentence structure, grammar, spelling, and typographical errors. VDH reviewed and revised technical terms and word use to improve consistency throughout the Waterworks Regulations. No new federal mandates are included. Substantive changes include:

In Part I (General Framework for Waterworks Regulations), proposed amendments (i) revise, add, or delete definitions; (ii) add units of measurement; (iii) add new sections regarding the Waterworks Advisory Committee, the relationship to the Uniform Statewide Building Code, and administrative proceedings and enforcement requirements, all to be more consistent with statute; (iv) clarify and streamline the permit process, including the requirements for obtaining a construction permit; and (v) add requirements and circumstances for issuance of a temporary operation permit.

In Part II (Operation Regulations for Waterworks), proposed amendments (i) consolidate all water quality standards, maximum contaminant levels, action levels, treatment techniques, and maximum disinfectant levels and goals; (ii) revise and clarify the procedure for determining surface water influence of groundwater sources; (iii) reorganize content of five large sections into several smaller sections; (iv) revise and clarify the classification of waterworks, operator requirements, and operator attendance; (v) add new sections for abandoning and reactivating wells; (vi) reorganize operation report content requirements; and (vii) revise and clarify cross-connection control program requirements.

In Part III (Manual of Practice for Waterworks Design), proposed amendments (i) update design water demand and waterworks capacity requirements; (ii) revise and clarify metering, building design, layout, laboratory design, and new source development requirements for groundwater sources, including springs; (iii) clarify well construction requirements and classification; (iv) distinguish and clarify construction, testing, and capacity requirements for wells located in designated groundwater management areas; (iv) revise and clarify water treatment processes by adding new sections for membrane filtration, bag and cartridge filtration, pre-engineered package treatment units, powdered activated carbon, disinfection processes using chloramines, chlorine dioxide, ultraviolet light, and ozone; (v) clarify design requirements for pump stations and equipment; (vi) distinguish atmospheric and pressure storage tank design requirements; (vii) add a new section on water loading stations; and (viii) generally reorganize content into new, smaller sections.

In Part IV (Exceptions for Noncommunity Waterworks) and the appendices, proposed amendments move applicable requirements into Part II or III and repeal.

Issues: The majority of the proposed amendments to the Waterworks Regulations update and clarify existing requirements. In many cases, the changes reflect current practices and technologies for treatment, monitoring, and reporting, which are changes waterworks have already implemented but because the last significant revision was 25 years ago, requirements that have not been incorporated into the Waterworks Regulations. VDH has worked with stakeholder groups to make changes that are both protective of public health and reflect best practices for the regulated community. However, several specific areas upon which the stakeholders, VDH, and the citizens of the Commonwealth may not be in complete agreement exist, including cross-connection control, source water capacity evaluation, operator classification, point-of-use devices, reduced monitoring for bacteriological contaminants at certain transient noncommunity waterworks (TNCs), and the addition of fluoride to drinking water to reduce dental caries.

Community waterworks are required to take measures to reduce the possibility of cross-connections and to prevent backflow, both of which can lead to contamination of drinking water. A number of waterworks owners requested changes to the Waterworks Regulations that reflect their current practices to track and monitor cross-connection and backflow prevention devices, to educate consumers, and conditions that result in greater risk of contamination. An advantage of the proposed amendments is that they are based mostly on input from stakeholders. However, the amendments do not and cannot take into account all stakeholder concerns. VDH believes the amendments clarify requirements for cross-connection control programs and provide a great deal of flexibility for waterworks to meet program requirements, and they are no less protective of public health than the current practices and requirements. While individual waterworks may have issues with the changes, VDH does not view any disadvantages to the changes.

Determination of waterworks source water capacity and how much can be withdrawn is a concern to stakeholders. Waterworks with wells located in a Virginia Groundwater Management Area may be subject to regulation by the

Department of Environmental Quality (DEQ) based on the quantity of water that is withdrawn and require a Groundwater Withdrawal Permit prior to construction. Waterworks with surface water sources may also be subject to regulation by DEQ, depending on the amount the waterworks withdraws and when the withdrawal commenced. 12VC5-590-830 does not reflect VDH practices for evaluating a permit application that involves a surface water withdrawal. However, efforts to reach a consensus among stakeholders about how to revise this section were unsuccessful. Consequently, VDH proposes no amendments to 12VC5-590-830 in this action.

The operator classification and minimum attendance requirements may be an issue for a small subset of waterworks, particularly those with the Class 4, 5, and 6 designations, which are differentiated by the type of treatment provided and by the population served. This change establishes regulatory requirements that VDH has been implementing by policy. Placing the operator classification and attendance requirements in the Waterworks Regulations will give the regulated community a sense of security that the requirements will not be subject to change without going through a rulemaking process. The advantage to the regulatory change is that waterworks will be required to have properly trained and licensed operators, and the operators will have standards for training. For owners, the disadvantage will be the cost to train operators and, in some areas, the difficulty of finding trained, licensed operators. For the agency and the Commonwealth, having qualified operators in responsible charge of waterworks is critical to ensuring that waterworks can consistently and reliably provide drinking water that meets regulatory standards and preserves public health.

VDH will allow point-of-use (POU) or point-of-entry (POE) devices for long-term compliance with primary maximum contaminant level (PMCL); except that POU devices are still prohibited for achieving compliance with microbial contaminant treatment technique requirements. This action will provide waterworks additional flexibility, allowing owners and operators the option to employ POU and POE devices to meet PMCLs.

VDH incorporated the federal Revised Total Coliform Rule into the Waterworks Regulations in 2016. At the time, VDH did not include the option in the rule to reduce the monitoring frequency for bacteriological contaminants at certain TNCs from quarterly to annually. To reduce the burden of collecting and submitting quarterly bacteriological samples at qualified well-operated TNCs, VDH proposes adding this option to the Waterworks Regulations. U.S. Environmental Protection Agency Region 3 determined that the changes to the Waterworks Regulations that are related to reduced monitoring at TNCs are no less stringent than and do not differ materially from the federal rule. For VDH, the change requires the agency to increase its site visit frequency at those TNCs that qualify for reduced monitoring from every three years to every year. However, VDH believes the change will be a benefit for the TNCs that qualify because it will reduce their monitoring costs.

Although the benefits of adding fluoride to drinking water, which does not contain naturally occurring fluoride, to prevent tooth decay are widely accepted in the United States, some individuals and groups strongly oppose the practice. VDH is changing the Waterworks Regulations to clearly state that the State Board of Health recommends that all community waterworks maintain an optimal level of fluoride in drinking water and to require notice to the commissioner and consumers prior to any operational changes that either initiate or permanently stop programs to provide community water fluoridation. The main advantage of these changes is that they align the recommended level of fluoridation with the U.S. Department of Health and Human Resource guidelines and ensure that VDH and the public will be notified about proposed changes in fluoridation before they take effect. Groups who oppose fluoridation may be resistant to any statement in the Waterworks Regulations that the practice is effective or recommended. VDH sees advantages to receiving notice about proposed changes in fluoridation programs and allowing the recommended level, currently 0.7 parts per million, to be established by the U.S. Department of Health and Human Resources.

Department of Planning and Budget's Economic Impact Analysis:

Summary of the Proposed Amendments to Regulation. The State Board of Health (Board) proposes to comprehensively update the Waterworks Regulations.

Result of Analysis. For most proposed amendments, the benefits likely exceed the costs. For one amendment, whether the benefits exceed the costs depend on the policy views of the observer.

Estimated Economic Impact.[2] The regulation establishes requirements and procedures for the issuance of permits, minimum standards for water quality (including requirements for waterworks owners to submit regular analytical results of sampling for biological, chemical, radiological, physical, and other tests), requirements for recordkeeping, reporting, public notice, and consumer confidence reports, requirements for inspections, and criteria for the siting, design, and construction of waterworks. The regulation has not been significantly revised since 1993. Consequently, it contains obsolete language. The Board proposes to eliminate the obsolete language.

Technology and knowledge about best practices have changed over the last 26 years. Reflecting this, the Virginia Department of Health (VDH) has put some requirements and options in guidance documents (sometimes called policy), and has allowed some other activities in practice. The Board proposes to put many of the requirements and options that

have been in guidance documents, or allowed in practice, into the regulation. According to VDH, there have been no problems with compliance to the rules in guidance documents. Thus, adding this language to the regulation would not have a large impact in practice.

The Board also proposes to make numerous changes to improve clarity. Eliminating obsolete language, adding text to reflect requirements and options that have been adhered to and allowed in practice, and amending language to improve clarity all would be beneficial in that there would be reduced likelihood that those affected by the regulation and other interested members of the public misunderstand or are under-informed concerning waterworks requirements and options.

Waterworks Advisory Committee:

The Waterworks Advisory Committee (WAC) is formed by the State Health Commissioner (Commissioner) to provide peer review of the regulatory, policy, and legislative aspects of VDH authorities. Under the current regulation, the WAC is appointed by the Commissioner and consists of thirteen appointed members and three ex officio members, including one individual each from the following:

> … a member of the Virginia Section American Water Works Association; a member of the Virginia Society of Professional Engineers; a member of the Virginia Water Well Association, Inc.; a member of the Consulting Engineers Council; a water treatment plant operator having a valid license of the highest classification in waterworks issued by the State Board for Waterworks and Wastewater Works Operators; a faculty member of a state university or college whose principal field of teaching is Environmental Engineering; a community waterworks owner; a nontransient noncommunity (NTNC) representative; a representative from Virginia Rural Water Association; a representative from Virginia Water Projects, Inc.; a representative from the Virginia Municipal League; a representative from the Virginia Association of Counties; and a citizen representative. Ex officio members shall consist of the Director, Office of Water Programs, who shall act as chairman; Director, Division of Water Supply Engineering; and Director, Division of Consolidated Laboratory Services or their designees.

The membership for the WAC under the proposed regulation are the following:

> … industry professionals employed outside the department with longstanding expertise or vested interest in waterworks operations and who represent a diverse group of stakeholders. Members shall be experts in the fields of water treatment technologies, public health, water quality, economics, environmental science, public utilities, community development, or industry regulations. A minimum of nine persons shall be appointed to the committee by the commissioner.

More flexibility is available for membership under the proposed language. According to VDH, some interested qualified individuals have not been able to participate under the current definition. Thus, the proposed amendment would likely be beneficial.

Permits:

Amongst the Board's proposed clarifying changes is new language concerning permit requirements. Though there are no changes to current requirements, VDH believes that the clarifying of these existing requirements may increase participation in the general permit process. A general permit allows the waterworks to review and approve waterline projects in-house or by their contract engineer (on behalf of VDH), which is much simpler and quicker than sending waterline projects to VDH for review and approval. Essentially, the waterworks assumes control of the plan review process by agreement with VDH through a general permit. General permits apply only to waterline extension projects.

VDH estimates that a general permit, as compared to a construction permit, would save a total of 4 hours per project for VDH and 4 hours per project for the waterworks. Assuming an estimated cost of $60 per hour of engineering review for VDH, the agency would save $240 per engineering review. Assuming an estimated cost of $150 per hour for engineering review and engineering services for the waterworks, there would be a savings of $600 per project per year for waterworks. VDH estimates that 5 to 20 additional general permit projects per year could occur with improved regulatory clarifications, resulting in a possible savings of $3,000 to $12,000 per year for the waterworks community and $1,200 to $4,800 per year for the agency.

Monitoring Requirements for Transient Noncommunity Waterworks:

Community waterworks are waterworks that serve at least 15 service connections used by year-round residents or regularly serve at least 25 year-round residents. A noncommunity waterworks is a waterworks that is not a community waterworks but operates at least 60 days out of the year. A nontransient noncommunity waterworks is a waterworks that is not a community waterworks and that regularly serve at least 25 of the same persons over six months out of the year. A transient noncommunity waterworks (TNC) is a noncommunity waterworks that is not a nontransient noncommunity waterworks. A TNC serves at least 25 persons daily for at least 60 days out of the year.

The Board proposes to add provisions to allow qualified, well-operated TNCs to reduce the bacteriological monitoring frequency from quarterly to annually. Allowing qualified well-operated TNCs to reduce the monitoring frequency for

bacteriological contaminants from quarterly to annual would reduce the burden of collecting and submitting bacteriological samples for these waterworks. The savings would be approximately $100 annually for each TNC. Assuming that there is not a significant increase in health risk with the less frequent monitoring, this amendment would likely produce a net benefit.

TNCs are owned by state and local governmental agencies, corporations, small businesses and nonprofit organizations. VDH estimates that 885 of the TNCs are privately owned.

Groundwater under the Direct Influence of Surface Water:

Groundwater under the direct influence of surface water (GUDI) is defined as any water beneath the surface of the ground with (i) significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as Giardia lamblia, or Cryptosporidium or (ii) significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH that closely correlate to climatological or surface water conditions. The regulation requires that all waterworks supplied by surface water or GUDI sources provide both disinfection and filtration.

The regulation requires that a groundwater source utilized by a waterworks, including wells, springs, and infiltration galleries, be evaluated by VDH and that a determination of surface water influence be made by the agency. The waterworks owner must provide to the agency all necessary information to make this determination. In the current regulation, there is a two-step procedure to determine if there is surface water influence. The Board proposes to add a third step to provide greater assurance. If the source has been confirmed to be GUDI at the second step, the third step and its associated cost can be foregone. Groundwater sources determined to be GUDI require significantly more treatment, monitoring, and reporting. Without treatment, water from GUDI sources can be unsafe to drink.

According to VDH, the cost for a Step 3 GUDI evaluation is approximately $7,480. The agency estimates that up to 10 waterworks per year may trigger the Level 3 GUDI evaluation. To the extent that the Step 3 requirement makes a significant difference in detecting and treating unsafe drinking water, the benefits of this proposed amendment likely exceeds the cost.

The owners of the groundwater waterworks could include (but need not be limited to) water authorities, state agencies, county or local governments, corporations, small businesses, and nonprofit organizations. For privately owned entities, VDH estimates that this proposal potentially applies to the 854 TNC, 258 NTNC, and 305 community waterworks.

Fluoride Notification:

Waterworks owners that add fluoride to drinking water are required to provide notice to the Commissioner and consumers if they intend to permanently stop their fluoridation program. They are also required to provide notice if they intend to start a fluoridation program. The Board proposes to require that waterworks owners provide the Commissioner at least 90 days prior written notice of the intent to initiate or discontinue a program to provide the optimum fluoride ion concentration. Whether the benefits exceed the costs for this proposed amendment depend on the policy views of the observer. Not allowing waterworks owners to change their fluoridation policy for at least 90 days after they choose to do so reduces their flexibility to act and go forward with what they believe to be the best decision. On the other hand, it enables greater public participation in the decision-making process.

This proposal affects owners of community waterworks. VDH estimates 317 community waterworks are privately owned.

Treatment Process Selection:

The Board proposes to allow point-of-use (POU) and point-of-entry (POE) water treatment devices in specified circumstances. A POU device is a water treatment device applied to a single tap for the purpose of reducing contaminants in the water at that one tap. A POE device is a water treatment device applied to the water entering a house or building for the purpose of reducing contaminants in the water distributed throughout the house or building. According to VDH, POU and POE devices have proven effective for short-term compliance with water quality standards. Using POU and POE devices in place of centralized treatment can create significant cost savings.

The most likely waterworks to use POUs and POEs would be small noncommunity waterworks. Based on a single POU installation at a small noncommunity waterworks, VDH estimates that capital cost savings of approximately $21,800 per installation and operations and maintenance savings of $600 per year could be achieved in comparison to a central treatment unit. Given that it is believed that these devices are effective in protecting water quality, this amendment should provide a net benefit.

Owners that could take advantage of this alternative include state and local governmental agencies, corporations, small businesses and nonprofit organizations. VDH estimates that this proposal applies to 1,115 privately owned waterworks.

Metering:

The current regulation requires that all waterworks provide metering of total water production. The Board proposes to no longer require metering for noncommunity waterworks with design capacities less than 300,000 gallons per month and

with no treatment. This change would apply only to new waterworks or new sources for existing waterworks to be constructed after the effective date of the amended regulation. The change would allow the owner of a new waterworks or an existing waterworks adding a new source (such as a well) to avoid a cost of approximately $300 for each source.

Businesses and Entities Affected. Proposed amendments particularly affect VDH, the Department of Professional and Occupational Regulation, the Department of Transportation, the Department of Corrections, the Department of Conservation and Recreation, local governments, restaurants, convenience stores, recreation areas, golf courses, day care facilities, schools, and other businesses that own and operate community or noncommunity waterworks, as well as all Virginians in that all drink water.

Localities Particularly Affected. All waterworks using groundwater sources (wells and springs) are required to complete a GUDI evaluation at least once when a source is constructed and possibly in the future if water quality monitoring indicates a potential problem. Localities that own and operate community or noncommunity waterworks that make use of groundwater sources and are required to complete a Level 3 assessment would be particularly affected.

According to VDH, existing wells and springs serving waterworks are located in the following localities: Accomack, Albemarle, Alleghany, Amelia, Amherst, Appomattox, Augusta, Bath, Bedford County, Bland, Botetourt, Brunswick, Buckingham, Campbell, Caroline, Carroll, Charles City, Charlotte, Chesterfield, Clarke, Craig, Culpeper, Cumberland, Dickenson, Dinwiddie, Essex, Fairfax County, Fauquier, Floyd, Fluvanna, Franklin County, Frederick, Giles, Gloucester, Goochland, Grayson, Greene, Greensville, Halifax, Hanover, Henrico, Henry, Highland, Isle of Wight, James City, King and Queen, King George, King William, Lancaster, Loudoun, Louisa, Lunenburg, Madison, Mathews, Mecklenburg, Middlesex, Montgomery, Nelson, New Kent, Northampton, Northumberland, Nottoway, Orange, Page, Patrick, Pittsylvania, Powhatan, Prince Edward, Prince George, Prince William, Pulaski, Rappahannock, Richmond County, Roanoke County, Rockbridge, Rockingham, Russell, Scott, Shenandoah, Smyth, Southampton, Spotsylvania, Stafford, Surry, Sussex, Tazewell, Warren, Washington, Westmoreland, Wise, Wythe, York, Buena Vista City, Chesapeake, Franklin City, Newport News, Norfolk, Portsmouth, Roanoke City, Suffolk, Virginia Beach, Waynesboro, and Williamsburg.

Allowing qualified well-operated TNCs to reduce the monitoring frequency for bacteriological contaminants from quarterly to annually will reduce the burden of collecting and submitting bacteriological samples. This change could reduce the burden for localities that own and operate TNCs that make use of groundwater sources. This could include TNCs at local parks and recreation areas.

Projected Impact on Employment. The proposed amendments are unlikely to significantly affect total employment.

Effects on the Use and Value of Private Property. The proposals to: 1) add provisions to allow qualified, well-operated TNCs to reduce the bacteriological monitoring frequency from quarterly to annually, 2) allow POU and POE water treatment devices in specified circumstances, 3) no longer require metering for noncommunity waterworks with design capacities less than 300,000 gallons per month and with no treatment, and 4) clarify general permit requirements, would likely reduce costs for some privately owned waterworks, potentially altering operations and increasing net value.

The proposal to add a third step in the determination of whether groundwater sources are GUDI would increase costs for small privately owned waterworks. This would increase costs for some privately owned waterworks, potentially altering operations and decreasing net value.

Real Estate Development Costs. The proposed clarifying of existing general permit requirements that is expected to increase participation in the general permit process would reduce waterline extension project costs for about 5 to 20 projects a year.

Small Businesses:

Definition. Pursuant to § 2.2-4007.04 of the Code of Virginia, small business is defined as "a business entity, including its affiliates, that (i) is independently owned and operated and (ii) employs fewer than 500 full-time employees or has gross annual sales of less than $6 million."

Costs and Other Effects. The proposed clarifying of existing general permit requirements that is expected to increase participation in the general permit process may reduce waterline extension project costs for some small privately owned waterworks. The proposals to: 1) add provisions to allow qualified, well-operated TNCs to reduce the bacteriological monitoring frequency from quarterly to annually, 2) allow POU and POE water treatment devices in specified circumstances, and 3) no longer require metering for noncommunity waterworks with design capacities less than 300,000 gallons per month and with no treatment would also likely reduce costs for some small firms.

The proposal to add a third step in the determination of whether groundwater sources are GUDI would increase costs for small privately owned waterworks that are utilizing or plan to utilize a groundwater source that has not already been determined to be GUDI.

Alternative Method that Minimizes Adverse Impact

There are no clear alternative methods that both reduce adverse impact and meet the intended policy goals.

Adverse Impacts:

Businesses. The proposal to add a third step in the determination of whether groundwater sources are GUDI would increase costs for privately owned waterworks that are utilizing or plan to utilize a groundwater source that has not already been determined to be GUDI.

Localities. The proposal to add a third step in the determination of whether groundwater sources are GUDI would increase costs for locality-owned waterworks that are utilizing or plan to utilize a groundwater source that has not already been determined to be GUDI.

Other Entities. The proposal to add a third step in the determination of whether groundwater sources are GUDI would increase costs for waterworks owned by other entities that are utilizing or plan to utilize a groundwater source that has not already been determined to be GUDI.

---

[2]All data are provided by Virginia Department of Health.

Agency's Response to Economic Impact Analysis: The Virginia Department of Health concurs with the findings of the Department of Planning and Budget's economic impact analysis.

Regarding the determination of whether a groundwater source is under the direct influence of surface water (GUDI), VDH estimates that of approximately 100 GUDI determinations that waterworks will complete each year, no more than 10 waterworks will trigger the requirement to proceed to Step 3. VDH concurs with the assessment that the benefits of the Step 3 requirements likely exceed the cost.

Summary:

The proposed amendments reorganize provisions; add new sections to expand or clarify existing requirements or incorporate new ones; remove obsolete information and duplication; update citations; correct sentence structure, grammar, spelling, and typographical errors; and improve consistency.

In Part I (General Framework for Waterworks Regulations), proposed amendments (i) revise, add, or delete definitions; (ii) add units of measurement; (iii) add new sections regarding the Waterworks Advisory Committee, the relationship of the Waterworks Regulations to the Uniform Statewide Building Code, and administrative proceedings and enforcement requirements; (iv) clarify and streamline the permit process, including the requirements for obtaining a construction permit; and (v) add requirements and circumstances for issuance of a temporary operation permit.

In Part II (Operation Regulations for Waterworks), proposed amendments (i) consolidate all water quality standards, maximum contaminant levels, action levels, treatment techniques, and maximum disinfectant levels and goals; (ii) revise and clarify the procedure for determining surface water influence of groundwater sources; (iii) revise and clarify the classification of waterworks, operator requirements, and operator attendance; (iv) add new sections for abandoning and reactivating wells; (v) reorganize operation report content requirements; (vi) revise and clarify cross-connection control program requirements; and (vii) generally reorganize content into smaller sections.

In Part III (Manual of Practice for Waterworks Design), proposed amendments (i) update design water demand and waterworks capacity requirements; (ii) revise and clarify metering, building design, layout, laboratory design, and new source development requirements for groundwater sources, including springs; (iii) clarify well construction requirements and classification; (iv) distinguish and clarify construction, testing, and capacity requirements for wells located in designated groundwater management areas; (iv) revise and clarify water treatment processes by adding new sections for membrane filtration, bag and cartridge filtration, pre-engineered package treatment units, powdered activated carbon, disinfection processes using chloramines, chlorine dioxide, ultraviolet light, and ozone; (v) clarify design requirements for pump stations and equipment; (vi) distinguish atmospheric and pressure storage tank design requirements; (vii) add a new section on water loading stations; and (viii) generally reorganize content into new, smaller sections.

In Part IV (Exceptions for Noncommunity Waterworks) and the appendices, proposed amendments move some requirements into Part II or III of the chapter and repeal Part IV and all appendices.

This action includes no new federal mandates.

Part I
General Framework for Waterworks Regulations

~~Article 1~~
~~Definitions~~

12VAC5-590-10. Definitions and units of measurement.

A. Definitions. As used in this chapter, the following words ~~and,~~ terms, and abbreviations shall have meanings respectively set forth unless the context clearly requires a different meaning:

"Action level" or "AL" means the concentration of lead or copper in water specified in 12VAC5-590-385, which determines, in some cases, the treatment requirements contained in 12VAC5-590-405 that an owner is required to complete.

"Administrative Process Act" or "APA" means Chapter 40 (§ 2.2-4000 et seq.) of Title 2.2 of the Code of Virginia. The APA is the basic law conferring authority on agencies either

to make regulations or case decisions as well as to standardize court review thereof.

"Air gap separation" means the unobstructed vertical distance through the free atmosphere between the lowest ~~opening from any pipe or faucet supplying pure water to a tank, plumbing fixture, or other device and the rim of the receptacle~~ point of the potable water outlet and the flood rim of the receiving vessel.

~~"Annual daily water demand" means the average rate of daily water usage over at least the most recent three year period.~~

"ANSI" means the American National Standards Institute.

"Applied water" means water that is ready for filtration.

~~"Approved" means material, equipment, workmanship, process or method that has been accepted by the commissioner as suitable for the proposed use.~~

"ASME" means the American Society of Mechanical Engineers.

"ASTM" means the American Society for Testing and Materials.

"Auxiliary water system" means any water supply or system on or available to the premises of the consumer other than the waterworks. These ~~auxiliary waters may include water from a source such as wells, lakes, or streams; process fluids; or used water. They~~ may be polluted or contaminated ~~or~~, objectionable, or of questionable quality and constitute an unapproved water ~~source~~ supply or system over which the ~~water purveyor~~ waterworks owner does not have control.

"AWWA" means the American Water Works Association.

"Backflow" means the undesirable reversal of flow of water or mixtures of water and other liquids, ~~mixtures~~ gases, or other substances into ~~the distribution piping of~~ a waterworks ~~from any source or sources other than its intended source~~.

"Backflow elimination method" means the air gap separation or physical disconnection that will eliminate the cross-connection.

"Backflow prevention assembly" means a mechanical unit, designed to stop the reversal of flow that includes an inlet and outlet shutoff valve and test cocks to facilitate testing of the assembly. Backflow prevention assemblies include the reduced pressure principle backflow prevention (RPZ) assembly, the double gate-double check valve assembly, and the pressure vacuum breaker assembly.

"Backflow prevention device" means ~~any approved device, method, or type of construction intended to prevent backflow into a waterworks.~~ a mechanical unit designed to stop the reversal of flow that is not testable because it does not have inlet and outlet shutoff valves or test cocks. A backflow prevention device is not generally designed or constructed to withstand backpressure. A backflow prevention device generally includes the atmospheric type vacuum breakers and the dual check valve type devices.

"Backpressure backflow" means backflow caused by pressure in the downstream piping that is superior to the supply pressure at the point of consideration.

"Backsiphonage" means backflow caused by a reduction in pressure that causes a partial vacuum, creating a siphon effect.

"Bag filters" means pressure-driven separation devices that remove particulate matter larger than one micrometer using an engineered porous filtration media. ~~They~~ Bag filters are typically constructed of a nonrigid, fabric filtration media housed in a pressure vessel in which the direction of flow is from the inside of the bag to outside.

"Bank filtration" means a water treatment process that uses a well to recover surface water that has naturally infiltrated into groundwater through a river bed ~~or bank(s)~~ or bank. Infiltration is typically enhanced by the hydraulic gradient imposed by a nearby pumping water supply or other ~~well(s)~~ well.

"Best available technology" or "BAT" means the best practicable technology, treatment techniques, or other means that the commissioner finds, after examination for efficacy under field conditions and not solely under laboratory conditions ~~and in conformance with applicable EPA regulations~~, that are available (taking cost into consideration).

"Board" means the State Board of Health.

~~"Breakpoint chlorination" means the addition of chlorine to water until the chlorine demand has been satisfied and further additions result in a residual that is directly proportional to the amount added.~~

"Boil water advisory" and "boil water notice" mean a statement that informs consumers that drinking water is or may be contaminated and that the water should be boiled before being used for human consumption.

"BSSP" means a bacteriological sample siting plan.

"CAP" means a corrective action plan.

"Cartridge filters" means pressure-driven separation devices that remove particulate matter larger than one micrometer using an engineered porous filtration media. ~~They~~ Cartridge filters are typically constructed as rigid or semi-rigid, self-supporting filter elements housed in pressure vessels in which flow is from the outside of the cartridge to the inside.

~~"Chlorine" means dry chlorine.~~

~~"Chlorine gas" means dry chlorine in the gaseous state.~~

~~"Chlorine solution (chlorine water)" means a solution of chlorine in water.~~

~~"Chronically noncompliant waterworks" or "CNC" means a waterworks that is unable to provide pure water for any of the following reasons: (i) the waterworks' record of performance demonstrates that it can no longer be depended upon to furnish pure water to the persons served; (ii) the owner has inadequate technical, financial, or managerial capacity to furnish pure water to the people served; (iii) the owner has failed to comply with an order issued by the board or the commissioner; (iv) the owner has abandoned the waterworks and has discontinued supplying pure water to the persons served; or (v) the owner is subject to a forfeiture order pursuant to § 32.1-174.1 of the Code of Virginia.~~

"Case decision" means an agency determination as defined in § 2.2-4001 of the Code of Virginia.

"CCCP" means a cross-connection control program.

"CCR" means consumer confidence report.

"CDC" means the Centers for Disease Control and Prevention.

"CFE" means the combined filter effluent.

"CFR" means the Code of Federal Regulations.

"Clean compliance history" means a record of no PMCL violations for microbiological contaminants, no monitoring violations under 12VAC5-590-370, and no coliform treatment technique trigger exceedances or treatment technique violations under 12VAC5-590-392.

"Coagulation" means a process using coagulant chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into floc.

~~"Coliform bacteria group" means a group of bacteria predominantly inhabiting the intestines of man or animal but also occasionally found elsewhere. It includes all aerobic and facultative anaerobic, gram-negative, non-sporeforming bacilli that ferment lactose with production of gas. Also included are all bacteria that produce a dark, purplish green colony with metallic sheen by the membrane filter technique used for coliform identification.~~

"Combined distribution system" means the interconnected distribution system consisting of the distribution systems of wholesale waterworks and of the consecutive waterworks that receive finished water.

"Commissioner" means the State Health Commissioner, who is the executive officer of the board.

"Community waterworks" means a waterworks that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.

"Compliance cycle" means the nine-year calendar year cycle during which a waterworks shall monitor. Each compliance cycle consists of three three-year compliance periods. The first calendar year cycle ~~begins~~ began January 1, 1993, and ~~ends~~ ended December 31, 2001~~; the second begins January 1, 2002, and ends December 31, 2010; the third begins January 1, 2011, and ends December 31, 2019~~ with subsequent compliance cycles continuing thereafter.

"Compliance period" means a three-year calendar year period within a compliance cycle. Each compliance cycle ~~has~~ consists of three three-year compliance periods. ~~Within the first compliance cycle, the first compliance period runs from January 1, 1993, to December 31, 1995; the second from January 1, 1996, to December 31, 1998; the third from January 1, 1999, to December 31, 2001~~ The first compliance period began January 1, 1993, and ended December 31, 1995, with subsequent compliance periods continuing thereafter.

~~"Comprehensive performance evaluation" or "CPE" means a thorough review and analysis of a treatment plant's performance-based capabilities and associated administrative, operational and maintenance practices. It is conducted to identify factors that may be adversely impacting a plant's capability to achieve compliance and emphasizes approaches that can be implemented without significant capital improvements. For purposes of compliance with 12VAC5-590-530 E 1 b (2), the comprehensive performance evaluation shall consist of at least the following components: assessment of plant performance, evaluation of major unit processes, identification and prioritization of performance limiting factors, assessment of the applicability of comprehensive technical assistance, and preparation of a CPE report.~~

"Comprehensive business plan" means a plan detailing the technical, managerial, and financial (TMF) commitments that the owner will make in order to assure that the waterworks will have the capability to provide water that complies with this chapter over the long term.

"Confirmation sample" means a sample to be collected by the owner within a specified time after the results of the initial sample are known to have exceeded a specified limit or standard in order to validate the initial result and to determine compliance.

"Confluent growth" means a continuous bacterial growth covering the entire filtration area of a membrane filter, or a portion thereof, in which bacterial colonies are not discrete.

"Consecutive waterworks" means a waterworks that ~~has no water production or source facility of its own and that obtains all of its water from another permitted waterworks or~~ receives some or all of its finished water from one or more ~~wholesale~~ waterworks. Consecutive waterworks may provide additional treatment to finished water. Delivery may be through a direct connection or through the distribution system of one or more consecutive waterworks.

"Consolidated" means rock made from sedimentary, igneous, or metamorphic materials that have been metamorphosed or cemented together forming strata or bodies of rock.

"Consumer" means any person ~~who drinks~~ receiving water for human consumption from a waterworks.

"Consumer's water system" means any water system located on the consumer's premises, supplied by or in any manner connected to a waterworks.

"Containment" means the safeguard against backflow into a waterworks from a consumer's water system by installing an appropriate backflow prevention assembly, backflow prevention device, or backflow elimination method at the service connection.

"Contaminant" means any objectionable or hazardous physical, chemical, biological, or radiological substance or matter in water.

"Conventional filtration treatment" means a series of processes including coagulation, flocculation, sedimentation, and filtration resulting in substantial particulate removal.

"Corrosion inhibitor" means a substance capable of reducing the corrosivity of water toward metal plumbing materials, especially lead and copper, by forming a protective film on the interior surface of those materials.

~~"Cross connection"~~ "Cross-connection" means any ~~connection or structural arrangement, direct or indirect, to the waterworks whereby~~ actual or potential link, connection, or physical arrangement, direct or indirect, between used water, an auxiliary water system, or other source of contamination to the waterworks through which backflow can occur.

~~"CT" or "CT_{calc}" means the product of "residual disinfectant concentration" (C) in mg/L determined before or at the first customer, and the corresponding "disinfectant contact time" (T) in minutes (i.e., "C" x "T").~~

~~"Daily fluid intake" means the daily intake of water for drinking and culinary use and is defined as two liters.~~

~~"Dechlorination" means the partial or complete reduction of residual chlorine in water by any chemical or physical process at a waterworks with a treatment facility.~~

~~"Degree of hazard" means the level of health hazard, as derived from an evaluation of the potential risk to health and the adverse effect upon the waterworks.~~

"DBPPs" means disinfection byproduct precursors.

"DBPs" means disinfection byproducts.

"DCLS" means the Virginia Department of General Services, Division of Consolidated Laboratory Services.

"Department" means the Virginia Department of Health.

"DEQ" means the Virginia Department of Environmental Quality.

"Diatomaceous earth filtration" means a process resulting in substantial particulate removal in which (i) a precoat cake of diatomaceous earth filter media is deposited on a support membrane (septum), and (ii) while the water is filtered by passing through the cake on the septum, additional filter media known as body feed is continuously added to the feed water to maintain the permeability of the filter cake.

"Direct filtration" means a series of processes including coagulation and filtration but excluding sedimentation resulting in substantial particulate removal.

"Disinfectant" means any ~~oxidant (including chlorine) that is~~ chemical and physical agents, including chlorine, chlorine dioxide, chloramines, ozone, and UV light, added to water in any part of the treatment or distribution process for the purpose of killing or ~~deactivating~~ inactivating pathogenic organisms.

~~"Disinfectant contact time" ("T" in CT calculations) means the time in minutes that it takes for water to move from the point of disinfectant application to the point where residual disinfectant concentration ("C") is measured.~~

"Disinfection" means a process that inactivates or destroys pathogenic organisms in water by ~~chemical oxidants or equivalent agents~~ use of a disinfectant.

"Disinfection profile" means a summary of Giardia lamblia or virus inactivation through the water treatment plant.

"Distribution main" means a water ~~main~~ pipeline whose primary purpose is to ~~provide treated~~ convey drinking water to service connections.

~~"District engineer" means the employee assigned by the Commonwealth of Virginia, Department of Health, Office of Drinking Water to manage its regulatory activities in a geographical area of the state consisting of a state planning district or subunit of a state planning district.~~

~~"Domestic or other nondistribution system plumbing problem" means a coliform contamination problem in a waterworks with more than one service connection that is limited to the specific service connection from which the coliform positive sample was taken.~~

"Distribution system" means a network of pipelines and appurtenances by which a waterworks delivers drinking water to its consumers.

"DOC" means the dissolved organic carbon in a water sample.

"Double gate-double check valve assembly" means an ~~approved~~ assembly composed of two single independently acting check valves including tightly closing shutoff valves located at each end of the assembly and petcocks and test gauges for testing the watertightness of each check valve.

"DPOR" means the Virginia Department of Professional and Occupational Regulation.

"Drawdown" means the difference, measured vertically, between the static water level in the well and the water level during pumping.

"Dual sample set" means a set of two samples collected at the same time and same location, with one sample analyzed for TTHM and the other sample analyzed for HAA5. ~~Dual sample sets are collected for the purposes of conducting an initial distribution system evaluation (IDSE) under 12VAC5-590-370 B 3 e (2) and determining compliance with the TTHM and HAA5 MCLs under 12VAC5-590-370 B 3 e (3).~~

~~"Effective corrosion inhibitor residual" means, for the purpose of 12VAC5-590-405 A 1 only, a concentration sufficient to form a passivating film on the interior walls of a pipe.~~

"EDR" means electrodialysis reversal.

"Enhanced coagulation" means the addition of sufficient coagulant for improved removal of disinfection byproduct precursors by conventional filtration treatment.

"Enhanced softening" means the improved removal of disinfection byproduct precursors by precipitative softening.

"Entry point" means the place where water from the source after application of any treatment is delivered to the distribution system. Where two or more sources are combined before distribution, the entry point is the location that is representative of the blended water following all treatment.

~~"Equivalent residential connection" means a volume of water used equal to a residential connection that is 400 gallons per day unless supportive data indicates otherwise.~~

~~"Exception" means an approved deviation from a "shall" criteria contained in Part III (12VAC5-590-640 et seq.) of this chapter.~~

"EPA" means the U.S. Environmental Protection Agency.

"Exemption" means ~~a conditional waiver of~~ allowing a waterworks that satisfies the criteria in 12VAC5-590-150 to deviate from a specific PMCL or treatment technique requirement that is granted to ~~a specific~~ the waterworks for a limited period of time.

"Filter profile" means a graphical representation of individual filter performance, based on continuous turbidity measurements or total particle counts versus time for an entire filter run, from ~~startup~~ start-up to backwash inclusively, that includes an assessment of filter performance while another filter is being backwashed.

"Filtration" means a process for removing particulate matter from water by passage through porous media.

"Finished water" means water that is introduced into the distribution system of a waterworks and is intended for distribution and consumption without further treatment, except as treatment is necessary to maintain water quality in the distribution system (e.g., booster disinfection~~, addition of corrosion control chemicals~~).

~~"First draw sample" means a one liter sample of tap water, collected in accordance with 12VAC5-590-375 B 2, that has been standing in plumbing pipes at least six hours and is collected without flushing the tap.~~

"Flocculation" means a process to enhance agglomeration or collection of smaller floc particles into larger, more easily settleable particles through gentle stirring by hydraulic or mechanical means.

"Flowing stream" means a course of running water flowing in a definite channel.

"Free available chlorine" means that portion of the total ~~residual~~ chlorine residual remaining in water at the end of a specified contact period that will react chemically and biologically as hypochlorous acid or hypochlorite ion.

~~"GAC10" means granular activated carbon filter beds with an empty bed contact time of 10 minutes based on average daily flow and a carbon reactivation frequency of every 180 days, except that the reactivation frequency for GAC10 used as a best available technology for compliance with 12VAC5-590-410 C 2 b (1) (b) shall be 120 days.~~

~~"GAC20" means granular activated carbon filter beds with an empty bed contact time of 20 minutes based on average daily flow and a carbon reactivation frequency of every 240 days.~~

~~"Governmental entity" means the Commonwealth, a town, city, county, service authority, sanitary district, or any other governmental body established under the Code of Virginia, including departments, divisions, boards, or commissions.~~

"GAC" means granular activated carbon.

"Gross alpha particle activity" means the total radioactivity due to alpha particle emission as inferred from measurements on a dry sample.

"Gross beta particle activity" means the total radioactivity due to beta particle emission as inferred from measurements on a dry sample.

"Groundwater" means all water obtained from sources not classified as surface water ~~(or surface water sources)~~.

"Groundwater system" means any waterworks that uses groundwater as its source of supply; however, a waterworks that combines all its groundwater with surface water or with groundwater under the direct influence of surface water ~~prior to~~ before treatment is not a groundwater system. Groundwater systems include consecutive waterworks that receive ~~finished groundwater from a wholesale waterworks~~ potable water from another groundwater source.

"Groundwater under the direct influence of surface water" or "GUDI" means any water beneath the surface of the ground

with (i) significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as Giardia lamblia~~,~~ or Cryptosporidium~~. It also means~~ or (ii) significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH that closely correlate to climatological or surface water conditions. ~~The commissioner~~ GUDI source determinations shall be made by the department in accordance with 12VAC5-590-430 ~~will determine direct influence of surface water~~.

"GWMA" means the groundwater management area designation by the State Water Control Board.

"Haloacetic acids (five)" or "HAA5" means the sum of the concentrations ~~in milligrams per liter~~ of the haloacetic ~~acid compounds (monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid), rounded to two significant figures after addition~~ acids, expressed in milligrams per liter (mg/L) as rounded to two significant figures. For the purpose of this chapter the HAA5 shall mean monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid.

"Halogen" means one of the chemical elements chlorine, bromine, fluorine, astatine, or iodine.

"Health hazard" means any condition, device, or practice in a waterworks or its operation that creates, or may create, a danger to the health and well-being of the water consumer.

~~"Health regulations" means regulations that include all primary maximum contaminant levels, treatment technique requirements, and all operational regulations, the violation of which would jeopardize the public health.~~

"HPC" means the heterotrophic plate count of a bacterial population.

"Human consumption" means drinking, food preparation, dishwashing, bathing, showering, hand washing, teeth brushing, and maintaining oral hygiene.

"Hypochlorite" means ~~a solution of water and some form of chlorine, usually sodium hypochlorite~~ the ionic component from the disassociation of hypochlorous acid that performs the function of disinfection. It is the available active ingredient in liquid hypochlorite disinfectants such as sodium and calcium hypochlorite.

"Initial compliance period" means ~~for all regulated contaminants, the initial compliance period is the first full three year compliance period beginning at least 18 months after promulgation with the exception of waterworks with 150 or more service connections for contaminants listed at Table 2.3, VOC 19 21; Table 2.3, SOC 19 33; and antimony, beryllium, cyanide (as free cyanide), nickel, and thallium that shall begin January 1993~~ the compliance period in which chemical monitoring begins.

~~"Interchangeable connection" means an arrangement or device that will allow alternate but not simultaneous use of two sources of water.~~

"Isolation" means the safeguard against backflow into a waterworks from a consumer's water system by installing an appropriate backflow prevention assembly or device or by installing a backflow elimination method at the sources of potential contamination in the consumer's water system. This is also called point-of-use isolation.

"Karst geology" means an area predominantly underlain by limestone, dolomite, or gypsum and characterized by rapid underground drainage. ~~Such~~ These areas often feature sinkholes, caverns, and sinking or disappearing creeks. ~~In Virginia, this generally includes all that area west of the Blue Ridge and, in Southwest Virginia, east of the Cumberland Plateau.~~

~~"Lake/reservoir"~~ "Lake or reservoir" means a natural or ~~manmade~~ man-made basin or hollow on the Earth's surface in which water collects or is stored that may or may not have a current or single direction of flow.

~~"Large waterworks" means, for the purposes of 12VAC5-590-375, 12VAC5-590-405, 12VAC5-590-530 F, and 12VAC5-590-550 D only, a waterworks that serves more than 50,000 persons.~~

"Lead free" means the following: ~~1. When~~ (i) when used with respect to solders and flux, refers to solders and flux containing not more than 0.2% lead; ~~2. When~~ and (ii) when used with respect to pipes~~, and pipe fittings, refers to pipes and pipe fittings containing not more than 8.0% lead;~~ pipe fittings, plumbing fittings, and plumbing fixtures, refers to the weighted average of wetted surfaces of pipes, pipe fittings, plumbing fittings, and plumbing fixtures containing not more than 0.25% lead.

~~3. When used with respect to plumbing fittings and fixtures intended by the plumbing manufacturer to dispense water for human ingestion, refers to fittings and fixtures that are in compliance with standards established in accordance with 42 USC § 300g-6(e).~~

"Lead service line" means a ~~service line~~ pipeline made of lead that connects the ~~water~~ distribution main to the building inlet and any lead pigtail, gooseneck, or other fitting that is connected to ~~such lead line~~ the lead pipeline.

"Leakage" means the loss of potable water from the distribution system, up to the points of service connections, through breaks or defects in piping and piping appurtenances.

"Legionella" means a genus of bacteria, some species of which ~~have caused~~ cause a type of pneumonia called Legionnaires disease.

"Level 1 assessment" means an evaluation to identify the possible presence of sanitary defects, defects in distribution

system coliform monitoring practices, and, when possible, the likely reason that the waterworks triggered the assessment.

"Level 2 assessment" means an evaluation to identify the possible presence of sanitary defects, defects in distribution system coliform monitoring practices, and, when possible, the likely reason that the waterworks triggered the assessment in a more comprehensive investigation than a Level 1 assessment.

~~"Liquid chlorine" means a liquefied, compressed chlorine gas as shipped in commerce.~~

"Locational running annual average" or "LRAA" means the average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters.

"Log inactivation~~ (log removal)~~" means ~~that a 99% reduction is a 2-log inactivation; a 99.9% reduction is a 3-log inactivation; a 99.99% reduction is a 4-log inactivation~~ the inactivation of organisms expressed on a logarithmic scale. For example, a 99.9% inactivation is a 3-log inactivation; whereas a 99.99% inactivation is a 4-log inactivation.

~~"Manmade beta particle and photon emitters" means all radionuclides emitting beta particles and/or photons listed in the most current edition of "Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure," National Bureau of Standards Handbook 69, except the daughter products of thorium-232, uranium-235 and uranium-238.~~

"Log removal" means the removal of organisms expressed on a logarithmic scale. For example, a 99.9% is a 3-log removal; whereas a 99.99% removal is a 4-log removal.

"Maximum contaminant level" or "MCL" means the maximum permissible level of a contaminant in ~~pure~~ potable water that is delivered to any ~~user~~ consumer of a waterworks. MCLs are set as close to the MCLGs as feasible using the ~~best available treatment technology~~ BAT. MCLs may be either "primary" (PMCL), meaning based on health considerations, or "secondary" (SMCL), meaning based on aesthetic considerations.

"Maximum contaminant level goal" or "MCLG" means the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur ~~and that allows an adequate margin of safety~~. Applying an adequate margin of safety to the MCLG allows the MCL to be set as the standard. Maximum contaminant level goals are nonenforceable health goals.

~~"Maximum daily water demand" means the rate of water usage during the day of maximum water use.~~

"Maximum residual disinfectant level" or "MRDL" means a level of a disinfectant added for water treatment that may not be exceeded at the consumer's tap without an unacceptable possibility of adverse health effects. ~~For chlorine and chloramines, a waterworks is in compliance with the MRDL when the running annual average of monthly averages of samples taken in the distribution system, computed quarterly, is less than or equal to the MRDL. For chlorine dioxide, a waterworks is in compliance with the MRDL when daily samples are taken at the entrance to the distribution system and no two consecutive daily samples exceed the MRDL. MRDLs are enforceable in the same manner as maximum contaminant levels. There is convincing evidence that addition of a disinfectant is necessary for control of waterborne microbial contaminants. Notwithstanding the MRDLs listed in Table 2.12, operators may increase residual disinfectant levels of chlorine or chloramines (but not chlorine dioxide) in the distribution system to a level and for a time necessary to protect public health to address specific microbiological contamination problems caused by circumstances such as distribution line breaks, storm runoff events, source water contamination, or cross-connections.~~

"Maximum residual disinfectant level goal" or "MRDLG" means the maximum level of a disinfectant added for water treatment at which no known or anticipated adverse effect on the health of persons would occur, and that allows an adequate margin of safety. MRDLGs are nonenforceable health goals and do not reflect the benefit of the addition of the chemical for control of waterborne microbial contaminants.

"Maximum total trihalomethane potential" or "MTP" means the maximum concentration of total trihalomethanes (TTHMs) produced in a given water containing a residual disinfectant ~~residual~~ after seven days at a temperature of 25°C or above.

~~"Medium waterworks" means, for the purpose of 12VAC5-590-375 and 12VAC5-590-405 only, a waterworks that serves greater than 3,300 and less than or equal to 50,000 persons.~~

"Membrane filtration" means a pressure or vacuum-driven separation process in which particulate matter larger than one micrometer is rejected by an engineered barrier, primarily through a size exclusion mechanism, and that has a measurable removal efficiency of a target organism that can be verified through the application of a direct integrity test. ~~This definition includes the common membrane technologies of microfiltration, ultrafiltration, nanofiltration, and reverse osmosis~~ Included in this definition are the common membrane classifications of microfiltration (MF), ultrafiltration (UF), nanofiltration (NF), and reverse osmosis (RO).

"Membrane module" means the smallest component of a membrane unit in which a specific membrane surface area is housed in a device with a filtrate outlet.

"Membrane technologies" means those processes that use a permeable membrane to remove ions, molecules, or particles from the process stream, such as MF, UF, NF, RO, and EDR.

"Membrane unit" means a group of membrane modules that share common valving that allows the unit to be isolated from the rest of the system for the purpose of integrity testing or other maintenance.

"Method detection limit" or "MDL" means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte.

"Microfiltration" or "MF" means a pressure-driven membrane technology that separates particles, based on the pore-size rating of the membrane, from a feed stream by using a sieving mechanism. Typically, MF can remove particles down to 0.1 micrometer in size.

"Most probable number" or "MPN" means ~~that~~ the density or number of organisms per unit volume ~~that, in accordance with statistical theory, would be more likely than any other number to yield the observed test result or that would yield the observed test result with the greatest frequency, expressed as density of organisms per 100 milliliters. Results are computed from the number of positive findings of coliform group organisms resulting from multiple portion decimal dilution plantings~~ most likely to be present in a water sample and obtained from method-specific statistical MPN tables.

"MPA" means the microscopic particulate analysis method approved by EPA for use in the determination of whether a groundwater is under the influence of surface water.

"Nanofiltration" or "NF" means a pressure-driven membrane technology designed to remove multivalent ions ("softening") and other constituents based on the pore size, which ranges from one to 10 nanometers. Nanofiltration membranes typically operate under a pressure range of 600 to 1100 psi.

"Nondetected" or "ND" means a term typically used by laboratories to express the absence of an analyte in a test sample.

"Noncommunity waterworks" means a waterworks that is not a community waterworks, but operates at least 60 days out of the year.

"Nonpotable water" means water not classified as pure water.

"Nontransient noncommunity waterworks" or "NTNC" means a waterworks that is not a community waterworks and that regularly serves at least 25 of the same persons over six months out of the year. When used in the context of an NTNC, "regularly serves" means four or more hours per day, for four or more days per week, for 26 or more weeks per year.

"NSF" means the National Sanitation Foundation.

~~"Office" or "ODW" means the Commonwealth of Virginia, Department of Health, Office of Drinking Water.~~

"One hundred year flood ~~level"~~ elevation" or "100-year flood elevation" means ~~the~~ flood elevation ~~that will, over a long period of time, be equaled or exceeded on the average once every 100 years~~ that has a 1.0% probability of being equaled or exceeded in any given year.

"Operating staff" means individuals employed or appointed by an owner to work at a waterworks. Included in this definition are operators, whether or not the operator's license is appropriate for the classification and category of the waterworks, and unlicensed individuals.

"Operator" means any individual with the requisite skills, employed or appointed by any owner, ~~and~~ who is designated by ~~such~~ the owner to be the person ~~in responsible charge, such as~~ having full responsibility for the waterworks operations and any subordinate operating staff. The individual may be a supervisor, a shift operator, or a substitute in charge, and ~~whose~~ have duties ~~include~~ including testing or evaluation to control waterworks operations. Not included in this definition are superintendents or directors of public works, city engineers, or other municipal or industrial officials whose duties do not include the actual operation or direct supervision of waterworks.

"Optimal corrosion control treatment" means the corrosion control treatment that minimizes the lead and copper concentrations at ~~users'~~ consumers' taps while ensuring that the treatment does not cause the waterworks to violate any other section of this chapter.

"Optimum fluoride ion concentration" means that fluoride ion concentration recommended by the U.S. Public Health Service for protection from dental caries.

"Owner" ~~or "water purveyor"~~ means an individual, group of individuals, partnership, firm, association, institution, corporation, governmental entity, or the federal government that supplies or proposes to supply water to any person within ~~this state~~ the Commonwealth from or by means of any waterworks ~~(see Article 2 (§ 32.1-167 et seq.) of Chapter 6 of Title 32.1 of the Code of Virginia)~~.

"PAC" means powdered activated carbon.

"PCBs" means polychlorinated biphenyls.

"PER" means a preliminary engineering report.

"Permit" means an authorization granted by the commissioner to construct or operate a waterworks.

"Permitted capacity" means the limiting hydraulic capability of the waterworks, taking into consideration the source water capacity, treatment facilities, finished water storage, delivery, and distribution system.

"Person" means any individual, corporation, partnership, association, cooperative, limited liability company, trust, joint venture, government, political subdivision, or any other legal or commercial entity and any successor, representative, agent, or instrumentality thereof.

"pH" means the negative logarithm of the hydrogen ion concentration of an aqueous solution.

"Physical disconnection" means the removal or absence of pipes, fittings, or fixtures that connect a waterworks directly or indirectly to any other water system.

"Picocurie" or "pCi" means that quantity of radioactive material producing 2.22 nuclear transformations per minute.

~~"Plant intake" means the works or structures at the head of a conduit through which water is diverted from a source (e.g., river or lake) into the treatment plant.~~

"PMCL" means the same as "maximum contaminant level."

"Point of disinfectant application" means the point where the disinfectant is applied and water downstream of that point is not subject to recontamination by surface ~~water~~ runoff.

"Point-of-entry ~~treatment~~ device" or "POE device" means a treatment device applied to the water entering a house or building for the purpose of reducing contaminants in the water distributed throughout the house or building.

"Point-of-use ~~treatment~~ device" or "POU device" means a treatment device applied to a single tap for the purpose of reducing contaminants in the water at that one tap.

"Pollution" means the presence of any foreign substance (chemical, physical, radiological, or biological) in water that tends to degrade its quality so as to constitute an unnecessary risk to human health or impair the usefulness of the water.

~~"Pollution hazard" means a condition through which an aesthetically objectionable or degrading material may enter the waterworks or a consumer's water system.~~

~~"Postchlorination" means the application of chlorine to water subsequent to treatment.~~

"Potable water" ~~– see "Pure~~ means the same as "pure water."

"Practical quantitation level" or "PQL" means the lowest level ~~achievable by good laboratories within specified limits during routine laboratory operating conditions~~ that can be reliably measured within specified limits of precision and accuracy during routine laboratory conditions.

"Prechlorination" means the application of chlorine to water ~~prior to~~ before filtration.

"Presedimentation" means a preliminary treatment process used to remove gravel, sand, and other particulate material from the source water through settling before the water enters the primary clarification and filtration processes in a water treatment plant.

"Pressure vacuum breaker assembly" means an assembly designed to prevent backsiphonage and used for high-hazard or low-hazard situations, composed of an independently operating, spring-loaded check valve; an independently operating, spring-loaded air-inlet valve; and tightly closing shutoff valves located at each end of the assembly and fitted with properly located test cocks.

"Primary disinfection" means disinfection to achieve a desired level of inactivation of targeted pathogenic organisms in water by chemical or physical agents as an integral part of the treatment process.

"Process fluids" means any fluid or solution that may be chemically, biologically, or otherwise contaminated or polluted that would constitute a health, ~~pollutional~~ environmental, or system hazard if introduced into the waterworks. This includes~~, but is not limited to:~~ (i) polluted or contaminated water; (ii) used waters; (iii) cooling waters; (iv) contaminated natural waters taken from wells, lakes or reservoirs, streams, or irrigation systems; (v) chemicals in solution or suspension; or (vi) oils, gases, acids, alkalis, and other liquid and gaseous fluid used in industrial or other processes.

~~1. Polluted or contaminated water;~~

~~2. Process waters;~~

~~3. Used waters, originating from the waterworks that may have deteriorated in sanitary quality;~~

~~4. Cooling waters;~~

~~5. Contaminated natural waters taken from wells, streams, or irrigation systems;~~

~~6. Chemicals in solution or suspension; and~~

~~7. Oils, gases, acids, alkalis, and other liquid and gaseous fluid used in industrial or other processes, or for firefighting purposes.~~

"Process water" means water used for dissolving dry chemicals; diluting liquid chemicals; and operating chemical feeders, treatment facilities, or equipment.

"Project documents" means the engineer's report, design criteria, preliminary and final plans, specifications, and procurement documents for the construction of new waterworks or modifications to existing waterworks.

"Pure water" means water fit for human consumption that is (i) sanitary and normally free of minerals, organic substances, and toxic agents in excess of reasonable amounts and (ii) adequate in quantity and quality for the minimum health requirements of the persons served ~~(see Article 2 (§ 32.1-167 et seq.) of Chapter 6 of Title 32.1 of the Code of Virginia)~~.

~~"Raw water main" means a water main that conveys untreated water from a source to a treatment facility.~~

"QCRV" means the quality control release value used in challenge tests of microfiltration (MF) and ultrafiltration (UF) membrane filters.

"RAA" means running annual average.

"Reduced pressure principle backflow prevention ~~device~~ assembly" or "RPZ ~~device~~ assembly" means ~~a device containing a minimum of two independently acting check valves together with an automatically operated pressure differential relief valve located between the two check valves~~ an assembly designed to prevent backsiphonage or backpressure backflow used for high or low hazard situations, composed of two independently operating spring-loaded check valves together with an independent, hydraulically operating pressure differential relief valve located between the two check valves. During normal flow and at the cessation of normal flow, the pressure between these two checks shall be less than the supply pressure. ~~In case of leakage of either check valve, the differential relief valve, by discharging to the atmosphere, shall operate to maintain the pressure between the check valves at less than the supply pressure.~~ The ~~unit~~ assembly shall include tightly closing shutoff valves located at each end of the ~~device,~~ RPZ assembly and ~~each device~~ shall be fitted with properly located test cocks. ~~These devices shall be of the approved type.~~

"REM" means the unit of dose equivalent from ionizing radiation to the total body or any internal organ or organ system. A millirem ~~(MREM)~~ (mrem) is 1/1000 of ~~a~~ an REM.

"Repeat compliance period" means any subsequent compliance period after the initial compliance period.

"Residual disinfectant concentration" ~~("C" in CT Calculations)~~ means the concentration of disinfectant measured in mg/L in a representative sample of water.

~~"Responsible charge" means designation by the owner of any individual to have duty and authority to operate or modify the operation of waterworks processes.~~

~~"Sanitary facilities" means piping and fixtures, such as sinks, lavatories, showers, and toilets, supplied with potable water and drained by wastewater piping.~~

"Reverse osmosis" or "RO" means a membrane technology designed to remove salts, low-molecular weight solutes, and all other constituents up to 0.0001 micron in size by applying a pressure in excess of osmotic pressure to force water through a semi-permeable membrane from a region of high solution concentration to a region of lower solution concentration.

"Sanitary defect" means a defect that could provide a pathway of entry for microbial contamination into the distribution system or that is indicative of a failure or imminent failure in a protective barrier that is already in place.

"Sanitary survey" means an evaluation conducted by ~~ODW~~ the department of a waterworks' water supply, facilities, equipment, operation, maintenance, monitoring records, and overall management ~~of a waterworks~~ to ensure the provision of ~~pure~~ potable water.

"SDWA" means the Safe Drinking Water Act (42 USC § 300f et seq.) and its amendments.

"Seasonal waterworks" means a noncommunity waterworks that is not operated as a waterworks on a year-round basis, and starts up and shuts down at the beginning and end of each operating season.

~~"Secondary water source" means any approved water source, other than a waterworks' primary source, connected to or available to that waterworks for emergency or other nonregular use.~~

"Secondary disinfection" means disinfection by chemical oxidants or equivalent agents applied at the entry point or in the distribution system to provide a residual disinfectant in water to maintain water quality and safeguard against chance contamination from permeation, leaching, intrusion, regrowth, or biofilms.

"Sedimentation" means a process for removal of solids before filtration by gravity or separation.

"Service connection" means the point of delivery of finished water ~~to a customer's building service line as follows:~~ from a waterworks to a consumer's water system, fire protection system, or irrigation system and to all other points where finished water is delivered through the distribution system to a consumer. Service connections may be permanent, temporary, or emergency.

~~1. If a meter is installed, the service connection is the downstream side of the meter;~~

~~2. If a meter is not installed, the service connection is the point of connection to the waterworks;~~

~~3. When the water purveyor is also the building owner, the service connection is the entry point to the building.~~

~~"Service line sample" means a one liter sample of water, collected in accordance with 12VAC5-590-375 B 2 c, that has been standing for at least six hours in a service line.~~

"Sewer" means any pipe or conduit used to convey sanitary sewage, stormwater, or industrial waste streams. Combined sewers convey both stormwater and sanitary sewage.

"Significant deficiency" means any defect in a waterworks' design, operation, maintenance, or administration, as well as the failure or malfunction of any waterworks component~~,~~ that may cause~~,~~ or has the potential to cause, an unacceptable risk to health or could affect the reliable delivery of ~~pure~~ potable water to consumers.

"Single-family structure" means, for the purpose of 12VAC5-590-375 B only, a building constructed as a single-family residence that is currently used as either a residence or a place of business.

"Site visit" means a tour of a waterworks by department staff or other authorized persons for purposes including assessing and documenting its physical condition, operations, and compliance activities.

"Slow sand filtration" means a process involving passage of ~~raw~~ source water through a bed of sand at low velocity (generally less than 0.4 m/h), resulting in substantial particulate removal by physical and biological mechanisms.

~~"Small waterworks" means, for the purpose of 12VAC5-590-375, 12VAC5-590-405, 12VAC5-590-530 F and 12VAC5-590-550 D only, a waterworks that serves 3,300 persons or fewer.~~

~~"Standard sample" means that portion of finished drinking water that is examined for the presence of coliform bacteria.~~

"SMCL" means the same as "maximum contaminant level."

"SOP" means standard operating procedure.

"Source water" means water as it is pumped or otherwise withdrawn from a well, spring, stream, lake or reservoir, or any body of surface water (natural or impounded), and before any treatment.

"Supervisory control and data acquisition" or "SCADA" means a computer-controlled system used by a waterworks to monitor its operations. Typical design features may be specific to individual waterworks and include alarm, response, control, and data acquisition.

"Surface water" means all water open to the atmosphere and subject to surface runoff.

"SUVA" means specific ultraviolet absorption at 254 nanometers (nm), an indicator of the humic content of the water. It is a calculated parameter obtained by dividing a sample's ultraviolet absorption at a wavelength of 254 nm (UV_{254}) (in m-1) by its concentration of ~~dissolved organic carbon (DOC)~~ DOC (in mg/L).

~~"Synthetic organic chemicals" or "SOC" means one of the family of organic manmade compounds generally utilized for agriculture or industrial purposes.~~

"Synthetic organic chemical" or "SOC" means a man-made organic compound, generally utilized for agriculture or industrial purposes. Table 340.2 lists SOCs regulated as contaminants.

"System hazard" means a condition posing an actual, or threat of, damage to the physical properties of the waterworks or a consumer's water system.

~~"Terminal reservoir" means an impoundment providing end storage of water prior to treatment.~~

"TDS" means total dissolved solids.

"TMF" means the technical, managerial, and financial capabilities to operate and maintain a waterworks.

"Too numerous to count" or "TNTC" means that the total number of bacterial colonies exceeds 200 on a 47-mm diameter membrane filter used for coliform detection.

~~"Total effective storage volume" means the volume available to store water in distribution reservoirs measured as the difference between the reservoir's overflow elevation and the minimum storage elevation. The minimum storage elevation is that elevation of water in the reservoir that can provide a minimum pressure of 20 psi at a flow as determined in 12VAC5-590-690 C to the highest elevation served within that reservoir's service area under systemwide maximum daily water demand.~~

"Total organic carbon" or "TOC" means total organic carbon in ~~mg/L~~ miiligrams per liter (mg/l) measured using heat, oxygen, ultraviolet irradiation, chemical oxidants, or combinations of these oxidants that convert organic carbon to carbon dioxide, rounded to two significant figures.

"Total trihalomethanes" or "TTHM" means the sum of the concentrations of the trihalomethanes (THMs) expressed in milligrams per liter (mg/L) and rounded to two significant figures. For the purpose of ~~these regulations, the TTHMs~~ this chapter, TTHM shall mean trichloromethane (chloroform), dibromochloromethane, bromodichloromethane, and tribromomethane (bromoform).

"Transient noncommunity waterworks" or "TNC" means a noncommunity waterworks that is not a nontransient noncommunity waterworks (NTNC). A TNC serves at least 25 persons daily for at least 60 days out of the year.

~~"Transmission main" means a water main whose primary purpose is to move significant quantities of treated water among service areas.~~

"Treatment" means any process that changes the chemical, physical, radiological, or bacteriological quality of water.

"Treatment technique~~ requirement~~" or "TT" means a ~~requirement that specifies for a contaminant a specific treatment technique(s)~~ technology or process demonstrated to the satisfaction of the ~~division~~ department to lead to a reduction in the level of ~~such~~ a specific contaminant sufficient to comply with ~~these regulations~~ this chapter.

"Triggered source water monitoring" means monitoring required of any groundwater system as a result of a total coliform-positive sample in the distribution system.

"Trihalomethane" or "THM" means one of the family of organic compounds, named as derivatives of methane,

wherein three of the four hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure.

~~"Two-stage lime softening" means a process in which chemical addition and hardness precipitation occur in each of two distinct unit clarification processes in series prior to filtration.~~

"Ultrafiltration" or "UF" means a membrane technology designed to remove particles up to 0.01 micron in size.

"Unconsolidated" means loose sediment that has not been compacted, cemented, lithified, or metamorphosed into rock. Sediment may be derived from a sedimentary-type, igneous-type, metamorphic-type rock, which includes clay, silt, sand, gravel, and mixtures of these particle types.

"Uncovered finished water storage facility" means a tank, reservoir, or other facility used to store water that will undergo no further treatment to reduce microbial pathogens (except residual disinfection) and is directly open to the atmosphere.

"Unregulated contaminant" or "UC" means a contaminant for which a monitoring requirement has been established, but for which no MCL or treatment technique requirement has been established.

"USBC" means the Uniform Statewide Building Code (13VAC5-63).

"Used water" means any water supplied by a ~~water purveyor from the~~ waterworks to a consumer's water system after it has passed through the service connection and is no longer under the control of the owner.

"UV" means ultraviolet.

"Variance" means ~~a conditional waiver of a specific regulation that is granted to a specific waterworks~~ allowing a waterworks that satisfies the criteria in 12VAC5-590-140 to provide drinking water that does not fully comply with the regulations. A PMCL variance is a variance to a primary maximum contaminant level, or a treatment technique requirement. An operational variance is a variance to an operational regulation or a ~~secondary maximum contaminant level~~ SMCL. ~~Variances for monitoring, reporting and public notification requirements will not be granted.~~

"Virus" means a ~~microbe~~ virus of fecal origin that is infectious to humans by waterborne transmission and must be preemptively inactivated through disinfection before human consumption.

~~"Volatile synthetic organic chemical" or "VOC" means one of the family of manmade organic compounds generally characterized by low molecular weight and rapid vaporization at relatively low temperatures or pressures.~~

"Volatile organic chemical" or "VOC" means an organic compound generally characterized by its low molecular weight and its tendency to vaporize rapidly at relatively low temperatures and pressures. Table 340.2 lists VOCs regulated as contaminants.

"VOSH" means the Virginia Occupational Safety and Health program.

"Waiver" means permission from the department to deviate from the monitoring and reporting requirements in the regulations for a specific contaminant.

"Waterborne disease outbreak" means the significant occurrence of acute infectious illness, epidemiologically associated with the ingestion of water from a waterworks that is deficient in treatment, as determined by the commissioner or the State Epidemiologist.

~~"Water purveyor" (same as owner).~~

"Water supply" means the source of water ~~that shall have been~~ taken into a waterworks ~~from all~~ including wells, streams, springs, lakes or reservoirs, and other bodies of surface waters (natural or impounded), and the tributaries thereto, and all impounded groundwater~~, but the~~. The term "water supply" shall not include any waters above the point of intake of ~~such~~ the waterworks ~~(see Article 2 (§ 32.1-167 et seq.) of Chapter 6 of Title 32.1 of the Code of Virginia)~~.

~~"Water supply main" or "main" means any water supply pipeline that is part of a waterworks distribution system.~~

~~"Water Well Completion Report" means a report form published by the State Water Control Board entitled "Water Well Completion Report," which requests specific information pertaining to the ownership, driller, location, geological formations penetrated, water quantity and quality encountered as well as construction of water wells. The form is to be completed by the well driller.~~

"Water treatment plant" means that portion of a waterworks intended specifically for water treatment; it may include, among other operations, coagulation, sedimentation, filtration, and disinfection.

"Waterworks" means a system that serves piped water for human consumption to at least 15 service connections or 25 or more individuals for at least 60 days out of the year. "Waterworks" includes all structures, equipment, and appurtenances used in the storage, collection, purification, treatment, and distribution of ~~pure~~ potable water except the piping and fixtures inside the building where such water is delivered ~~(see Article 2 (§ 32.1-167 et seq.) of Chapter 6 of Title 32.1 of the Code of Virginia)~~.

~~"Waterworks with a single service connection" means a waterworks that supplies drinking water to consumers via a single service line.~~

"Waterworks business operation plan" means the same as "comprehensive business plan."

"Wholesale waterworks" means a waterworks that treats source water as necessary to produce ~~finished~~ potable water and then delivers some or all of that ~~finished~~ potable water to another waterworks. Delivery may be through a direct connection or through the distribution system of one or more consecutive waterworks.

B. As used in this chapter, the following units of measurement shall use the abbreviations as shown in this subsection:

C – degrees Celsius

CU – color units

ft^2 – square feet of area

ft/min – feet per minute

ft/sec – feet per second

gpd – gallons per day

gpd/ft^2 – gallons per day per square foot

gpm – gallons per minute

gpm/ft – gallons per minute per foot

gpm/ft^2 – gallons per minute per square foot

in – inches

lb – pounds

lb/day – pounds per day

lb/ft^2 – pounds per square foot

MFL – million fibers per liter

MGD – million gallons per day

mg/L – milligrams per liter

min – minutes

mJ/cm^2 – millijoules per square centimeter

mrem – millirem

nm – nanometer (10^{-9} meter)

NTU – nephelometric turbidity units

pCi – picocuries

pCi/L – picocuries per liter

ppb – parts per billion, or micrograms per liter (µg/L)

ppm – parts per million, or milligrams per liter (mg/L)

ppq – parts per quadrillion, or pictograms per liter (pq/L)

ppt – parts per trillion, or nanograms per liter (ng/L)

psi – pounds per square inch

psig – pounds per square inch gauge

$scfm/ft^2$ – standard cubic feet per minute per square foot

µm – micrometers (10^{-6} meter or microns)

µg/L – micrograms per liter

µS/cm – microSiemens per centimeter

W/m^2 – Watts per square meter

~~Article 2~~
~~General Information~~

12VAC5-590-20. ~~Authority for regulations.~~ (Repealed.)

~~Article 2 (§ 32.1-5 et seq.) of Chapter 1 of Title 32.1 of the Code of Virginia provides that the State Board of Health has the duty to protect the public health and to ensure that all water supplies destined for public consumption be pure water. In order to discharge that duty, the board is empowered to supervise and regulate all waterworks and water supplies within the state (see Article 2 of Chapter 1 of Title 32.1 of the Code of Virginia).~~

12VAC5-590-30. ~~Purpose of regulations.~~ (Repealed.)

~~These regulations have been promulgated by the board to: 1. Ensure that all water supplies destined for public consumption be pure water; 2. Guide the commissioner in his determination of whether a permit for a public water supply or waterworks should be issued; and 3. Assist the owner or his authorized engineer in the preparation of an application, plans, specifications, reports and other data.~~

12VAC5-590-35. Delegation of authority.

The commissioner, or the commissioner's designee, may perform any act of the board provided under this chapter, except as limited by § 32.1-20 of the Code of Virginia.

12VAC5-590-40. Administration of ~~regulations~~ this chapter.

~~These regulations are administered by the following parties:~~

~~1. State Board of Health, which has responsibility~~ A. The board is responsible for promulgating, amending, and repealing regulations ~~which~~ to ensure a supply of ~~pure~~ potable water.

~~2. State Health Commissioner, who is the executive officer~~ B. The commissioner is vested with all the authority of the ~~State Board of Health with the authority of the~~ board when it is not in session, ~~and~~ subject to such rules and regulations as may be prescribed by the board.

~~3.Division of Water Supply Engineering, which~~ C. The department is designated as the primary ~~reviewing~~ agent of the board for the purpose of administering this chapter. It examines ~~and passes upon~~ the technical aspects of all applications and plans for waterworks projects ~~prior to the~~ before drafting ~~of~~ a permit for final approval by the ~~State Health Commissioner~~ commissioner. It also has primary

responsibility for monitoring waterworks operations to ensure that water supplied to ~~the public is pure~~ consumers is potable water.

~~4. Central and field offices, which are maintained by the division, the central office is located in Richmond, Virginia. The Office of Water Programs maintains six field offices which are responsible for activities of the division within their service areas. Applications for waterworks permits should be submitted to the appropriate field office. The addresses of the field offices and a description of the areas that they serve are listed in Appendix C.~~

~~5. Waterworks Advisory Committee, which shall be appointed by the commissioner, shall consist of thirteen appointed members and three ex officio members specified below. The commissioner shall appoint to the Waterworks Advisory Committee one individual each from the following: a member of the Virginia Section American Water Works Association; a member of the Virginia Society of Professional Engineers; a member of the Virginia Water Well Association, Inc.; a member of the Consulting Engineers Council; a water treatment plant operator having a valid license of the highest classification in waterworks issued by the State Board for Waterworks and Wastewater Works Operators; a faculty member of a state university or college whose principal field of teaching is Environmental Engineering; a community waterworks owner; a nontransient noncommunity (NTNC) representative; a representative from Virginia Rural Water Association; a representative from Virginia Water Projects, Inc.; a representative from the Virginia Municipal League; a representative from the Virginia Association of Counties; and a citizen representative. Ex officio members shall consist of the Director, Office of Water Programs, who shall act as chairman; Director, Division of Water Supply Engineering; and Director, Division of Consolidated Laboratory Services or their designees.~~

~~Appointed members shall serve at the discretion of the commissioner with staggered terms being of three years in duration. The Waterworks Advisory Committee shall make recommendations to the commissioner regarding waterworks and water supply policies, procedures and programs of the division.~~

12VAC5-590-45. Waterworks Advisory Committee.

A. A Waterworks Advisory Committee (WAC) shall be formed by the commissioner to peer review the regulatory, policy, and legislative aspects of the department's authorities. Committee members shall consist of industry professionals employed outside the department with longstanding expertise or vested interest in waterworks operations and represent a diverse group of stakeholders. Members shall be experts in the fields of water treatment technologies, public health, water quality, economics, environmental science, public utilities, community development, or industry regulations. A minimum of nine persons shall be appointed to the committee by the commissioner.

B. The WAC will convene at least quarterly.

C. WAC meetings will be considered public meetings. Notice of scheduled meetings will be posted on the Virginia Regulatory Town Hall at least seven working days before the date of the meeting. Meeting minutes will be posted to the Virginia Regulatory Town Hall within 10 working days after the meeting.

D. Each member of the WAC shall hold office for a term of three years, except that:

1. With approval by the commissioner, members are eligible for reappointment to consecutive terms.

2. Each member of the WAC serves at the pleasure of the commissioner.

E. The commissioner shall appoint the chair of the WAC.

F. The WAC shall have a department staff member serve as secretary.

12VAC5-590-50. Application of regulations to waterworks ~~and water supplies~~ in operation or planned ~~prior to~~ before the effective date of ~~the regulations~~ this chapter.

~~Waterworks and water supplies which were in operation prior to the effective date of the regulations may continue operation if they comply with the operational regulations set forth in Part II. Operation permits, which will be in addition to all permits previously received, will be issued to such waterworks as soon as practicable after the effective date of these regulations.~~

A. ~~Waterworks and water supplies unable to comply with Part II of this chapter may be issued the appropriate variances and/or exemptions in conjunction with the operation permit to allow continued operation during the period of adjustment. Any variances and/or exemptions will be issued in accordance with the procedures contained in Article 3 of Part I of this chapter~~ The owner shall comply with Part II (12VAC5-540-340 et seq.) of this chapter unless a variance or exemption is issued by the commissioner.

B. Compliance with design criteria set forth in ~~Parts~~ Part III ~~and IV~~ of this chapter is ~~necessary for waterworks modification~~ limited to modifications to existing waterworks and for all construction of new waterworks commenced after ~~the effective date of these revised regulations~~ (insert effective date of this chapter). Portions of waterworks not being modified are not required to comply with the design criteria of Part III (12VAC5-590-640 et seq.). Waterworks construction or modification is deemed to be commenced for purposes of this section upon ~~receipt of final plans and specifications by the field office~~ issuance of the construction permit.

C. Compliance with the requirements set forth in ~~Parts~~ Part III ~~and IV~~ of this chapter including those for materials, construction methods, and disinfection~~, etc.,~~ is necessary for all repairs to pipes, tanks, pumps, and appurtenances ~~which~~ that are part of a waterworks.

~~D. Volatile Synthetic Organic Chemicals (VOCs) and Unregulated Contaminants (UCs) Regulations are effective immediately for those community and NTNC waterworks which serve more than 10,000 persons. The VOC and UC regulations are effective immediately for community and NTNC waterworks serving 3,300 to 10,000 persons. The VOC and UC regulations become effective on January 1, 1991, for community and NTNC waterworks serving less than 3,300 persons. (See Table 2.7.)~~

~~E. The Lead and Copper Regulations establish a treatment technique that includes requirements for corrosion control treatment, water supply (source water) treatment, lead service line replacement, and public education. These requirements are triggered, in some cases, by lead and copper action levels measured in samples collected at consumers' taps. Unless otherwise indicated, each of the provisions of 12VAC5-590-375, 12VAC5-590-405, 12VAC5-590-530 F and 12VAC5-590-550 D applies to community waterworks and nontransient noncommunity waterworks. The requirements set forth in 12VAC5-590-375, 12VAC5-590-530 D and 12VAC5-590-550 D shall take effect on July 7, 1991.~~

12VAC5-590-55. Relationship of this chapter to the Uniform Statewide Building Code.

A. This chapter governs waterworks facilities from any source water to all service connections.

B. In accordance with § 36-98 of the Code of Virginia and the USBC, the USBC governs the construction of buildings and structures, including plumbing systems and backflow prevention methods. The USBC also governs the water service piping from the service connection to a building or structure.

C. Notwithstanding subsections A and B of this section, this chapter shall govern:

1. Water treatment, storage, pumping facilities, and water piping that are part of a waterworks and housed in any building or structure; and

2. Backflow prevention assemblies or elimination methods, or both, installed for containment and located downstream from the service connection, including where located in any building or structure.

~~Article 3~~
~~Procedures~~

12VAC5-590-60. ~~Compliance with the Administrative Process Act.~~ (Repealed.)

~~The provisions of the Administrative Process Act (Chapter 1.1:1 of Title 9) and Title 32.1 of the Code of Virginia govern this chapter. All procedures outlined below are in addition to, or in compliance with, the requirements of that Act.~~

12VAC5-590-70. Powers and procedures.

The board reserves the right to ~~authorize~~ utilize any lawful procedure for the enforcement of this chapter ~~that is consistent with the provisions set forth herein and the provisions of Title 32.1 of the Code of Virginia~~.

12VAC5-590-80. ~~Procedure.~~ (Repealed).

~~Regulations for the operations, construction, or modification of a waterworks or water supply are established, amended, or repealed only in accordance with the Administrative Process Act.~~

12VAC5-590-100. Exception; emergency regulations.

If the establishment of a regulation is necessary ~~for the preservation of public health, safety, or welfare~~ to meet any emergency not provided for by this chapter, the board or commissioner acting on behalf of the board when it is not in session may immediately promulgate and adopt the necessary regulation by complying with the procedures set forth in either § 2.2-4011 or § 32.1-13 of the Code of Virginia.

12VAC5-590-110. Enforcement.

~~All waterworks must be operated in compliance with the requirements as set forth in this chapter as follows:~~

~~1.~~ A. Notice. Whenever the ~~commissioner, his appointed representative, or the division~~ department has reason to believe that a violation of Title 32.1 ~~or~~ of the Code of Virginia or of any section of this chapter ~~has~~ may have occurred or ~~is~~ may be occurring, the ~~division~~ department shall ~~so~~ notify the alleged violator. ~~Such~~ The notice shall (i) be in writing ~~shall~~; (ii) cite the statute~~, regulation~~ or regulations that are allegedly being violated~~, and shall~~; (iii) state the facts ~~which~~ that form the basis for believing that the violation ~~has~~ may have occurred or ~~is~~ may be occurring; and (iv) include information on the process for obtaining a final decision or fact finding from the department on whether or not a violation has occurred. ~~A notice of violation~~ This notification is not an official finding, case decision, or adjudication but may ~~be accompanied by~~ include a request ~~that certain~~ to the owner to respond timely and to take specific corrective action ~~be taken~~ by a stated deadline.

~~2.~~ B. Orders. Pursuant to § 32.1-26 of the Code of Virginia, the ~~commissioner~~ board may issue orders to require any owner to comply with the provisions of ~~Title 32.1 of the Code~~

~~of Virginia or this chapter~~ any law administered by it, the commissioner, or the department; any regulations promulgated by the board, including any section of this chapter; or any case decision of the board or commissioner. The ~~order shall be signed by the commissioner and~~ commissioner, acting on behalf of the board when it is not in session, will sign the order, and the order may require:

~~a.~~ 1. The immediate cessation or correction of the violation;

~~b.~~ 2. The acquisition or use of additional equipment, supplies, or personnel to ensure that the violation does not recur;

~~c.~~ 3. The submission of a plan to prevent future violations;

~~d.~~ 4. The submission of an application for a variance or exemption;

~~e.~~ 5. Any other corrective action deemed necessary for proper compliance with ~~the~~ this chapter; or

~~f. Division review~~ 6. An evaluation and approval~~, if appropriate,~~ of the required submissions, if appropriate.

~~3.~~ C. Compliance with effective orders and this chapter. The commissioner may act as the agent of the board to enforce all effective orders and this chapter. Should any owner fail to comply with any effective order or this chapter, the commissioner may:

~~a.~~ 1. Institute ~~a~~ an administrative proceeding to revoke the owner's permit in accordance with 12VAC5-590-320 and § 32.1-174 of the Code of Virginia or other appropriate administrative remedies;

~~b. Apply to an appropriate court for an injunction or other legal process to prevent or stop any practice in violation of the order;~~

~~c.~~ 2. Request ~~attorney for~~ the ~~Commonwealth to bring a criminal action~~ criminal prosecution by a Commonwealth's attorney with the appropriate jurisdiction in accordance with § 32.1-27 of the Code of Virginia;

~~d.~~ 3. Request civil action by the Attorney General to ~~bring an action for~~ impose a civil penalty, ~~injunction~~ seek injunctive relief, or other appropriate ~~remedy~~ legal remedies pursuant to §§ 32.1-27 and 32.1-176 of the Code of Virginia; or

~~e.~~ 4. Do any combination of ~~the above~~ subdivision C 1, C 2, or C 3 of this section.

~~4.~~ D. Special order. Pursuant to § 32.1-175.01 of the Code of Virginia, the commissioner may, after an informal fact-finding proceeding held in accordance with § 2.2-4019 of the Code of Virginia, issue a special order that may include a civil penalty against an owner who violates the Public Water Supplies Law, §§ 32.1-167 through 32.1-176 of the Code of Virginia, this chapter, or any order of the board.

E. Graduated enforcement actions. Nothing in this section shall prevent the commissioner ~~or the division from taking action prior to issuing an order~~ or department from making efforts to obtain voluntary compliance through conference, warning, or other appropriate means before issuance of an order, instituting an administrative proceeding, or requesting an action by a Commonwealth's Attorney or the Attorney General.

~~5. Hearing as a matter of right (see 12VAC5-590-180).~~

12VAC5-590-115. Administrative proceedings.

A. Types of administrative proceedings. Administrative proceedings before the board, the commissioner, or the commissioner's designee, shall include the following forms depending upon the nature of the controversy and the interests of the named party involved.

1. An informal fact-finding proceeding is an informal conference between the department staff and the named party held in accordance with § 2.2-4019 of the Code of Virginia.

2. A formal hearing is an adjudicatory proceeding before the commissioner or a designated hearing officer held in accordance with § 2.2-4020 of the Code of Virginia.

B. Request for administrative proceeding. The named party may request an administrative proceeding by sending a request in writing to the department.

C. Administrative proceeding as a matter of right. The named party whose rights, duties, or privileges have been or may be affected by any action or inaction of the board, commissioner, or department in the administration of this chapter, has a right to both an informal fact-finding proceeding and a formal hearing; however, the commissioner reserves the right to require participation in an informal fact-finding proceeding before granting the request for a formal hearing.

12VAC5-590-120. Emergency ~~Orders~~ orders.

A. The commissioner may, pursuant to § 32.1-175 of the Code of Virginia, issue emergency orders in any case where there is an imminent danger to the public health resulting from the operation of any waterworks or the source of a water supply.

B. An emergency order may be communicated by the best practical notice under all the circumstances and is effective immediately upon receipt. ~~The order may state any requirements necessary to remove the danger to the public health, including the immediate cessation of the operation of the waterworks or the use of any water supply.~~ The commissioner may order the immediate cessation of the operation of any waterworks or the use of any water supply or the correction of any condition causing the production or

distribution of any water constituting an imminent danger to the public health and welfare.

C. Violation of an emergency order is subject to civil enforcement and is punishable as a criminal misdemeanor.

D. Emergency orders shall be effective for a period determined by the commissioner.

E. Emergency orders may be appealed in accordance with the provisions of the ~~Administrative Process Act~~ APA.

12VAC5-590-125. Chronically noncompliant waterworks.

~~A. The commissioner may identify a waterworks as chronically noncompliant (CNC) whenever he determines that:~~

~~1. The waterworks has a documented performance record that demonstrates the waterworks is not a dependable supplier of potable water;~~

~~2. The owner has shown inadequate technical, financial, or managerial capabilities to provide potable water;~~

~~3. The owner has failed to comply with an order issued by the commissioner;~~

~~4. The owner has abandoned the waterworks and has discontinued providing potable water to the consumers; or~~

~~5. The owner is subject to a forfeiture order pursuant to § 32.1-174.1 of the Code of Virginia.~~

~~B. Once~~ A. If the commissioner determines that a waterworks is ~~CNC~~ a chronically noncompliant waterworks, as defined in § 32.1-167 of the Code of Virginia, ~~he~~ then the commissioner shall issue an order to the owner containing a schedule to bring the waterworks into compliance with this chapter and require the submission of a ~~comprehensive business plan pursuant to § 32.1-172 B of the Code of Virginia~~ waterworks business operation plan. If capital improvements are necessary to bring the waterworks into compliance, and the owner does not possess sufficient assets to make the necessary improvements, the order shall require the owner to make annual, good faith applications for loans, grants, or both, to appropriate financial institutions to secure funding for such improvements, until ~~such~~ the improvements are complete and operational. The owner shall provide a copy of the order to each consumer ~~with a copy of the compliance schedule~~ within 10 calendar days of issuance of the order.

~~C. The owner shall provide the commissioner a copy of the notice~~ order was distributed and a signed certification of the distribution completion date within five calendar days of completing the notification required in subsection B of this section.

B. Within 15 calendar days of issuance of the commissioner's order, the owner shall certify in writing that a copy of the order was distributed to each consumer within the 10-day period specified in subsection A of this section.

~~D.~~ C. The commissioner shall send a copy of the order to the chief administrative officer of the locality in which the waterworks is located for appropriate action under § 15.2-2146 of the Code of Virginia.

~~E.~~ D. In addition to the provisions of § 32.1-27 of the Code of Virginia, any owner who violates this chapter, an order of the board, or a statute governing public water supplies shall be subject to those civil penalties provided in ~~§§ 32.1-167 through 32.1-176~~ Article 2 (§ 32.1-167 et seq.) of Chapter 6 of Title 32.1 of the Code of Virginia.

12VAC5-590-130. Suspension of this chapter.

If, in the case of a ~~manmade~~ man-made or natural disaster, the commissioner ~~finds~~ determines that certain regulations cannot be complied with ~~and that the public health is better served by access to semiregulated or nonregulated water supplies than by the closing of those affected supplies he may suspend~~, then the ~~application~~ enforcement of ~~the chapter~~ those regulations may be suspended for ~~specific affected localities~~ designated waterworks and ~~institute~~ a provisional regulatory scheme instituted until ~~the disaster is abated~~ the conditions that brought about the suspension have abated.

12VAC5-590-140. Variances.

A. The commissioner may grant a variance to a ~~primary maximum contaminant level (PMCL), a~~ PMCL, SMCL, treatment technique requirement, or an operational regulation~~, or a secondary maximum contaminant level (SMCL)~~ by following the appropriate procedures set forth in this section.

1. Requirements for a variance. A ~~PMCL~~ variance may be granted to a waterworks from any requirement ~~respecting~~ with respect to a PMCL or SMCL upon a finding that:

a. Alternative ~~sources of~~ water supplies are not reasonably available to the waterworks;

b. The characteristics of the ~~raw water sources which are~~ source water that is reasonably available to the waterworks ~~prevent~~ prevents the waterworks from meeting the PMCL or SMCL requirements, and on condition that the waterworks installs the ~~best available technology~~ BAT, treatment techniques, or other means, ~~which~~ that the commissioner finds are generally available (taking costs into consideration); and

c. The granting of a variance will not result in an unreasonable risk to the health of persons served by the waterworks.

2. The commissioner may grant ~~a~~ one or more treatment technique ~~variance~~ variances to a waterworks from any requirement of a specified treatment technique upon a finding that the waterworks applying for the variance has demonstrated that ~~such~~ the treatment technique is not necessary to protect the health of persons because of the

nature of the ~~raw water source of such~~ source water at the waterworks.

3. The commissioner may grant a variance to a waterworks from an operational regulation ~~or a SMCL~~ if a thorough investigation reveals that the hardship imposed outweighs the benefits that may be received by the public and that the granting of ~~such~~ the variance does not subject the public to unreasonable health risks. ~~An operational variance may not be issued from monitoring, reporting, or public notification requirements.~~

4. An operational variance may not be issued from monitoring, reporting, or public notification requirements.

B. ~~Application~~ Request for a variance. Any owner may apply in writing for a variance. The ~~application should~~ request shall be sent to the ~~appropriate field office~~ department for evaluation. All ~~applications~~ requests for a variance shall include the following:

1. A citation of the regulation from which a variance is requested;

2. The nature and duration of the variance requested;

3. Relevant analytical results of water quality sampling of the waterworks, including results of relevant tests conducted pursuant to the requirements of this chapter;

4. A statement of the hardship to the owner and the anticipated impacts to the public health and welfare if a variance were granted;

5. Suggested conditions that might be imposed on the granting of a variance that would limit its detrimental impact on public health and welfare;

6. Other information, if any, believed by the ~~applicant~~ owner to be pertinent to the ~~application~~ request; and

7. ~~Such~~ Any other information as may be required by the commissioner to make the determination.

~~8.~~ C. For any ~~application~~ request made for a PMCL variance, the ~~applicant~~ owner shall also include~~:~~:

~~a. Explanation~~ 1. An explanation in full and evidence of the ~~best available treatment technology and techniques~~ BAT;

~~b. Economic~~ 2. The economic and legal factors relevant to the owner's ability to comply;

~~c. Analytical~~ 3. The analytic results of ~~raw water~~ source water quality relevant to the variance request;

~~d.~~ 4. A proposed compliance schedule including the date each step toward compliance will be achieved. ~~Such~~ The schedule shall include as a minimum the following dates:

~~(1) Date~~ a. The date by which arrangement for an alternative ~~raw water source~~ source water or improvement of an existing ~~raw water source~~ source water will be completed;

~~(2) Date~~ b. The date of initiation of the connection of the alternative ~~raw water source~~ source water or improvement of the existing ~~raw water source~~ source water; and

~~(3) Date~~ c. The date by which final compliance is to be achieved.

~~e.~~ 5. A plan for the provision of ~~safe drinking~~ potable water in the case of an excessive rise in the contaminant level for which the variance is requested; ~~and~~

~~f.~~ 6. A plan for interim control measures during the effective period of the variance~~.~~; and

7. A plan for notifying the consumers at least once every three months, or more frequently if determined by the commissioner, that the waterworks is operating under the conditions of a variance.

~~9.~~ D. For any ~~application~~ request made for a treatment technique variance, the ~~applicant~~ owner must also include a statement that monitoring and other reasonable requirements prescribed by the commissioner as a condition to the variance will be performed.

~~C.~~ E. Consideration of a variance ~~application~~ request.

1. The commissioner shall act on any variance ~~application~~ request submitted pursuant to subsection B of this section within 90 days of receipt of the ~~application~~ submittal.

2. The commissioner will consider comments received during the comment period and testimony in the record of a public hearing held before making a determination.

3. In the commissioner's consideration of whether the waterworks is unable to comply with a contaminant level required by this chapter ~~(PMCL variance)~~ because of the nature of the ~~raw water source~~ source water, the commissioner shall consider such factors as the following:

a. The availability and effectiveness of ~~treatment methods~~ BAT for which the variance is requested~~.~~; and

b. ~~Cost~~ The cost and other economic considerations such as implementing treatment, improving the quality of the source water, or using an alternate source.

~~3.~~ 4. In the commissioner's consideration of whether a waterworks should be granted a variance to a required treatment technique because ~~such~~ the treatment is unnecessary to protect the public health ~~(treatment technique variance)~~, the commissioner shall consider such factors as the following:

a. Quality of the source water ~~source~~ including water quality data and pertinent sources of pollution~~.~~; and

b. Source protection measures employed by the waterworks.

~~4.~~ 5. In the commissioner's consideration of whether a waterworks should be granted a variance to a required operational procedure ~~or SMCL (operational variance)~~, the commissioner shall consider such factors as the following:

a. The effect that such a variance would have on the adequate operation of the waterworks, including operator safety ~~(in accordance with Virginia Occupational Safety and Health laws).~~ in accordance with VOSH laws and regulations;

b. The cost and other economic considerations imposed by this requirement~~.~~; and

c. The effect that such a variance would have on the protection of the public health.

~~D.~~ F. Disposition of a variance ~~application~~ request.

1. The commissioner may reject any ~~application~~ request for a variance by sending a rejection notice to the applicant. The rejection notice shall be in writing and shall state the reasons for the rejection. A rejection notice constitutes a case decision. ~~The applicant has the right to petition for a hearing within 60 days of the date of the rejection to challenge the rejection pursuant to 12VAC5-590-160 and 12VAC5-590-180~~ If the commissioner proposes to deny the variance, the owner shall be provided with an opportunity for an informal fact-finding proceeding as provided in § 2.2-4019 of the Code of Virginia.

2. If the commissioner grants the variance, the applicant shall be notified in writing of this decision. ~~Such~~ The notice shall identify the variance, the waterworks covered, and shall specify the period of time for which the variance will be effective.

a. For a PMCL variance as specified in subdivision A 1 of this section, ~~such~~ the notice shall provide that the variance will be terminated when the waterworks comes into compliance with the applicable regulation and may be terminated upon a finding by the commissioner that the waterworks has failed to comply with any requirements of a final schedule issued pursuant to subdivision ~~D~~ F 3 of this section.

b. For a treatment technique variance as specified in subdivision A 2 of this section, ~~such~~ the notice shall provide that the variance may be terminated at any time upon a finding by the commissioner that the nature of the ~~raw water~~ source water is such that the specified treatment technique for which the variance was granted is necessary to protect the public health or upon a finding that the waterworks has failed to comply with monitoring and other requirements prescribed by the commissioner as a condition to the granting of the variance.

c. For an operational variance as specified in subdivision A 3 of this section, ~~such~~ the notice shall provide that the variance will be terminated when the waterworks comes into compliance with the applicable regulation and may be terminated upon a finding by the commissioner that the waterworks has failed to comply with any requirements or schedules issued in conjunction with the variance. The effective date of the operational variance shall be the date of its issuance. A public hearing is not required before the issuance of an operational variance.

3. Schedules pursuant to PMCL and treatment technique variances:

a. The proposed schedule for compliance shall specify dates by which steps ~~towards~~ toward compliance are to be taken, including where applicable:

(1) Date by which arrangement for ~~an~~ the alternative ~~water~~ source water or improvement of the existing ~~raw water.~~ source water will be completed;

(2) Date of connection to the alternative ~~raw water~~ source water or improvement of the existing ~~raw water.~~ source water; and

(3) Date by which final compliance is to be achieved.

b. If the waterworks has no access to an alternative ~~raw water~~ source water and can effect or anticipate no adequate improvement of the existing ~~raw water~~ source water, then the proposed schedule may specify an indefinite time period for compliance until a new and effective treatment technology is developed, at which time a new compliance schedule shall be prescribed by the commissioner.

c. The schedule for implementation of interim control measures during the period of variance shall specify interim treatment techniques, methods, and equipment and dates by which steps toward meeting the interim control measures are to be met.

d. The schedule shall be prescribed by the commissioner at the time the variance is granted.

e. For a PMCL variance specified in subdivision A 1 of this section, the commissioner shall propose a schedule for:

(1)~~.~~ Compliance (including increments of progress) by the waterworks with each contaminant level requirement covered by the variance; and

(2)~~.~~ Implementation by the waterworks of such control measures as the commissioner may require for each contaminant level covered by the variance.

~~E.~~ G. Public hearings on PMCL and treatment technique variances and their schedules.

1. Notice of a public hearing shall be provided before a variance and schedule proposed by the commissioner pursuant to subsection ~~D~~ F of this section may take effect. A notice given pursuant to ~~the preceding sentence~~ this subsection may cover the granting of more than one variance and a public hearing held pursuant to such notice shall include each of the variances covered by the notice.

2. Notice of a public hearing on ~~an application~~ a request for a variance and its schedule shall be advertised in at least one major newspaper of general circulation in the region in which the waterworks is located. The notice shall include a summary of the proposed variance and its schedule and shall contain the time, date, and place of the public hearing. If the schedule exceeds five years from the date of the variance, then the rationale for the extended compliance schedule shall be discussed in the notice.

~~F.~~ H. Issuance of variance.

1. Within 30 days after the public hearing, the commissioner shall, taking into consideration information obtained during such hearing, revise the proposed variance as necessary and prescribe the final schedule for compliance and interim measures for the waterworks granted a variance. If the schedule for compliance exceeds five years from the date of issuance of the variance, then the commissioner shall document the rationale for the extended compliance schedule.

2. ~~Such~~ The compliance schedule shall establish the timetable by which the waterworks shall comply with each contaminant level and treatment technique requirement prescribed by this chapter. Such schedule shall also consider if the waterworks is to become part of a regional waterworks. ~~Such~~ The compliance schedule shall provide the shortest practicable time schedule under the circumstances.

~~G.~~ I. Posting of variances. All variances granted to any waterworks are nontransferable. Each variance must be attached to the permit of the waterworks to which it is granted. Each variance is a condition to that permit and is revoked when the permit is revoked.

~~H.~~ J. No variances shall be granted to 12VAC5-590-380, ~~12VAC5-590-400, or 12VAC5-590-420,~~ 12VAC5-590-388, 12VAC5-590-395, or 12VAC5-590-411.

12VAC5-590-150. Exemptions.

A. The commissioner may grant an exemption to any ~~primary maximum contaminant level (PMCL)~~ PMCL or treatment technique requirement by following the procedures set forth in this ~~subsection~~ section. An exemption may be granted to a waterworks ~~from any requirement with respect to a PMCL or treatment technique requirement~~ upon a finding that:

1. The waterworks ~~must be~~ is unable to implement measures to develop an alternative supply of source ~~of~~ water ~~supply~~;

2. The waterworks cannot reasonably make management or restructuring changes that will result in compliance or improve the quality of the drinking water;

3. Due to compelling factors (which may include economic factors), the waterworks is unable to comply with ~~such~~ contaminant level or treatment technique ~~requirement~~ requirements;

4. The granting of the exemption will not result in an unreasonable risk to the health of persons served by the waterworks;

5. The waterworks was in operation on the effective date of such contaminant level or treatment technique ~~requirement~~ requirements; and

6. The waterworks has not been granted a variance.

B. ~~Application for exemption. A waterworks~~ The owner may request an exemption for a waterworks by submitting a written ~~application~~ request to the ~~appropriate field office~~ department for evaluation. All ~~applications~~ requests for an exemption shall include the following information:

1. A citation to the regulation from which the exemption is requested;

2. ~~Nature~~ The nature and duration of the exemption requested;

3. ~~Relevant~~ The relevant analytical results of water quality sampling of the waterworks, including results of relevant tests conducted pursuant to the requirements of this chapter;

4. ~~Explanation~~ An explanation of the compelling factors such as time or economic factors ~~which~~ that prevent such waterworks from achieving compliance;

5. Other information believed by the ~~applicant~~ owner to be pertinent to the ~~application~~ request;

6. A proposed compliance schedule, including the date when each step toward compliance will be achieved; and

7. ~~Such other~~ Other information as may be required by the commissioner to make the determination.

C. Consideration of an exemption ~~application~~ request.

1. The commissioner shall act on any exemption ~~application~~ request submitted pursuant to subsection B of this section within 90 days of receipt of the ~~application~~ request.

2. In the commissioner's consideration of whether the waterworks is unable to comply due to compelling factors, the commissioner shall consider such factors as the following:

a. ~~Construction~~ The construction, installation, or modification of treatment equipment or systems;

b. The time needed to put ~~into operation~~ a new water treatment ~~facility~~ plant into operation to replace an existing ~~waterworks which~~ water treatment plant that is not in compliance;

c. The economic feasibility of compliance;

d. The availability of Drinking Water State Revolving Fund, a department program to assist waterworks in achieving the public health protection objectives of the SDWA, assistance or any other federal or state program that is reasonably likely to be available within the period of the exemption;

e. The consideration of rate increases, accounting changes, the appointment of a licensed operator under the state operator's licensure program, or contractual agreements for joint operation with one or more waterworks;

f. The activities consistent with Virginia's capacity development strategy to help the waterworks acquire and maintain technical, financial, and managerial capacity to come into compliance;

g. The ownership changes, physical consolidation with another waterworks, or other feasible and appropriate means of consolidation that would result in compliance; and

h. The availability of an alternative source of drinking water, including the feasibility of partnerships with neighboring waterworks, as identified by the waterworks or by the commissioner consistent with the capacity development strategy.

D. Disposition of an exemption ~~application~~ request.

1. The commissioner may reject any ~~application~~ request for an exemption by sending a rejection notice to the ~~applicant~~ owner. The rejection notice shall be in writing and shall state the reasons for the rejection. A rejection notice constitutes a case decision. ~~The applicant has the right to petition for a hearing within 60 days of the date of the rejection to challenge the rejection pursuant to 12VAC5-590-160 and 12VAC5-590-180.~~ If the commissioner proposes to deny the exemption, then the owner shall be provided with an opportunity for an informal fact-finding proceeding as provided in § 2.2-4019 of the Code of Virginia.

2. If the commissioner grants the exemption, then the ~~applicant~~ owner shall be notified in writing of this decision. ~~Such~~ The notice shall identify the exemption and the waterworks covered and shall specify the termination date of the exemption. ~~Such notice shall provide that the exemption~~ Exemptions shall be terminated when the waterworks comes into compliance with the applicable regulation and may be terminated upon a finding by the commissioner that the waterworks has failed to comply with any requirements of a final schedule issued pursuant to subsection F of this section.

3. The commissioner shall propose a schedule for:

a. Compliance (including increments of progress) by the waterworks with each contaminant level and treatment technique requirement covered by the exemption; and

b. Implementation by the waterworks of such control measures as the commissioner may require for each contaminant level and treatment technique requirement covered by the exemption.

4. The schedule shall be prescribed by the commissioner at the time the exemption is granted.

5. For a waterworks that serves a population of not more than 3,300 persons and that needs financial assistance for the necessary improvements under the initial compliance schedule, an exemption granted by the commissioner may be for one or more additional two-year periods, but not to exceed a total of six additional years, only if the commissioner establishes that the waterworks is taking all practicable steps to meet the requirements of the exemption and the established compliance period. The commissioner will document the findings in granting an extension under this subdivision.

E. Public hearings on exemptions and their schedules.

1. Notice of a public hearing shall be provided before an exemption and schedule proposed by the commissioner pursuant to subsection D of this section may take effect. ~~A~~ Such notice ~~given pursuant to the preceding sentence~~ may cover the granting of more than one exemption, and a public hearing held pursuant to ~~such~~ the notice shall include each of the exemptions covered by the notice.

2. Notice of a public hearing on ~~an application~~ a request for an exemption and its schedule shall be advertised in at least one major newspaper of general circulation in the region in which the waterworks is located.

3. The notice shall include a summary of the proposed exemption and its schedule and shall contain the time, date, and place of the public hearing.

F. Issuance of exemption.

1. Within 30 days after the public hearing, the commissioner shall, taking into consideration information obtained during ~~such~~ the hearing, revise the proposed exemption as necessary and prescribe the final compliance

schedule ~~for compliance~~ and interim measures ~~for~~ before issuing the exemption to the waterworks ~~granted an exemption~~.

2. ~~Such~~ The schedule shall establish the timetable by which the waterworks shall comply with each contaminant level and treatment technique requirement prescribed by this ~~chapter~~ section. If the schedule for compliance exceeds five years from the date of issuance of the exemption, then the commissioner shall document the rationale for the extended compliance period. Such schedule shall also consider if the waterworks is to become part of a regional waterworks.

G. Posting of exemptions. All exemptions granted to any waterworks are nontransferable. Each exemption must be attached to the operation permit of the waterworks to which it is granted. Each exemption is a condition to that permit and is revoked when the permit is revoked.

H. No exemption shall be granted to 12VAC5-590-380, ~~12VAC5-590-400, or 12VAC5-590-420 B 1 b~~, 12VAC5-590-388, or 12VAC5-590-395.

12VAC5-590-160. ~~Types of hearings.~~ (Repealed.)

~~Hearings before the board, the commissioner, or their designees shall include any of the following forms depending upon the nature of the controversy and the interests of the parties involved.~~

~~1. An informal hearing is a meeting with the district engineer and field director and held in accordance with § 9-6.14:11 of the Code of Virginia. The field director may consider all evidence presented at the meeting which is relevant to the issue in controversy. Presentation of evidence, however, is entirely voluntary. The field office has no subpoena power. No verbatim record will be taken at the informal hearing, but the field director may make preliminary findings of fact, and may submit a copy of those preliminary findings, with recommendations, to the commissioner and or division director for review. A copy of the findings shall be mailed to the appellant.~~

~~2. The adjudicatory hearing is a formal, public, adjudicatory proceeding before the commissioner or a designated hearing officer held in conformance with § 9-6.14:12. Pursuant to the hearings process:~~

~~a. A Notice which states the time, place, and issues involved in the prospective hearing shall be sent to parties requesting the hearing by certified mail at least 15 calendar days before the hearing is to take place;~~

~~b. A record of the hearing will be made by a court reporter or other approved means. A copy of the transcript of the hearing, if transcribed, will be provided within a reasonable time to any person upon written request and payment of the cost. If the record is not transcribed, then the cost of preparation of the transcript will be borne by the party requesting the transcript;~~

~~c. All interested parties may attend the hearing and present evidence, expert or otherwise, that is material and relevant to the issues in controversy. The admissibility of evidence shall be in accordance with the Administrative Process Act. All parties may be represented by counsel;~~

~~d. The commissioner or hearing officer, pursuant to § 9-9.14:13 of the Code of Virginia, may issue subpoenas for the attendance of witnesses and the production of books, papers, maps, and records. The failure of a witness without legal excuse to appear or to testify or to produce documents may be reported by the commissioner to the appropriate circuit court; and~~

~~e. The commissioner may designate a hearing officer or subordinate to conduct the hearing, as provided in § 9-6.14:12 of the Code of Virginia, and to make written recommended findings of fact and conclusions of law to be submitted for review and final decision by the commissioner. The final decision of the commissioner shall be reduced to writing and will contain the explicit findings of fact upon which his decision is based. Copies of the decision shall be delivered to the owner affected by it. Notice of a decision will be served upon the parties and become a part of the record. Service may be by personal service or certified mail, return receipt requested.~~

~~3. A regulatory hearing is a public meeting of the board which is held for the purpose of adopting, amending, or repealing rules and regulations. A regulatory hearing requires that:~~

~~a. A notice shall be published, in at least one newspaper of general circulation in the commonwealth, not less than 60 days prior to the day on which the regulatory hearing is to be held. Such notice shall state the time, place, and nature of the hearing and the express terms or an informative survey of the rules that are to be adopted, amended, or repealed;~~

~~b. All interested persons may be present at the hearing and may present comments, arguments, objections, and evidence which concern the proposed rules; and~~

~~c. The board may adopt, repeal, or amend any rule or regulation which was included in the general notice published prior to the meeting. Rules and regulations may be adopted in the form in which they were described in the notice, or as amended at the hearing, provided the amendments do not alter the main purpose of the rule or regulation.~~

12VAC5-590-170. ~~Request for hearing.~~ (Repealed.)

~~Any person may request a hearing by sending a request, in writing, to the appropriate field office or the central office.~~

12VAC5-590-180. ~~Hearing as a matter of right.~~ (Repealed.)

~~Any person whose rights, duties or privileges have been or may be affected by any action or inaction of the board, its agents, or deputies in the administration of this chapter, shall have a right to both an informal and an adjudicatory hearing; however, the commissioner reserves the right to require participation in an informal hearing before granting the request for a full adjudicatory hearing.~~

12VAC5-590-190. Permits.

A. No owner or other person may cause or allow any waterworks to be operated in the Commonwealth without a written operation permit issued by the commissioner.

B. No owner or other person shall cause or allow the construction or change in the manner of transmission, storage, purification, treatment, or distribution of water (including the extension of water pipes for the distribution of water) at any waterworks ~~or water supply~~ in the Commonwealth without a written construction permit or a general permit for distribution mains from the commissioner. ~~Furthermore, no owner or other person shall cause or permit any waterworks or water supply to be operated without a written operation permit issued by the commissioner which authorizes the operation of the waterworks or water supply. Conditions may be imposed on the issuance of any permit, and no waterworks or water supply may be constructed, modified, or operated in violation of these conditions.~~

C. Construction permits may not be required for the extension of water distribution piping having a diameter of eight inches or less and serving less than 15 connections (see § 32.1-172 A of the Code of Virginia).

D. Individual construction permits for distribution mains are not required for waterworks that obtain a general permit (see 12VAC5-590-300).

E. Conditions may be imposed on the issuance of any permit, and no waterworks may be constructed, modified, or operated in violation of these conditions.

12VAC5-590-200. Procedure for obtaining a construction permit.

A. Construction permits are issued by the ~~Commissioner~~ commissioner, but all requests for a construction permit are directed initially to the ~~Field Office~~ department. The procedure for obtaining ~~the~~ a construction permit includes the following steps:

~~(i) the submission of an application, (ii) a preliminary engineering conference, (iii) the submission of an engineer's report (optional at the discretion of the Field Director), and, (iv) the submission of plans, specifications, design criteria and other data in the number requested by the Division.~~

~~A. An application for a permit shall be submitted by the owner or authorized agent requesting permission to establish, construct, expand, modify, and/or operate a waterworks or water supply. The application shall clearly indicate whether the affected water supply is a community, nontransient noncommunity, or noncommunity waterworks.~~

~~B. A preliminary conference with the Division's appropriate District Engineer will be held. The applicant's engineer shall be prepared to set forth the water supply problems and the proposed solution in such a manner as to support his conclusions and recommendations.~~

~~C. The engineer's report and preliminary plans for waterworks shall present the following information where applicable:~~

~~1. General information - The report shall include:~~

~~a. A description of any existing waterworks and sewerage facilities.~~

~~b. Identification of the municipality or area served.~~

~~c. The name and mailing address of the owner.~~

~~2. Extent of waterworks system - The report shall include:~~

~~a. A description of the nature and extent of the area to be served.;~~

~~b. Provisions for extending the waterworks system to include additional areas.~~

~~c. An appraisal of the future requirements for service, including existing and potential industrial, commercial, institutional and other water supply needs.~~

~~3. Alternate plans - Where two or more solutions exist for providing public water supply facilities, each of which is feasible and practicable, the report shall discuss the alternate plans and give reasons for selecting the one recommended, including financial considerations.~~

~~4. Soil, groundwater conditions, and foundation problems - The report shall include:~~

~~a. A description of the character of the soil through which water mains are to be laid.~~

~~b. A description of foundation conditions prevailing at sites of proposed structures.~~

~~c. A description of the approximate elevation of ground water in relation to subsurface structures.~~

~~5. Water consumption - The report shall include:~~

~~a. A description of the population trends as indicated by available records, and the estimated population which will be served by the proposed water supply system or expanded system.~~

b. Present and estimated future water consumption values used as the basis of design.

c. Present and estimated future yield of the sources of supply.

6. Fire flow requirements; if fire flows are to be provided, the quantity of fire flow which will be made available by the proposed or enlarged system shall be given.

7. Sewerage system available; Describe the existing system and sewage treatment works, with special reference to its relationship to the existing or proposed waterworks which may affect the operation of the water supply system, or which may affect the quality of the water supply.

8. Source of water supply: Describe the proposed source or sources of water supply to be developed and the reasons for their selection by supplying the following data:

a. Surface water sources

(1) Hydrological data, stream flow, and weather records;

(2) Safe yield, including all factors that may affect it;

(3) Maximum flood flow, together with approval for safety features of spillway and dam from appropriate reviewing authority;

(4) Summarized quality of raw water with special references to fluctuation in quality, changing meteorological conditions, sources of contamination, measures to protect the watershed, etc.

b. Groundwater sources

(1) Sites considered,

(2) Advantages of site selected,

(3) Elevation with respect to surroundings and 100 year flood,

(4) Probable character of geological formations through which source is to be developed,

(5) Unusual geological conditions affecting site,

(6) Summary of source exploration, test well depth and method of construction, placement of liners or screens; pumping test, hours, capacity; water level and specified yield, water quality,

(7) Possible sources of contamination.

9. Proposed treatment processes - Summarize and establish the adequacy of proposed processes for the treatment of the specified water under consideration (pilot studies may be required).

10. Waste disposal - Discuss the various wastes from the water treatment plant, their volume, proposed treatment and points for discharge.

11. Automatic equipment - Provide supporting data justifying automatic equipment, including servicing.

12. Project sites - The report shall include:

a. A discussion on various sites considered and advantages of the recommended one,;

b. A description of the proximity of residences, industries, and other establishments,

c. The location of potential sources of pollution that may influence the quality of the supply or interfere with the effective operation of the waterworks system, such as sewage absorption systems, septic tanks, privies, cesspools, sink holes, sanitary landfills, petroleum storage tanks, etc.

13. Financing - The report shall state:

a. The estimated cost of integral parts of the system,

b. The detailed estimated annual cost of operation,

c. The proposed method of financing, both capital charges and operating expenses.

14. Future extensions - Summarize planning for future needs and service.

1. Owners shall notify the department of all proposed construction projects, except distribution main projects that are permitted under the provisions of a general permit for distribution mains (see 12VAC5-590-300), or when the project is for the extension of water distribution piping having a diameter of eight inches or less and serving less than 15 connections (see § 32.1-172 A of the Code of Virginia).

2. The submission of a Waterworks Permit Application to the department on a form approved by the department.

3. Based on the application received, the department shall notify the owner if a preliminary engineering conference is required. A preliminary engineering conference shall be required for projects proposed using alternative delivery methods authorized under § 2.2-4380 of the Code of Virginia. The preliminary engineering conference shall define the scope of the project, project phasing, milestones, and deliverables. An evaluation procedure shall be agreed upon and the conference shall be documented.

4. The submission of preliminary engineering or intermediate design reports if required by the department. The need for and scope of the reports shall be established during the preliminary engineering conference.

5. The submission of a waterworks business operation plan that demonstrates the waterworks TMF capability. The waterworks business operation plan consists of four primary components:

a. Waterworks information that includes ownership data, a waterworks facility description, operator requirements, staffing needs, and staff training.

b. Management information that identifies critical business practices necessary for effective management and operation of the waterworks. Management information includes the requirements essential for managing and operating the waterworks and defines the processes, methods, and tasks necessary for complying with this chapter.

c. Financial information that identifies projects, considering the waterworks revenues and cash flow, will be sufficient for meeting the cost of operation and maintenance for at least five full years from the initiation of operations. Financial information also demonstrates the owner's ability to direct the waterworks' finances to support technical and managerial capacities and includes a self-assessment consisting of the following several financial metrics: operating cash reserve, debt service coverage, emergency reserve, and revenue sufficiency.

d. Sustainability improvements that are identified throughout the waterworks business operation plan to address TMF aspects of the waterworks' business processes that need improvement.

6. The submission of plans, specifications, final design criteria, and other supporting design data. This submission may include manufacturers equipment data sheets, drawings, and specifications when the specific materials or equipment to be used in the project have been preselected by the owner with the engineer's concurrence.

B. Well site inspection. When, upon inspection by the department, one or more well locations are found suitable for well sites, tentative approval in writing shall be furnished to the owner authorizing the drilling of wells, the exact location where each well is to be drilled, and the well construction requirements. This tentative approval will become void after a 12-month period.

~~D.~~ C. Plans for waterworks ~~improvements~~ construction shall provide the following information, where applicable:

1. A general layout ~~which~~ that includes:

a. Suitable title, to include name of waterworks~~,~~;

b. Name of owner of waterworks~~,~~;

c. Area or institution to be served~~,~~;

d. Scale~~, in feet,~~;

e. North Point~~,~~;

f. Datum used~~,~~;

~~g. Boundaries of the municipality or area to be served,~~

~~h.~~ g. Date, address, and name of ~~designing~~ owner's engineer~~,~~;

~~i. Imprint of professional engineer's seal (see 12VAC5-590-220),~~

~~j. Legible prints suitable for microfilming, with size not to exceed 30 inches by 42 inches,~~

~~k.~~ h. Location and size of existing ~~water mains,~~ distribution system; and

~~l.~~ i. Location and nature of existing waterworks structures and appurtenances affecting the proposed ~~improvements~~ construction noted on one sheet.

2. Detailed plans ~~which~~ that include, where applicable:

a. Stream crossings, providing profiles with elevations of the stream bed and the normal ~~and extreme high and low water levels,~~ water level;

b. Profiles having a horizontal scale of not more than 100 feet to the inch and a vertical scale of not more than 10 feet to the inch, with both scales clearly indicated~~,~~;

c. Location and size of ~~the~~ property to be used for ~~the~~ groundwater development with respect to known references such as street intersections or section lines~~,~~;

d. Topography and arrangement of present or planned wells or structures, with contour intervals not greater than two feet~~,~~;

e. Elevation of highest known flood ~~level~~, floor of structure, upper terminal of protective casing, and outside surrounding grade, using United States Coast and Geodetic Survey, United States Geological Survey, or equivalent elevations where applicable as a reference~~,~~;

f. ~~Schematic drawing~~ A completed Uniform Water Well Completion Report, Form GW-2, and schematic drawings of well construction, showing diameter and depth of ~~drillholes~~ drill holes, casing and liner diameters and depths, grouting depths, elevations and designation of geological formation, water levels, and other details to describe the proposed well completely~~,~~;

g. ~~Location~~ If not previously submitted in the preliminary engineering report (PER): the location of all potential sources of pollution within ~~250~~ 1,000 feet ~~(or further, depending upon aquifer type and recharge area)~~ of drilled wells, 100 feet of treated water storage facilities, five miles upstream from surface water intakes, and the entire drainage area of springs;

h. Size, length, identity, and location ~~or~~ of sewers, drains, ~~water mains~~ distribution systems, and water treatment plant structures;

i. Schematic flow diagrams and hydraulic profiles showing the flow through various water treatment plant units~~,~~;

j. Piping in sufficient detail to show flow through the water treatment plant, including waste lines~~,~~;

k. Location of all chemical feeding equipment and points of chemical application~~,~~;

l. All appurtenances, specific structures, equipment, water treatment plant waste disposal units, and point of discharge having any relationship to the plans for ~~water mains and/or~~ distribution system or waterworks structures~~,~~;

m. Location of sanitary or other facilities such as lavatories, showers, toilets, and lockers~~,~~;

n. Location, dimensions, and elevations of all proposed water treatment plant facilities~~,~~; and

o. Adequate description of all features not otherwise covered by the specifications.

~~E. Complete, detailed, technical specifications shall be supplied for the proposed project which include where applicable:~~ D. Specifications for waterworks construction improvements shall provide the following information, where applicable:

1. A program for keeping existing waterworks facilities in operation during construction of additional facilities so as to minimize interruption of service~~,~~;

2. ~~Laboratory~~ The laboratory facilities and equipment, as well as sampling taps and their locations~~,~~;

3. ~~Number~~ The number and design of treatment process components~~,~~;

4. ~~Materials~~ The materials or proprietary equipment for sanitary or other facilities including any necessary backflow or backsiphonage backflow protection~~,~~;

5. Workmanship~~,~~; and

6. Other equipment.

~~F.~~ E. Design criteria. A summary of complete design criteria shall be submitted for the proposed project, containing but not limited to the following information, where applicable:

1. ~~Yield of source of supply,~~ Source water capacity;

~~2. Reservoir surface area,~~

~~3. Area of watershed,~~

~~4.~~ 2. Estimated water consumption, including average day, maximum day, and peak hour flows;

~~5.~~ 3. Number and type of proposed services~~,~~;

~~6. Fire fighting~~ 4. Firefighting requirements~~,~~;

~~7.~~ 5. Basin capacities~~,~~;

~~8.~~ 6. Retention times~~,~~;

~~9.~~ 7. Unit loadings~~,~~;

~~10.~~ 8. Filter area and proposed filtration rate~~,~~;

~~11.~~ 9. Backwash rate~~,~~; and

~~12.~~ 10. Feeder capacities and ranges.

F. For community waterworks, a copy of the duly recorded (i) plat plan of the well lot or subdivision plan showing the well lot and (ii) dedication document stating that the well lot shall be used only for waterworks appurtenances as long as the lot is utilized as part of a waterworks.

G. For noncommunity waterworks, the commissioner may on a case-by-case basis require a copy of a duly recorded plat plan of a well lot and a dedication document stating that the well lot shall be used only for waterworks appurtenances as long as the lot is utilized as part of a waterworks. In imposing such a requirement, the commissioner shall take into consideration public health protection and the waterworks operations, treatment processes, and appurtenances.

12VAC5-590-210. ~~Formal requirements~~ Requirements for the submission of engineering data.

A. In accordance with ~~Article 1 (§ 54.1-400 et seq.) of~~ Chapter 4 (§ 54.1-400 et seq.) of Title 54.1 of the Code of Virginia, all drawings, specifications, and engineer's reports submitted for approval shall be prepared by or under the supervision of a licensed professional engineer ~~legally~~ qualified to practice in Virginia, unless submitted under § 54.1-408 of the Code of Virginia for practice of land surveying in subdivisions.

~~The front cover of each set of drawings, of each copy of the engineer's report, and of each copy of the specifications submitted for review shall bear the signed imprint of the seal of the licensed professional engineer who prepared or supervised the preparation and be signed with an original signature. In addition, each drawing submitted shall bear an imprint or a legible facsimile of such seal.~~ B. The quantity, format, and method of submission shall meet the evaluation needs of the department and shall be consistent with the requirements in Chapter 42.1 (§ 59.1-479 et seq.) of Title 59.1 of the Code of Virginia.

C. All reports, plans, and specifications shall be submitted to the ~~field office~~ department at least 60 days ~~prior to~~ before the date upon which action by the ~~division~~ department or commissioner is desired.

D. If the procedures for obtaining a construction permit in 12VAC5-590-200 are not complied with or if plans and specifications are found to be incomplete or inadequate for ~~detailed review~~ evaluation, then the plans and specifications will be returned to the submitting party. If revisions to the

plans or specifications or both are necessitated, ~~a letter will be sent to~~ the owner and engineer who prepared them ~~outlining the~~ will be notified in writing of the necessary revisions. Revised plans, ~~or~~ specifications, or both constitute a ~~resubmittal; however, the division will make every~~ resubmission. Every effort will be made to complete the ~~review of such~~ evaluation of these revisions promptly. ~~Preliminary plans and the engineer's report should be submitted for review prior to preparation of final plans.~~

12VAC5-590-220. Compliance with the Manual of Practice.

A. The design guidelines set forth in ~~the Manual of Practice (Part III)~~ Part III Manual of Practice for Waterworks Design (12VAC5-590-640 et seq.) of this chapter (Manual of Practice) specify general criteria for the design and construction of waterworks. The ~~division~~ commissioner may impose standards or requirements ~~which~~ that are more stringent than those contained in the Manual of Practice when required ~~for critical areas or special conditions~~ to meet drinking water quality standards. Any ~~such~~ special standards or requirements with a federal mandate shall take precedence over the criteria in the ~~manual~~ Manual of Practice and will be items ~~which~~ that warrant careful consideration at the preliminary engineering conference, referenced in 12VAC5-590-200 ~~B~~.

B. Designs submitted for waterworks must demonstrate that the ~~system~~ waterworks will adequately safeguard public health. Submissions ~~which~~ that are in substantial compliance with the Manual of Practice ~~or~~ and any additional requirements of the ~~department~~ commissioner, as noted ~~above~~ in subdivision A of this section, will be approved. Justification for a design may be required for those portions of the submitted design ~~which~~ that differ from the criteria ~~of the division,~~ set forth in the Manual of Practice~~, or accepted engineering practices~~ and any established by the commissioner. Deviations from ~~"shall"~~ mandatory criteria ~~which the design engineer, in his judgment, believes to be substantial in nature~~ contained in the Manual of Practice shall be identified and justified. ~~The division~~ For each deviation, the commissioner may ~~require changes in designs which are not in substantial compliance with the manual and which are not adequately justified by the engineer owner~~ issue a design exception or require compliance with the criteria.

C. Final, complete, and detailed plans and specifications submitted in accordance with the provisions of 12VAC5-590-200 and 12VAC5-590-210 will be ~~reviewed~~ evaluated by the ~~division~~ department as soon as practicable upon receipt. ~~Such plans~~ Plans and specifications will be approved if they demonstrate substantial compliance with the design criteria set forth in the Manual of Practice and any established by the commissioner and if the waterworks, as constructed or modified, will be able to function in compliance with ~~the operating regulations set forth in~~ Part II (12VAC5-590-340 et seq.) of this chapter. ~~One set of the approved plans and specifications will be stamped by the division and returned to the owner.~~

D. Compliance with the Manual of Practice for transient noncommunity waterworks is allowed the following exceptions as long as the conditions in subsection E of this section are satisfied:

1. The design of a transient noncommunity waterworks is not required to satisfy the professional engineer licensure requirement of 12VAC5-590-210 under the following conditions:

a. The waterworks shall serve no more than 100 persons per day.

b. The waterworks shall consist only of one supply of source water, a pressure tank no greater than 250 gallon capacity, and a single service connection.

c. The single service connection shall be a building or structure of less than 5,000 square feet total floor space. The determination of square footage shall be calculated using the outside perimeter of the building or structure.

2. Although the owner of a transient noncommunity waterworks is required to use a water well systems provider certified by DPOR for drilling wells, the remainder of the waterworks facility construction at a transient noncommunity waterworks may be performed by a master plumber or a certified water well systems provider, as defined in § 54.1-1129.1 of the Code of Virginia.

E. The conditions for exceptions to the Manual of Practice for transient noncommunity waterworks specified in subsection D of this section are as follows:

1. The owner shall submit a signed and dated statement attached to the permit application, certifying that subsection D of this section will be satisfied.

2. The owner shall submit information related to the design, construction, and materials used as required by the department.

12VAC5-590-230. Issuance of the construction permit.

A. Upon approval of the plans and specifications, the commissioner will issue a permit to the owner to construct or modify ~~his~~ the waterworks ~~or water supply~~ in accordance with the approved plans and specifications.

B. The construction permit shall be valid for a period of five years. If construction has not begun within five years but were to proceed in the future, then the owner shall reapply for a new construction permit.

C. The construction permit may include conditions for securing equipment certifications and performance validations.

12VAC5-590-240. Revisions of approved plans.

A. Any deviations from the approved plans and specifications affecting capacity, hydraulic conditions, operating units, the functioning of water treatment processes, or the quality of water to be delivered must be approved by the ~~division~~ department before any ~~such changes~~ of these deviations are ~~made~~ implemented.

B. Revised plans and specifications shall be submitted in time to ~~permit~~ allow the ~~review~~ evaluation and approval of ~~such~~ these plans or specifications before any construction work ~~which~~ that will be affected by ~~such~~ these changes ~~is begun~~ may begin.

12VAC5-590-250. Statement required upon completion of construction.

A. Upon completion of the construction or modification of the waterworks, the owner shall submit to the ~~field office~~ department a statement signed by a licensed professional engineer stating that the construction work was completed in accordance with the approved plans and specifications, revised only in accordance with the provisions of 12VAC5-590-240. This statement is called a statement of completion of construction and shall be based upon inspections of the waterworks during and after construction or modifications~~, that~~. These inspections are to be adequate to ~~insure~~ ensure the truth of the statement of completion of construction.

B. The project documents may require a performance validation report to confirm the design, performance criteria, and appropriate emergency procedures for specific processes and equipment. The project documents may also require operator training. If these requirements are included in the project documents, then the statement of completion of construction shall also include the performance validation report and a certification of successful operator training, as applicable.

12VAC5-590-260. Issuance of the operation permit.

A. Upon receipt of the ~~12VAC5-590-250~~ statement of completion of construction, receipt of all required certifications and test results, inspection by the department to ensure that the project has been satisfactorily completed in accordance with the approved design documents, and verification that bacteriological test results comply with the requirements set forth in Part II of this chapter, as appropriate, the commissioner will issue an ~~operating~~ operation permit. ~~However, the commissioner may delay the granting of the permit pending inspection by the field office to insure that the work has been satisfactorily completed.~~

B. The owner shall not operate a waterworks without first having obtained an operation permit except as provided in 12VAC5-590-290.

C. The commissioner shall establish the type (community waterworks, NTNC, or TNC), classification, and permitted capacity of the waterworks and specify these on the operation permit. Conditions may be included with the permit for operator, monitoring, and reporting requirements.

12VAC5-590-270. ~~Inspection and correction~~ Start-up testing and inspections.

A. ~~Within 30 days after~~ Before placing a new or modified waterworks ~~or water supply~~ into operation following construction, the owner shall test the water ~~produced~~ at the entry point to the distribution system in a manner acceptable to the ~~division~~ department. The ~~field office will be notified~~ owner shall notify the department of the time and place of the tests. ~~Results~~ The owner shall send the results of the tests ~~will be sent~~ to the ~~field office~~ department.

B. The commissioner~~, a member of the board, or a member of the division~~ has a right to inspect any waterworks ~~or water supply~~ and to be present for any testing in accordance with Title 32.1 of the Code of Virginia.

12VAC5-590-280. ~~Procedure for obtaining a construction permit for well sources.~~ (Repealed.)

~~Since the quantity and quality of water from proposed wells cannot be anticipated, the following procedure shall be used:~~

~~1. Submittal of application - see 12VAC5-590-200 A.~~

~~2. Preliminary engineering conference - see 12VAC5-590-200 B.~~

~~3. When, upon inspection by the division's engineer, one or more well lots are found suitable for well sites, then tentative approval in writing will be furnished to the owner authorizing him to proceed with the drilling of the well or wells and this letter will specify the exact location on the lot where each well is to be drilled. Also, the letter will specify that the well shall be Class I or Class II, meeting the specifications set forth in Part III Article 2, Source Development. This tentative approval will become void after a 12 month period and the site must be reinspected before construction when so voided.~~

~~4. Submittal of engineer's report and preliminary plans - see 12VAC5-590-200 C.~~

~~5. Submittal of plans, specifications, and other data - see subsections D, E, and F of 12VAC5-590-200; 12VAC5-590-210 and 12VAC5-590-840. One of the following must also be submitted:~~

~~a. A copy of the plat plan showing that it has been duly recorded and signed by the clerk of the court, giving the deed book and page number and date of recording, will be required before a construction permit can be issued, or~~

~~b. If the well lot is identified on a recorded plan of the subdivision as a well lot, then this is acceptable, if recorded as required by this subsection.~~

~~In addition, a dedication document duly recorded with the clerk of the circuit court must be furnished stating that the well lot shall be used only for waterworks appurtenances as long as this lot is utilized as part of a waterworks.~~

12VAC5-590-290. ~~Procedure for issuance of special permits for new or nonconventional methods, processes, and equipment~~ Issuance of a temporary operation permit.

A. Water treatment methods, processes, and equipment ~~which~~ that are not covered by the design criteria of Part III ~~or Part IV~~ (12VAC5-590-640 et seq.) of this chapter, and ~~which~~ that in principle or application are new or nonconventional, are subject to a ~~special~~ temporary permit application procedure ~~in lieu~~ instead of that set forth in 12VAC5-590-200. A ~~special~~ temporary permit may be issued only after detailed ~~review~~ evaluation of all engineering data and after a period of extensive monitoring of the water treatment plant performance.

B. ~~The policy of the board is to encourage~~ The department encourages the development of any new or nonconventional methods, processes, and equipment ~~which,~~ that by virtue of treatability studies~~,~~ appear to have application for ~~the purification of raw~~ water treatment. However, these new or nonconventional developments shall have been thoroughly tested in a ~~full scale~~ full-scale or representative pilot plant installation before ~~approval of a plant utilizing this process~~ these methods, processes, and equipment ~~can be employed~~ are approved and an operation permit issued. The ~~result of this testing must~~ results shall be submitted to the ~~field office~~ department. The testing required on new or nonconventional developments ~~will~~ shall generally follow these guidelines:

1. All procedures used in validating the process shall be conducted under the supervision of (i) a licensed professional engineer experienced in the field of environmental engineering, (ii) the owner's engineering staff, or (iii) a testing firm acceptable to the ~~division~~ commissioner;

2. Samples shall be collected and analyzed in a manner ~~which would~~ that shall demonstrate water treatment plant effectiveness and efficiency under adverse conditions and over extended periods of time in the area of the proposed installation;

3. The data shall be from the continuous operation of a ~~full scale~~ full-scale or pilot plant treating the type of water to be handled;

4. Automatic indicating, recording, and totalizing ~~flow measuring~~ equipment shall be provided, and the total flow shall be measured and recorded daily;

~~5. At installations treating surface waters, employing coagulation, flocculation, sedimentation, filtration, and disinfection, automatic indicating and recording equipment shall be provided for continuously monitoring the turbidity of the raw water, settled water, and each filter effluent, as well as pH monitoring of the treated water (flash mix effluent);~~

~~6.~~ 5. If the ~~raw water source~~ source water receives upstream discharges of treated industrial wastes or ~~sewage effluents~~ treated wastewater, then automatic indicating and recording equipment shall be provided for continuously monitoring the pH of ~~raw~~ the source and finished water ~~and~~ in addition to the chlorine residual of the finished water;

~~7.~~ 6. The minimum sampling and analysis program will be established by the ~~division~~ commissioner in accordance with the process under investigation; and~~,~~

~~8.~~ 7. All analyses shall ~~be made in accordance with the most current edition of Standard Methods for the Examination of Water and Wastewater, published by the American Public Health Association, the American Water Works Association, and the Water Pollution Control Federation or analytical methods approved in advance by the division~~ utilize methods that are consistent with 12VAC5-590-440.

C. Detailed plans shall be submitted where possible showing how, in case of nonacceptance, the water treatment plant or ~~unit~~ water treatment methods, processes, and equipment will be converted to, or replaced with, a proven process. Also, financial resources must be assured to make the conversion (for example~~:~~, funds placed in escrow or a bond ~~posted)~~ posted.

D. After ~~review~~ evaluation of the plans and testing data, the commissioner will issue a construction permit if ~~he is satisfied~~ the performance data verifies that the method, process, or equipment ~~will~~ may efficiently produce water ~~that will meet~~ in accordance with the design specifications and the operation standards of Part II~~, and that the method, process, or equipment may be converted to a conventional technique, if necessary~~ (12VAC5-590-340 et seq.) of this chapter.

E. Upon completion of construction or modification, a ~~provisional~~ temporary permit for a definite period of time will be issued for the operation of the new or nonconventional methods, processes, and equipment. Not more than one ~~provisional~~ temporary permit will be granted for a similar installation during the evaluation period. The ~~provisional~~ temporary operation permit shall require that:

1. The evaluation period shall be a minimum of 12 months and no longer than 18 months; and

2. The holder of a ~~provisional~~ temporary operation permit ~~must~~ shall submit reports on operation during the evaluation period as required by the ~~division~~ commissioner. The reports shall be prepared by (i) a licensed professional engineer experienced in the field of

environmental engineering, (ii) the owner's operating or engineering staff, or (iii) a testing ~~firm acceptable to the division~~ organization.

~~F. The commissioner will issue an operation permit upon lapse of the provisional permit, if, on the basis of testing during that period, he finds that the new or nonconventional method, process, or equipment efficiently meets the operation standards of Part II. If the standards are not met, then the commissioner will issue an order which will require the alteration of the waterworks or water supply in a manner that will enable those standards to be met.~~

F. The commissioner may issue a temporary operation permit if the waterworks is not in compliance with this chapter and public health will not be jeopardized. The temporary permit may be issued for a period of time and subject to conditions as the commissioner may deem appropriate for the owner to achieve compliance with this chapter.

1. The commissioner may require, as a condition to a temporary operation permit, the submission of a waterworks business operation plan by new waterworks and existing waterworks that have demonstrated limited TMF capability or significant noncompliance with this chapter.

2. The waterworks business operation plan shall satisfy the requirements of 12VAC5-590-200 A 5.

12VAC5-590-300. ~~Procedure for obtaining~~ Issuance of a general permit for construction of distribution mains.

~~In lieu~~ A. Instead of obtaining a permit for each distribution main project, an owner may elect to obtain a general permit for the construction of distribution mains. These general permits are issued by the commissioner, but all requests for a general permit are directed initially to the ~~field office~~ department.

B. The following ~~procedure for obtaining the~~ requirements shall be satisfied for the issuance of a general permit ~~shall be used~~:

1. The owner shall develop, adopt, and have ~~division~~ the commissioner's approval of general specifications and plan details covering ~~water~~ distribution main design and construction. The general specifications shall be at least as stringent as the requirements contained in this chapter.

2. The owner shall enter into a memorandum of understanding (MOU) with the ~~division which outlines the following system specific~~ commissioner. The commissioner will outline the waterworks-specific requirements, and the owner's method of compliance with ~~such~~ the requirements~~:~~. The waterworks-specific requirements include the following:

a. The maximum size of pipe to be covered by the general permit;

b. The means for modifying the ~~division~~ department's approved general specifications and plan details;

c. The maintenance of engineering capabilities satisfactory to the ~~division~~ commissioner, either on-staff or through contractual arrangements;

d. The preparation of engineering plans and specifications for individual projects;

e. The maintenance of up-to-date distribution system maps and other appropriate records; and

f. The submission by the owner to the ~~division~~ department of appropriate reports, including an annual report and summary, concerning all projects constructed under the terms of the ~~general permit~~ MOU and information concerning changes to the distribution system.

C. Once the general specifications are approved and the MOU is agreed to by the commissioner, a general permit for distribution mains shall be issued with the MOU attached.

D. The general permit allows for the construction of distribution mains. The duration for the general permit is five years.

12VAC5-590-310. Amendment or reissuance of operation permits.

A. The commissioner may amend or reissue ~~a~~ an operation permit ~~where~~ (i) when there is a change in the manner of storage, ~~the~~ treatment, or ~~the source of~~ supply of ~~the~~ source water at the permitted location~~,~~; (ii) when the existing permit is no longer valid; ~~or~~ (iii) for any other cause incident to the protection of the public health~~,~~; or (iv) for the supplying of ~~pure~~ potable water~~, provided~~. A notice ~~is~~ may be required to be given to the owner, and~~,~~ if one is required, a hearing held in accordance with the provisions of ~~subdivisions 1 and 2 of 12VAC5-590-160~~ 12VAC5-590-115.

B. The commissioner may require submission of a waterworks business operation plan as a condition to amend or reissue an operation permit. The waterworks business operation plan shall satisfy the requirements of 12VAC5-590-200 A 5.

12VAC5-590-320. Revocation ~~or suspension~~ of ~~a~~ an operation permit.

A. The commissioner may ~~suspend or~~ revoke ~~a~~ an operation permit in accordance with ~~Administrative Process Act~~ the APA. Reasons for revocation ~~of permits are as follows~~ include:

~~1. Failure to comply with the conditions of the permit;~~

~~2. Violation of Title 32.1 of the Code of Virginia or of any of this chapter from which no variance or exemption has been granted;~~.

~~3. Change in ownership;~~

~~4. Abandonment of the waterworks and discontinuing the supplying of pure water; and~~

~~5. Any of the grounds specified in § 32.1-174 of the Code of Virginia.~~

1. The waterworks can no longer be depended upon to furnish potable water;

2. The capacity of the waterworks is inadequate for the purpose of furnishing potable water;

3. The owner has failed to abide by an order issued by the commissioner;

4. The owner has abandoned the waterworks and discontinued supplying potable water; or

5. The owner has failed to pay the waterworks operation fee required by § 32.1-171.1 of the Code of Virginia.

B. Procedure for revocation of operation permit. When revoking ~~or suspending permits~~ an operation permit in accordance with ~~the above~~ subsection A of this section, the commissioner shall:

1. Send a written notice of intent to ~~suspend or~~ revoke by certified mail to the last known address of the ~~waterworks~~ owner. The notice shall state the reasons for the proposed ~~suspension or~~ revocation of the operation permit, the authority under which the commissioner proposes to act, and ~~shall give the time and place of the hearing; and~~ offer the opportunity for an administrative proceeding in accordance with 12VAC5-590-115.

2. Provide at least 30 days advance notice of the ~~hearing~~ administrative proceeding.

~~C. An owner who is given notice of intent to revoke or suspend his permit has a right to a hearing as specified in 12VAC5-590-160 and 12VAC5-590-180.~~

12VAC5-590-330. Monitoring, records, and reporting.

A. The commissioner or ~~the division~~ department may require the owner ~~or operator of any waterworks or water supply~~ to install, use, and maintain monitoring equipment for the control and testing of water flowing through the water treatment plant to:

1. Identify and determine the cause of operational problems;

2. Determine the necessary corrective actions for these problems;

3. Ensure compliance with Part II of this chapter; and

4. Prepare the finished water for entry into the distribution system.

B. Sampling and testing shall be by methods approved by the ~~division~~ commissioner. Test results shall be recorded, compiled, and reported to the ~~field office~~ department in a format ~~approved by~~ acceptable to the ~~division~~ commissioner.

Part II
Operation Regulations for Waterworks

~~Article 1~~
~~General~~ Drinking Water Compliance Standards, Testing, Surveys, and Responsibilities

12VAC5-590-340. ~~General~~ Compliance standards.

A. All physical, chemical, bacteriological, or radiological analyses for the purpose of demonstrating compliance with ~~primary and secondary maximum contaminant levels action levels or contaminants that do not have PMCLs but for which compliance samples must be analyzed by certified laboratories~~ the requirements of this chapter shall be performed by the ~~Commonwealth of Virginia, Department of General Services, Division of Consolidated Laboratory Services (DCLS)~~ DCLS or ~~in~~ by laboratories certified by the ~~Division of Consolidated Laboratory Services~~ DCLS for such purposes unless listed in 12VAC5-590-440 C. The owner is responsible for the collection and submission of all samples. The department may require sampling and testing that exceeds the minimal requirements specified in this chapter. A sample is deemed to have been collected only ~~if and~~ when its results are made known to the ~~Office of Drinking Water~~ department.

B. Specific limits. No attempt has been made to prescribe specific limits for every contaminant that might occur in a water supply or a waterworks. Although the need exists for continued attention to the entry of chemical, physical, bacteriological, and radiological substances into drinking water, the limits are confined to substances recognized as being detrimental to the health or well-being of the consumer or that cause significant degradation of the usefulness of the water. Limits for innumerable substances would require an impossible burden of analytical examination. The specific limits included in this chapter are listed in Tables 340.1 through 340.7.

C. Compliance is determined:

1. Based on sample results or calculated averages, where appropriate, rounded to the same number of significant figures as the PMCL, SMCL, AL, or MRDL of the contaminant in question, or

2. By the application of the specific treatment technique for particular contaminants (see 12VAC5-590-391).

TABLE 340.1

Inorganic Chemicals

SUBSTANCE	PMCL (mg/L)
Antimony	0.006
Arsenic	0.010[a]
Asbestos	7 million fibers/liter (longer than 10 µm)
Barium	2
Beryllium	0.004
Cadmium	0.005
Chromium	0.1
Cyanide (as free Cyanide)	0.2
Fluoride	4.0[b]
Mercury	0.002
Nickel	No limits designated
Nitrate (as N)	10[c]
Nitrite (as N)	1.0[c]
Total Nitrate and Nitrite (as N)	10[c]
Selenium	0.05
Thallium	0.002
SUBSTANCE	SECONDARY MAXIMUM CONTAMINANT LEVEL (mg/L)
Aluminum	0.05-0.2[d]
Chloride	250[c]
Copper	1.0
Corrosivity	Noncorrosive
Fluoride	2.0
Foaming agents	0.5[e]
Iron	0.3
Manganese	0.05
Silver	0.1
Sulfate	250[c]
Zinc	5

SUBSTANCE	ACTION LEVEL (mg/L)
Lead	0.015
Copper	1.3

[a]Arsenic sampling results shall be reported to the nearest 0.001 mg/L.

[b]The fluoride PMCL applies only to community waterworks.

[c]Significant figures are noted as shown. For values with trailing zeros, significant figures are noted as shown. The limits for nitrate and nitrate-nitrite have two significant figures. The limits for chloride and sulfate have three significant figures.

[d]Varying water quality and treatment situations necessitates a flexible range for the aluminum SMCL. The owner is encouraged to maintain an aluminum concentration as low as possible. If the aluminum concentration in the finished water causes discoloration, then the owner is urged to contact the department.

[e]Concentrations reported in terms of Methylene Blue Active Substances.

TABLE 340.2

Organic Chemicals

SUBSTANCE	PMCL (mg/L)
VOC	
Benzene	0.005
Carbon tetrachloride	0.005
Chlorobenzene (also called Monochlorobenzene)	0.1
o-Dichlorobenzene	0.6
p-Dichlorobenzene	0.075
1,2-Dichloroethane (also called Ethylene dichloride)	0.005
1,1-Dichloroethylene (also called Dichloroethene)	0.007
cis-1,2-Dichloroethylene	0.07
Trans-1,2-Dichloroethylene	0.1
Dichloromethane (also called Methylene chloride)	0.005
1,2-Dichloropropane	0.005
Ethylbenzene	0.7

Styrene	0.1
Tetrachloroethylene (PCE) (also called Perchloroethylene)	0.005
Toluene	1
1,2,4-Trichlorobenzene	0.07
1,1,1-Trichloroethane	0.2
1,1,2-Trichloroethane	0.005
Trichloroethylene (TCE)	0.005
Vinyl Chloride	0.002
Xylene (total)	10[a]
SOC	
Acrylamide	TT[b]
Alachlor (also called Lasso)	0.002
Atrazine	0.003
Benzo(a)pyrene	0.0002
Carbofuran	0.04
Chlordane	0.002
Dalapon	0.2
Di(2-ethylhexyl)adipate (also called Bis(2-ethylhexyl)adipate)	0.4
Di(2-ethylhexyl)phthalate (also called Bis(2-ethylhexyl)phthalate)	0.006
1,2-Dibromo-3-chloropropane (DBCP)	0.0002
2,4-Dichlorophenoxyacetic Acid (2,4-D)	0.07
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Endrin	0.002
Epichlorohydrin	TT[b]
Ethylene dibromide (EDB) (also called 1,2-Dibromoethane)	0.00005
Glyphosate	0.7
Heptachlor	0.0004
Heptachlor epoxide	0.0002
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Lindane (also called gamma-HCH and gamma BHC)	0.0002
Methoxychlor	0.04
Oxamyl (Vydate)	0.2
Pentachlorophenol(PCP)	0.001
Picloram	0.5
Polychlorinated biphenyls (PCBs)	0.0005
Simazine	0.004
2,3,7,8-TCDD (Dioxin)	3×10^{-8}
Toxaphene	0.003
2,4,5-Trichlorophenoxypropionic Acid (2,4,5-TP or Silvex)	0.05

[a]The limit for xylene has two significant figures.

[b]Each waterworks must certify annually to the department that when acrylamide and epichlorohydrin are used to treat water, the combination (or product) of dose and monomer level does not exceed the levels specified as follows: (i) acrylamide = 0.05% dosed at 1 mg/L (or equivalent) and (ii) epichlorohydrin = 0.01% dosed at 20 mg/L (or equivalent). The certification shall be in writing, using third-party certification approved by the department or the manufacturer's certification.

TABLE 340.3

Physical Quality

PARAMETER	STANDARD	CONCENTRATION
Color	SMCL	15 Color Units (CU)
Odor	SMCL	3 Threshold odor numbers
pH	SMCL	6.5-8.5
Total dissolved solids (TDS)	SMCL	500 mg/L[a]
Turbidity	Treatment Technique	See 12VAC5-590-395 A 2 b[b]

[a]TDS has three significant figures.

[b]Operational goal: Surface water treatment plants with gravity flow granular media filters are capable of producing filtered water with a turbidity consistently less than 0.10 NTU. Therefore, for water treatment plants, the operational goal for filter effluent turbidity for each filter, before any post-filtration chemical addition, is 0.10 NTU.

TABLE 340.4

Radiological Quality

PARAMETER	PMCL
Combined radium-226 and radium-228.	5 pCi/L
Gross alpha particle activity (excluding Radon and Uranium)	15 pCi/L
Beta particle and photon radioactivity.	4 mrem/yr [a, b]
Uranium	30 µg/L[c]

[a]The average annual concentration of beta particle and photon radioactivity from man-made radionuclides in drinking water shall not produce an annual dose equivalent to the total body or any internal organ greater than 4 mrem/year.

[b]Except for the radionuclides listed in Schedule I, the concentration of man-made radionuclides causing 4 mrem total body or organ dose equivalents shall be calculated on the basis of a 2 liter per day drinking water intake using the 168-hour data listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure," NBS Handbook 69 issued June 5, 1959, and amended August 1963, U.S. Department of Commerce. If two or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any organ shall not exceed 4 mrem/year.

[c]The limit for uranium has two significant figures.

Schedule 1

Average annual concentrations assumed to produce a total body organ dose of 4 mrem/year.

RADIONUCLIDE	CRITICAL ORGAN	pCi/L
Tritium	Total Body	20,000[d]
Strontium-90	Bone Marrow	8

[d]The limit for tritium has five significant figures.

TABLE 340.5

Microbial Contaminants

CONTAMINANT	PMCL or TT
Cryptosporidium	TT Minimum 99% (2-log) removal plus additional log removal or inactivation based upon bin classification in 12VAC5-590-401 D.
Giardia lamblia	TT 99.9% (3-log) removal or inactivation.
Viruses	TT 99.99% (4-log) removal or inactivation
Legionella	TT No limit, but if Giardia lamblia and viruses are removed or inactivated, according to the treatment techniques in 12VAC5-590-395, Legionella will also be controlled.
Heterotrophic plate count (HPC)	TT No more than 500 bacterial colonies per milliliter. (HPC is not a contaminant, it is an analytic method used to measure a variety of bacteria found in water.)
Escherichia coli (E. coli)	PMCL (1) Any E. coli-positive repeat sample following a total coliform-positive routine sample. (2) Total coliform-positive repeat sample following an E. coli-positive routine sample. (3) Failure to collect all require repeat samples following an E. coli-positive routine sample. (4) Failure to test for E. coli when any repeat sample tests positive for total coliform.

TABLE 340.6 Disinfection Byproducts	
PARAMETER	PMCL (mg/L)
TTHM Bromodichloromethane Bromoform Chloroform Dibromochloromethane	0.080[a]
HAA5 Bromoacetic acid Dibromoacetic acid Dichloroacetic acid Monochloroacetic acid Trichloroacetic acid	0.060[a]
Bromate	0.010[a]
Chlorite	1.0[a]
[a]The limits for TTHM, HAA5, and bromate have three significant figures. The limit for chlorite has two significant figures.	

TABLE 340.7 Maximum Residual Disinfectant Level Goals (MRDLG) and Maximum Residual Disinfectant Levels (MRDL) for Disinfectants	
RESIDUAL DISINFECTANT	MRDL (mg/L)
Chlorine	4.0 (as Cl_2)[a]
Chloramines	4.0 (as Cl_2)[a]
Chlorine Dioxide	0.8 (as ClO_2)
[a]Chlorine and chloramines have two significant figures.	

D. Notwithstanding the MRDLs in Table 340.7, an owner may increase the residual disinfectant level of chlorine or chloramines (but not chlorine dioxide) in the distribution system to a level and for a time necessary to protect public health. This may include specific microbiological contamination problems caused by circumstances such as distribution line breaks, storm runoff events, water supply contamination events, or cross-connection events.

12VAC5-590-350. ~~Sanitary surveys~~ Assessments and sanitary surveys.

A. Frequent assessments shall be made by the owner of the water supply ~~source~~ and waterworks to locate and identify health hazards to the waterworks. The manner and frequency of making these assessments, and the rate at which discovered health hazards are to be removed, shall be the responsibility of the owner. Every effort shall be made by the owner, to the extent of his jurisdiction, to prevent the degradation of the quality of water ~~supply sources~~ supplies.

B. ~~The commissioner may perform sanitary surveys. Owners~~ The department is required to perform sanitary surveys and site visits to assess the condition of a waterworks and its source water. Pursuant to § 32.1-25 of the Code of Virginia, the department personnel have the right, with the owner's consent, of entry onto the waterworks property and the facilities to inspect, investigate, evaluate, conduct tests, and collect samples for testing for the purposes of determining compliance with the provisions of any law, regulation, or order administered by the board or commissioner or any conditions in a permit, license, or certificate issued by the board or commissioner. The owner shall provide any existing information requested by the department that will enable ~~the commissioner~~ the department personnel to conduct the sanitary survey or site visit.

C. A sanitary survey includes~~, but is not limited to,~~ an ~~onsite~~ evaluation of all of the following eight components:

1. Source;

2. Treatment;

3. Distribution system;

4. Finished water storage;

5. Pumps, pumping facilities, and controls;

6. Monitoring, reporting, data verification, and a special monitoring evaluation during each sanitary survey to determine whether the waterworks monitoring is appropriate or needs modification;

7. Waterworks system management and operation; and~~,~~

8. Number and classification of ~~licensed operator(s) required in 12VAC5-590-460~~ operators. ~~Licensed operators~~ Operators shall also comply with all applicable regulations promulgated by the Virginia Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals~~, Department of Professional and Occupational Regulation~~ and DPOR.

D. Significant deficiencies discovered as a result of a sanitary survey shall be addressed in accordance with the following:

1. The ~~commissioner~~ department shall issue written notification describing the significant deficiency to the owner.

2. Within 30 days of the ~~significant deficiency~~ significant-deficiency notification, the owner shall consult with the ~~commissioner~~ department regarding the appropriate corrective action with a schedule for implementing the corrective action. ~~Any~~ A waterworks with one or more significant deficiencies must have a ~~Corrective Action Plan (CAP)~~ CAP as described in 12VAC5-590-421 A.

3. Within 45 days of the ~~significant deficiency~~ significant-deficiency notification, the owner shall submit to the department a CAP with a schedule for meeting the requirements of 12VAC5-590-421 A.

12VAC5-590-360. ~~Responsibility;~~ Responsibilities of the owner.

A. The ~~water utility~~ owner ~~or owner of the property served, to the extent of their respective jurisdictions,~~ shall provide and maintain conditions ~~through~~ throughout the entirety of the ~~water supply system~~ waterworks in a manner ~~which~~ that will assure a high degree of capability and reliability to ~~effect compliance with these standards~~ comply with Part II (12VAC5-590-340 et seq.) of this chapter. This requirement shall pertain to the ~~source of supply~~ source water, transmission, treatment, ~~transmission,~~ storage, and distribution system facilities and the operation thereof. ~~In addition, this requirement shall include specific and continuing assessment of the capability, effectiveness, and reliability of the treatment process in relation to potential contaminants in the source of supply. Finally, this requirement shall include the identification and evaluation of all~~ The owner shall identify and evaluate factors ~~having~~ with the potential for impairing the quality of the water ~~as~~ delivered to ~~customers and appropriate preventive and control~~ the consumers. Preventative control measures identified in Part II of this chapter shall be promptly implemented to protect public health.

B. ~~For the purpose of application of this chapter, responsibility for the conditions in the water supply system shall be considered to be held by: 1. The owner from the source of supply to the customer's service connection; and 2. The owner of the property served and the municipal, county, or other authority having legal jurisdiction from the customer's service connection to the free flowing outlet.~~ For the purpose of achieving compliance with this chapter, the owner shall exercise control of the waterworks from the source water to the service connection. This requirement does not imply ownership of or maintenance for any portion of the service line where local agreements and conditions dictate otherwise.

C. The property owner shall exercise control of all buildings, structures, and equipment up to the point of the service connection to the waterworks. This requirement does not limit or modify ownership of or maintenance for the service line, that may be specified by local agreements and conditions.

~~Article 2~~
~~General Information~~

12VAC5-590-370. ~~Sampling frequency~~ Monitoring requirements.

~~The commissioner may exempt consecutive waterworks that obtain potable water from another water system for distribution from all monitoring requirements in this section except for bacteriological (subsection A of this section); disinfectant residuals, disinfection byproducts, and disinfection byproduct precursors (subdivision B 3 of this section); and lead and copper (12VAC5-590-375). The required sampling frequencies are as follows:~~

A. Bacteriological monitoring.

1. The owner shall collect total coliform samples at specific sites and according to a schedule that is representative of water quality throughout the distribution system, which shall be documented in a written ~~bacteriological sample siting plan (BSSP)~~ BSSP. The BSSP shall be established or approved by the ~~commissioner~~ department after investigation of the source water, method of treatment and storage, and ~~protection of the water concerned~~ the final delivery of the drinking water through the distribution system. The BSSP shall include~~, but is not limited to,~~ the following:

a. Specific routine, repeat, and triggered source water monitoring sites, identified by address or location.

b. Distribution ~~map~~ maps showing the location where specific sampling sites will be selected with all monitoring sites identified.

c. A minimum of three routine sample sites identified for each required routine sample for waterworks serving 3,300 or fewer people.

d. ~~Sample~~ A sample collection schedule with the number of routine samples required per monitoring period in accordance with Table ~~2.1~~ 370.1 and subdivision A 4 of this section.

e. Repeat sample sites for each routine sample site that shall include the original routine location, at least one tap within five service connections upstream, and at least one tap within five service connections downstream with the following exceptions:

(1) Alternative repeat sample sites may be allowed when a routine site is one connection away from or at the end of a ~~water supply~~ distribution system main or as approved by the ~~commissioner~~ department;

(2) ~~Groundwater waterworks~~ A groundwater system serving 1,000 or fewer people may propose repeat sample sites, such as an entry point to the distribution system, that differentiate potential source water and distribution system contamination; or

(3) ~~Groundwater waterworks~~ A groundwater system serving 1,000 or fewer people with a single well source and no treatment may propose that one repeat sample be collected at the triggered source water monitoring site, provided that representative sampling of the distribution system is still achieved.

f. A repeat sampling site shall not be eliminated from future collections solely based on a history of questionable water quality unless the sampling point is unacceptable as determined by the ~~commissioner~~ department.

g. A seasonal waterworks may collect special samples in accordance with an approved start-up procedure pursuant to subdivision A ~~10~~ 12 a of this section.

2. The minimum number of bacteriological samples for total coliform evaluation to be collected and analyzed monthly from the distribution system of a community waterworks, or ~~nontransient noncommunity waterworks~~ a NTNC shall be in accordance with Table ~~2.1. Owners of all~~ 370.1. The owner of a (i) ~~transient noncommunity waterworks~~ TNC that ~~use~~ uses a surface water source or a groundwater source under the direct influence of surface water ~~and~~ or (ii) a large ~~transient noncommunity~~ TNC (serving 1,000 or more persons per day) ~~waterworks~~ shall collect and submit samples monthly for analysis in accordance with Table ~~2.1~~ 370.1. ~~Owners of~~ For all other ~~transient noncommunity waterworks~~ TNCs, the owner shall collect and submit samples for analysis each calendar quarter in accordance with Table ~~2.1.~~ 370.1. The minimum number of samples must be collected and submitted even if the waterworks has exceeded the E. coli PMCL or the total coliform treatment technique triggers.

3. The samples shall be ~~taken~~ collected at ~~reasonably~~ evenly spaced time intervals as practical throughout the month, except that a waterworks that ~~use~~ uses only groundwater ~~serving~~ and serves 4,900 or fewer people may ~~collect all~~ have the required samples collected on a single day if the samples are ~~taken~~ collected from different sites.

4. If the results of a sanitary survey or other factors determine that some other frequency is more appropriate than that stated in subdivisions A 2 and A 3 ~~and A 4~~ of this section, then a modified BSSP may be required. The altered frequency shall be confirmed or changed on the basis of subsequent sanitary surveys or as otherwise determined by the ~~commissioner~~ department.

5. ~~An~~ The owner may conduct more compliance monitoring than is required by this section to investigate potential problems in the distribution system and to assist in uncovering problems. ~~An~~ The owner may ~~take~~ collect more than the minimum number of required routine samples. If the samples are ~~taken~~ collected in accordance with the existing BSSP and are representative of water quality throughout the distribution system, then all of the results shall be included in determining whether a coliform treatment technique has been triggered.

6. ~~An~~ The owner may propose repeat monitoring locations believed to be representative of a pathway for contamination of the distribution system. ~~An~~ The owner may elect to specify either alternative fixed locations or criteria for selecting repeat sampling sites on a situational basis in a ~~standard operating procedure (SOP)~~ SOP in its BSSP. The owner shall design the SOP to focus on the collection of repeat samples at locations that best verify and determine the extent of potential contamination of the distribution system ~~area~~ based on specific situations. The ~~commissioner~~ department shall require modifications to the SOP or require alternative monitoring locations as needed.

TABLE ~~2.1~~ 370.1

Bacteriological Monitoring

POPULATION SERVED PER DAY	MINIMUM NUMBER OF SAMPLES[a] ~~(See subdivision A 2 of this section)~~
25 to 1,000[b]	1
1,001 to 2,500	2
2,501 to 3,300	3
3,301 to 4,100	4
4,101 to 4,900	5
4,901 to 5,800	6
5,801 to 6,700	7
6,701 to 7,600	8
7,601 to 8,500	9
8,501 to 12,900	10
12,901 to 17,200	15
17,201 to 21,500	20
21,501 to 25,000	25
25,001 to 33,000	30
33,001 to 41,000	40
41,001 to 50,000	50
50,001 to 59,000	60
59,001 to 70,000	70
70,001 to 83,000	80
83,001 to 96,000	90

96,001 to 130,000	100
130,001 to 220,000	120
220,001 to 320,000	150
320,001 to 450,000	180
450,001 to 600,000	210
600,001 to 780,000	240
780,001 to 970,000	270
970,001 to 1,230,000	300
1,230,001 to 1,520,000	330
1,520,001 to 1,850,000	360
1,850,001 to 2,270,000	390
2,270,001 to 3,020,000	420
3,020,001 to 3,960,000	450
3,960,001 or more	480

[a]Monthly monitoring is required for the following waterworks: (i) community; (ii) nontransient noncommunity; (iii) all noncommunity waterworks that use a surface water source, a GUDI source, or both; (iv) all seasonal waterworks; and (v) large noncommunity (serving more than 1,000 people per day). Quarterly monitoring is required for noncommuntity waterworks not specifically identified in the monthly requirements. Annual monitoring may be allowed at a TNC that meets the criteria specified in subdivision A 8 of this section.

[b]Includes a waterworks that have at least 15 service connections, but serve fewer than 25 persons.

7. All bacteriological analyses shall be performed in accordance with 12VAC5-590-440 by the ~~Division of Consolidated Laboratory Services (DCLS)~~ DCLS or by a laboratory certified by the DCLS for drinking water samples.

8. Annual monitoring. The department may reduce the bacteriological monitoring frequency at a well-operated TNC from a quarterly sample to one annual sample, and the waterworks may remain at the annual monitoring frequency provided that all of the following conditions are continuously met:

a. The waterworks serves 1,000 or fewer people per day.

b. The waterworks uses groundwater only and is not under the influence of surface water.

c. The waterworks has a clean compliance history for a minimum of 12 consecutive months.

d. The most recent sanitary survey shows that the waterworks is free of sanitary defects or has corrected all identified sanitary defects.

e. The waterworks has a protected water source.

f. The waterworks meets existing approved construction standards.

g. The department has conducted an annual site visit within the last 12 months, and all identified sanitary defects have been corrected. For the purposes of this section, an annual site visit is equivalent to a voluntary Level 2 assessment that meets the criteria in 12VAC5-590-392 C. A sanitary survey may meet the requirement for an annual site visit in the year in which the sanitary survey is completed if all identified sanitary defects have been corrected.

~~8.~~ 9. Increased monitoring.

a. A ~~transient noncommunity waterworks~~ TNC on quarterly or annual monitoring shall begin monthly monitoring in the month following an event if any of the following ~~were to occur~~ occurs: (i) the waterworks triggers a Level 2 assessment or two Level 1 assessments under the provisions of 12VAC5-590-392 in a rolling 12-month period, (ii) the waterworks has an E. coli PMCL violation, (iii) the waterworks has a coliform treatment technique violation, (iv) the owner has two monitoring violations under 12VAC5-590-370 A 2, or (v) the owner has one monitoring violation under 12VAC5-590-370 A 2 and one Level 1 assessment under 12VAC5-590-392 in a rolling 12-month period. ~~Owners~~ The owner shall continue monthly monitoring until the requirements in subdivisions ~~A 9 a~~ A 10 a and ~~A 9 b~~ A 10 b of this section are met. A waterworks on monthly monitoring for other reasons is not considered to be on increased monitoring for the purpose of this subdivision.

b. A TNC on annual monitoring that experiences one monitoring violation of 12VAC5-590-370 must begin quarterly monitoring in the quarter following the event. The owner shall continue quarterly monitoring until the conditions in subdivision A 11 of this section are continuously met and the department reduces the monitoring frequency.

~~9.~~ 10. Returning to quarterly routine monitoring. The ~~commissioner~~ department may return the monitoring frequency of a ~~transient noncommunity waterworks~~ TNC subject to subdivision A 9 a of this section and using groundwater not under the influence of surface water to quarterly monitoring if:

a. The ~~commissioner~~ department has completed a sanitary survey or a site visit within the last 12 months, and the ~~transient noncommunity waterworks~~ TNC is free of sanitary defects and has a protected water source; and

b. The ~~owner~~ waterworks has maintained a clean compliance history~~, defined as a record of no PMCL violations for microbiological contaminants, no monitoring violations under 12VAC5-590-370, and no coliform treatment technique trigger exceedances or treatment technique violations under 12VAC5-590-392,~~ for a minimum of 12 consecutive months following the event.

11. Returning to annual routine monitoring. The department may reduce the monitoring frequency of a TNC subject to subdivision A 9 of this section and using groundwater not under the influence of surface water to annual monitoring if:

a. An annual site visit or sanitary survey is conducted by the department, and all identified sanitary defects are corrected. The waterworks may substitute a voluntary Level 2 assessment for the annual site visit.

b. The waterworks has a protected water source and maintained a clean compliance history for a minimum of 12 consecutive months following the event.

c. The waterworks has in place or has adopted one or more of the following additional barriers to contamination: (i) an approved cross-connection control program, (ii) a licensed operator, (iii) continuous disinfection and maintenance of a residual in the distribution system in accordance with criteria specified by the department, (iv) demonstration of maintenance of at least a 4-log removal or inactivation of viruses in accordance with 12VAC5-590-379 A, or (v) other equivalent enhancements approved by the department.

~~10.~~ 12. Seasonal waterworks monitoring.

a. ~~All~~ A seasonal waterworks shall demonstrate completion of an approved start-up procedure that may include start-up sampling ~~prior to~~ before serving water.

b. A seasonal waterworks shall monitor every month that it is in operation.

c. The ~~commissioner~~ department may waive any seasonal waterworks from some or all of the requirements for seasonal waterworks if the entire distribution system remains pressurized during the entire period that the waterworks is not operating.

d. Failure to complete an approved start-up procedure ~~prior to~~ before serving water is a treatment technique violation and requires the owner to provide public notification under Tier 2 conditions in ~~12VAC5-590-540~~ 12VAC5-590-540 A 2.

e. Failure to submit certification of completion to the ~~commissioner~~ department after the owner completes an approved start-up procedure is a reporting violation and requires the owner to provide public notification under Tier 3 conditions in 12VAC5-590-540 A 3.

~~11.~~ 13. Additional routine monitoring in the month following a total coliform-positive sample.

a. ~~Owners~~ The owner collecting samples on a quarterly or annual frequency shall collect at least three additional routine samples during the month following one or more total coliform-positive samples, with or without a Level 1 treatment trigger. The owner shall use the results of additional routine samples in coliform treatment technique trigger calculations under 12VAC5-590-392 B.

b. The requirements specified in subdivision A ~~11~~ 13 a of this section may be waived by the ~~commissioner~~ department if:

(1) The ~~commissioner~~ department conducts a site visit before the end of the next month in which the waterworks provides water and has determined whether additional monitoring or corrective action is needed;

(2) The ~~commissioner~~ department has determined why the sample was total coliform positive and has established that the owner corrected the problem or will correct the problem before the end of the next month in which the waterworks serves water. In this case, the decision and the rationale for the decision shall be documented and approved in writing by the ~~commissioner~~ department. The ~~commissioner~~ department shall make this document available to EPA and the public. The documentation shall describe the specific cause of the total coliform-positive sample and what action the owner has taken or will take to correct this problem; or

(3) The ~~commissioner~~ department determines that the owner has corrected the contamination problem before collecting the set of repeat samples required in 12VAC5-590-380 D 3, and all repeat samples are total coliform negative. The ~~commissioner~~ department may waive the requirement for additional routine monitoring the next month.

c. The requirements specified in subdivision A ~~11~~ 13 a of this section may not be waived by the ~~commissioner~~ department solely on the grounds that all repeat samples are total coliform negative.

~~12.~~ 14. Failure to collect every required routine or additional routine sample in a compliance period is a monitoring violation and requires the owner to provide public notification under Tier 3 conditions in 12VAC5-590-540 A 3.

~~13.~~ 15. Failure to submit monitoring results after the owner properly conducts monitoring is a reporting violation and requires the owner to provide public notification under Tier 3 conditions in 12VAC5-590-540 A 3.

B. Chemical monitoring. The location of sampling points, the chemicals measured, the frequency, and the timing of sampling within each compliance period shall be established or approved by the ~~commissioner~~ department at the time of issuance of a waterworks operation permit because of changes in this chapter or conditions at the waterworks.

1. The ~~commissioner~~ department may increase required monitoring where necessary to detect variations within the waterworks and to provide quality control for any treatment processes that are employed.

2. Analysis of field composite samples shall not be allowed.

3. Samples for contaminants that may exhibit seasonal variations shall be collected during the period of the year when contamination is most likely to occur.

4. Failure to comply with the sampling schedules in this section shall require public notification pursuant to 12VAC5-590-540 A 3.

C. The department may allow a consecutive waterworks that obtains potable water from another waterworks to limit monitoring to bacteriological, residual disinfectant, DBPs, and lead and copper.

D. Monitoring requirements for a waterworks developing new sources of source water are provided in 12VAC5-590-820, 12VAC5-590-830, and 12VAC5-590-840.

E. The department may require an owner to collect additional samples to provide quality control for any treatment processes that are employed.

F. Surface water sampling requirements specified in 12VAC5-590-372 through 12VAC5-590-378 apply to GUDI sources.

~~Any other dates contained in this chapter notwithstanding, all waterworks shall comply with all applicable PMCLs listed in Tables 2.2 and 2.3.~~

~~Design criteria for new or modified waterworks or owners developing new sources of supply are found in 12VAC5-590-820, 12VAC5-590-830 and 12VAC5-590-840.~~

~~1. Inorganic chemical. Community and nontransient noncommunity waterworks owners shall conduct monitoring to determine compliance with the MCLs in Table 2.2 in accordance with this section. All other noncommunity waterworks owners shall conduct monitoring to determine compliance with the nitrate and nitrite PMCLs in Table 2.2 (as appropriate) in accordance with this section. Monitoring shall be conducted as follows:~~

~~a. The owner of any groundwater source waterworks with 150 or more service connections shall take a minimum of one sample at each entry point to the distribution system which is representative of each source, after treatment, unless a change in condition makes another sampling point more representative of each source or treatment plant (hereafter called a sampling point) starting in the compliance period beginning January 1, 1993. The owner of any groundwater source waterworks with fewer than 150 service connections shall take a minimum of one sample at each sampling point for asbestos, barium, cadmium, chromium, fluoride, mercury, nitrate, nitrite, and selenium in the compliance period beginning January 1, 1993, for antimony, beryllium, cyanide (as free cyanide), nickel, and thallium in the compliance period beginning January 1, 1996, and for arsenic (for community and nontransient noncommunity waterworks) in compliance with subdivision B 1 d (6) (b) of this section.~~

~~b. The owner of any waterworks which uses a surface water source in whole or in part with 150 or more service connections shall take a minimum of one sample at each entry point to the distribution system after any application of treatment or in the distribution system at a point which is representative of each source, after treatment, unless a change in conditions makes another sampling point more representative of each source or treatment plant (hereafter called a sampling point) beginning January 1, 1993. The owner of any waterworks which use a surface water source in whole or in part with fewer than 150 service connections shall take a minimum of one sample at each sampling point for asbestos, barium, cadmium, chromium, fluoride, mercury, nitrate, nitrite, and selenium beginning January 1, 1993, for antimony, beryllium, cyanide (as free cyanide), nickel, and thallium beginning January 1, 1996, and for arsenic (for community and nontransient noncommunity waterworks) in compliance with subdivision B 1 d (6) (a) of this section.~~

~~c. If a waterworks draws water from more than one source and the sources are combined before distribution, the owner shall sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water is representative of all sources being used).~~

~~d. The frequency of monitoring for asbestos shall be in accordance with subdivision B 1 d (1) of this section; the frequency of monitoring for barium, cadmium, chromium, fluoride, mercury, and selenium shall be in accordance with subdivision B 1 d (2) of this section; the frequency of monitoring for antimony, beryllium, cyanide (as free cyanide), nickel, and thallium shall be in accordance with subdivision B 1 d (3) of this section; the frequency of monitoring for nitrate shall be in accordance with subdivision B 1 d (4) of this section; the frequency of monitoring for nitrite shall be in accordance with subdivision B 1 d (5) of this section; and the frequency of~~

~~monitoring for arsenic shall be in accordance with subdivision B 1 d (6) of this section.~~

~~(1) The frequency of monitoring conducted to determine compliance with the PMCL for asbestos specified in Table 2.2 shall be conducted as follows:~~

~~(a) The owner of each community and nontransient noncommunity waterworks is required to monitor for asbestos during the first three year compliance period of each nine year compliance cycle beginning in the compliance period starting January 1, 1993.~~

~~(b) If the owner believes the waterworks is not vulnerable to either asbestos contamination in its source water or due to corrosion of asbestos cement pipe, or both, the owner may apply to the commissioner for a waiver of the monitoring requirement in subdivision B 1 d (1) (a) of this section. If the commissioner grants the waiver, the owner is not required to monitor.~~

~~(c) The commissioner may grant a waiver based on a consideration of the following factors:~~

~~(i) Potential asbestos contamination of the water source; and~~

~~(ii) The use of asbestos cement pipe for finished water distribution and the corrosive nature of the water.~~

~~(d) A waiver remains in effect until the completion of the three year compliance period. The owner of a waterworks not receiving a waiver shall monitor in accordance with the provisions of subdivision B 1 d (1) (a) of this section.~~

~~(e) The owner of a waterworks vulnerable to asbestos contamination due solely to corrosion of asbestos cement pipe shall take one sample at a tap served by asbestos cement pipe and under conditions where asbestos contamination is most likely to occur.~~

~~(f) The owner of a waterworks vulnerable to asbestos contamination due solely to source water shall monitor sampling points in accordance with subdivision B 1 of this section.~~

~~(g) The owner of a waterworks vulnerable to asbestos contamination due both to its source water supply and corrosion of asbestos cement pipe shall take one sample at a tap served by asbestos cement pipe and under conditions where asbestos contamination is most likely to occur.~~

~~(h) The owner of a waterworks which exceeds the PMCL as determined in 12VAC5 590 410 B 1 shall monitor quarterly beginning in the next quarter after the exceedance occurred.~~

~~(i) The commissioner may decrease the quarterly monitoring requirement to the frequency specified in subdivision B 1 d (1) (a) of this section provided the commissioner has determined that the waterworks is reliably and consistently below the PMCL. In no case can the commissioner make this determination unless the owner of a groundwater source waterworks takes a minimum of two quarterly samples or the owner of a waterworks which uses a surface water source in whole or in part takes a minimum of four quarterly samples.~~

~~(j) If monitoring data collected after January 1, 1990, are generally consistent with the requirements of subdivision B 1 d (1) of this section, then the commissioner may allow an owner to use that data to satisfy the monitoring requirement for the initial compliance period beginning January 1, 1993.~~

~~(2) The frequency of monitoring conducted to determine compliance with the MCLs in Table 2.2 for barium, cadmium, chromium, fluoride, mercury, and selenium shall be as follows:~~

~~(a) The owner of a groundwater source waterworks shall take one sample at each sampling point during each compliance period beginning in the compliance period starting January 1, 1993.~~

~~(b) The owner of a waterworks which uses a surface water source in whole or in part shall take one sample annually at each sampling point beginning January 1, 1993.~~

~~(c) An owner may apply to the commissioner for a waiver from the monitoring frequencies specified in subdivision B 1 d (2) (a) or (b) of this section.~~

~~(d) A condition of the waiver shall require that the owner shall take a minimum of one sample while the waiver is effective. The term during which the waiver is effective shall not exceed one compliance cycle (i.e., nine years).~~

~~(e) The commissioner may grant a waiver provided the owner of a waterworks that uses a surface water source in whole or in part has monitored annually for at least three years and groundwater waterworks have conducted a minimum of three rounds of monitoring. (At least one sample shall have been taken since January 1, 1990.) The owner of any waterworks which uses a surface water source in whole or in part or a groundwater source waterworks shall demonstrate that all previous analytical results were less than the PMCL. Waterworks that use a new water source are not eligible for a waiver until three rounds of monitoring from the new source have been completed.~~

~~(f) In determining the appropriate reduced monitoring frequency, the commissioner shall consider:~~

~~(i) Reported concentrations from all previous monitoring;~~

~~(ii) The degree of variation in reported concentrations; and~~

~~(iii) Other factors that may affect contaminant concentrations such as changes in groundwater pumping rates, changes in the waterworks configuration, changes in the waterworks operating procedures, or changes in stream flows or characteristics.~~

~~(g) A decision by the commissioner to grant a waiver shall be made in writing and shall set forth the basis for the determination. The request for a waiver may be initiated by the commissioner or upon an application by the owner. The owner shall specify the basis for the request. The commissioner shall review and, where appropriate, revise the determination of the appropriate monitoring frequency when the owner submits new monitoring data or when other data relevant to the waterworks appropriate monitoring frequency become available.~~

~~(h) Owners of waterworks that exceed the PMCLs as calculated in 12VAC5-590-410 shall monitor quarterly beginning in the next quarter after the exceedance occurred.~~

~~(i) The commissioner may decrease the quarterly monitoring requirement to the frequencies specified in subdivision B 1 d (2) (a), (b) or (c) of this section provided a determination has been made that the waterworks is reliably and consistently below the PMCL. In no case can the commissioner make this determination unless the owner of a groundwater source waterworks takes a minimum of two quarterly samples or the owner of a waterworks which uses a surface water source in whole or in part takes a minimum of four quarterly samples.~~

~~(3) The frequency of monitoring conducted to determine compliance with the PMCLs in Table 2.2 for antimony, beryllium, cyanide (as free cyanide), nickel, and thallium shall be as follows:~~

~~(a) The owner of a groundwater source waterworks with 150 or more service connections shall take one sample at each sampling point during each compliance period beginning in the compliance period starting January 1, 1993. The owner of a groundwater source waterworks with fewer than 150 service connections shall take one sample at each sampling point during each compliance period beginning in the compliance period starting January 1, 1996.~~

~~(b) The owner of a waterworks that uses a surface water source in whole or in part with 150 or more service connections shall take one sample annually at each sampling point beginning January 1, 1993. The owner of a waterworks that uses a surface water source in whole or in part with fewer than 150 service connections shall take one sample annually at each sampling point beginning January 1, 1996.~~

~~(c) An owner may apply to the commissioner for a waiver from the monitoring frequencies specified in subdivision B 1 d (3) (a) or (b) of this section.~~

~~(d) A condition of the waiver shall require that the owner take a minimum of one sample while the waiver is effective. The term during which the waiver is effective shall not exceed one compliance cycle (i.e., nine years).~~

~~(e) The commissioner may grant a waiver provided the owner of a waterworks that uses a surface water source in whole or in part has monitored annually for at least three years and groundwater waterworks have conducted a minimum of three rounds of monitoring. (At least one sample shall have been taken since January 1, 1990.) The owner of any waterworks which uses a surface water source in whole or in part or a groundwater source waterworks shall demonstrate that all previous analytical results were less than the PMCL. Waterworks that use a new water source are not eligible for a waiver until three rounds of monitoring from the new source have been completed.~~

~~(f) In determining the appropriate reduced monitoring frequency, the commissioner shall consider:~~

~~(i) Reported concentrations from all previous monitoring;~~

~~(ii) The degree of variation in reported concentrations; and~~

~~(iii) Other factors which may affect contaminant concentrations such as changes in groundwater pumping rates, changes in the waterworks configuration, changes in the waterworks operating procedures, or changes in stream flows or characteristics.~~

~~(g) A decision by the commissioner to grant a waiver shall be made in writing and shall set forth the basis for the determination. The request for a waiver may be initiated by the commissioner or upon an application by the owner. The owner shall specify the basis for the request. The commissioner shall review and, where appropriate, revise the determination of the appropriate monitoring frequency when the owner submits new monitoring data or when other data relevant to the waterworks appropriate monitoring frequency become available.~~

~~(h) Owners of waterworks that exceed the PMCLs as calculated in 12VAC5-590-410 shall monitor quarterly beginning in the next quarter after the exceedance occurred.~~

~~(i) The commissioner may decrease the quarterly monitoring requirement to the frequencies specified in subdivision B 1 d (3) (a), (b) or (c) of this section~~

~~provided a determination has been made that the waterworks is reliably and consistently below the PMCL. In no case shall the commissioner make this determination unless the owner of a groundwater source waterworks takes a minimum of two quarterly samples or the owner of a waterworks which uses a surface water source in whole or in part takes a minimum of four quarterly samples.~~

~~(4) All community, nontransient noncommunity and noncommunity waterworks owners shall monitor to determine compliance with the PMCL for nitrate in Table 2.2.~~

~~(a) Owners of community and nontransient noncommunity waterworks that use a groundwater source shall monitor annually beginning January 1, 1993.~~

~~(b) Owners of community and nontransient noncommunity waterworks that use a surface water source in whole or in part shall monitor quarterly beginning January 1, 1993.~~

~~(c) For owners of community and nontransient noncommunity waterworks that use groundwater, the repeat monitoring frequency shall be quarterly for at least one year following any one sample in which the concentration is greater than 50% of the PMCL. The commissioner may allow the owner of a waterworks, that uses groundwater, to reduce the sampling frequency to annually after four consecutive quarterly samples are reliably and consistently less than the PMCL.~~

~~(d) For community and nontransient noncommunity waterworks, the commissioner may allow the owner of a waterworks that uses a surface water source in whole or in part, to reduce the sampling frequency to annually if all analytical results from four consecutive quarters are less than 50% of the PMCL. Such waterworks shall return to quarterly monitoring if any one sample is greater than or equal to 50% of the PMCL.~~

~~(e) The owners of all other noncommunity waterworks shall monitor annually beginning January 1, 1993.~~

~~(f) After the initial round of quarterly sampling is completed, the owner of each community and nontransient noncommunity waterworks that is monitoring annually shall take subsequent samples during the quarter(s) which previously resulted in the highest analytical result.~~

~~(5) All owners shall monitor to determine compliance with the PMCL for nitrite in Table 2.2.~~

~~(a) All owners shall take one sample at each sampling point in the compliance period beginning January 1, 1993.~~

~~(b) After the initial sample, the owner of any waterworks where an analytical result for nitrite is less than 50% of the PMCL shall monitor at the frequency specified by the commissioner.~~

~~(c) The repeat monitoring frequency for any owner shall be quarterly for at least one year following any one sample in which the concentration is greater than 50% of the PMCL. The commissioner may allow an owner to reduce the sampling frequency to annually after determining the analysis results are reliably and consistently less than the PMCL.~~

~~(d) Owners of waterworks which are monitoring annually shall take each subsequent sample during the quarter(s) which previously resulted in the highest analytical result.~~

~~(6) The frequency of monitoring conducted to determine compliance with the PMCLs in Table 2.2 for arsenic shall be as follows:~~

~~(a) The owner of each community and nontransient noncommunity waterworks that uses a surface water source in whole or in part shall take one sample annually at each sampling point beginning January 23, 2006.~~

~~(b) The owner of each community and nontransient noncommunity groundwater source waterworks shall take one sample at each entry point during each compliance period starting January 23, 2006.~~

~~(c) Owners of waterworks that exceed the PMCL, as calculated in 12VAC5-590-410, shall monitor quarterly beginning in the next quarter after the exceedance has occurred.~~

~~(d) The commissioner may decrease the quarterly monitoring requirement to the frequencies specified in subdivision B 1 d (6) (a) or (b) of this section provided a determination has been made that the waterworks is reliably and consistently below the PMCL. In no case can the commissioner make this determination unless the owner of a groundwater source waterworks takes a minimum of two quarterly samples or the owner of a waterworks that uses a surface water source in whole or in part takes a minimum of four quarterly samples.~~

~~(e) No waivers shall be granted by the commissioner for arsenic.~~

~~2. Organic chemicals. Owners of all community and nontransient noncommunity waterworks shall sample for organic chemicals in accordance with their water source. Where two or more sources are combined before distribution, the owner shall sample at the entry point for the combined sources during periods of normal operating conditions.~~

~~a. Owners of waterworks that use groundwater shall take a minimum of one sample at each entry point to the~~

distribution system which is representative of each source, after treatment (hereafter called a sampling point).

b. Owners of waterworks that use a surface water source in whole or in part shall take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system, after treatment (hereafter called a sampling point).

c. The owner of each community and nontransient noncommunity waterworks shall take four consecutive quarterly samples for each contaminant listed in Table 2.3 VOC 2 through 21 and SOC during each compliance period, beginning in the compliance period starting January 1, 1993.

d. Reduced monitoring.

(1) VOC.

(a) If the initial monitoring for contaminants listed in Table 2.3 VOC 1 through 8 and the monitoring for the contaminants listed in Table 2.3 VOC 9 through 21 as allowed in subdivision B 2 d (1) (c) of this section has been completed by December 31, 1992, and the waterworks did not detect any contaminant listed in Table 2.3 VOC 1 through 21, then the owner of each groundwater waterworks and waterworks that use a surface water source in whole or in part shall take one sample annually beginning January 1, 1993.

(b) After a minimum of three years of annual sampling, the commissioner may allow the owner of a groundwater waterworks with no previous detection of any contaminant listed in Table 2.3 VOC 2 through 21 to take one sample during each compliance period.

(c) The commissioner may allow the use of monitoring data collected after January 1, 1988, for purposes of initial monitoring compliance. If the data are generally consistent with the other requirements in this section, the commissioner may use these data (i.e., a single sample rather than four quarterly samples) to satisfy the initial monitoring requirement of subdivision B 2 c of this section. Owners of waterworks that use grandfathered samples and did not detect any contaminants listed in Table 2.3 VOC, 2 through 21, shall begin monitoring annually in accordance with subdivision B 2 d (1) (a) of this section beginning January 1, 1993.

(2) SOC.

(a) Owners of waterworks serving more than 3,300 persons that do not detect a contaminant listed in Table 2.3 SOC in the initial compliance period, may reduce the sampling frequency to a minimum of two quarterly samples in one year during each repeat compliance period.

(b) Owners of waterworks serving less than or equal to 3,300 persons that do not detect a contaminant listed in Table 2.3 SOC in the initial compliance period may reduce the sampling frequency to a minimum of one sample during each repeat compliance period.

e. Waiver application.

(1) For VOCs. The owner of any community and nontransient noncommunity groundwater waterworks which does not detect a contaminant listed in Table 2.3 VOC may apply to the commissioner for a waiver from the requirements of subdivisions B 2 d (1) (a) and (b) of this section after completing the initial monitoring. A waiver shall be effective for no more than six years (two compliance periods). The commissioner may also issue waivers to small systems for the initial round of monitoring for 1,2,4 trichlorobenzene.

(2) For SOCs. The owner of any community and nontransient noncommunity waterworks may apply to the commissioner for a waiver from the requirement of subdivisions B 2 c and d (2) of this section. The owner shall reapply for a waiver for each compliance period.

f. The commissioner may grant a waiver after evaluating the following factors: Knowledge of previous use (including transport, storage, or disposal) of the contaminant within the watershed or zone of influence of the source. If a determination by the commissioner reveals no previous use of the contaminant within the watershed or zone of influence, a waiver may be granted. If previous use of the contaminant is unknown or it has been used previously, then the following factors shall be used to determine whether a waiver is granted.

(1) Previous analytical results.

(2) The proximity of the waterworks to a potential point or nonpoint source of contamination. Point sources include spills and leaks of chemicals at or near a waterworks or at manufacturing, distribution, or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities. Nonpoint sources for SOCs include the use of pesticides to control insect and weed pests on agricultural areas, forest lands, home and gardens, and other land application uses.

(3) The environmental persistence and transport of the contaminants listed in Table 2.3 VOC and SOC.

(4) How well the water source is protected against contamination, such as whether it is a waterworks that uses a surface water source in whole or in part or whether it is a groundwater source waterworks. Groundwater source waterworks shall consider factors such as depth of the well, the type of soil, wellhead protection, and well structure integrity. Owners of waterworks that use

surface water in whole or in part shall consider watershed protection.

(5) Special factors.

(a) For VOCs. The number of persons served by the waterworks and the proximity of a smaller waterworks to a larger waterworks.

(b) For SOCs. Elevated nitrate levels at the waterworks supply source.

(c) For SOCs. Use of PCBs in equipment used in the production, storage, or distribution of water (i.e., PCBs used in pumps, transformers, etc.).

g. Condition for waivers.

(1) As a condition of the VOC waiver the owner of a groundwater waterworks shall take one sample at each sampling point during the time the waiver is effective (i.e., one sample during two compliance periods or six years) and update its vulnerability assessment considering the factors listed in subdivision B 2 f of this section. Based on this vulnerability assessment the commissioner shall reconfirm that the waterworks is nonvulnerable. If the commissioner does not make this reconfirmation within three years of the initial determination, then the waiver is invalidated and the owner is required to sample annually as specified in subdivision B 2 d (1) (a) of this section.

(2) The owner of any community and nontransient noncommunity waterworks that use surface water in whole or in part which does not detect a contaminant listed in Table 2.3 VOC may apply to the commissioner for a waiver from the requirements of subdivision B 2 d (1) (a) of this section after completing the initial monitoring. Waterworks meeting these criteria shall be determined by the commissioner to be nonvulnerable based on a vulnerability assessment during each compliance period. Each owner receiving a waiver shall sample at the frequency specified by the commissioner (if any).

(3) There are no conditions to SOC waivers.

h. If a contaminant listed in Table 2.3 VOC 2 through 21 or SOC 1 through 33 is detected then (NOTE: Detection occurs when a contaminant level exceeds the current detection limit as defined by EPA.):

(1) Each owner shall monitor quarterly at each sampling point which resulted in a detection.

(2) The commissioner may decrease the quarterly monitoring requirement specified in subdivision B 2 h (1) of this section provided it has determined that the waterworks is reliably and consistently below the PMCL. In no case shall the commissioner make this determination unless the owner of a groundwater waterworks takes a minimum of two quarterly samples and the owner of a waterworks that use surface water in whole or in part takes a minimum of four quarterly samples.

(3) If the commissioner determines that the waterworks is reliably and consistently below the PMCL, the commissioner may allow the waterworks to monitor annually. Owners of waterworks that monitor annually shall monitor during the quarter(s) that previously yielded the highest analytical result.

(4) Owners of waterworks that have three consecutive annual samples with no detection of a contaminant may apply to the commissioner for a waiver for VOC as specified in subdivision B 2 e (1) or to SOC as specified in subdivision B 2 e (2) of this section.

(5) Subsequent monitoring due to contaminant detection.

(a) Owners of groundwater waterworks that have detected one or more of the following two carbon organic compounds: trichloroethylene, tetrachloroethylene, 1,2 dichloroethane, 1,1,1 trichloroethane, cis 1,2 dichloroethylene, trans 1,2 dichloroethylene, or 1,1 dichloroethylene shall monitor quarterly for vinyl chloride. A vinyl chloride sample shall be taken at each sampling point at which one or more of the two carbon organic compounds were detected. If the results of the first analysis do not detect vinyl chloride, the commissioner may reduce the quarterly monitoring frequency of vinyl chloride monitoring to one sample during each compliance period. Owners of waterworks that use surface water in whole or in part are required to monitor for vinyl chloride as specified by the commissioner.

(b) If monitoring results in detection of one or more of certain related contaminants (heptachlor and heptachlor epoxide), then subsequent monitoring shall analyze for all related contaminants.

i. Owners of waterworks that violate the requirements of Table 2.3 for VOCs or SOCs, as determined by 12VAC5-590-410-C, shall monitor quarterly. After a minimum of four consecutive quarterly samples that show the waterworks is in compliance as specified in 12VAC5-590-410-C and the commissioner determines that the waterworks is reliably and consistently below the PMCL, the owner may monitor at the frequency and time specified in subdivision B 2 h (3) of this section.

3. Disinfectant residuals, disinfection byproducts and disinfection byproduct precursors.

a. Unless otherwise noted, owners of all waterworks that use a chemical disinfectant shall comply with the requirements of this section as follows:

(1) Owners of community or nontransient noncommunity waterworks that use surface water or groundwater under the direct influence of surface water and serving 10,000 or more persons shall comply with this section beginning January 1, 2002.

(2) Owners of community or nontransient noncommunity waterworks that use surface water or groundwater under the direct influence of surface water serving fewer than 10,000 persons and waterworks using only groundwater not under the direct influence of surface water shall comply with this section beginning January 1, 2004.

(3) Owners of transient noncommunity waterworks that use surface water or groundwater under the direct influence of surface water and serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant shall comply with any requirements for chlorine dioxide in this section beginning January 1, 2002.

(4) Owners of transient noncommunity waterworks that use surface water or groundwater under the direct influence of surface water serving fewer than 10,000 persons and using chlorine dioxide as a disinfectant or oxidant and waterworks using only groundwater not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant shall comply with any requirements for chlorine dioxide in this section beginning January 1, 2004.

b. Owners shall take all samples during normal operating conditions.

(1) Analysis under this section for disinfection byproducts (TTHM, HAA5, chlorite and bromate) shall be conducted by a laboratory that has received certification by EPA or the state except as noted in subdivision B 3 b (2) of this section.

(2) Measurement under this section of daily chlorite samples at the entry point to the distribution system, disinfection residuals (free chlorine, combined chlorine, total chlorine and chlorine dioxide), alkalinity, bromide, TOC, SUVA (DOC and UV_{254}), pH and magnesium shall be made by a party approved by the commissioner.

(3) DPD colorimetric test kits may be used to measure residual disinfectant concentrations for chlorine, chloramines and chlorine dioxide.

c. Failure to monitor in accordance with the monitoring plan required under subdivision B 3 j of this section is a monitoring violation. Failure to monitor shall be treated as a violation for the entire period covered by the annual average where compliance is based on a running annual average of monthly or quarterly samples or averages and the owner's failure to monitor makes it impossible to determine compliance with PMCLs or MRDLs.

d. Owners may use only data collected under the provisions of this section or the US EPA Information Collection Rule, 40 CFR Part 141 Subpart M, Information Collection Requirements (ICR) for Public Water Systems, to qualify for reduced monitoring.

e. TTHM/HAA5 monitoring. Owners of community or nontransient noncommunity waterworks shall monitor TTHM and HAA5 at the frequency indicated below, unless otherwise indicated:

(1) Running annual average monitoring requirements.

(a) Routine monitoring requirements:

(i) Owners of waterworks using surface water or groundwater under the direct influence of surface water and serving at least 10,000 persons shall collect four water samples per quarter per treatment plant. At least 25% of all samples collected each quarter shall be at locations representing maximum residence time in the distribution system. The remaining samples shall be taken at locations representative of at least average residence time in the distribution system and representative of the entire distribution system. When setting the sample locations the waterworks shall take into account number of persons served, different sources of water, and different treatment methods.

(ii) Owners of waterworks using surface water or groundwater under the direct influence of surface water and serving from 500 to 9,999 persons shall collect one sample per quarter per treatment plant. The sample location shall represent maximum residence time in the distribution system.

(iii) Owners of waterworks using surface water or groundwater under the direct influence of surface water and serving fewer than 500 persons shall collect one sample per year per treatment plant during the month of warmest water temperature. The sample location shall represent maximum residence time in the distribution system. If the sample (or average of annual samples, if more than one sample is taken) exceeds PMCL in Table 2.13, the owner shall increase monitoring to one sample per treatment plant per quarter, taken at a point reflecting the maximum residence time in the distribution system, until waterworks meets reduced monitoring criteria.

(iv) Owners of waterworks using only groundwater not under direct influence of surface water using chemical disinfectant and serving at least 10,000 persons shall collect one sample per quarter per treatment plant. The sample location shall represent maximum residence time in the distribution system.

(v) Owners of waterworks using only groundwater not under direct influence of surface water using chemical disinfectant and serving fewer than 10,000 persons shall

collect one sample per year per treatment plant during the month of warmest water temperature. The sample location shall represent maximum residence time in the distribution system. If the sample (or average of annual samples, if more than one sample is taken) exceeds PMCL in Table 2.13, the owner shall increase monitoring to one sample per treatment plant per quarter, taken at a point reflecting the maximum residence time in the distribution system, until the waterworks meets the criteria for reduced monitoring found in subdivision B 3 e (1) (d) of this section.

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

(vii) With prior approval of the commissioner, owners of waterworks that utilize multiple wells from a common aquifer may consider these multiple sources as one treatment plant for determining the minimum number of samples to be collected for TTHM and HAA5 analysis.

(b) After one year of routine monitoring an owner may reduce monitoring, except as otherwise provided, as follows:

(i) Owners of waterworks using surface water or groundwater under the direct influence of surface water and serving at least 10,000 persons that has a source water annual average TOC level, before any treatment, of equal to or less than 4.0 mg/L and a TTHM annual average equal to or less than 0.040 mg/L and HAA5 annual average equal to or less than 0.030 mg/L may reduce its monitoring to one sample per treatment plant per quarter at a distribution system location reflecting maximum residence time.

(ii) Owners of waterworks using surface water or groundwater under the direct influence of surface water serving from 500 to 9,999 persons that has a source water annual average TOC level, before any treatment, equal to or less than 4.0 mg/L and a TTHM annual average equal to or less than 0.040 mg/L and HAA5 annual average equal to or less than 0.030 mg/L may reduce its monitoring to one sample per treatment plant per year at a distribution system location reflecting maximum residence time during the month of warmest water temperature.

(iii) Owners of waterworks using only groundwater not under the direct influence of surface water, using chemical disinfectant and serving at least 10,000 persons that has a TTHM annual average of equal to or less than 0.040 mg/L and HAA5 annual average of equal to or less than 0.030 mg/L may reduce its monitoring to one sample per treatment plant per year at a distribution system location reflecting maximum residence time during the month of warmest water temperature.

(iv) Owners of waterworks using only groundwater not under the direct influence of surface water, using chemical disinfectant and serving fewer than 10,000 persons that has a TTHM annual average equal to or less than 0.040 mg/L and HAA5 annual average equal to or less than 0.030 mg/L for two consecutive years or TTHM annual average equal to or less than 0.020 mg/L and HAA5 annual average of equal to or less than 0.015 mg/L for one year may reduce its monitoring to one sample per treatment plant per three year monitoring cycle at a distribution system location reflecting maximum residence time during the month of warmest water temperature, with the three year cycle beginning on January 1 following the quarter in which the system qualifies for reduced monitoring.

(v) Owners of waterworks using surface water or groundwater under the direct influence of surface water serving fewer than 500 persons may not reduce its monitoring to less than one sample per treatment plant per year.

(vi) In order to qualify for reduced monitoring for TTHM and HAA5 under subdivision B 3 e (1) (b) (i) through (iv) of this section, owners of waterworks using surface water or groundwater under the direct influence of surface water not monitoring under the provisions of subdivision B 3 (i) shall take monthly TOC samples every 30 days at a location prior to any treatment, beginning April 1, 2008. In addition to meeting other criteria for reduced monitoring in subdivision B 3 e (1) (b) (i) through (iv) of this section, the source water TOC running annual average shall be less than or equal to 4.0 mg/L (based on the most recent four quarters of monitoring) on a continuing basis at each treatment plant to reduce or remain on reduced monitoring for TTHM and HAA5. Once qualified for reduced monitoring for TTHM and HAA5 under subdivision B 3 e (1) (b) (i) through (iv) of this section, a system may reduce source water TOC monitoring to quarterly TOC samples taken every 90 days at a location prior to any treatment.

(c) Owners of waterworks on a reduced monitoring schedule may remain on that reduced schedule as long as the average of all samples taken in the year (for waterworks that must monitor quarterly) or the result of the sample (for waterworks that must monitor no more frequently than annually) is no more than 0.060 mg/L and 0.045 mg/L for TTHMs and HAA5, respectively. Owners of waterworks that do not meet these levels shall resume monitoring at the frequency identified in

subdivision B 3 e (1) (a) of this section in the quarter immediately following the monitoring period in which the waterworks exceeds 0.060 mg/L or 0.045 mg/L for TTHMs and HAA5, respectively. For waterworks using only groundwater not under the direct influence of surface water and serving fewer than 10,000 persons, if either the TTHMs annual average is greater than 0.080 mg/L or the HAA5 annual average is greater than 0.060 mg/L, the owner shall go to increased monitoring identified in subdivision B 3 e (1) (a) of this section in the quarter immediately following the monitoring period in which the waterworks exceeds 0.080 mg/L or 0.060 mg/L for TTHM or HAA5 respectively.

(d) Owners of waterworks on increased monitoring may return to routine monitoring if, after at least one year of monitoring, their TTHM annual average is equal to or less than 0.060 mg/L and their HAA5 annual average is equal to or less than 0.045 mg/L.

(e) The commissioner may return a waterworks to routine monitoring at the commissioner's discretion.

(2) Initial distribution system evaluations (IDSE).

(a) This subdivision establishes monitoring and other requirements for identifying locational running annual average (LRAA) compliance monitoring locations for determining compliance with maximum contaminant levels for total trihalomethanes (TTHM) and haloacetic acids (five) (HAA5). Owners shall use an IDSE to determine locations with representative high TTHM and HAA5 concentrations throughout the distribution system. IDSEs are used in conjunction with, but separate from running annual average compliance monitoring locations, subdivision B 3 e (1) (a) of this section, to identify and select locational running annual average compliance monitoring locations, subdivision B 3 e (3) of this section.

(b) This subdivision applies to the following waterworks:

(i) Community waterworks that use a primary or residual disinfectant other than ultraviolet light or delivers water that has been treated with a primary or residual disinfectant other than ultraviolet light; or,

(ii) Nontransient noncommunity waterworks that serve at least 10,000 people and use a primary or residual disinfectant other than ultraviolet light or delivers water that has been treated with a primary or residual disinfectant other than ultraviolet light.

(c) Owners shall comply with the following schedule:

Waterworks Population	Owners shall submit a standard monitoring plan or system specific study plan[1] or 40/30 certification[2] to the commissioner by or receive very small system waiver from the commissioner.	Owners shall complete standard monitoring or system specific study by	Owners shall submit IDSE report to the commissioner by[3]
Waterworks that are not part of a combined distribution system and waterworks that serve the largest population in the combined distribution system			
Equal to or greater than 100,000	October 1, 2006	September 30, 2008	January 1, 2009
50,000-99,999	April 1, 2007	March 31, 2009	July 1, 2009
10,000-49,999	October 1, 2007	September 30, 2009	January 1, 2010
Less than 10,000 (CWS Only)	April 1, 2008	March 31, 2010	July 1, 2010
Other waterworks that are part of a combined distribution system			
Wholesale waterworks or consecutive waterworks	-at the same time as the waterworks with the earliest compliance date in the combined distribution system	-at the same time as the waterworks with the earliest compliance date in the combined distribution system	-at the same time as the waterworks with the earliest compliance date in the combined distribution system

[1]If, within 12 months after the date identified in this column, the commissioner does not approve the plan or notify the owner that the review has been completed; the owner may consider the submitted plan as approved. The owner shall implement the plan and shall complete standard monitoring or a system specific study no later than the date identified in the third column.

[2]The owner shall submit the 40/30 certification under subdivision B 3 e (2) (d) (v) of this section by the date indicated.

[3]If, within three months after the date identified in this column (nine months after the date identified in this column if the owner is required to comply with the schedule for waterworks populations 10,000 to 49,999), the commissioner does not approve the IDSE report or notify the owner that the review has not been completed,

the owner may consider the submitted report as approved and the owner shall implement the recommended monitoring in accordance with subdivision B 3 e (3) of this section as required.

For the purpose of this schedule, the commissioner has determined that the combined distribution system does not include consecutive waterworks that receive water from a wholesale waterworks only on an emergency basis or receive less than 10% of their total water consumption from a wholesale waterworks. The commissioner has also determined that the combined distribution system does not include wholesale waterworks that deliver water to a consecutive waterworks only on an emergency basis or delivers less than 10% of the total water used by a consecutive waterworks.

(d) Owners shall conduct standard monitoring that meets the requirements in subdivision B 3 e (2) (d) (iii) of this section, or a system specific study that meets the requirements in subdivision B 3 e (2) (d) (iv) of this section, or certify to the commissioner that the waterworks meets 40/30 certification criteria under subdivision B 3 e (2) (d) (v) of this section, or qualify for a very small system waiver under subdivision B 3 e (2) (d) (vi) of this section.

(i) Owners shall have taken the full complement of routine TTHM and HAA5 compliance samples required of a waterworks based on population and source water under subdivision B 3 e (1) of this section (or the owner shall have taken the full complement of reduced TTHM and HAA5 compliance samples required of an owner based population and source water under subdivision B 3 e (1) of this section if the waterworks meet reduced monitoring criteria under subdivision B 3 e (1)) of this section during the period specified in subdivision B 3 e (2) (d) (v) ((a)) of this section to meet the 40/30 certification criteria in subdivision B 3 e (2) (d) (v) of this section. Owners shall have taken TTHM and HAA5 samples under subdivision B 3 e (1) of this section to be eligible for the very small system waiver in subdivision B 3 e (2) (d) (vi) of this section.

(ii) If the owner has not taken the required samples, the owner shall conduct standard monitoring that meets the requirements in subdivision B 3 e (2) (d) (iii) of this section, or a system specific study that meets the requirements in subdivision B 3 e (2) (d) (iv) of this section.

(iii) Standard monitoring.

((a)) The standard monitoring plan shall comply with the following paragraphs ((i)) through ((iv)). Owners shall prepare and submit the standard monitoring plan to the commissioner according to the schedule in subdivision B 3 e (2) (c) of this section.

((i)) The standard monitoring plan shall include a schematic of the waterworks distribution system (including distribution system entry points and their sources, and storage facilities), with notes indicating locations and dates of all projected standard monitoring, and all projected compliance monitoring in accordance with subdivision B 3 e (1) of this section.

((ii)) The standard monitoring plan shall include justification of standard monitoring location selection and a summary of data relied on to justify standard monitoring location selection.

((iii)) The standard monitoring plan shall specify the population served and waterworks type (surface water, groundwater under the direct influence of surface water or groundwater).

((iv)) Owners shall retain a complete copy of the submitted standard monitoring plan, including any modification required by the commissioner of the standard monitoring plan, for as long as the owner is required to retain the IDSE report under subdivision B 3 e (2) (d) (iii) ((c)) ((iv)) of this section.

((b)) Owners shall monitor as indicated in the following table. Owners shall collect dual sample sets at each monitoring location. One sample in the dual sample set shall be analyzed for TTHM. The other sample in the dual sample set shall be analyzed for HAA5. Owners shall conduct one monitoring period during the peak historical month for TTHM levels or HAA5 levels or the month of warmest water temperature. Owners shall review available compliance, study, or operational data to determine the peak historical month for TTHM or HAA5 levels or warmest water temperature.

Source Water Type	Population Size Category	Monitoring Periods and Frequency of Sampling	Distribution System Monitoring Locations[1]				
			Total per monitoring period	Near Entry Points	Average Residence Time	High TTHM Locations	High HAA5 Locations
Surface water or ground	Less than 500 consecutive waterworks	one (during peak historical	2	1		1	

water under the direct influence of surface water.	Less than 500 nonconsecutive waterworks	month)[2]	2			1	1
	500-3,300 consecutive waterworks	four (every 90 days)	2	1		1	
	500-3,300 nonconsecutive waterworks		2			1	1
	3,301-9,999		4		1	2	1
	10,000-49,999	six (every 60 days)	8	1	2	3	2
	50,000-249,999		16	3	4	5	4
	250,000-999,999		24	4	6	8	6
	1,000,000-4,999,999		32	6	8	10	8
	Equal to or greater than 5,000,000		40	8	10	12	10
Ground-water	Less than 500 consecutive waterworks	one (during peak historical month)[2]	2	1		1	
	Less than 500 nonconsecutive waterworks		2			1	1
	500-9,999	four (every 90 days)	2			1	1
	10,000-99,999		6	1	1	2	2
	100,000-499,999		8	1	1	3	3
	Equal to or greater than 500,000		12	2	2	4	4

[1]A dual sample set (i.e., a TTHM and an HAA5 sample) shall be taken at each monitoring location during each monitoring period.

[2]The peak historical month is the month with the highest TTHM or HAA5 levels or the warmest water temperature.

((i)) Owners shall take samples at locations other than the existing monitoring locations used in subdivision B 3 e (1) of this section. Monitoring locations shall be distributed throughout the distribution system.

((ii)) If the number of entry points to the distribution system is fewer than the specified number of entry point monitoring locations, excess entry point samples shall be replaced equally at high TTHM and HAA5 locations. If there is an odd extra location number, the owner shall take a sample at a high TTHM location. If the number of entry points to the distribution system is more than the specified number of entry point monitoring locations, owners shall take samples at entry points to the distribution system having the highest annual water flows.

((iii)) The monitoring under subdivision B 3 e (2) (d) (iii) ((b)) of this section may not be reduced.

((c)) The IDSE report shall include the elements required in the following paragraphs. Owners shall submit the IDSE report to the commissioner according to the schedule in subdivision B 3 e (2) (c) of this section.

((i)) The IDSE report shall include all TTHM and HAA5 analytical results from compliance monitoring required under subdivision B 3 e (1) of this section and all standard monitoring conducted during the period of the IDSE as individual analytical results and LRAAs

presented in a tabular or spreadsheet format acceptable to the commissioner. If changed from the standard monitoring plan submitted under subdivision B 3 e (2) (d) (iii) ((a)) of this section, the report shall also include a schematic of the distribution system, the population served, and system type (surface water, groundwater under the direct influence of surface water or groundwater).

((ii)) The IDSE report shall include an explanation of any deviations from the approved standard monitoring plan.

((iii)) Owners shall recommend and justify the compliance monitoring locations to be used in accordance with subdivision B 3 e (3) of this section and timing based on the protocol in subdivision B 3 e (2) (e) of this section.

((iv)) Owners shall retain a complete copy of the IDSE report submitted under this section for 10 years after the date the report was submitted to the commissioner. If the commissioner modifies the LRAA monitoring requirements recommended in the IDSE report or if the commissioner approves alternative monitoring locations, the owner shall keep a copy of the commissioner's notification on file for 10 years after the date of the commissioner's notification. The owner shall make the IDSE report and any commissioner's notification available for review by the commissioner or the public.

(iv) System specific studies.

((a)) The system specific study plan shall be based on either existing monitoring results as required under subdivision B 3 e (2) (d) (iv) ((a)) or modeling as required under subdivision B 3 e (2) (d) (iv) ((a)) of this section. Owners shall prepare and submit the waterworks specific study plan to the commissioner according to the schedule in subdivision B 3 e (2) (c) of this section.

((i)) Existing monitoring results. Owners may comply by submitting monitoring results collected before the waterworks is required to begin monitoring under subdivision B 3 e (2) (c) of this section. The monitoring results and analysis shall meet the criteria in subdivisions ((1)) and ((2)) as follows:

((1)) Minimum requirements.

((A)) TTHM and HAA5 results shall be based on samples collected and analyzed in accordance with 12VAC5-590-440. Samples shall be collected no earlier than five years prior to the study plan submission date.

((B)) The monitoring locations and frequency shall meet the conditions identified in the following table. Each location shall be sampled once during the peak historical month for TTHM levels or HAA5 levels or the month of warmest water temperature for every 12 months of data submitted for that location. Monitoring results shall include all compliance monitoring results in accordance with subdivision B 3 e (1) of this section plus additional monitoring results as necessary to meet minimum sample requirements.

System Type	Population Size Category	Number of Monitoring Locations	Number of Samples	
			TTHM	HAA5
Surface water or groundwater under the direct influence of surface water	Less than 500	3	3	3
	500-3,300	3	9	9
	3,301-9,999	6	36	36
	10,000-49,999	12	72	72
	50,000-249,999	24	144	144
	250,000-999,999	36	216	216
	1,000,000-4,999,999	48	288	288
	Equal to or greater than 5,000,000	60	360	360
Groundwater	Less than 500	3	3	3
	500-9,999	3	9	9
	10,000-99,999	12	48	48
	100,000-499,999	18	72	72
	Equal to or greater than 500,000	24	96	96

((2)) Reporting monitoring results. Owners shall report the following information:

((A)) Owners shall report previously collected monitoring results and certify that the reported monitoring results include all compliance and non-compliance results generated during the time period beginning with the first reported result and ending with the most recent results collected in accordance with subdivision B 3 e (1) of this section.

((B)) Owners shall certify that the samples were representative of the entire distribution system and that treatment, and distribution system have not changed significantly since the samples were collected.

((C)) The study monitoring plan shall include a schematic of the distribution system (including distribution system entry points and their sources, and storage facilities), with notes indicating the locations and dates of all completed or planned system specific study monitoring.

((D)) The system specific study plan shall specify the population served and system type (surface water, groundwater under the direct influence of surface water or groundwater).

((E)) Owners shall retain a complete copy of the system specific study plan submitted, including any modification requested by the commissioner of the system specific study plan, for as long as the owner is required to retain the IDSE report under subdivision B 3 e (2) (d) (iv) ((b)) ((vii)) of this section.

((F)) If previously collected data that fully meets the number of samples required under subdivision B 3 e (2) (d) (iv) ((a)) ((i)) ((1)) ((b)) of this section and the commissioner rejects some of the data, the owner shall either conduct additional monitoring to replace rejected data on a schedule the commissioner approves or conduct standard monitoring under subdivision B 3 e (2) (d) (iii) of this section.

((ii)) Modeling. Owners may comply through analysis of an extended period simulation hydraulic model. The extended period simulation hydraulic model and analysis shall meet the following criteria:

((1)) Minimum requirements.

((A)) The model shall simulate 24-hour variation in demand and show a consistently repeating 24-hour pattern of residence time.

((B)) The model shall represent the criteria listed in the following table:

75% of pipe volume;
50% of pipe length;
All pressure zones;
All 12-inch diameter and larger pipes;
All 8-inch and larger pipes that connect pressure zones, influence zones from different sources, storage facilities, major demand areas, pumps, and control valves, or are known or expected to be significant conveyors of water;
All 6-inch and larger pipes that connect remote areas of a distribution system to the main portion of the system;
All storage facilities with standard operations represented in the model; and
All active pump stations with controls represented in the model; and
All active control valves.

((C)) The model shall be calibrated, or have calibration plans, for the current configuration of the distribution system during the period of high TTHM formation potential. All storage facilities shall be evaluated as part of the calibration process. All required calibration shall be completed no later than 12 months after plan submission.

((2)) Reporting modeling. The system specific study plan shall include the following information:

((A)) Tabular or spreadsheet data demonstrating that the model meets requirements in subdivision B 3 e (2) (d) (iv) ((a)) ((ii)) ((1)) ((b)) of this section.

((B)) A description of all calibration activities undertaken, and if calibration is complete, a graph of predicted tank levels versus measured tank levels for the storage facility with the highest residence time in each pressure zone, and a time series graph of the residence time at the longest residence time storage facility in the distribution system showing the predictions for the entire simulation period (i.e., from time zero until the time it takes to for the model to reach a consistently repeating pattern of residence time).

((C)) Model output showing preliminary 24-hour average residence time predictions throughout the distribution system.

((D)) Timing and number of samples representative of the distribution system planned for at least one monitoring period of TTHM and HAA5 dual sample monitoring at a number of locations no less than would be required for the system under standard monitoring in subdivision B 3 e (2) (d) (iii) of this section during the historical month of high TTHM. These samples shall be taken at locations other than existing compliance monitoring locations listed in subdivision B 3 e (1) of this section.

((E)) Description of how all requirements will be completed no later than 12 months after owner submits the system specific study plan.

((F)) Schematic of the distribution system (including distribution system entry points and their sources, and storage facilities), with notes indicating the locations and dates of all completed system specific study monitoring (if calibration is complete) and all compliance monitoring listed in subdivision B 3 e (1) of this section.

((G)) Population served and system type (surface water, groundwater under the direct influence of surface water or groundwater).

((H)) Owners shall retain a complete copy of the system specific study plan submitted, including any modification recommended by the commissioner to the waterworks specific study plan, for as long as the owner is required to

retain the IDSE report under subdivision B 3 e (2) (d) (iv) ((b)) ((vii)) of this section.

((3)) If an owner submits a model that does not fully meet the requirements under paragraph (iv) ((a)) ((ii)) of this section, the owners shall correct the deficiencies and respond to commissioner's inquiries concerning the model. If the owner fails to correct deficiencies or respond to inquiries to the commissioner's satisfaction, the owner shall conduct standard monitoring under subdivision B 3 e (2) (d) (iii) of this section.

((b)) The IDSE report shall include the elements required in the following paragraphs. Owners shall submit the IDSE report according to the schedule in subdivision B 3 e (2) (c) of this section.

((i)) The IDSE report shall include all TTHM and HAA5 analytical results from compliance monitoring in subdivision B 3 e (1) of this section and all system specific study monitoring conducted during the period of the system specific study presented in a tabular or spreadsheet format acceptable to the commissioner. If changed from the system specific study plan submitted under subdivision B 3 e (2) (d) (iv) ((a)) of this section, the IDSE report shall also include a schematic of the distribution system, the population served; and system type (surface water, groundwater under the direct influence of surface water or groundwater).

((ii)) Owners of waterworks using the modeling provision under subdivision B 3 e (2) (d) (iv) ((a)) ((ii)) of this section shall include final information for the elements described in subdivision B 3 e (2) (d) (iv) ((a)) ((ii)) ((2)) of this section, and a 24 hour time series graph of residence time for each LRAA compliance monitoring location selected.

((iii)) The owner shall recommend and justify LRAA compliance monitoring locations and timing based on the protocol in subdivision B 3 e (2) (e) of this section.

((iv)) The IDSE report shall include an explanation of any deviations from the waterworks approved system specific study plan.

((v)) The IDSE report shall include the basis (analytical and modeling results) and justification the owner used to select the recommended LRAA monitoring locations.

((vi)) The owner may submit the IDSE report in lieu of the system specific study plan on the schedule identified in subdivision B 3 e (2) (c) of this section for submission of the system specific study plan if the owner believes the necessary information has been obtained by the time that the waterworks specific study plan is due. If the owner elects this approach, the IDSE report shall also include all information required under subdivision B 3 e (2) (d) (iv) ((a)) of this section.

((vii)) The owner shall retain a complete copy of the IDSE report submitted under this subdivision for 10 years after the date submitted. If the commissioner modifies the LRAA monitoring requirements that the owner recommended in the IDSE report or if the commissioner approves alternative monitoring locations, the owner shall keep a copy of the commissioner's notification on file for 10 years after the date of the commissioner's notification. The owner shall make the IDSE report and any notification from the commissioner available for review by the commissioner or the public.

(v) 40/30 certifications.

((a)) Eligibility. Waterworks are eligible for 40/30 certification if the waterworks had no TTHM or HAA5 monitoring violations under subdivision B 3 e (1) of this section and no individual sample exceeded 0.040 mg/L for TTHM or 0.030 mg/L for HAA5 during an eight consecutive calendar quarter period beginning no earlier than the date specified in the following table.

If the waterworks 40/30 Certification Is Due	Then the waterworks eligibility for 40/30 certification is based on eight consecutive calendar quarters of compliance monitoring under subdivision B 3 e (1) results beginning no earlier than[1]
October 1, 2006	January 2004
April 1, 2007	January 2004
October 1, 2007	January 2005
April 1, 2008	January 2005

[1]Unless the waterworks is on reduced monitoring under subdivision B 3 e (1) of this section and was not required to monitor during the specified period. If the owner did not monitor during the specified period, the owner shall base eligibility on compliance samples taken during the 12 months preceding the specified period.

((b)) Requirements for 40/30 certification:

((i)) Certify to the commissioner that every individual compliance sample taken under subdivision B 3 e (1) of this section during the periods specified in subdivision B 3 e (2) (d) (v) ((a)) of this section were less than or equal to 0.040 mg/L for TTHM and less than or equal to 0.030 mg/L for HAA5, and that the waterworks has not had any TTHM or HAA5 monitoring violations during the period specified in subdivision ((a)).

((ii)) The commissioner may require the owner to submit compliance monitoring results, distribution system schematics, and/or recommended LRAA compliance monitoring locations in addition to the certification. If an

owner fails to submit the requested information, the commissioner may require standard monitoring under subdivision B 3 e (2) (d) (iii) of this section or a system specific study under subdivision B 3 e (2) (d) (iv) of this section.

((iii)) The commissioner may still require standard monitoring under subdivision B 3 e (2) (d) (iii) or a system specific study under subdivision B 3 e (2) (d) (iv) of this section even if the waterworks meet the criteria in subdivision B 3 e (2) (d) (v) ((a)) of this section.

((iv)) The owner shall retain a complete copy of the certification submitted under this subdivision for 10 years after the date that the owner submitted the certification. The owner shall make the certification, all data upon which the certification is based, and any notification from the commissioner available for review by the commissioner or the public.

(vi) Very small system waivers.

((a)) If the waterworks serves fewer than 500 people and has taken TTHM and HAA5 samples under subdivision B 3 e (1) of this section, the owner is not required to comply with this subdivision unless the commissioner notifies the owner to conduct standard monitoring under subdivision B 3 e (2) (d) (iii) or a system specific study under subdivision B 3 e (2) (d) (iv) of this section.

((b)) If the owner has not taken TTHM and HAA5 samples under subdivision B 3 e (1) of this section or if the commissioner notifies the owner to comply with this subdivision, the owner shall conduct standard monitoring under subdivision B 3 e (2) (d) (iii) of this section or a system specific study under subdivision B 3 e (2) (d) (iv) of this section.

(e) LRAA compliance monitoring location recommendations.

(i) The IDSE report shall include recommendations and justification for where and during what month(s) TTHM and HAA5 monitoring in accordance with subdivision B 3 e (3) of this section should be conducted. These recommendations shall be based on the criteria in the paragraphs in this section.

(ii) Owners shall select the number of monitoring locations specified in the following table. These recommended locations will be used as LRAA routine compliance monitoring locations, unless the commissioner requires different or additional locations. The locations should be distributed throughout the distribution system to the extent possible.

Source Water Type	Population Size Category	Monitoring Frequency[1]	Distribution System Monitoring Location			
			Total per monitoring period[2]	Highest TTHM Locations	Highest HAA5 Locations	Existing Compliance Locations in accordance with subdivision B 3 e (1)
Surface water or ground-water under the direct influence of surface water	Less than 500	per year	2	1	1	
	500-3,300	per quarter	2	1	1	
	3,301-9,999	per quarter	2	1	1	
	10,000-49,999	per quarter	4	2	1	1
	50,000-249,999	per quarter	8	3	3	2
	250,000-999,999	per quarter	12	5	4	3
	1,000,000-4,999,999	per quarter	16	6	6	4
	Equal to or greater than 5,000,000	per quarter	20	8	7	5
Ground-water	Less than 500	per year	2	1	1	
	500-9,999	per year	2	1	1	
	10,000-99,999	per quarter	4	2	1	1
	100,000-499,999	per quarter	6	3	2	1
	Equal to or greater than 500,000	per quarter	8	3	3	2

[1]All owners shall monitor during month of highest DBP concentrations.

[2]Owners of waterworks on quarterly monitoring (except for surface water source or GUDI source waterworks serving 500–3,300) shall take dual sample sets every 90 days at each monitoring location. Groundwater source waterworks serving 500–9,999 (on annual monitoring) shall take dual sample sets annually at each monitoring location. Waterworks serving fewer than 500 and surface water source or GUDI source waterworks serving 500–3,300 shall take individual TTHM and HAA5 samples (instead of a dual sample set) at the locations with the highest TTHM and HAA5 concentrations, respectively. Waterworks serving fewer than 500 shall sample annually and surface water source or GUDI source systems serving 500–3,300 shall sample every 90 days. Only one location with a dual sample set per monitoring period is needed if highest TTHM and HAA5 concentrations occur at the same location (and month, if monitoring annually).

(iii) Owners shall recommend LRRA compliance monitoring locations based on standard monitoring results, system specific study results, and compliance monitoring results under subdivision B 3 e (1) of this section. Owners shall follow the protocol in subdivision B 3 e (2) (e) (iii) ((a)) through ((h)) of this section. If required to monitor at more than eight locations, the owner shall repeat the protocol as necessary. If an owner does not have existing compliance monitoring results under subdivision B 3 e (1) of this section or if the owner does not have enough existing compliance monitoring results under subdivision B 3 e (1) of this section, the owner shall repeat the protocol, skipping the provisions of subdivision B 3 e (2) (e) (iii) ((c)) and ((g)) of this section as necessary, until the owner has identified the required total number of monitoring locations.

((a)) Location with the highest TTHM LRAA not previously selected as a LRAA monitoring location.

((b)) Location with the highest HAA5 LRAA not previously selected as a LRAA monitoring location.

((c)) Existing average residence time compliance monitoring location under subdivision B 3 e (1) of this section (maximum residence time compliance monitoring location for ground water systems) with the highest HAA5 LRAA not previously selected as a LRAA monitoring location.

((d)) Location with the highest TTHM LRAA not previously selected as a LRAA monitoring location.

((e)) Location with the highest TTHM LRAA not previously selected as a LRAA monitoring location.

((f)) Location with the highest HAA5 LRAA not previously selected as a LRAA monitoring location.

((g)) Existing average residence time compliance monitoring location under subdivision B 3 e (1) of this section (maximum residence time compliance monitoring location for ground water systems) with the highest TTHM LRAA not previously selected as a LRAA monitoring location.

((h)) Location with the highest HAA5 LRAA not previously selected as a LRAA monitoring location.

(iv) An owner may recommend locations other than those specified in subdivision B 3 e (2) (e) (iii) of this section if the owner includes a rationale for selecting other locations. If the commissioner approves the alternate locations, the owners shall monitor at these locations to determine compliance under subdivision B 3 e (3) of this section.

(v) The recommended schedule shall include LRAA monitoring during the peak historical month for TTHM and HAA5 concentration, unless the commissioner approves another month. Once the owner has identified the peak historical month, and if the owner is required to conduct routine monitoring at least quarterly, the owner shall schedule LRAA compliance monitoring at a regular frequency of every 90 days or fewer.

(f) The owner shall use only the analytical methods specified in 12VAC5-590-440, or otherwise approved by EPA for monitoring, to demonstrate compliance.

(g) IDSE results will not be used for the purpose of determining compliance with MCLs in Table 2.13.

(3) Locational running annual average monitoring requirements.

(a) This subdivision establishes monitoring and other requirements for achieving compliance with maximum contaminant levels based on locational running annual averages (LRAA) for total trihalomethanes (TTHM) and haloacetic acids (five) (HAA5), and for achieving compliance with maximum residual disinfectant residuals for chlorine and chloramines for certain consecutive waterworks.

(b) This subdivision applies to community waterworks or nontransient noncommunity waterworks that uses a primary or residual disinfectant other than ultraviolet light or delivers water that has been treated with a primary or residual disinfectant other than ultraviolet light.

(c) Owner shall comply on the schedule in the following table based on the type of waterworks:

Type of Waterworks	Waterworks shall comply with Locational Running Average monitoring by:[1]
Waterworks that are not part of a combined distribution system and waterworks that serve the largest population in the combined distribution system	
Waterworks serving equal to or greater than 100,000	April 1, 2012
Waterworks serving 50,000-99,999	October 1, 2012
Waterworks serving 10,000-49,999	October 1, 2013
Waterworks serving less than 10,000	October 1, 2013 if no Cryptosporidium monitoring is required under 12VAC5-590-420 B 3 a (1) (c) or October 1, 2014 if Cryptosporidium monitoring is required under 12VAC5-590-420 B 3 a (1) (c)
Other waterworks that are part of a combined distribution system	
Consecutive waterworks or wholesale waterworks	at the same time as the waterworks with the earliest compliance date in the combined distribution system

[1]The commissioner may grant up to an additional 24 months for compliance with MCLs and operational evaluation levels if the waterworks require capital improvements to comply with an MCL.

(i) Waterworks monitoring frequency is specified in subdivision B 3 e (3) (d) (ii) of this section.

((a)) Owners of waterworks required to conduct quarterly monitoring shall begin monitoring in the first full calendar quarter that includes the compliance date in the table in subdivision B 3 e (3) (c) of this section.

((b)) Owners of waterworks required to conduct monitoring at a frequency that is less than quarterly shall begin monitoring in the calendar month recommended in the IDSE report prepared under subdivision B 3 e (2) (d) (iii) or subdivision B 3 e (2) (d) (iv) of this section or the calendar month identified in the LRAA monitoring plan developed under subdivision B 3 e (3) (e) of this section no later than 12 months after the compliance date in the table in subdivision B 3 e (3) (c) of this section.

(ii) Owners of waterworks required to conduct quarterly monitoring shall make compliance calculations at the end of the fourth calendar quarter that follows the compliance date and at the end of each subsequent quarter (or earlier if the LRAA calculated based on fewer than four quarters of data would cause the MCL to be exceeded regardless of the monitoring results of subsequent quarters). Owners of waterworks required to conduct monitoring at a frequency that is less than quarterly shall make compliance calculations beginning with the first compliance sample taken after the compliance date.

(iii) For the purpose of the schedule in subdivision B 3 e (3) (c) of this section, the commissioner has determine that the combined distribution system does not include consecutive waterworks that receive water from a wholesale waterworks only on an emergency basis or receive less than 10% of their total water consumption from a wholesale waterworks. The commissioner has also determine that the combined distribution system does not include wholesale waterworks which deliver water to a consecutive waterworks only on an emergency basis or deliver less than 10% of the total water used by a consecutive waterworks.

(d) Routine monitoring.

(i) Owners submitting an IDSE report shall begin monitoring at the locations and months the owner recommended in the IDSE report submitted under subdivision B 3 e (2) (c) of this section following the schedule in subdivision B 3 e (3) (c) of this section, unless the commissioner requires other locations or additional locations after review. If the owner submitted a 40/30 certification under subdivision B 3 e (2) (d) (v) of this section or the waterworks qualified for a very small system waiver under subdivision B 3 e (2) (d) (vi) of this section or the waterworks is a nontransient noncommunity waterworks serving less than 10,000, the owner shall monitor at the location(s) and dates identified in the monitoring plan in subdivision B 3 j of this section, updated as required by subdivision B 3 e (3) (e) of this section.

(ii) Owners shall monitor at no fewer than the number of locations identified in the following table:

Source Water Type	Population Size Category	Monitoring Frequency[1]	Distribution System Monitoring Location Total per Monitoring Period[2]
Surface water or groundwater under the direct influence of surface water	Less than 500	per year	2
	500-3,300	per quarter	2
	3,301-9,999	per quarter	2
	10,000-49,999	per quarter	4
	50,000-249,999	per quarter	8
	250,000-999,999	per quarter	12
	1,000,000-4,999,999	per quarter	16
	Equal to or greater than 5,000,000	per quarter	20
Groundwater	Less than 500	per year	2
	500-9,999	per year	2
	10,000-99,999	per quarter	4
	100,000-499,999	per quarter	6
	Equal to or greater than 500,000	per quarter	8

[1]All owners shall monitor during month of highest DBP concentrations.

[2]Owners of waterworks on quarterly monitoring (except for surface water source or GUDI source waterworks serving 500-3,300) shall take dual sample sets every 90 days at each monitoring location. Groundwater source waterworks serving 500-9,999 (on annual monitoring) shall take dual sample sets annually at each monitoring location. Waterworks serving fewer than 500 and surface water source or GUDI source waterworks serving 500-3,300 shall take individual TTHM and HAA5 samples (instead of a dual sample set) at the locations with the highest TTHM and HAA5 concentrations, respectively. Waterworks serving fewer than 500 shall sample annually and surface water source or GUDI source systems serving 500-3,300 shall sample every 90 days. Only one location with a dual sample set per monitoring period is needed if highest TTHM and HAA5 concentrations occur at the same location (and month, if monitoring annually).

(iii) Owners of waterworks not using disinfection that begin using a disinfectant other than UV light after the dates in subdivision B 3 e (2) of this section for complying with the IDSE requirements shall consult with the commissioner to identify compliance monitoring locations. Owners shall then develop a monitoring plan under subdivision B 3 e (3) (e) of this section that includes those monitoring locations.

(iv) Owners shall use an approved method listed in 12VAC5-590-440 for TTHM and HAA5 analyses. Analyses shall be conducted by laboratories that have received certification by EPA or DCLS as specified in 12VAC5-590-440.

(e) Monitoring plan.

(i) Owners shall develop and implement a monitoring plan to be kept on file for review by the commissioner and the public. The monitoring plan shall be completed no later than the date the owner conducts the initial monitoring and contain:

((a)) Monitoring locations;

((b)) Monitoring dates; and

((c)) Compliance calculation procedures.

(ii) If the owner was not required to submit an IDSE report under either subdivision B 3 e (2) (d) (iii) or subdivision B 3 e (2) (d) (iv) of this section, and the waterworks did not have sufficient monitoring locations under subdivision B 3 e (1) of this section to identify the required number of LRAA compliance monitoring locations indicated in subdivision B 3 e (2) (e) (ii) of this section, the owner shall identify additional locations by alternating selection of locations representing high TTHM levels and high HAA5 levels until the required number of compliance monitoring locations have been identified. The owner shall also provide the rationale for identifying the locations as having high levels of TTHM or HAA5. If the waterworks has more monitoring locations under subdivision B 3 e (1) of this section than required for LRAA compliance monitoring in subdivision B 3 e (2) (e) (ii) of this section, the owner shall identify which locations the waterworks will use for LRAA compliance monitoring by alternating selection of locations representing high TTHM levels and high HAA5 levels until the required number of LRAA compliance monitoring locations have been identified.

(iii) Owners of waterworks using surface water or groundwater under the direct influence of surface water serving more than 3,300 people shall submit a copy of the monitoring plan to the commissioner prior to the date the waterworks conducts the initial monitoring, unless the IDSE report submitted under subdivision B 3 e (2) of

this section contains all the information required by this section.

(iv) Owners may revise the monitoring plan to reflect changes in treatment, distribution system operations and layout (including new service areas), or other factors that may affect TTHM or HAA5 formation, or for reasons approved by the commissioner, after consultation with the commissioner regarding the need for changes and the appropriateness of the changes. If the owner changes monitoring locations, the owner shall replace existing compliance monitoring locations with the lowest LRAA with new locations that reflect the current distribution system locations with expected high TTHM or HAA5 levels. The commissioner may also require modifications in the monitoring plan. Owners of waterworks using surface water or groundwater under the direct influence of surface water serving more than 3,300 people shall submit a copy of the modified monitoring plan to the commissioner prior to the date the owner is required to comply with the revised monitoring plan.

(f) Reduced monitoring

(i) Owners may reduce monitoring to the level specified in the following table any time the LRAA is less than or equal to 0.040 mg/L for TTHM and less than or equal to 0.030 mg/L for HAA5 at all monitoring locations. Owners may only use data collected under the provisions of this subdivision or subdivision B 3 e (1) of this section to qualify for reduced monitoring. In addition, the source water annual average TOC level, before any treatment, shall be less than or equal to 4.0 mg/L at each treatment plant treating surface water or ground water under the direct influence of surface water, based on monitoring conducted under either subdivision B 3 e (1) (b) (vi) or B 3 i of this section.

Source Water Type	Population Size Category	Monitoring Frequency[1]	Distribution System Monitoring Location per Monitoring Period
Surface water or ground water under the direct influence of surface water	Less than 500		monitoring may not be reduced
	500-3,300	per year	1 TTHM and 1 HAA5 sample: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement; 1 dual sample set per year if the highest TTHM and HAA5 measurements occurred at the same location and quarter.
	3,301-9,999	per year	2 dual sample sets: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement
	10,000-49,999	per quarter	2 dual sample sets at the locations with the highest TTHM and highest HAA5 LRAAs
	50,000-249,999	per quarter	4 dual sample sets - at the locations with the two highest TTHM and two highest HAA5 LRAAs
	250,000-999,999	per quarter	6 dual sample sets - at the locations with the three highest TTHM and three highest HAA5 LRAAs
	1,000,000-4,999,999	per quarter	8 dual sample sets - at the locations with the four highest TTHM and four highest HAA5 LRAAs
	Equal to or greater than 5,000,000	per quarter	10 dual sample sets - at the locations with the five highest TTHM and five highest HAA5 LRAAs
Groundwater	Less than 500	every third year	1 TTHM and 1 HAA5 sample: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement; 1 dual sample set per year if the highest TTHM and HAA5 measurements occurred at the same location and quarter.
	500-9,999	per year	1 TTHM and 1 HAA5 sample: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement; 1 dual sample set per year if the highest

			TTHM and HAA5 measurements occurred at the same location and quarter.
	10,000-99,999	per year	2 dual sample sets: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement
	100,000-499,999	per quarter	2 dual sample sets; at the locations with the highest TTHM and highest HAA5 LRAAs
	Equal to or greater than 500,000	per quarter	4 dual sample sets at the locations with the two highest TTHM and two highest HAA5 LRAAs

[1]Owners of waterworks on quarterly monitoring shall take dual sample sets every 90 days.

(ii) owners may remain on reduced monitoring as long as the TTHM LRAA is less than or equal to 0.040 mg/L and the HAA5 LRAA is less than or equal to 0.030 mg/L at each monitoring location (for waterworks with quarterly reduced monitoring) or each TTHM sample is less than or equal to 0.060 mg/L and each HAA5 sample is less than or equal to 0.045 mg/L (for waterworks with annual or less frequent monitoring). In addition, the source water annual average TOC level, before any treatment, shall be less than or equal to 4.0 mg/L at each treatment plant treating surface water or ground water under the direct influence of surface water, based on monitoring conducted under either subdivision B 3 e (1) (b) (vi) or B 3 i of this section.

(iii) If the LRAA based on quarterly monitoring at any monitoring location exceeds either 0.040 mg/L for TTHM or 0.030 mg/L for HAA5 or if the annual (or less frequent) sample at any location exceeds either 0.060 mg/L for TTHM or 0.045 mg/L for HAA5, or if the source water annual average TOC level, before any treatment, is greater than 4.0 mg/L at any treatment plant treating surface water or ground water under the direct influence of surface water, the owner shall resume routine monitoring under subdivision B 3 e (3) (d) of this section or begin increased monitoring if subdivision B 3 e (3) (g) of this section applies.

(iv) The commissioner may return the waterworks to routine monitoring at the commissioner's discretion.

(v) A waterworks may remain on reduced monitoring after the dates identified in subdivision B 3 e (3) (c) of this section for compliance with this section only if the waterworks qualifies for a 40/30 certification under subdivision B 3 e (2) (d) (v) of this section or has received a very small system waiver under subdivision B 3 e (2) (d) (vi) of this section, plus the waterworks meets the reduced monitoring criteria in subdivision B 3 e (3) (f) of this section, and the owner did not change or add monitoring locations from those used for compliance monitoring under subdivision B 3 e (1) of this section. If the monitoring locations under this subdivision differ from the monitoring locations under subdivision B 3 e (1) of this section, the owner may not remain on reduced monitoring after the dates identified in subdivision B 3 e (3) (c) of this section for compliance with this subdivision.

(vi) Owners shall use an approved method listed in 12VAC5-590-440 for TTHM and HAA5 analyses. Analyses shall be conducted by laboratories that have received certification by EPA or DCLS as specified in 12VAC5-590-440.

(g) Increased Monitoring

(i) Owners of waterworks required to monitor at a particular location annually or less frequently than annually under subdivision B 3 e (3) (d) or subdivision B 3 e (3) (f) of this section, shall increase monitoring to dual sample sets once per quarter (taken every 90 days) at all locations if a TTHM sample is greater than 0.080 mg/L or a HAA5 sample is greater than 0.060 mg/L at any location.

(ii) A waterworks is in violation of the MCL when the LRAA exceeds the MCLs in Table 2.13, calculated based on four consecutive quarters of monitoring (or the LRAA calculated based on fewer than four quarters of data if the MCL would be exceeded regardless of the monitoring results of subsequent quarters). Waterworks are in violation of the monitoring requirements for each quarter that a monitoring result would be used in calculating an LRAA if the owner fails to monitor.

(iii) Owners may return to routine monitoring once the waterworks has conducted increased monitoring for at least four consecutive quarters and the LRAA for every monitoring location is less than or equal to 0.060 mg/L for TTHM and less than or equal to 0.045 mg/L for HAA5.

(iv) Owners of waterworks on increased monitoring under subdivision e (1) in this section shall remain on increased monitoring until the waterworks qualify for a return to routine monitoring under subdivision B 3 e (3) (g) (iii) of this section. The owner shall conduct increased monitoring under subdivision B 3 e (3) (g) of

this section at the monitoring locations in the monitoring plan developed under subdivision B 3 e (3) (e) of this section beginning at the date identified in subdivision B 3 e (3) (c) of this section for compliance with this subdivision and remain on increased monitoring until the waterworks qualifies for a return to routine monitoring under subdivision B 3 e (3) (g) (iii) of this section.

(v) Owners shall use an approved method listed in 12VAC5-590-440 for TTHM and HAA5 analyses. Analyses shall be conducted by laboratories that have received certification by EPA or DCLS as specified in 12VAC5-590-440.

f. Chlorite. Owners of community and nontransient noncommunity waterworks using chlorine dioxide, for disinfection or oxidation, shall conduct monitoring for chlorite.

(1) Routine monitoring.

(a) Daily monitoring. Owners shall take daily samples at the entrance to the distribution system. For any daily sample that exceeds the chlorite PMCL in Table 2.13, the owner shall take additional samples in the distribution system the following day at the locations required by subdivision B 3 f (1) (c) of this section, in addition to the sample required at the entrance to the distribution system.

(b) Monthly monitoring. Owners shall take a three-sample set each month in the distribution system. The owner shall take one sample at each of the following locations: near the first customer, at a location representative of average residence time, and at a location reflecting maximum residence time in the distribution system. Any additional routine sampling shall be conducted in the same manner (as three-sample sets, at the specified locations). The owner may use the results of additional monitoring conducted under subdivision B 3 f (1) (c) of this section to meet the requirement for monitoring in this paragraph.

(c) Additional monitoring requirements. On each day following a routine sample monitoring result that exceeds the chlorite PMCL in Table 2.13 at the entrance to the distribution system, the owner is required to take three chlorite distribution system samples at the following locations: as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the distribution system as possible (reflecting maximum residence time in the distribution system).

(2) Reduced monitoring.

(a) Chlorite monitoring at the entrance to the distribution system required by subdivision B 3 f (1) (a) of this section may not be reduced.

(b) Chlorite monitoring in the distribution system required by subdivision B 3 f (1) (b) of this section may be reduced to one three-sample set per quarter after one year of monitoring where no individual chlorite sample taken in the distribution system under subdivision B 3 f (1) (b) of this section has exceeded the chlorite PMCL in Table 2.13 and the owner has not been required to conduct monitoring under subdivision B 3 f (1) (c) of this section. The owner may remain on the reduced monitoring schedule until either any of the three individual chlorite samples taken quarterly in the distribution system under subdivision B 3 f (1) (b) of this section exceeds the chlorite PMCL or the owner is required to conduct monitoring under subdivision B 3 f (1) (c) of this section, at which time the owner shall revert to routine monitoring.

g. Bromate.

(1) The owner of a community or nontransient noncommunity waterworks treatment plant using ozone, for disinfection or oxidation, shall take one sample per month and analyze it for bromate. The owner shall take samples monthly at the entrance to the distribution system while the ozonation system is operating under normal conditions.

(2) Reduced monitoring.

(a) Until March 31, 2009, owners of waterworks required to analyze for bromate may reduce monitoring from monthly to quarterly, if the waterworks average source water bromide concentration is less than 0.05 mg/L based on representative monthly bromide measurements for one year. The owner may remain on reduced bromate monitoring until the running annual average source water bromide concentration, computed quarterly, is equal to or greater than 0.05 mg/L based on representative monthly measurements. If the running annual average source water bromide concentration is equal to or greater than 0.05 mg/L, the owner shall resume routine monitoring required by subdivision B 3 g (1) of this section in the following month.

(b) Beginning April 1, 2009, owners may no longer use the provisions of subdivision B 3 g (2) (a) of this section to qualify for reduced monitoring. An owner required to analyze for bromate may reduce monitoring from monthly to quarterly, if the waterworks running annual average bromate concentration is equal to or less than 0.0025 mg/L based on monthly bromate measurements under subdivision B 3 g (1) of this section for the most recent four quarters, with samples analyzed in accordance with 12VAC5-590-440. If a waterworks has qualified for reduced bromate monitoring under subdivision B 3 g (2) (a) of this section, the owner may remain on reduced monitoring as long as the running annual average of quarterly bromate samples is equal to

or less than 0.0025 mg/L based on samples analyzed in accordance with 12VAC5-590-440. If the running annual average bromate concentration is greater than 0.0025 mg/L, the owner shall resume routine monitoring required by subdivision B 3 g (1) of this section.

(3) Bromide. Owners of waterworks required to analyze for bromate may reduce bromate monitoring from monthly to once per quarter, if the owner demonstrates that the average source water bromide concentration is less than 0.05 mg/L based upon representative monthly measurements for one year. The owner shall continue bromide monitoring to remain on reduced bromate monitoring.

h. Monitoring requirements for disinfectant residuals.

(1) Chlorine and chloramines.

(a) Owners of waterworks that use chlorine or chloramines shall measure the residual disinfectant level in the distribution system at the same point in the distribution system and at the same time as total coliforms are sampled, as specified in subsection A. Owners of waterworks that use surface water or groundwater under the direct influence of surface water may use the results of residual disinfectant concentration sampling found in subdivision B 7 c (1) of this section in lieu of taking separate samples.

(b) Residual disinfectant level monitoring may not be reduced.

(2) Chlorine dioxide.

(a) Owners of waterworks that use chlorine dioxide for disinfection or oxidation shall take daily samples at the entrance to the distribution system. For any daily sample that exceeds the MRDL in Table 2.12, the owner shall take samples in the distribution system the following day at the locations required by subdivision B 3 h (2) (b) of this section, in addition to the sample required at the entrance to the distribution system.

(b) On each day following a routine sample monitoring result that exceeds the MRDL in Table 2.12, the owner is required to take three chlorine dioxide distribution system samples. If chlorine dioxide or chloramines are used to maintain a disinfectant residual in the distribution system, or if chlorine is used to maintain a disinfectant residual in the distribution system and there are no disinfection addition points after the entrance to the distribution system (i.e., no booster chlorination), the owner shall take three samples as close to the first customer as possible, at intervals of at least six hours. If chlorine is used to maintain a disinfectant residual in the distribution system and there are one or more disinfection addition points after the entrance to the distribution system (i.e., booster chlorination), the owner shall take one sample at each of the following locations: as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the distribution system as possible (reflecting maximum residence time in the distribution system).

(c) Chlorine dioxide monitoring may not be reduced.

i. Monitoring requirements for disinfection byproduct precursors (DBPP).

(1) Owners of community or nontransient noncommunity waterworks using surface water or groundwater under the direct influence of surface water and using conventional filtration treatment (as defined in 12VAC5-590-10) shall monitor each treatment plant for TOC no later than the point of combined filter effluent turbidity monitoring and representative of the treated water. All owners required to monitor under subdivision (B 3 i (1)) shall also monitor for TOC in the source water prior to any treatment at the same time as monitoring for TOC in the treated water. These samples (source water and treated water) are referred to as paired samples. At the same time as the source water sample is taken, all owners shall monitor for alkalinity in the source water prior to any treatment. Owners shall take one paired sample and one source water alkalinity sample per month per plant at a time representative of normal operating conditions and influent water quality.

(2) Owners of community or nontransient noncommunity waterworks that use surface water or groundwater under the direct influence of surface water with an average treated water TOC of less than 2.0 mg/L for two consecutive years, or less than 1.0 mg/L for one year, may reduce monitoring for both TOC and alkalinity to one paired sample and one source water alkalinity sample per plant per quarter. The owners shall revert to routine monitoring in the month following the quarter when the annual average treated water TOC equal to or greater than 2.0 mg/L.

j. The owner of each waterworks required to monitor under subdivision B 3 of this section shall develop and implement a monitoring plan. The owner shall maintain the plan and make it available for inspection by the commissioner and the general public no later than 30 days following the applicable compliance dates in subdivision B 3 a of this section. The owners of all community or nontransient noncommunity waterworks that use surface water or groundwater under the direct influence of surface water serving more than 3,300 people shall submit a copy of the monitoring plan to the commissioner no later than the date of the first report required under 12VAC5-590-530 A. The commissioner may also require the plan to be submitted by any other owner. After review, the commissioner may require

changes in any plan elements. The plan shall include at least the following elements:

(1) Specific locations and schedules for collecting samples for any parameters included in subdivision B 3 of this section.

(2) How the owner will calculate compliance with PMCLs, MRDLs, and treatment techniques.

(3) The sampling plan for a consecutive waterworks shall reflect the entire consecutive distribution system.

4. Unregulated contaminants (UCs). Owners of all community and nontransient noncommunity waterworks shall sample for the contaminants listed in Table 2.6 and Table 2.7 as follows:

a. Table 2.6 – Group A

(1) Owners of waterworks that use a surface water source in whole or in part shall sample at the entry points to the distribution system which is representative of each source, after treatment (hereafter called a sampling point). The minimum number of samples is one year of consecutive quarterly samples per sampling point beginning in accordance with Table 2.8.

(2) Owners of waterworks that use groundwater shall sample at points of entry to the distribution system which is representative of each source (hereafter called a sampling point). The minimum number of samples is one sample per sampling point beginning in accordance with Table 2.8.

(3) The commissioner may require a confirmation sample for positive or negative results.

(4) Owners of waterworks serving less than 150 connections may inform the commissioner, in writing, that their waterworks is available for sampling instead of performing the required sampling.

(5) All waterworks required to sample under this section shall repeat the sampling at least every five years.

b. Table 2.6 – Group B and Table 2.7

(1) The owner of each community and nontransient noncommunity waterworks shall take four consecutive quarterly samples at the entry points to the distribution system which is representative of each source (hereafter called a sampling point) for each contaminant listed in Table 2.6 Group B and report the results to the commissioner. Monitoring shall be completed by December 31, 1995.

(2) The owner of each community and nontransient noncommunity waterworks shall take one sample at each sampling point for each contaminant listed in Table 2.7 and report the results to the commissioner. Monitoring shall be completed by December 31, 1995.

(3) The owner of each community and nontransient noncommunity waterworks may apply to the commissioner for a waiver from the monitoring requirements of subdivisions B 4 b (1) and (2) of this section for the contaminants listed in Table 2.6 Group B and Table 2.7.

(4) The commissioner may grant a waiver for the requirement of subdivision B 4 b (1) of this section based on the criteria specified in subdivision B 2 f of this section. The commissioner may grant a waiver from the requirement of subdivision B 4 b (2) of this section if previous analytical results indicate contamination would not occur, provided this data was collected after January 1, 1990.

(5) If the waterworks utilizes more than one source and the sources are combined before distribution, the owner shall sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water is representative of all sources being used).

(6) The commissioner may require a confirmation sample for positive or negative results.

(7) Instead of performing the monitoring required by this section, the owner of a community waterworks or nontransient noncommunity waterworks serving fewer than 150 service connections may send a letter to the commissioner stating that the waterworks is available for sampling. This letter shall be sent to the commissioner by January 1, 1994. The owner shall not send such samples to the commissioner unless requested to do so by the commissioner.

(8) All waterworks required to sample under this subdivision shall repeat the sampling at least every five years.

5. Reserved.

6. Reserved.

7. Monitoring filtration and disinfection.

a. The owner of a waterworks that uses a surface water source or a groundwater source under the direct influence of surface water and provides filtration treatment shall monitor in accordance with this section beginning June 29, 1993, or when filtration is installed, whichever is later.

b. Turbidity measurements as required by 12VAC5-590-370 C shall be performed on representative samples of the filtered water every four hours (or more frequently) that the waterworks serves water to the public. An owner may substitute continuous turbidity monitoring for grab sample monitoring if it validates the continuous measurement for accuracy on a regular basis using a protocol approved by the commissioner. For any

waterworks using slow sand filtration or filtration treatment other than conventional treatment, direct filtration, or diatomaceous earth filtration, the office may reduce the sampling frequency to once per day if it determines that less frequent monitoring is sufficient to indicate effective filtration performance. For waterworks serving 500 or fewer persons, the commissioner may reduce the turbidity sampling frequency to once per day, regardless of the type of filtration treatment used, if the commissioner determines that less frequent monitoring is sufficient to indicate effective filtration performance.

(1) In addition to the above, as of January 1, 2001, waterworks serving at least 10,000 people and as of January 1, 2005, waterworks serving less than 10,000 people supplied by surface water or groundwater under the direct influence of surface water using conventional filtration treatment or direct filtration shall conduct continuous monitoring of turbidity for each individual filter, using an approved method in 12VAC5-590-440. The turbidimeter shall be calibrated using the procedure specified by the manufacturer. The owner shall record the results of individual filter turbidity monitoring every 15 minutes.

(2) If there is a failure in the continuous turbidity monitoring equipment, the owner shall conduct grab sampling every four hours in lieu of continuous monitoring but for no more than five working days (for waterworks serving at least 10,000 people) or 14 days (for waterworks serving less than 10,000 people) following the failure of the equipment.

(3) If a waterworks serving less than 10,000 people consists of two or fewer filters, continuous monitoring of the combined filter effluent may be used in lieu of individual filter monitoring.

c. The residual disinfectant concentration of the water entering the distribution system shall be monitored continuously, and the lowest value shall be recorded each day, except that if there is a failure in the continuous monitoring equipment, grab sampling every four hours may be conducted in lieu of continuous monitoring, but for no more than five working days following the failure of the equipment, and owners of waterworks serving 3,300 or fewer persons may take grab samples in lieu of continuous monitoring on an ongoing basis at the frequencies each day prescribed below:

Table 2.5
Grab Sample Monitoring Frequency

Waterworks Size By Population	Samples/Day[1]
500 or less	1
501 to 1,000	2
1,000 to 2,500	3
2,501 to 3,300	4

[1]The day's samples cannot be taken at the same time. The sampling intervals are subject to commissioner's review and approval. If at any time the residual disinfectant concentration falls below 0.2 mg/L in a waterworks using grab sampling in lieu of continuous monitoring, the waterworks owner shall take a grab sample every four hours until the residual disinfectant concentration is equal to or greater than 0.2 mg/L.

(1) The residual disinfectant concentration shall be measured at least at the same points in the distribution system and at the same time as total coliforms are sampled, as specified in subsection A of this section, except that the district engineer may allow an owner which uses both a surface water source or a groundwater source under direct influence of surface water, and a groundwater source to take disinfectant residual samples at points other than the total coliform sampling points if the division determines that such points are more representative of treated (disinfected) water quality within the distribution system. Heterotrophic bacteria, measured as heterotrophic plate count (HPC) as specified in 12VAC5-590-420 B may be measured in lieu of residual disinfectant concentration.

(2) If the commissioner determines, based on site-specific considerations, that a waterworks has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature conditions and that the waterworks is providing adequate disinfection in the distribution system, the requirements of subdivision B 7 b (1) of this section do not apply to that waterworks.

d. The following information on the samples taken in the distribution system in conjunction with total coliform monitoring pursuant to 12VAC5-590-420 B shall be reported monthly to the district engineer by the owner:

(1) Number of instances where the residual disinfectant concentration is measured;

(2) Number of instances where the residual disinfectant concentration is not measured but HPC is measured;

(3) Number of instances where the residual disinfectant concentration is measured but not detected and no HPC is measured;

(4) Number of instances where no residual disinfectant concentration is detected and where the HPC is greater than 500/mL;

(5) Number of instances where the residual disinfectant concentration is not measured and HPC is greater than 500/mL.

(6) For the current and previous month the waterworks serves water to the public, the value of "V" in percent in the following formula:

~~V = (c + d + e) / (a + b) X 100~~

~~where~~

~~a = the value in subdivision B 7 d (1) of this section,~~

~~b = the value in subdivision B 7 d (2) of this section,~~

~~c = the value in subdivision B 7 d (3) of this section,~~

~~d = the value in subdivision B 7 d (4) of this section,~~

~~e = the value in subdivision B 7 d (5) of this section,~~

~~(7) If the commissioner determines, based on site specific considerations, that an owner has no means for having a sample transported and analyzed for HPC by a certified laboratory within the requisite time and temperature conditions and that the waterworks is providing adequate disinfection in the distribution system, the requirements of subdivision B 7 c (1) of this section do not apply.~~

~~e. An owner need not report the data listed in 12VAC5 590 530 E 2 a if all data listed in 12VAC5 590 530 E 2 a through E 2 c remain on file at the waterworks and the district engineer determines that the owner has submitted all the information required by 12VAC5 590 530 E 2 a through c for at least 12 months.~~

~~8. Operational. Owners may be required by the commissioner to collect additional samples to provide quality control for any treatment processes that are employed.~~

~~C. Physical. All samples for turbidity analysis shall be taken at a representative entry point or points to the water distribution system unless otherwise specified. Turbidity samples shall be analyzed in accordance with 12VAC5 590 480 B 1 a, at least once per day at all waterworks that use surface water sources or groundwater sources under the direct influence of surface water.~~

~~D. Radiological. The location of sampling points, the radionuclides measured in community waterworks, the frequency, and the timing of sampling within each compliance period shall be established or approved by the commissioner. The commissioner may increase required monitoring where necessary to detect variations within the waterworks. Failure to comply with the sampling schedules in this section will require public notification pursuant to 12VAC5 590 540.~~

~~Community waterworks owners shall conduct monitoring to determine compliance with the PMCLs in Table 2.5 and 12VAC5 590 400 in accordance with this section.~~

~~1. Monitoring and compliance requirements for gross alpha particle activity, radium 226, radium 228, and uranium.~~

~~a. Community waterworks owners shall conduct initial monitoring to determine compliance with 12VAC5 590 400 B 2, B 3, and B 4 by December 31, 2007. For the purposes of monitoring for gross alpha particle activity, radium 226, radium 228, uranium, and beta particle and photon radioactivity in drinking water, "detection limit" is defined as in Appendix B of this chapter.~~

~~(1) Applicability and sampling location for existing community waterworks or sources. The owners of all existing community waterworks using ground water, surface water or waterworks using both ground and surface water shall sample at every entry point to the distribution system that is representative of all sources being used under normal operating conditions. The community waterworks owner shall take each sample at the same entry point unless conditions make another sampling point more representative of each source.~~

~~(2) Applicability and sampling location for new community waterworks or sources. All new community waterworks or community waterworks that use a new source of water shall begin to conduct initial monitoring for the new source within the first quarter after initiating use of the source. Community waterworks owners shall conduct more frequent monitoring when directed by the commissioner in the event of possible contamination or when changes in the distribution system or treatment processes occur which may increase the concentration of radioactivity in finished water.~~

~~b. Initial monitoring: Community waterworks owners shall conduct initial monitoring for gross alpha particle activity, radium 226, radium 228, and uranium as follows:~~

~~(1) Community waterworks without acceptable historical data, as defined below, shall collect four consecutive quarterly samples at all entry points before December 31, 2007.~~

~~(2) Grandfathering of data: The commissioner may allow historical monitoring data collected at an entry point to satisfy the initial monitoring requirements for that entry point, for the following situations:~~

~~(a) To satisfy initial monitoring requirements, a community waterworks owner having only one entry point to the distribution system may use the monitoring data from the last compliance monitoring period that began between June 2000 and December 8, 2003.~~

~~(b) To satisfy initial monitoring requirements, a community waterworks owner with multiple entry points and having appropriate historical monitoring data for each entry point to the distribution system may use the monitoring data from the last compliance monitoring period that began between June 2000 and December 8, 2003.~~

(3) For gross alpha particle activity, uranium, radium-226, and radium-228 monitoring, the commissioner may waive the final two quarters of initial monitoring for an entry point if the results of the samples from the previous two quarters are below the method detection limit specified in Appendix B.

(4) If the average of the initial monitoring results for an entry point is above the PMCL, the community waterworks owner shall collect and analyze quarterly samples at that entry point until the owner has results from four consecutive quarters that are at or below the PMCL, unless the community waterworks owner enters into another schedule as part of a formal compliance agreement with the commissioner.

c. Reduced monitoring: The commissioner may allow community waterworks owners to reduce the future frequency of monitoring from once every three years to once every six or nine years at each entry point, based on the following criteria:

(1) If the average of the initial monitoring results for each contaminant (i.e., gross alpha particle activity, uranium, radium 226, or radium 228) is below the method detection limit specified in Appendix B, the community waterworks owner shall collect and analyze for that contaminant using at least one sample at that entry point every nine years.

(2) For gross alpha particle activity and uranium, if the average of the initial monitoring results for each contaminant is at or above the method detection limit specified in Appendix B but at or below 1/2 of the PMCL, the community waterworks owner shall collect and analyze for that contaminant using at least one sample at that entry point every six years. For combined radium 226 and radium 228, the analytical results shall be combined. If the average of the combined initial monitoring results for radium 226 and radium 228 is at or above the method detection limit specified in Appendix B but at or below 1/2 the PMCL, the community waterworks owner shall collect and analyze for that contaminant using at least one sample at that entry point every six years.

(3) For gross alpha particle activity and uranium, if the average of the initial monitoring results for each contaminant is above 1/2 the PMCL but at or below the PMCL, the community waterworks owner shall collect and analyze at least one sample at that entry point every three years. For combined radium 226 and radium 228, the analytical results shall be combined. If the average of the combined initial monitoring results for radium 226 and radium-228 is above 1/2 the PMCL but at or below the MPCL, the community waterworks owner shall collect and analyze at least one sample at that entry point every three years.

(4) Community waterworks owners shall use the samples collected during the reduced monitoring period to determine the monitoring frequency for subsequent monitoring periods (e.g., if a community waterworks' entry point is on a nine year monitoring period, and the sample result is above 1/2 the PMCL, then the next monitoring period for that entry point is three years).

(5) If a community waterworks owner has a monitoring result that exceeds the PMCL while on reduced monitoring, the community waterworks owner shall collect and analyze quarterly samples at that entry point until the community waterworks owner has results from four consecutive quarters that are below the PMCL, unless the community waterworks enters into another schedule as part of a formal compliance agreement with the commissioner.

d. Compositing: To fulfill quarterly monitoring requirements for gross alpha particle activity, radium-226, radium 228, or uranium, a community waterworks owner may composite up to four consecutive quarterly samples from a single entry point if analysis is done within a year of the first sample. The commissioner will treat analytical results from the composited sample as the average analytical result to determine compliance with the PMCLs and the future monitoring frequency. If the analytical result from the composited sample is greater than 1/2 the PMCL, the commissioner may direct the community waterworks owner to take additional quarterly samples before allowing the community waterworks owner to sample under a reduced monitoring schedule.

e. A gross alpha particle activity measurement may be substituted for the required radium 226 measurement provided that the measured gross alpha particle activity does not exceed 5 pCi/L. A gross alpha particle activity measurement may be substituted for the required uranium measurement provided that the measured gross alpha particle activity does not exceed 15 pCi/L.

The gross alpha measurement shall have a confidence interval of 95% (1.65, where is the standard deviation of the net counting rate of the sample) for radium 226 and uranium. When a community waterworks owner uses a gross alpha particle activity measurement in lieu of a radium 226 and/or uranium measurement, the gross alpha particle activity analytical result will be used to determine the future monitoring frequency for radium-226 and/or uranium. If the gross alpha particle activity result is less than the detection limit as specified in Appendix B, 1/2 the detection limit will be used to determine compliance and the future monitoring frequency.

2. Monitoring and compliance requirements for beta particle and photon radioactivity. To determine compliance

with the maximum contaminant levels in 12VAC5-590-400 B 5 for beta particle and photon radioactivity, a community waterworks owner shall monitor at a frequency as follows:

a. Community waterworks owners (using surface or groundwater) designated by the commissioner as vulnerable shall sample for beta particle and photon radioactivity. Community waterworks owners shall collect quarterly samples for beta emitters and annual samples for tritium and strontium-90 at each entry point to the distribution system, beginning within one quarter after being notified by the commissioner. Community waterworks already designated by the commissioner shall continue to sample until the commissioner reviews and either reaffirms or removes the designation.

(1) If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity at an entry point has a running annual average (computed quarterly) less than or equal to 50 pCi/L (screening level), the commissioner may reduce the frequency of monitoring at that entry point to once every three years. Community waterworks owners shall collect all samples required in subdivision 2 a of this subsection during the reduced monitoring period.

(2) For community waterworks in the vicinity of a nuclear facility, the commissioner may allow the community waterworks owners to utilize environmental surveillance data collected by the nuclear facility in lieu of monitoring at the community waterworks' entry point(s), where the commissioner determines if such data is applicable to a particular community waterworks. In the event that there is a release from a nuclear facility, community waterworks owners which are using surveillance data shall begin monitoring at the community waterworks' entry point(s) in accordance with subdivision 2 a of this subsection.

b. Community waterworks owners (using surface or groundwater) designated by the commissioner as utilizing waters contaminated by effluents from nuclear facilities shall sample for beta particle and photon radioactivity. Community waterworks owners shall collect quarterly samples for beta emitters and iodine-131 and annual samples for tritium and strontium-90 at each entry point to the distribution system, beginning within one quarter after being notified by the commissioner. Owners of community waterworks already designated by the commissioner as using waters contaminated by effluents from nuclear facilities shall continue to sample until the commissioner reviews and either reaffirms or removes the designation.

(1) Quarterly monitoring for gross beta particle activity shall be based on the analysis of monthly samples or the analysis of a composite of three monthly samples. The former is recommended.

(2) For iodine-131, a composite of five consecutive daily samples shall be analyzed once each quarter. As directed by the commission, more frequent monitoring shall be conducted when iodine-131 is identified in the finished water.

(3) Annual monitoring for strontium-90 and tritium shall be conducted by means of the analysis of a composite of four consecutive quarterly samples or analysis of four quarterly samples. The latter procedure is recommended.

(4) If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity at a sampling point has a running annual average (computed quarterly) less than or equal to 15 pCi/L (screening level), the commissioner may reduce the frequency of monitoring at that sampling point to every three years. Community waterworks owners shall collect all samples required in subdivision 2 b of this subsection during the reduced monitoring period.

(5) For community waterworks in the vicinity of a nuclear facility, the commissioner may allow the community waterworks owner to utilize environmental surveillance data collected by the nuclear facility in lieu of the monitoring at the community waterworks' entry point(s), where the commissioner determines such data is applicable to a particular waterworks. In the event that there is a release from a nuclear facility, community waterworks owners which are using surveillance data shall begin monitoring at the community waterworks' entry point(s) in accordance with subdivision 2 b of this subsection.

c. Owners of community waterworks designated by the commissioner to monitor for beta particle and photon radioactivity cannot apply to the commissioner for a waiver from the monitoring frequencies specified in subdivision 2 a or 2 b of this subsection.

d. Community waterworks owners may analyze for naturally occurring potassium-40 beta particle activity from the same or equivalent sample used for the gross beta particle activity analysis. Community waterworks owners are allowed to subtract the potassium-40 beta particle activity value from the total gross beta particle activity value to determine if the screening level is exceeded. The potassium-40 beta particle activity shall be calculated by multiplying elemental potassium concentrations (in mg/L) by a factor of 0.82.

e. If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity exceeds the appropriate screening level, an analysis of the sample shall be performed to identify the major radioactive constituents present in the sample and the appropriate

~~doses shall be calculated and summed to determine compliance with 12VAC5-590-400-B-5-a, using the formula in 12VAC590-400-B-5-b. Doses shall also be calculated and combined for measured levels of tritium and strontium to determine compliance.~~

~~f. Community waterworks owners shall monitor monthly at the entry point(s) which exceed the maximum contaminant level in 12VAC5-590-400-B-5 beginning the month after the exceedance occurs. Community waterworks owners shall continue monthly monitoring until the community waterworks has established, by a rolling average of three monthly samples, that the PMCL is being met. Community waterworks owners who establish that the PMCL is being met shall return to quarterly monitoring until they meet the requirements set forth in subdivision 2 a (1) or 2 b (4) of this subsection.~~

~~3. General monitoring and compliance requirements for radionuclides.~~

~~a. The commissioner may require more frequent monitoring than specified in subdivisions 1 and 2 of this subsection, or may require confirmation samples at his discretion. The results of the initial and confirmation samples shall be averaged for use in compliance determinations.~~

~~b. Each community waterworks owner shall monitor at the time designated by the commissioner during each compliance period.~~

~~c. Compliance: Compliance with 12VAC5-590-400-B-2 through B-5 will be determined based on the analytical results(s) obtained at each entry point. If one entry point is in violation of a PMCL, the community waterworks is in violation of the PMCL.~~

~~(1) For community waterworks monitoring more than once per year, compliance with the PMCL is determined by a running annual average at each entry point. If the average of any entry point is greater than the PMCL, then the community waterworks is out of compliance with the PMCL.~~

~~(2) For community waterworks monitoring more than once per year, if any sample result will cause the running average to exceed the PMCL at any entry point, the community waterworks is out of compliance with the PMCL immediately.~~

~~(3) Community waterworks owners shall include all samples taken and analyzed under the provisions of this section in determining compliance, even if that number is greater than the minimum required.~~

~~(4) If a community waterworks owner does not collect all required samples when compliance is based on a running annual average of quarterly samples, compliance will be based on the running average of the samples collected.~~

~~(5) If a sample result is less than the method detection limit as specified in Appendix B, zero will be used to calculate the annual average, unless a gross alpha particle activity is being used in lieu of radium-226 and/or uranium. If the gross alpha particle activity result is less than the method detection limit as specified in Appendix B, 1/2 the method detection limit will be used to calculate the annual average.~~

~~d. The commissioner has the discretion to delete results of obvious sampling or analytic errors.~~

~~e. If the PMCL for radioactivity set forth in 12VAC5-590-400-B-2 through B-5 is exceeded, the owner of a community waterworks shall give notice to the commissioner pursuant to 12VAC5-590-530 and to the public as required by 12VAC5-590-540.~~

12VAC5-590-372. Inorganic chemicals monitoring.

A. The owner of a community waterworks or a NTNC shall conduct monitoring to determine compliance with the PMCLs and SMCLs listed in Table 340.1 in accordance with this section. The owner of a TNC shall conduct monitoring to determine compliance with the nitrate, nitrite, and nitrate-nitrite PMCLs listed in Table 340.1 in accordance with this section.

B. If a waterworks draws water from more than one source and the sources are combined before distribution, then the owner shall sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water is representative of all sources being used).

C. When the results of sampling for antimony, arsenic, asbestos, barium, beryllium, cadmium, cyanide (as free cyanide), chromium, fluoride, mercury, nickel, selenium, or thallium exceed the applicable PMCL, the owner shall collect a confirmation sample, at the same sampling site, within two weeks of notification of the analytical results of the first sample.

D. Monitoring frequency.

1. Asbestos. The commissioner has granted a statewide waiver for asbestos. If the statewide waiver is removed or if site-specific waterworks conditions warrant monitoring for asbestos, then monitoring to determine compliance with the PMCL for asbestos specified in Table 340.1 shall be conducted as follows:

a. The owner of a community waterworks or a NTNC shall monitor for asbestos during the first three-year compliance period of each nine-year compliance cycle.

b. If the statewide waiver is removed, and the owner believes the waterworks is not vulnerable to asbestos contamination from either its source water or due to corrosion of its asbestos-cement pipe, then the owner may apply to the commissioner for a monitoring waiver

for asbestos. If the commissioner grants the monitoring waiver, then the owner is not required to monitor.

c. The commissioner may grant a waiver based on a consideration of the following factors:

(1) Potential asbestos contamination of the source water; and

(2) The use of asbestos-cement pipe for finished water distribution and the corrosive nature of the water.

d. A waiver remains in effect until the completion of the compliance period (i.e., three years).

e. The owner of a waterworks vulnerable to asbestos contamination due solely to corrosion of its asbestos-cement pipe shall collect one sample at a tap served by the asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.

f. The owner of a waterworks vulnerable to asbestos contamination due to its source water shall monitor at the entry points.

g. The owner of a waterworks vulnerable to asbestos contamination due both to its source water and corrosion of its asbestos-cement pipe shall collect one sample at a tap served by the asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.

h. The owner of a waterworks that exceeds the PMCL as determined in 12VAC5-590-382 A shall monitor quarterly beginning in the next quarter after the exceedance occurred.

i. The department may decrease the quarterly monitoring requirement to the frequency specified in subdivision D 1 a of this section provided the department has determined that the waterworks is reliably and consistently below the PMCL. In no case shall the department make this determination unless the owner of a groundwater system collects a minimum of two quarterly samples or the owner of a waterworks that uses a surface water source, in whole or in part, collects a minimum of four quarterly samples.

2. Antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide (as free cyanide), fluoride, mercury, nickel, selenium, and thallium. Monitoring to determine compliance with the PMCL for these contaminants specified in Table 340.1 shall be conducted as follows:

a. The owner shall collect one sample at each groundwater source entry point during each compliance period.

b. The owner shall collect one sample annually at each surface water source entry point, in whole or in part.

c. The owner may apply to the department for a waiver from the monitoring frequencies specified in subdivisions D 2 a and D 2 b of this section.

(1) A condition of the waiver shall require that the owner collect a minimum of one sample while the waiver is effective. The waiver remains in effect for one compliance cycle (i.e., nine years).

(2) The department may grant a waiver provided the owner has monitored surface water source entry points, in whole or in part, annually for at least three years and has conducted a minimum of three rounds of monitoring at groundwater source entry points. At least one sample shall have been collected since January 1, 1990. The owner shall demonstrate that all previous analytical results were less than the PMCL. A waterworks that uses a new groundwater or surface water source is not eligible for a waiver until three rounds of monitoring from the new source have been completed.

(3) In determining the appropriate reduced monitoring frequency, the department shall consider:

(a) The reported concentrations from all previous monitoring;

(b) The degree of variation in reported concentrations; and

(c) Other factors that may affect contaminant concentrations such as changes in groundwater pumping rates, changes in the waterworks configuration, changes in the waterworks operating procedures, or changes in stream flows or characteristics.

(4) A decision by the department to grant a waiver shall be made in writing and shall set forth the basis for the determination. The request for a waiver may be initiated by the department or upon an application by the owner. The owner shall specify the basis for the request. The department shall evaluate and, where appropriate, revise the determination of the appropriate monitoring frequency when the owner submits new monitoring data or when other data relevant to the appropriate monitoring frequency become available.

(5) No arsenic waivers shall be granted by the department.

d. The owner of a waterworks that exceed the PMCLs as calculated in 12VAC5-590-382 shall monitor quarterly beginning in the next quarter after the exceedance occurred. The department may decrease the quarterly monitoring requirement to the frequencies specified in subdivisionD 2 a, D 2 b, or D 2 c of this section provided a determination has been made that the analytical results are reliably and consistently below the PMCL. In no case may the department make this determination unless the owner collects a minimum of two quarterly samples from

each groundwater source entry point and a minimum of four quarterly samples from each surface water source entry point, in whole or in part.

3. Nitrate and combined nitrate-nitrite as nitrogen. Monitoring to determine compliance with the PMCL for nitrate and combined nitrate-nitrite as nitrogen specified in Table 340.1 shall be conducted as follows:

a. The owner shall collect one sample annually at each groundwater source entry point.

b. The owner shall collect one sample quarterly at each surface water source entry point, in whole or in part.

c. For groundwater source entry points at community and NTNCs, the repeat monitoring frequency shall be quarterly for at least one year following any one sample in which the concentration is greater than 50% of the PMCL. After four consecutive quarters of monitoring, the department may allow the owner to reduce the sampling frequency to annually after determining the results are reliably and consistently less than the PMCL.

d. For surface water source entry points, in whole or in part, the department may allow the owner to reduce the sampling frequency to annually if all analytical results from four consecutive quarters are less than 50% of the PMCL. The waterworks shall return to quarterly monitoring if the concentration found in any one sample is greater than or equal to 50% of the PMCL.

e. After any round of quarterly sampling is completed as required by subdivisions D 3 c and D 3 dof this section, the owner who is monitoring annually shall collect subsequent samples during the quarter that previously resulted in the highest analytical result.

f. No monitoring waivers shall be issued for nitrate or combined nitrate-nitrite as nitrogen.

4. Nitrite. Monitoring to determine compliance with the PMCL for nitrite specified in Table 340.1 shall be conducted as follows:

a. The owner shall collect one sample at each entry point during the initial compliance period.

b. After the initial sample, the owner of a waterworks where an analytical result for nitrite is less than 50% of the PMCL shall monitor at the frequency specified by the department.

c. The repeat monitoring frequency for an owner shall be quarterly for at least one year following any one sample in which the concentration is greater than 50% of the PMCL. The department may allow an owner to reduce the sampling frequency to annually after determining the analysis results are reliably and consistently less than the PMCL.

d. The owner of a waterworks that is monitoring annually shall collect each subsequent sample during the quarter that previously resulted in the highest analytical result.

e. No monitoring waivers shall be issued for nitrite.

5. Aluminum, chloride, copper, corrosivity, fluoride, foaming agents (surfactants), iron, manganese, silver, sulfate, and zinc. Monitoring to determine compliance with the SMCL for these contaminants specified in Table 340.1 shall be conducted as follows:

a. The owner shall collect one sample at each groundwater source entry point during each compliance period.

b. The owner shall collect one sample annually at each surface water source entry point, in whole or in part.

12VAC5-590-373. Organic chemicals monitoring.

A. The owner of a community waterworks or a NTNC shall conduct monitoring to determine compliance with PMCLs listed in Table 340.2 in accordance with this section. Where two or more sources are combined before distribution, the owner shall sample at the entry point for the combined sources during periods of normal operation conditions.

1. The owner of a waterworks that uses groundwater shall collect a minimum of one sample at each entry point.

2. The owner of a waterworks that uses surface water, in whole or in part, shall collect a minimum of one sample at each entry point.

B. During the initial compliance period and each subsequent compliance period, the owner shall monitor during four consecutive calendar quarters for each contaminant listed in Table 340.2. A minimum of one sample at each entry point shall be collected during each calendar quarter.

C. Reduced monitoring.

1. Volatile organic chemicals (VOCs).

a. The requirement for four quarterly samples during the initial monitoring period as specified in subsection B of this section may not be reduced.

b. The department may decrease the requirement for quarterly monitoring during subsequent compliance periods provided it has been determined that the analytical results are reliably and consistently below the PMCL.

(1) In no case shall the department make this determination unless the owner collects a minimum of two quarterly samples at each groundwater source entry point; or

(2) The owner collects a minimum of four quarterly samples at each surface water source entry point, in whole or in part.

c. If the department determines that the waterworks is reliably and consistently below the PMCL, then the department may allow the owner to monitor annually. The owner who monitors annually shall monitor during the quarter that previously yielded the highest analytical result.

d. For a groundwater system only. After a minimum of three years of annual sampling, the department may allow the owner with no previous detection of any VOCs listed in Table 340.2 to collect one sample during each compliance period.

e. The owner of a groundwater system that has three consecutive annual samples with no detection of a contaminant may apply to the department for a waiver.

2. Synthetic organic chemicals (SOCs).

a. The owner of a waterworks serving more than 3,300 persons that does not detect any SOCs listed in Table 340.2 in the initial compliance period may reduce the sampling frequency to a minimum of two quarterly samples in one year during each repeat compliance period.

b. The owner of a waterworks serving fewer than than or equal to 3,300 persons that does not detect any SOCs listed in Table 340.2 in the initial compliance period may reduce the sampling frequency to a minimum of one sample during each repeat compliance period.

c. The department may decrease the requirement for quarterly monitoring during subsequent monitoring periods as specified in subsection B of this section provided the analytical results of the four quarterly samples required during the initial monitoring are reliably and consistently below the PMCL.

d. The department may reduce the increased monitoring required by subdivision D 1 of this section provided the department has determined that the analytical results are reliably and consistently below the PMCL. In no case shall the department make this latter determination unless:

(1) The owner collects a minimum of two quarterly samples at each groundwater source entry point.

(2) The owner collects a minimum of four quarterly samples at each surface water source entry point, in whole or in part.

e. If the department determines that the analytical results are reliably and consistently below the PMCL, the department may allow the owner to monitor annually. The owner of a waterworks that monitors annually shall monitor during the quarter that previously yielded the highest analytical result.

f. The owner of a waterworks that has three consecutive annual samples with no detection of a contaminant may apply to the department for a waiver for SOC monitoring by submitting a waiver application as specified in subdivisions E 1 b and E 2 b of this section. The waiver remains in effect for one compliance period (i.e., three years).

3. Return to compliance. The owner of a waterworks that exceeds the PMCLs listed inTable 340.2 for VOCs or SOCs, as determined by 12VAC5-590-383, shall monitor quarterly. After a minimum of four consecutive quarterly samples that show the waterworks is in compliance as specified in 12VAC5-590-383 and the department determines that the analytical results are reliably and consistently below the PMCL, the owner may monitor at the frequency and time specified in subdivisions C 1 c and C 2 e of this section.

D. Increased monitoring.

1. If the owner of a waterworks that is on reduced monitoring detects a contaminant listed in Table 340.2 (see 12VAC5-590-383 A regarding confirmation samples), then the owner shall monitor quarterly at each sampling point where the contaminant was detected unless:

a. That contaminant was previously detected and the department determined it was reliably and consistently below the PMCL according to subdivisions C 1 b and C 2 d of this section;

b. The historical sampling data do not indicate a meaningful increase in the contaminant concentration; and

c. The contaminant concentration does not exceed the PMCL.

2. Vinyl chloride.

a. The owner of a groundwater system that has detected one or more of the following two-carbon organic compounds: trichloroethylene, tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene, shall monitor quarterly for vinyl chloride. A vinyl chloride sample shall be collected at each sampling point at which one or more of the two-carbon organic compounds were detected. If the results of the first analysis do not detect vinyl chloride, then the department may reduce the quarterly monitoring frequency of vinyl chloride monitoring to one sample during each compliance period.

b. The owner of a waterworks that is required to monitor for vinyl chloride as specified by the department will monitor at each surface water source entry point, in whole or in part.

3. If monitoring detects one or more of certain related contaminants (heptachlor and heptachlor epoxide), then subsequent monitoring shall analyze for all related contaminants.

4. For entry points sampled and analyzed for contaminants listed in Table 340.2, the following detection limits apply:

a. A VOC is detected at a level equal to or greater than 0.0005 mg/L; and

b. A SOC is detected at a level equal to or greater than defined by EPA under 40 CFR 141.24(h)(18) or by the department.

E. Monitoring waivers.

1. Groundwater source entry points.

a. The owner of a waterworks that does not detect a VOC contaminant listed in Table 340.2 may apply to the department for a waiver from the subsequent compliance period requirements of subsection B and subdivisions C 1 c and C 1 d of this section after completing the initial monitoring. A waiver shall be effective for no more two compliance periods (i.e., six years).

b. The owner of a waterworks may apply to the department for a SOC monitoring waiver from the requirements of subsection B and subdivision C 2 of this section. The owner must reapply for a waiver for each subsequent compliance period (i.e., three years).

2. Surface water source entry points, in whole or in part.

a. No VOC monitoring waivers shall be issued.

b. The owner of a waterworks that does not detect a SOC contaminant listed in Table 340.2 may apply to the commissioner for a SOC monitoring waiver from the requirements of subsection B and subdivision C 2 of this section. The owner must reapply for a waiver for each subsequent compliance period (i.e., three years).

3. Monitoring waiver applications. The owner shall submit a monitoring waiver application for evaluation on a form approved by the department. The commissioner may grant a waiver after an evaluation of the use, transport, storage, or disposal of any organic contaminant within the watershed or zone of influence of the source.

a. If an evaluation by the department reveals no previous use of the contaminants within the watershed or zone of influence, then a waiver may be granted.

b. If an evaluation by the department reveals either previous use of the contaminants or that use is unknown, then the following factors shall be used to determine whether a waiver is granted:

(1) Previous analytical results.

(2) The proximity of the source water to land use activities that are potential point or nonpoint sources of organic contamination and to potential conduits to groundwater. Point sources include spills and leaks of chemicals at or near a waterworks or at manufacturing, distribution, or storage facilities or from hazardous or municipal waste landfills and other waste handling or treatment facilities. Nonpoint sources for SOCs include the use of pesticides to control insects and weed pests on agricultural areas, forest lands, home and gardens, and other land application uses.

(3) The environmental persistence and transport of the contaminants listed in Table 340.2.

(4) The implementation of wellhead protection measures by the owner.

(5) For groundwater well sources: well construction, well depth, soil type, geological conditions, and well structure integrity.

(6) Special factors, as follows:

(a) For VOCs, the number of persons served by the waterworks and the proximity of a smaller waterworks to a larger waterworks.

(b) For SOCs, elevated nitrate levels at the waterworks' source water.

(c) For SOCs, use of PCBs in equipment used in the production, storage, or distribution of water (i.e., PCBs used in pumps, transformers, and other equipment).

c. An entry point at which treatment has been installed to remove VOCs or SOCs is not eligible for a monitoring waiver for the VOCs or SOCs for which treatment has been installed.

d. All waterworks are granted a waiver from monitoring dioxin, endothall, and glyphosate unless the department determines that there is a source of these contaminants that poses a threat to the source water.

4. Condition for waivers.

a. Groundwater source entry points.

(1) As a condition of the VOC waiver, the owner shall collect one sample at each entry point during the time the waiver is effective (i.e., one sample during two compliance periods or six years). Based on this data, the department may reconfirm that the source is nonsusceptible. If the department does not make this reconfirmation within three years of the initial determination, then the waiver is invalidated and the owner is required to sample annually.

(2) There are no conditions to SOC waivers.

b. Surface water source entry points, in whole or in part. There are no conditions to VOC and SOC waivers for waterworks in regard to these entry points.

12VAC5-590-374. Residual disinfectant, disinfection byproducts, and disinfection byproduct precursors monitoring.

A. Unless otherwise noted, an owner of a waterworks that uses a chemical disinfectant shall comply with the requirements of this section as follows:

1. The owner of a community waterworks or a NTNC shall comply with this section.

2. The owner of a TNC that uses any combination of a surface water source, a GUDI source, or a groundwater source and uses chlorine dioxide as a disinfectant or oxidant shall comply with all the requirements for chlorine dioxide in this section.

B. The owner shall collect all samples during normal operating conditions.

1. Analysis under this section for DBPs (TTHM, HAA5, chlorite, and bromate) shall be conducted by a laboratory that has received certification by the DCLS except as noted in subdivisions B 2 and B 3 of this section.

2. Measurement under this section of daily chlorite samples at the entry point to the distribution system, residual disinfectant (free chlorine, combined chlorine, total chlorine, and chlorine dioxide), alkalinity, TOC, SUVA (DOC and UV_{254}), pH, and magnesium shall be made by a party approved by the department.

3. Residual disinfectant concentrations for free chlorine, combined chlorine, total chlorine, and chlorine dioxide shall be made using equipment deemed satisfactory by the department.

C. Monitoring plan. The owner required to monitor under this section shall develop and implement a monitoring plan. The owner shall maintain the plan and make it available for inspection by the department and the general public. The owner of a community waterworks or a NTNC that uses a surface water source, a GUDI source, or both and serves more than 3,300 people shall submit a copy of the monitoring plan to the department no later than the date of the first report required under 12VAC5-590-531 A. The department may also require the plan to be submitted by any other owner. After evaluation, the department may require changes in any of the plan elements. The plan shall include at least the following:

1. Specific locations and schedules with monitoring dates for collecting samples for any parameters included in this section.

2. How the owner will calculate compliance with PMCLs, MRDLs, and treatment techniques.

3. The sampling plan for a consecutive waterworks shall reflect the entire consecutive distribution system.

D. Failure to monitor in accordance with the monitoring plan required under subsection C of this section is a monitoring violation. Failure to monitor shall be treated as a violation for the entire period covered by the annual average where compliance is based on an RAA of monthly or quarterly samples or averages, and the owner's failure to monitor makes it impossible to determine compliance with PMCLs or MRDLs.

E. The owner may use only data collected under the provisions of this section to qualify for reduced monitoring.

F. TTHM and HAA5 monitoring. The owner of a community waterworks or a NTNC shall conduct the LRAA monitoring for TTHM and HAA5 at the frequency given below, unless otherwise indicated.

1. This subdivision establishes monitoring and other requirements for achieving compliance with PMCLs based on the LRAA for TTHM and HAA5, and for achieving compliance with MRDLs for chlorine and chloramines for certain consecutive waterworks.

2. This subdivision applies to a community waterworks or a NTNC that uses a primary or secondary disinfectant other than UV light or delivers water that has been treated with a primary or secondary disinfectant other than UV light.

3. Routine monitoring.

a. If the waterworks is a NTNC serving fewer than 10,000 people, then the owner shall monitor at the location or locations and dates identified in the monitoring plan in subsection C of this section, updated as required by subdivision F 3 e of this section.

b. The owner shall monitor at no fewer than the number of locations identified in Table 374.1:

TABLE 374.1

Monitoring Frequency by Source Water Type for TTHM and HAA5

SOURCE WATER TYPE	POPULATION SIZE CATEGORY	MONITORING FREQUENCY[a]	DISTRIBUTION SYSTEM MONITORING LOCATION TOTAL PER MONITORING PERIOD[b]
Surface water or GUDI Source	Less than 500	per year	2
	500 - 3,300	per quarter	2
	3,301 - 9,999	per quarter	2
	10,000 - 49,999	per quarter	4
	50,000 - 249,999	per quarter	8
	250,000 - 999,999	per quarter	12
	1,000,000 - 4,999,999	per quarter	16
	Equal to or greater than 5,000,000	per quarter	20
Groundwater	Less than 500	per year	2
	500 - 9,999	per year	2
	10,000 - 99,999	per quarter	4
	100,000 - 499,999	per quarter	6
	Equal to or greater than 500,000	per quarter	8

[a]The owner shall monitor during the month of highest DBP concentrations.

[b]The owner of a waterworks on quarterly monitoring (except those using a surface water source, a GUDI source, or both and serving 500 to 3,300 people) shall collect dual sample sets every 90 days at each monitoring location. A groundwater system serving 500 to 9,999 people shall collect dual sample sets annually at each monitoring location. A waterworks serving fewer than 500 people and a waterworks using a surface water source, a GUDI source, or both and serving 500 to 3,300 people shall collect individual TTHM and HAA5 samples (instead of a dual sample set) at the locations with the highest TTHM and HAA5 concentrations, respectively. A waterworks serving fewer than 500 people shall sample annually, and a waterworks using a surface water source, a GUDI source, or both and serving 500 to 3,300 people shall sample every 90 days. For a waterworks serving fewer than 500 people, only one location with a dual sample set per monitoring period is needed if the highest TTHM and HAA5 concentrations occur at the same location (and month, if monitoring annually).

c. The owner of a waterworks not using disinfection that then begins using a disinfectant other than UV light shall consult with the department to identify compliance monitoring locations. The owner shall develop a monitoring plan under subdivision F 3 e of this section to include those monitoring locations.

d. The owner shall use an approved method listed in 12VAC5-590-440 for TTHM and HAA5 analyses. Analyses shall be conducted by laboratories that have received certification by EPA or DCLS as specified in 12VAC5-590-440.

e. The owner may revise the monitoring plan to reflect changes in treatment, distribution system operations and layout (including new service areas), or other factors that may affect TTHM or HAA5 formation, or for reasons approved by the department after consultation with the department regarding the need for changes and the appropriateness of the changes. If the owner changes monitoring locations, then the owner shall replace existing compliance monitoring locations with the lowest LRAA with new locations that reflect the current distribution system locations with expected high TTHM or HAA5 levels. The department may also require modifications in the monitoring plan. The owner of a waterworks using a surface water source, a GUDI source, or both and serving more than 3,300 people shall submit a copy of the modified monitoring plan to the department

before the date the owner is required to comply with the revised monitoring plan.

4. Reduced monitoring.

a. The owner may reduce monitoring to the level specified in Table 374.2 any time the LRAA is less than or equal to 0.040 mg/L for TTHM and less than or equal to 0.030 mg/L for HAA5 at all monitoring locations. The owner may only use data collected under the provisions of this section to qualify for reduced monitoring. In addition, the source water annual average TOC level, before any treatment, shall be less than or equal to 4.0 mg/L at each water treatment plant treating a surface water source, a GUDI source, or both based on monitoring conducted under subsection J of this section.

TABLE 374.2

Reduced Monitoring for TTHM and HAA5

SOURCE WATER TYPE	POPULATION SIZE CATEGORY	MONITORING FREQUENCY[a]	DISTRIBUTION SYSTEM MONITORING LOCATION PER MONITORING PERIOD
Surface water or GUDI Source	Less than 500		Monitoring may not be reduced.
	500 - 3,300	per year	One TTHM and one HAA5 sample: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement; one dual sample set per year if the highest TTHM and HAA5 measurements occurred at the same location and quarter.
	3,301 - 9,999	per year	Two dual sample sets: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement.
	10,000 - 49,999	per quarter	Two dual sample sets: at the locations with the highest TTHM and highest HAA5 LRAAs.
	50,000 - 249,999	per quarter	Four dual sample sets: at the locations with the two highest TTHM and two highest HAA5 LRAAs.
	250,000 - 999,999	per quarter	Six dual sample sets: at the locations with the three highest TTHM and three highest HAA5 LRAAs.
	1,000,000 - 4,999,999	per quarter	Eight dual sample sets: at the locations with the four highest TTHM and four highest HAA5 LRAAs.
	Equal to or greater than 5,000,000	per quarter	Ten dual sample sets: at the locations with the five highest TTHM and five highest HAA5 LRAAs.
Groundwater	Less than 500	every third year	One TTHM and one HAA5 sample: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement; one dual sample set per year if the highest TTHM and HAA5 measurements occurred at the same location and quarter.
	500 - 9,999	per year	One TTHM and one HAA5 sample: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement; one dual sample set per year if the highest TTHM and HAA5 measurements occurred at the same location and quarter.
	10,000 - 99,999	per year	Two dual sample sets: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement.

	100,000 - 499,999	per quarter	Two dual sample sets: at the locations with the highest TTHM and highest HAA5 LRAAs.
	Equal to or greater than 500,000	per quarter	Four dual sample sets: at the locations with the two highest TTHM and two highest HAA5 LRAAs.
[a]The owner of a waterworks on quarterly monitoring shall collect dual sample sets every 90 days.			

b. The owner may remain on reduced monitoring as long as the TTHM LRAA is less than or equal to 0.040 mg/L and the HAA5 LRAA is less than or equal to 0.030 mg/L at each monitoring location (for waterworks with quarterly reduced monitoring). In addition, the source water annual average TOC level, before any treatment, shall be less than or equal to 4.0 mg/L at each water treatment plant treating a surface water source or a GUDI source, based on monitoring conducted under subsection J of this section.

c. If the LRAA based on quarterly monitoring at any monitoring location exceeds either 0.040 mg/L for TTHM or 0.030 mg/L for HAA5 or if the annual (or less frequent) sample at any location exceeds either 0.060 mg/L for TTHM or 0.045 mg/L for HAA5, or if the source water annual average TOC level, before any treatment, is greater than 4.0 mg/L at any water treatment plant treating a surface water source, a GUDI source, or both then the owner shall resume routine monitoring under subdivision F 3 of this section or begin increased monitoring if subdivision F 5 of this section applies.

d. A waterworks may return to routine monitoring at the department's discretion.

5. Increased monitoring.

a. The owner of a waterworks required to monitor at a particular location annually or less frequently than annually under subdivision F 3 or F 4 of this section, shall increase monitoring to dual sample sets once per quarter (collected every 90 days) at all locations if a TTHM sample is greater than 0.080 mg/L or a HAA5 sample is greater than 0.060 mg/L at any location.

b. The owner may return to routine monitoring once the waterworks has conducted increased monitoring for at least four consecutive quarters and the LRAA for every monitoring location is less than or equal to 0.060 mg/L for TTHM and less than or equal to 0.045 mg/L for HAA5.

G. Chlorite. The owner of a community waterworks or a NTNC using chlorine dioxide, for disinfection or oxidation, shall conduct monitoring for chlorite.

1. Routine monitoring.

a. The owner shall collect daily samples at the entry point to the distribution system. For any daily sample that exceeds the chlorite PMCL listed in Table 340.6, the owner shall collect additional samples in the distribution system the following day at the locations required by subdivision G 1 c of this section, in addition to the sample required at the entrance to the distribution system.

b. The owner shall collect a three-sample set each month in the distribution system. The owner shall collect one sample at each of the following locations: near the first customer, at a location representative of average residence time, and at a location reflecting maximum residence time in the distribution system. Any additional routine sampling shall be conducted in the same manner (as three-sample sets, at the specified locations). The owner may use the results of additional monitoring conducted under subdivision G 1 c of this section to meet the requirement for monitoring in this subdivision G 1 b.

c. On each day following a routine sample monitoring result that exceeds the chlorite PMCL listed in Table 340.6 at the entrance to the distribution system, the owner is required to collect three chlorite distribution system samples at the following locations: as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the distribution system as possible (reflecting maximum residence time in the distribution system).

2. Reduced monitoring.

a. Chlorite monitoring at the entrance to the distribution system required by subdivision G 1 a of this subsection may not be reduced.

b. Chlorite monitoring in the distribution system required by subdivision G 1 b of this section may be reduced to one three-sample set per quarter after one year of monitoring where no individual chlorite sample collected in the distribution system under subdivision G 1 b of this section has exceeded the chlorite PMCL listed in Table 340.6 and the owner has not been required to conduct monitoring under subdivision G 1 c of this section. The owner may remain on the reduced monitoring schedule until either any of the three individual chlorite samples collected quarterly in the distribution system under subdivision G 1 b of this section exceeds the chlorite PMCL or the owner is required to conduct monitoring under subdivision G 1 c of this section, at which time the owner shall revert to routine monitoring.

H. Bromate.

1. The owner of a community waterworks or a NTNC water treatment plant using ozone for disinfection or oxidation shall collect one sample per month and analyze it for bromate. The owner shall collect samples monthly at the entrance to the distribution system while the ozonation system is operating under normal conditions.

2. The owner required to analyze for bromate may reduce monitoring from monthly to quarterly if the waterworks RAA bromate concentration is less than or equal to 0.0025 mg/L based on monthly bromate measurements under subdivision H 1 of this section for the most recent four quarters. If a waterworks has qualified for reduced bromate monitoring under this subdivision, then the owner may remain on reduced monitoring as long as the RAA of quarterly bromate samples is equal to or less than 0.0025 mg/L. If the RAA bromate concentration is greater than 0.0025 mg/L, then the owner shall resume routine monitoring required by subdivision H 1 of this section.

I. Monitoring requirements for the residual disinfectant.

1. Chlorine and chloramines.

a. The owner of a waterworks that uses chlorine or chloramines shall measure the residual disinfectant level in the distribution system at the same point in the distribution system and at the same time as total coliform bacteria are sampled, as specified in 12VAC5-590-370 A and 12VAC5-590-380 D. The owner of a waterworks using a surface water source, a GUDI source, or both may use the results of the residual disinfectant concentration sampling found in 12VAC5-590-376 D instead of collecting separate samples.

b. Residual disinfectant level monitoring may not be reduced.

2. Chlorine dioxide.

a. The owner of a waterworks that uses chlorine dioxide for disinfection or oxidation shall collect daily samples at the entrance to the distribution system. For any daily sample that exceeds the MRDL listed in Table 340.7, the owner shall collect samples in the distribution system the following day at the locations required by subdivision I 2 b of this section, in addition to the sample required at the entrance to the distribution system.

b. On each day following a routine sample monitoring result that exceeds the MRDL listed in Table 340.7, the owner is required to collect three chlorine dioxide distribution system samples. If chlorine dioxide or chloramines are used to maintain a residual disinfectant in the distribution system, or if chlorine is used to maintain a residual disinfectant in the distribution system and there is no rechlorination after the entry point, then the owner shall collect three samples as close to the first customer as possible, at intervals of at least six hours. If chlorine is used to maintain a residual disinfectant in the distribution system and there are one or more rechlorination points after the entry point, then the owner shall collect one sample at each of the following locations: as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the distribution system as possible (reflecting maximum residence time in the distribution system).

c. Chlorine dioxide monitoring may not be reduced.

3. Ozone. Ozone residual levels shall be monitored continuously and recorded. A portable ozone meter is recommended as a backup.

4. Additional monitoring and reporting requirements are specified in 12VAC5-590-500 to demonstrate log inactivation or removal of Giardia lamblia, virus, and Cryptosporidium.

J. Monitoring requirements for DBPPs.

1. The owner of a community waterworks or a NTNC using a surface water source, a GUDI source, or both and using conventional filtration treatment, as defined in 12VAC5-590-10, shall monitor each water treatment plant for TOC no later than the point of CFE turbidity monitoring and representative of the treated water. The owner shall also monitor for TOC in the source water before any treatment at the same time as monitoring for TOC in the treated water. These samples (source water and treated water) are referred to as paired samples. At the same time as the source water sample is collected, the owner shall monitor for alkalinity in the source water before any treatment. The owner shall collect one paired sample and one source water alkalinity sample per month per water treatment plant at a time representative of normal operating conditions and influent water quality.

2. The owner of a community waterworks or a NTNC that uses a surface water source, a GUDI source, or both with an average treated water TOC of less than 2.0 mg/L for two consecutive years, or less than 1.0 mg/L for one year, may reduce monitoring for both TOC and alkalinity to one paired sample and one source water alkalinity sample per water treatment plant per quarter. The owner shall revert to routine monitoring in the month following the quarter when the annual average treated water TOC is equal to or greater than 2.0 mg/L.

12VAC5-590-375. Lead and copper monitoring.

A. The ~~owners~~ owner of ~~all~~ a community ~~and nontransient noncommunity waterworks~~ waterworks or a NTNC shall monitor for lead and copper in tap water (subsection B of this section), water quality (corrosion) parameters in the distribution system and at entry points (subsection C of this

section), and lead and copper in water supplies (subsection D of this section).

B. Monitoring requirements for lead and copper in tap water.

1. Sample site location.

a. By the ~~commissioner-determined~~ date determined by the department for commencement of monitoring under subdivision B 4 a of this section, ~~each~~ the owner shall complete a materials evaluation of the distribution system ~~in order~~ to identify a pool of targeted sampling sites that meets the requirements of this subdivision, and that is sufficiently large to ensure that the owner can collect the number of lead and copper tap samples required in subdivision B 3 of this section. All sites from which ~~first-draw~~ first-draw samples are collected shall be selected from this pool of targeted sampling sites. Sampling sites may not include faucets that have ~~point-of-use~~ POU devices or ~~point-of-entry treatment~~ POE devices designed to remove inorganic contaminants.

b. When the distribution system evaluation required in subdivision B 1 a of this section is insufficient to locate the requisite number of lead and copper sampling sites that meet the targeting criteria of this section, the owner shall review the sources of information listed ~~below in order~~ in subdivisions B 1 b (1), B 1 b (2), and B 1 b (3) of this section to identify a sufficient number of sampling sites. In addition, the owner shall seek to collect such information where possible in the course of its normal operations (e.g., checking service line materials when reading water meters or performing maintenance activities):

(1) All plumbing codes, permits, and records in the files of the building department ~~or departments~~ that indicate the plumbing materials that are installed within publicly and privately owned structures connected to the distribution system;

(2) All inspections and records of the distribution system that indicate the material composition of the service connections that connect a structure to the distribution system; and

(3) All existing water quality information, which includes the results of all prior analyses of the waterworks or individual structures connected to the waterworks, indicating locations that may be particularly susceptible to high lead or copper concentrations.

c. The sampling sites selected for a community waterworks' sampling pool ~~(tier 1~~ (Tier 1 sampling sites) shall consist of ~~single-family~~ single-family structures that:

(1) Contain copper pipes with lead solder installed between January 1983 and April 1986 or contain lead pipes; or

(2) Are served by a lead service line.

~~NOTE:~~ When multiple-family residences comprise at least 20% of the structures served by a waterworks, the owner may include these types of structures in the sampling pool.

d. The owner of ~~any~~ a community waterworks with insufficient ~~tier~~ Tier 1 sampling sites shall complete the sampling pool with ~~tier~~ Tier 2 sampling sites consisting of buildings, including multiple-family residences that:

(1) Contain copper pipes with lead solder installed between January 1983 and April 1986 or contain lead pipes; or

(2) Are served by a lead service line.

e. The owner of ~~any~~ a community waterworks with insufficient ~~tier~~ Tier 1 and ~~tier~~ Tier 2 sampling sites shall complete the sampling pool with ~~tier~~ Tier 3 sampling sites, consisting of single family structures that contain copper pipes with lead solder installed before 1983. The owner of a community waterworks with insufficient ~~tier~~ Tier 1, ~~tier~~ Tier 2, and ~~tier~~ Tier 3 sampling sites shall complete the sampling pool with representative sites throughout the distribution system. For the purpose of this subdivision, a representative site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the waterworks.

f. The sampling sites selected for a ~~nontransient noncommunity waterworks (tier 1~~ NTNC (Tier 1 sampling sites) shall consist of buildings that:

(1) Contain copper pipes with lead solder installed between January 1983 and April 1986 or contain lead pipes; or

(2) Are served by a lead service line.

g. The owner of a ~~nontransient noncommunity waterworks~~ NTNC with insufficient ~~tier~~ Tier 1 sites that meet the targeting criteria in subdivision B 1 f of this section shall complete the sampling pool with sampling sites that contain copper pipes with lead solder installed before 1983. If additional sites are needed to complete the sampling pool, the owner of a ~~nontransient noncommunity waterworks~~ NTNC shall use representative sites throughout the distribution system. For the purpose of this subdivision, a representative site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the waterworks.

h. The owner of ~~any~~ a waterworks whose distribution system contains lead service lines shall draw 50% of the samples the owner collects during each monitoring period from sites that contain lead pipes, or copper pipes with lead solder, and 50% of the samples the owner collects from sites served by a lead service line. ~~Any~~ The owner who cannot identify a sufficient number of sampling sites served by a lead service line shall collect ~~first-draw~~ first-draw tap samples from all of the sites identified as being served by ~~such~~ these lines.

2. Sample collection methods.

a. All tap samples for lead and copper, with the exception of lead service line samples collected under 12VAC5-590-405 C 4 and samples collected under subdivision B 2 e of this section, shall be ~~first-draw~~ first-draw samples.

b. Each first-draw tap sample for lead and copper shall be one liter in volume, ~~and~~ have stood motionless in the plumbing system of each sampling site for at least six hours, and have been collected without flushing the tap. ~~First-draw~~ First-draw samples from residential housing shall be collected from the cold-water kitchen tap or from a bathroom sink tap. First-draw samples from a nonresidential building shall be one liter in volume and shall be collected at an interior tap from which water is typically drawn for consumption. Non-first-draw samples collected ~~in lieu of~~ instead of first-draw samples pursuant to subdivision B 2 e of this section shall be one liter in volume and shall be collected at an interior tap from which water is typically drawn for consumption. ~~First draw~~ First-draw samples may be collected by the owner or the owner may allow residents to collect ~~first-draw~~ first-draw samples after instructing the residents of the sampling procedures specified in this subdivision. To avoid problems of residents handling nitric acid, acidification of ~~first-draw~~ first-draw samples may be done up to 14 days after the sample is collected. After acidification to resolubilize the metals, the sample must stand in the original container for the time specified in the approved EPA method before the sample can be analyzed. If an owner allows residents to perform sampling, then the owner may not challenge, based on alleged errors in sample collection, the accuracy of sampling results.

c. Each lead service line sample collected pursuant to 12VAC5-590-405 C 4 for the purpose of avoiding replacement shall be one liter in volume and have stood motionless in the lead service line for at least six hours. Lead service line samples shall be collected in one of the following three ways:

(1) At the tap after flushing the volume of water between the tap and the lead service line. The volume of water shall be calculated based on the interior diameter and length of the pipe between the tap and the lead service line;

(2) Tapping directly into the lead service line; or

(3) If the sampling site is a building constructed as a single-family residence, then allowing the water to run until there is a significant change in temperature that would be indicative of water that has been standing in the lead service line.

d. ~~An~~ The owner shall collect each ~~first-draw~~ first-draw tap sample from the same sampling site from which the owner collected a previous sample. If, for any reason, the owner cannot gain entry to a sampling site ~~in order~~ to collect a follow-up tap sample, then the owner may collect the follow-up tap sample from another sampling site in the sampling pool as long as the new site meets the same targeting criteria and is within reasonable proximity of the original site.

e. The owner of a ~~nontransient noncommunity waterworks~~ NTNC, or a community waterworks that meets the criteria of 12VAC5-590-405 D 2 e (2) that does not have enough taps that can supply first-draw samples, as defined in subdivision B 2 b of this section, may apply to the ~~district engineer~~ department in writing to substitute non-first-draw samples. If approved by the ~~commissioner~~ department, ~~such owners~~ then an owner shall collect as many first-draw samples from appropriate taps as possible and identify sampling times and locations that would likely result in the longest standing time for the remaining sites.

3. Number of samples.

a. ~~Owners~~ The owner shall collect at least one sample during each monitoring period specified in subdivision B 4 of this section from the number of sites listed in the first column (standard monitoring) of ~~the table in subdivision B 3 c of this section~~ Table 375.1. The owner of a waterworks conducting reduced monitoring under subdivision B 4 d of this section shall collect at least one sample from the number of sites specified in the second column (reduced monitoring) of ~~the table in subdivision B 3 c of this section~~ Table 375.1 during each monitoring period specified in subdivision B 4 d of this section. ~~Such reduced~~ Reduced monitoring sites shall be representative of the sites required for standard monitoring. The ~~commissioner~~ department may specify sampling locations when an owner is conducting reduced monitoring.

b. The owner of a waterworks that has fewer than five drinking water taps that are normally used for human consumption meeting the sample site criteria of subdivision B 1 of this section to reach the required number of sample sites listed in ~~the table in subdivision B 3 c of this section,~~ Table 375.1 shall collect at least one

sample from each tap and then shall collect additional samples from those taps on different days during the monitoring period to meet the required number of sites. Alternatively, the ~~commissioner~~ department may allow ~~these owners~~ the owner to collect a number of samples less than the number of sites specified in ~~the table in subdivision B 3 c of this section~~ Table 375.1, provided that 100% of all taps that are normally used for human consumption are sampled. The ~~commissioner must~~ department shall approve this reduction of the minimum number of samples in writing based on a request from the owner or onsite verification by the ~~district engineer~~ designated department representative.

c. The lead and copper tap sample table is as follows:

TABLE 375.1

Tap Samples for Lead and Copper

~~System Size~~ WATERWORKS SIZE (Number of People Served)	~~Number of Sites~~ NUMBER OF SITES (Standard Monitoring)	~~Number of Sites~~ NUMBER OF SITES (Reduced Monitoring)
~~greater~~ Greater than 100,000	100	50
10,001-100,000	60	30
3,301 to 10,000	40	20
501 to 3,300	20	10
101 to 500	10	5
~~less~~ Less than or equal to 100	5	5

4. Timing of monitoring.

a. Initial tap sampling. The first six-month monitoring period for small (serving less than 3,300 population), ~~medium-size~~ medium (serving 3,301 to 50,000 population), and large waterworks (serving greater than 50,000 population) shall be established by the ~~commissioner~~ department.

(1) ~~Owners~~ The owner of ~~all~~ a large waterworks shall monitor during two consecutive six-month periods.

(2) ~~Owners~~ The owner of ~~all~~ a small ~~and medium-size~~ or a medium waterworks shall monitor during each six-month monitoring period until the waterworks exceeds the lead or copper ~~action level~~ AL and is therefore required to implement the corrosion control treatment requirements under 12VAC5-590-405 A 2, in which case the owner shall continue monitoring in accordance with subdivision B 4 b of this section, or the waterworks meets the lead and copper ~~action levels~~ ALs during two consecutive six-month monitoring periods, in which case the owner may reduce monitoring in accordance with subdivision B 4 d of this section.

b. Monitoring after installation of corrosion control and ~~water supply (source water)~~ source water treatment.

(1) The owner of ~~any~~ a large waterworks that installs optimal corrosion control treatment pursuant to 12VAC5-590-405 A 2 d (4) shall monitor during two consecutive six-month monitoring periods by the date specified in 12VAC5-590-405 A 2 d (5).

(2) The owner of ~~any~~ a small or ~~medium-size~~ a medium waterworks that installs optimal corrosion control treatment pursuant to 12VAC5-590-405 A 2 e (5) shall monitor during two consecutive six-month monitoring periods by the date specified in 12VAC5-590-405 A 2 ~~d~~ e (6).

(3) The owner of ~~any~~ a waterworks that installs source water treatment pursuant to 12VAC5-590-405 B 1 c shall monitor during two consecutive six-month monitoring periods by the date specified in 12VAC5-590-405 B 1 d.

c. Monitoring after the ~~commissioner~~ department specifies water quality parameter values for optimal corrosion control. After the ~~commissioner~~ department specifies the values for water quality control parameters under 12VAC5-590-405 A 1 f, the owner shall monitor during each subsequent six-month monitoring period, with the first monitoring period to begin on the date the ~~commissioner~~ department specifies the optimal values.

d. Reduced monitoring.

(1) The owner of a small or ~~medium-size~~ a medium waterworks that meets the lead and copper ~~action levels~~ ALs during each of two consecutive six-month monitoring periods may reduce the number of samples in accordance with subdivision B 3 of this section, and reduce the frequency of sampling to once per year. The owner of a small or a medium ~~water system~~ waterworks collecting fewer than five samples, as specified in subdivision B 3 b of this section, that meets the lead and copper ~~action levels~~ ALs during each of two consecutive six-month monitoring periods may reduce the frequency of sampling to once per year. In no case may the owner reduce the number of samples required below the minimum of one sample per available tap. This sampling shall begin during the calendar year immediately following the end of the second consecutive six-month monitoring period.

(2) The owner of ~~any~~ a waterworks that meets the lead ~~action level~~ AL and maintains the range of values for the water quality control parameters reflecting optimal corrosion control treatment specified by the ~~commissioner~~ department under 12VAC5-590-405 A 1 f

during each of two consecutive six-month monitoring periods may reduce the frequency of monitoring to once per year and to reduce the number of lead and copper samples in accordance with subdivision B 3 of this section if the owner receives written approval from the ~~commissioner~~ department. This sampling shall begin during the calendar year immediately following the end of the second consecutive six-month monitoring period. The ~~commissioner must review~~ department shall evaluate monitoring, treatment, and other relevant information submitted by the owner in accordance with ~~12VAC5-590-530 F~~ 12VAC5-590-532 and ~~must~~ shall notify the owner in writing when a determination is made that the owner is eligible to commence reduced monitoring pursuant to this subdivision. The ~~commissioner must review,~~ department shall evaluate and, where appropriate, revise ~~his~~ the determination when the owner submits new monitoring or treatment data~~,~~ or when other data relevant to the number and frequency of tap sampling becomes available.

(3) The owner of a small or ~~medium-size~~ a medium waterworks that meets the lead and copper ~~action levels~~ ALs during three consecutive years of monitoring may reduce the frequency of monitoring for lead and copper from annually to once every three years. The owner of ~~any~~ a waterworks that meets the lead ~~action level~~ AL and maintains the range of values for the water quality control parameters reflecting optimal corrosion control treatment specified by the ~~commissioner~~ department under 12VAC5-590-405 A 1 f during three consecutive years of monitoring may reduce the frequency of monitoring from annually to once every three years if the owner receives written approval from the ~~commissioner~~ department. Samples collected once every three years shall be collected no later than every third calendar year. The ~~commissioner must review,~~ department shall evaluate monitoring, treatment, and other relevant information submitted by the owner in accordance with ~~12VAC5-590-530 F~~ 12VAC5-590-532 and ~~must~~ shall notify the owner in writing when a determination is made that the owner is eligible to commence reduced monitoring pursuant to this subdivision. The ~~commissioner must review,~~ department shall evaluate and where appropriate, revise ~~his~~ the determination when the owner submits new monitoring or treatment data, or when other data relevant to the number and frequency of tap sampling becomes available.

(4) The owner of a waterworks that reduces the number and frequency of sampling shall collect these samples from representative sites included in the pool of targeted sampling sites identified in subdivision B 1 of this section. ~~Owners~~ The owner sampling annually or less frequently shall conduct the lead and copper tap sampling during the months of June, July, August, or September. For a ~~nontransient noncommunity waterworks~~ NTNC that does not operate during the months of June through September, the ~~commissioner~~ department shall designate an alternate monitoring period that represents a time of normal operation for the waterworks. This sampling shall begin in the calendar year immediately following the end of the second consecutive six-month monitoring period ~~of~~ for the ~~owners~~ owner initiating annual monitoring, and during the three-year period following the end of the third consecutive calendar year of annual monitoring for the ~~owners~~ owner initiating triennial monitoring.

(5) The owner of ~~any~~ a waterworks that demonstrates for two consecutive six-month monitoring periods that the tap water lead level computed under 12VAC5-590-385 C is less than or equal to 0.005 mg/L and the tap water copper level computed under 12VAC5-590-385 C is less than or equal to 0.65 mg/L may reduce the number of samples in accordance with subdivision B 3 of this section and reduce the frequency of sampling to once every three calendar years.

(6) The owner of a small or ~~medium-size~~ a medium waterworks subject to reduced monitoring that exceeds the lead or copper ~~action level~~ AL shall resume sampling in accordance with subdivision B 4 c of this section and collect the number of samples specified for standard monitoring under subdivision B 3 of this section. ~~Such~~ The owner shall also conduct water quality parameter monitoring in accordance with ~~subdivision C 2, 3, or 4~~ subdivisions C 2, C 3, and C 4 of this section (as appropriate) during the monitoring period in which the ~~action level~~ AL is exceeded. The owner of ~~any such~~ a waterworks may resume annual monitoring for lead and copper at the tap at the reduced number of sites specified in subdivision B 3 of this section after it has completed two subsequent consecutive six-month rounds of monitoring that meet the criteria of subdivision B 4 d (1) of this section or may resume triennial monitoring for lead and copper at the reduced number of sites after it demonstrates through subsequent rounds of monitoring that it meets the criteria of either subdivision B 4 d (3) or B 4 d (5) of this section.

(7) The owner of ~~any~~ a waterworks subject to the reduced monitoring frequency that fails to meet the lead ~~action level~~ ALs during any four-month monitoring period or that fails to operate at or above the minimum value or within the range of values for the water quality parameters specified by the ~~commissioner~~ department under 12VAC5-590-405 A 1 f for more than nine days in any six-month period specified in subdivision C 4 of this section shall conduct tap water sampling for lead and copper at the frequency specified in subdivision B 4 c of this section, collect the number of samples specified for standard monitoring under subdivision B 3 of this section, and resume monitoring for water quality

parameters within the distribution system in accordance with subdivision C 4 of this section. This standard tap water sampling shall begin no later than the six-month period beginning January 1 of the calendar year following the lead ~~action level~~ AL exceedance or water quality parameter excursion. The owner of such a waterworks may resume reduced monitoring for lead and copper at the tap and for water quality parameters within the distribution system under the following conditions:

(a) The owner may resume annual monitoring for lead and copper at the tap at the reduced number of sites specified in subdivision B 3 of this section after completion of two subsequent six-month rounds of monitoring that meet the criteria of subdivision B 4 d ~~2~~ (2) of this section and the owner has received written approval from the ~~commissioner~~ department that it is appropriate to resume reduced monitoring on an annual frequency. This sampling shall begin during the calendar year immediately following the end of the second consecutive six-month monitoring period.

(b) The owner may resume triennial monitoring for lead and copper at the tap at the reduced number of sites after demonstration through subsequent rounds of monitoring that it meets the criteria of either subdivision B 4 d (3) or B 4 d (5) of this section and the owner has received written approval from the ~~commissioner~~ department that it is appropriate to resume triennial monitoring.

(c) The owner may reduce the number of water quality parameter tap water samples required in accordance with subdivision C 5 a of this section and the frequency with which it collects ~~such~~ these samples in accordance with subdivision C 5 b of this section. The owner of such a waterworks may not resume triennial monitoring for water quality parameters at the tap until it demonstrates, in accordance with the requirements of subdivision C 5 b of this section, that it has requalified for triennial monitoring.

(8) The owner of ~~any~~ a waterworks subject to a reduced monitoring frequency under subdivision B 4 d of this section shall notify the ~~district engineer~~ department in writing in accordance with 12VAC5-590-530 ~~F 1 c~~ and 12VAC5-590-532 of any upcoming long-term change in the treatment or addition of a new ~~water~~ source water as described in this section. The ~~commissioner must review~~ department shall evaluate and approve the addition of a new ~~water~~ source water or long-term change in the water treatment before it is implemented by the owner. The ~~commissioner~~ department may require the owner to resume sampling in accordance with subdivision B 4 c of this section and collect the number of samples specified for standard monitoring under subdivision B 3 of this section or take other appropriate steps such as increased water quality parameter monitoring or re-evaluation of its corrosion control treatment given the potentially different water quality considerations.

5. Additional monitoring by owner. The results of ~~any~~ monitoring conducted in addition to the minimum requirements of this section shall be considered by the owner and the ~~commissioner~~ department in making ~~any~~ determinations (i.e., calculating the 90th percentile lead or copper level) under 12VAC5-590-385 C.

6. Invalidation of lead or copper tap water samples. A sample invalidated under this subdivision does not count toward determining lead or copper 90th percentile levels under 12VAC5-590-385 C or toward meeting the minimum monitoring requirements of subdivision B 3 of this section.

a. The ~~commissioner~~ department may invalidate a lead or copper tap water sample if at least one of the following conditions is met~~.~~:

(1) The laboratory establishes that improper sample analysis caused erroneous results.

(2) The ~~commissioner~~ department determines that the sample was ~~taken~~ collected from a site that did not meet the site selection criteria of this section.

(3) The sample container was damaged in transit.

(4) There is substantial reason to believe that the sample was subject to tampering.

b. The owner shall report the results of all samples to the ~~district engineer~~ department and all supporting documentation for samples the owner believes should be invalidated.

c. To invalidate a sample under subdivision B 6 a of this section, the decision and the rationale for the decision shall be documented in writing. The ~~commissioner~~ department may not invalidate a sample solely on the grounds that a follow-up sample result is higher or lower than that of the original sample.

d. The owner shall collect a replacement ~~samples~~ sample for ~~any samples~~ a sample invalidated under this section if~~,~~ after the invalidation of one or more samples, the owner has too few samples to meet the minimum requirements of subdivision B 3 of this section. ~~Any such~~ A replacement ~~samples~~ sample shall be ~~taken~~ collected as soon as possible, but no later than 20 days after the date the commissioner invalidates the sample or by the end of the applicable monitoring period, whichever occurs later. Replacement samples ~~taken~~ collected after the end of the applicable monitoring period shall not also be used to meet the monitoring requirements of a subsequent monitoring period. The replacement samples shall be ~~taken~~ collected at the same locations as the invalidated samples or, if that is not possible, at locations other than

those already used for sampling during the monitoring period.

7. Monitoring waivers for small waterworks. The owner of ~~any~~ a small waterworks that meets the criteria of this subdivision may apply to the ~~commissioner~~ department to reduce the frequency of monitoring for lead and copper to once every nine years (i.e., a full waiver) if the owner meets all of the materials criteria specified in subdivision B 7 a of this section and all of the monitoring criteria specified in subdivision B 7 b of this section. The owner of ~~any~~ a small waterworks that meets the criteria in subdivisions B 7 a and B 7 b of this section only for lead, or only for copper, may apply to the ~~commissioner~~ department for a waiver to reduce the frequency of tap water monitoring to once every nine years for that contaminant only (i.e., a partial waiver).

a. Materials criteria. The owner shall demonstrate that the distribution system ~~and~~ service lines ~~and all drinking water supply plumbing~~ and plumbing connected to the waterworks, including plumbing conveying drinking water within all residences and buildings connected to the waterworks, are free of lead-containing materials or copper-containing materials, as those terms are defined in this subdivision, as follows:

(1) Lead. To qualify for a full waiver, or a waiver of the tap water monitoring requirements for lead (i.e., a lead waiver), the owner shall provide certification and supporting documentation to the ~~commissioner~~ department that the waterworks is free of all lead-containing materials, as follows:

(a) It contains no plastic pipes that contain lead plasticizers, or plastic service lines that contain lead plasticizers; ~~and~~

~~(b) It is free of lead service lines, lead pipes, lead soldered pipe joints, and leaded brass or bronze alloy fittings and fixtures, unless such fittings and fixtures meet the specifications of any standard established pursuant to 42 USC § 300g-6(e) (SDWA § 1417(e)).~~

(b) Solders and flux contain no more than 0.2% lead; and

(c) The weighted average of wetted surface of pipes, pipe fittings, plumbing fittings, and plumbing fixtures contain no more than 0.25% lead.

(2) Copper. To qualify for a full waiver, or a waiver of the tap water monitoring requirements for copper (i.e., a copper waiver), the owner shall provide certification and supporting documentation to the ~~commissioner~~ department that the waterworks contains no copper pipes or copper service lines.

b. Monitoring criteria for waiver issuance. The owner shall have completed at least one six-month round of standard tap water monitoring for lead and copper at sites approved by the ~~commissioner~~ department and from the number of sites required by subdivision B 3 of this section and demonstrate that the 90th percentile levels for any and all rounds of monitoring conducted since the owner became free of all lead-containing or copper-containing materials, as appropriate, meet the following criteria:

(1) Lead levels. To qualify for a full waiver, or a lead waiver, the owner shall demonstrate that the 90th percentile lead level does not exceed 0.005 mg/L.

(2) Copper levels. To qualify for a full waiver, or a copper waiver, the owner shall demonstrate that the 90th percentile copper level does not exceed 0.65 mg/L.

c. ~~Commissioner~~ Department approval of waiver application. The ~~commissioner~~ department shall notify the owner of the waiver determination, in writing, setting forth the basis of ~~his~~ the decision and any condition of the waiver. As a condition of the waiver, the ~~commissioner~~ department may require the owner to perform specific activities (e.g., limited monitoring, periodic outreach to customers to remind them to avoid installation of materials that might void the waiver) to avoid the risk of lead or copper concentration of concern in tap water. The owner of a small waterworks shall continue monitoring for lead and copper at the tap as required by subdivisions B 4 a through B 4 d of this section, as appropriate, until it receives written notification from the ~~commissioner~~ department that the waiver has been approved.

d. Monitoring frequency for owners with waivers.

(1) ~~An~~ The owner with a full waiver shall conduct tap water monitoring for lead and copper in accordance with subdivision B 4 d (4) of this section at the reduced number of sampling sites identified in subdivision B 3 of this section at least once every nine years and provide the materials certification specified in subdivision B 7 a of this section for both lead and copper to the ~~commissioner~~ department along with the monitoring results. Samples collected every nine years shall be collected no later than every ninth calendar year.

(2) ~~An~~ The owner with a partial waiver shall conduct tap water monitoring for the waived contaminant in accordance with subdivision B 4 d (4) of this section at the reduced number of sampling sites specified in subdivision B 3 of this section at least once every nine years and provide the materials certification specified in subdivision B 7 a of this section pertaining to the waived contaminant along with the monitoring results. ~~Such an~~ The owner also shall continue to monitor for the nonwaived contaminant in accordance with requirements of subdivisions B 4 a through B 4 d of this section, as appropriate.

(3) ~~Any~~ The owner with a full or partial waiver shall notify the ~~district engineer~~ department in writing in accordance with ~~12VAC5-590-530 F 1 c~~ 12VAC5-590-532 B 3 of any upcoming long-term change in the treatment or addition of a new source water, as described in ~~that section~~ 12VAC5-590-532. The ~~commissioner must review~~ department shall evaluate and approve the addition of a new source water or a long-term change in water treatment before it is implemented by the owner. The ~~commissioner~~ department has the authority to require the owner to add or modify waiver conditions (e.g., require recertification that the waterworks is free of lead-containing or copper-containing materials; require additional round or rounds of monitoring), if it deems ~~such~~ these modifications are necessary to address treatment or source water changes at the waterworks.

(4) If an owner with a full or partial waiver becomes aware that it is no longer free of lead-containing or copper-containing materials, as appropriate~~,~~ (e.g., as a result of new construction or repairs), then the owner shall notify the ~~district engineer~~ department in writing no later than 60 days after becoming aware of ~~such a~~ the change.

e. Continued eligibility. If the owner continues to satisfy the requirements of subdivision B 7 d of this section, then the waiver will be renewed automatically, unless any of the conditions listed in ~~subdivisions~~ subdivision B 7 e (1), B 7 e (2), or B 7 e (3) of this section occurs. ~~An~~ The owner whose waiver has been revoked may reapply for a waiver ~~at such time as it~~ when the owner again meets the appropriate materials and monitoring criteria of subdivisions B 7 a and B 7 b of this section.

(1) A waterworks with a full waiver or a lead waiver no longer satisfies the materials criteria of subdivision B 7 a (1)of this section or has a 90th percentile lead level greater than 0.005 mg/L.

(2) A waterworks with a full waiver or a copper waiver no longer satisfies the materials criteria of subdivision B 7 a (2) of this section or has a 90th percentile copper level greater than 0.65 mg/L.

(3) The ~~commissioner~~ department notifies the owner, in writing, that the waiver has been revoked, setting forth the basis of the decision.

f. Requirements following waiver revocation. A waterworks whose full or partial waiver has been revoked by the ~~commissioner~~ department is subject to the corrosion control treatment and lead and copper tap water monitoring requirements, as follows:

(1) If the waterworks exceeds the lead or copper ~~action level~~ AL, then the owner shall implement corrosion control treatment in accordance with the deadlines specified in 12VAC5-590-405 A 2 e and any other applicable requirements of this section.

(2) If the waterworks meets both the lead and the copper ~~action level~~ ALs, then the owner shall monitor for lead and copper at the tap no less frequently than once every three years using the reduced number of sample sites specified in subdivision B 3 of this section.

g. Pre-existing waivers. Waivers for small waterworks approved by the ~~commissioner~~ department in writing ~~prior to~~ before April 11, 2000, shall remain in effect under the following conditions:

(1) If the waterworks has demonstrated that it is both free of lead-containing and copper-containing materials, as required by subdivision B 7 a of this section and that its 90th percentile lead levels and 90th percentile copper levels meet the criteria of subdivision B 7 b of this section, then the waiver ~~remains~~ will remain in effect so long as the owner continues to meet the waiver eligibility criteria of subdivision B 7 e of this section. The first round of tap water monitoring conducted pursuant to subdivision B 7 d of this section shall be completed no later than nine years after the last time the owner has monitored for lead and copper at the tap.

(2) If the waterworks has met the materials criteria of subdivision B 7 a of this section but has not met the monitoring criteria of subdivision B 7 b of this section, then the owner shall conduct one six-month round of standard tap water monitoring for lead and copper at sites approved by the ~~commissioner~~ department demonstrating that it meets the criteria of subdivision B 7 b of this section. Thereafter, the waiver shall remain in effect as long as the owner meets the continued eligibility criteria of subdivision B 7 e of this section. The first round of tap water monitoring conducted pursuant to subdivision B 7 d of this section shall be completed no later than nine years after the round of monitoring conducted pursuant to subdivision B 7 b of this section.

C. Monitoring requirements for water quality parameters. The owners of all large waterworks and all small and ~~medium-size~~ medium waterworks that exceed the lead or copper ~~action level~~ AL shall monitor for water quality parameters in addition to lead and copper in accordance with this section.

1. General requirements.

a. Sample collection methods.

(1) Tap samples shall be representative of water quality throughout the distribution system taking into account the number of persons served, the different sources of water, the different treatment methods employed by the waterworks, and seasonal variability. Tap sampling under this section is not required to be conducted at taps

targeted for lead and copper sampling under subdivision B 1 of this section. ~~Owners~~ The owner may find it convenient to conduct tap sampling for water quality parameters at sites approved for coliform sampling.

(2) Samples collected at the entry point or points to the distribution system shall be from locations representative of each source water after treatment. If a waterworks draws water from more than one source water and the ~~sources~~ source waters are combined before distribution, then the owner shall sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water is representative of all ~~sources~~ source waters being used).

b. Number of samples.

(1) ~~Owners~~ The owner shall collect two tap samples from the standard monitoring number of sites given in Table 375.2 for applicable water quality parameters during each monitoring period specified under ~~subdivision~~ subdivisions C 2 through C 5 of this section ~~from the following number of sites~~.

TABLE 375.2

Water Quality Monitoring for Lead and Copper

	NUMBER OF SITES FOR WATER QUALITY PARAMETERS	
~~System Size~~ WATERWORKS SIZE (Number of People Served)	~~Number of Sites for Water Quality Parameters~~ STANDARD MONITORING	REDUCED MONITORING
~~greater~~ Greater than 100,000	25	10
10,001-100,000	10	7
3,301 to 10,000	3	3
501 to 3,300	2	2
101 to 500	1	1
~~less~~ Less than or equal to 100	1	1

(2) Except as provided in subdivision C 3 c of this section, ~~owners~~ the owner shall collect two samples for each applicable water quality parameter at each entry point to the distribution system during each monitoring period specified in subdivision C 2 of this section. During each monitoring period specified in ~~subdivision~~ subdivisions C 3 ~~through~~, C 4, and C 5 of this section, ~~owners~~ the owner shall collect one sample for each applicable water quality parameter at each entry point to the distribution system.

2. Initial sampling. The ~~owners~~ owner of ~~all~~ a large waterworks shall measure the applicable water quality parameters as specified below at taps and at each entry point to the distribution system during each six-month monitoring period specified in subdivision B 4 a of this section. The ~~owners~~ owner of ~~all~~ a small ~~and medium-size~~ or a medium waterworks shall measure the applicable water quality parameters at the locations specified below during each six-month monitoring period specified in subdivision B 4 a of this section during which the waterworks exceeds the lead or copper ~~action level~~ AL.

a. At taps:

(1) pH;

(2) Alkalinity;

(3) Orthophosphate, when an inhibitor containing a phosphate compound is used;

(4) Silica, when an inhibitor containing a silicate compound is used;

(5) Calcium;

(6) Conductivity; and

(7) Water temperature.

b. At each entry point to the distribution system: all of the applicable parameters listed in subdivisionC 2 aof this section.

3. Monitoring after installation of corrosion control. The owner of ~~any~~ a large waterworks ~~which~~ that installs optimal corrosion control treatment pursuant to 12VAC5-590-405 A 2 d (4) shall measure the water quality parameters at the locations and frequencies specified below during each six-month monitoring period specified in subdivision B 4 b (1)of this section. The owner of ~~any~~ a small or ~~medium-size~~ a medium waterworks that installs optimal corrosion control treatment shall conduct ~~such~~ monitoring during each six-month monitoring period specified in subdivision B 4 b (2) of this section in which the waterworks exceeds the lead or copper ~~action level~~ AL.

a. At taps, two samples for:

(1) pH;

(2) Alkalinity;

(3) Orthophosphate, when an inhibitor containing a phosphate compound is used;

(4) Silica, when an inhibitor containing a silicate compound is used; and

(5) Calcium, when calcium carbonate stabilization is used as part of corrosion control.

b. Except as provided in subdivision C 3 c of this section, at each entry point to the distribution system, at least one sample no less frequently than every two weeks ~~(bi-weekly)~~ (biweekly) for:

(1) pH;

(2) When alkalinity is adjusted as part of optimal corrosion control, a reading of the dosage rate of the chemical used to adjust the alkalinity~~,~~ and the alkalinity concentration; and

(3) When a corrosion inhibitor is used as part of optimal corrosion control, a reading of the dosage rate of the inhibitor used~~,~~ and the concentration of orthophosphate or silica (whichever is applicable).

c. The owner of ~~any~~ a groundwater ~~waterworks~~ system may limit entry point sampling described in subdivision C 3 b of this section to those entry points that are representative of water quality and treatment conditions throughout the waterworks. If water from untreated ~~ground water~~ groundwater sources mixes with water from treated ~~ground water~~ groundwater sources, then the owner shall monitor for water quality parameters both at representative entry points receiving treatment and representative entry points receiving no treatment. ~~Prior to~~ Before the start of any monitoring under this subdivision, the owner shall provide to the ~~commissioner~~ department written information identifying the selected entry points and documentation, including information on seasonal variability, sufficient to demonstrate that the sites are representative of water quality and treatment conditions throughout the waterworks.

4. Monitoring after the ~~commissioner~~ department specifies water quality parameter values for optimal corrosion control. After the ~~commissioner~~ department specifies the values for applicable water quality control parameters reflecting optimal corrosion control treatment under 12VAC5-590-405 A 1 f, the ~~owners~~ owner of ~~all~~ a large waterworks shall measure the applicable water quality parameters in accordance with subdivision C 3 of this section and determine compliance with the requirements of 12VAC5-590-405 A 1 g every six months with the first six-month period to begin on either January 1 or July 1, whichever comes first, after the ~~commissioner~~ department specifies the optimal values under 12VAC5-590-405 A 1 f. The owner of ~~any~~ a small or ~~medium-size~~ a medium waterworks shall conduct ~~such~~ monitoring during each six-month monitoring period specified in this subdivision in which the waterworks exceeds the lead or copper ~~action level~~ AL. For the owner of ~~any such~~ a small ~~and medium-size~~ or a medium waterworks that is subject to a reduced monitoring frequency pursuant to subdivision B 4 d of this section at the time of the ~~action level~~ AL exceedance, the start of the applicable six-month period under this subdivision shall coincide with the start of the applicable monitoring period under subdivision B 4 d of this section. Compliance with the ~~commissioner-designated~~ department-designated optimal water quality parameter values shall be determined as specified under 12VAC5-590-405 A 1 g.

5. Reduced monitoring.

a. The owner of ~~any~~ a waterworks that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment during each of two consecutive six-month monitoring periods under subdivision C 4 of this section shall continue monitoring at the entry point or points to the distribution system as specified in subdivision C 3 b of this section. The owner of ~~such~~ the waterworks may collect two tap samples for applicable water quality parameters from the ~~following~~ reduced number of sites during each six-month monitoring period shown in Table 375.2.

~~Size of Water System (Number of People Served)~~	~~Reduced Number of WQP Monitoring Sites~~
~~greater than 100,000~~	~~10~~
~~10,001 to 100,000~~	~~7~~
~~3,301 to 10,000~~	~~3~~
~~501 to 3,300~~	~~2~~
~~101 to 500~~	~~1~~
~~less than or equal to 100~~	~~1~~

b. The owner of ~~any~~ a waterworks that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment specified by the ~~commissioner~~ department under 12VAC5-590-405 A 1 f during three consecutive years of monitoring may reduce the frequency with which the owner collects the number of tap samples for applicable water quality parameters specified in subdivision C 5 of this section from every six months to annually. This sampling begins during the calendar year immediately following the end of the monitoring period in which the third consecutive year of six-month monitoring occurs. The owner of ~~any~~ a waterworks that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment specified by the ~~commissioner~~ department under 12VAC5-590-405 A 1 f during three consecutive years of annual monitoring under this subdivision may reduce the frequency with which it collects the number of tap samples for applicable water quality parameters specified in subdivision C 5 a of this section from annually to every three years. This sampling begins during the calendar year immediately following

the end of the monitoring period in which the third consecutive year of six-month monitoring occurs.

c. The owner of a waterworks may reduce the frequency with which tap samples are collected for applicable water quality parameters specified in subdivision C 5 a of this section to every three years if the owner demonstrates during two consecutive monitoring periods that the tap water lead level at the 90th percentile is less than or equal to the PQL for lead (0.005 mg/L), that the tap water copper level at the 90th percentile is less than or equal to 0.65 mg/L for copper, and that the owner also has maintained the range of values for water quality parameters reflecting optimal corrosion control treatment specified by the ~~commissioner~~ department under 12VAC5-590-405 A 1 f. Monitoring conducted every three years shall be done no later than every third calendar year.

d. The owner of a waterworks that conducts sampling annually shall collect these samples evenly throughout the year so as to reflect seasonal variability.

e. The owner of ~~any~~ a waterworks subject to the reduced monitoring frequency that fails to operate at or above the minimum value or within the range of values for the water quality parameters specified by the ~~commissioner~~ department under 12VAC5-590-405 A 1 f for more than nine days in any six-month period specified in 12VAC5-590-405 A 1 g shall resume distribution system tap water sampling in accordance with the number and frequency requirements in subdivision C 4 of this section. ~~Such an~~ The owner may resume annual monitoring for water quality parameters at the tap at the reduced number of sites specified in subdivision C 5 of this section after completion of two subsequent consecutive six-month rounds of monitoring that meet the criteria of that subdivision or may resume triennial monitoring for water quality parameters at the tap at the reduced number of sites after demonstration through subsequent rounds of monitoring that the criteria of either subdivision C 5 b or C 5 c of this section has been met.

6. Additional monitoring by owners. The results of any monitoring conducted in addition to the minimum requirements of this section shall be considered by the owner and the ~~commissioner~~ department in making any determinations under this section or 12VAC5-590-405 A 1.

D. Monitoring requirements for lead and copper in water supplies (source water).

1. Sample location, collection methods, and number of samples.

a. The owner of a waterworks that fails to meet the lead or copper ~~action level~~ AL on the basis of tap samples collected in accordance with subsection A of this section shall collect lead and copper ~~water supply~~ source water samples in accordance with the following requirements regarding sample location, number of samples, and collection methods:

(1) The owner of a waterworks served by groundwater sources shall ~~take~~ collect a minimum of one sample at every entry point to the distribution system ~~that is representative of each well after treatment (hereafter called a sampling point)~~. The owner shall ~~take~~ collect one sample at the same sampling point unless conditions make another sampling point more representative of each source water or water treatment plant.

(2) The owner of a waterworks served by surface water sources shall ~~take~~ collect a minimum of one sample at every entry point to the distribution system ~~after any application of treatment or in the distribution system at a point that is representative of each source after treatment (hereafter called a sampling point)~~. The owner shall ~~take~~ collect each sample at the same sampling point unless conditions make another sampling point more representative of each source water or water treatment plant. Note that for the purpose of this subdivision, a waterworks served by a surface water source includes waterworks served by a combination of surface water and ~~ground~~ groundwater sources.

(3) If a waterworks draws water from more than one source water and the ~~sources~~ source waters are combined before distribution, then the owner shall collect samples at an entry point to the distribution system during periods of normal operating conditions (i.e., when water is representative of all ~~sources~~ source waters being used).

(4) The ~~commissioner~~ department may reduce the total number of samples that must be analyzed by allowing the use of compositing. Compositing of samples shall be done by certified laboratory personnel. Composite samples from a maximum of five samples are allowed, provided that if the lead concentration in the composite sample is greater than or equal to 0.001 mg/L or the copper concentration is greater than or equal to 0.160 mg/L, then either a follow-up sample shall be collected and analyzed within 14 days at each sampling point included in the composite; or if duplicates ~~of~~ or sufficient quantities from the original samples from each sampling point used in the composite are available, then the owner may use these instead of resampling.

b. Where the results of sampling indicate an exceedance of maximum permissible ~~water supply~~ source water levels established under 12VAC5-590-405 B 4, the ~~commissioner~~ department may require that one additional sample be collected as soon as possible after the initial sample was ~~taken~~ collected (but not to exceed two weeks) at the same sampling point. If a ~~commissioner required~~ confirmation sample required by the department is ~~taken~~ collected for lead or copper, then the results of

the initial and confirmation sample shall be averaged in determining compliance with the ~~commissioner specified~~ department-specified maximum permissible levels. ~~Any~~ A sample value below the ~~method detection limit~~ MDL shall be considered to be zero. ~~Any~~ A value above the ~~method detection limit~~ MDL but below the PQL shall either be considered as the measured value or be considered one-half the PQL. The PQL for lead is equal to 0.005 mg/L, and the PQL for copper is equal to 0.050 mg/L.

2. Monitoring frequency after a waterworks exceeds a tap ~~action level~~ AL. The owner of ~~any~~ a waterworks ~~which~~ that exceeds the lead or copper ~~action level~~ AL at the tap shall collect one ~~water supply~~ source water sample from each entry point to the distribution system no later than six months after the end of the monitoring period during which the lead or copper ~~action level~~ AL was exceeded. For monitoring periods that are annual or less frequent, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs, or if the ~~commissioner~~ department has established an alternate monitoring period, the last day of that period.

3. Monitoring frequency after installation of ~~water supply~~ source water treatment. The owner of ~~any~~ a waterworks that installs ~~water supply~~ source water treatment pursuant to 12VAC5-590-405 B 1 c shall collect an additional source water ~~supply~~ sample from each entry point to the distribution system during two consecutive six-month monitoring periods by the deadline specified in 12VAC5-590-405 B 1 d.

4. Monitoring frequency after the ~~commissioner~~ department specifies maximum permissible ~~water supply~~ source water lead and copper levels or determines that ~~water supply~~ source water treatment is not needed.

a. ~~An~~ The owner shall monitor at the frequency specified ~~below~~ in subdivisions D 4 a (1) and D 4 a (2) of this section in cases where the ~~commissioner~~ department specifies maximum permissible ~~water supply~~ source water lead and copper levels under 12VAC5-590-405 B 1 e or determines that the owner is not required to install ~~water supply~~ source water treatment under 12VAC5-590-405 B 2 b.

(1) The owner of a waterworks using only groundwater shall collect samples once during the three-year compliance period in effect when the applicable ~~commissioner~~ department determination under subdivision D 4 a of this section is made. ~~Owners of such waterworks~~ The owner shall collect samples once during each subsequent compliance period. Triennial samples shall be collected every third calendar year.

(2) The owner of a waterworks using surface water (or a combination of surface water and groundwater) shall collect samples once during each year, the first annual monitoring period to begin during the year in which the applicable ~~commissioner~~ department determination is made under subdivision D 4 a of this section.

b. ~~An~~ The owner is not required to conduct ~~water supply~~ source water sampling for lead or copper if the waterworks meets the ~~action level~~ AL for the specific contaminant in tap water samples during the entire ~~water supply~~ source water sampling period applicable to the waterworks under subdivision D 4 a (1) or D 4 a (2) of this section.

5. Reduced monitoring frequency.

a. The owner of a waterworks using only groundwater may reduce the monitoring frequency for lead and copper in ~~water supplies~~ source waters to once during each nine-year compliance cycle provided that the samples are collected no later than every ninth calendar year and if the owner meets one of the following criteria:

(1) The owner demonstrates that the finished ~~drinking~~ water entering the distribution system has been maintained below the maximum permissible lead and copper concentrations specified by the ~~commissioner~~ department under 12VAC5-590-405 B 1 e during at least three consecutive compliance periods under subdivision D 4 a of this section; or

(2) The ~~commissioner~~ department has determined that ~~water supply~~ source water treatment is not needed and the owner demonstrates that, during the last three consecutive compliance periods in which sampling was conducted under subdivision D 4 a of this section, the concentration of lead in the ~~water supply~~ source water was less than or equal to 0.005 mg/L and the concentration of copper in the ~~water supply~~ source water was less than or equal to 0.65 mg/L.

b. The owner of a waterworks using surface water (or a combination of surface ~~and ground waters)~~ water and groundwater sources) may reduce the monitoring frequency for lead and copper in ~~water supplies~~ source waters to once during each nine-year compliance cycle provided that the samples are collected no later than every ninth calendar year and if the owner meets one of the following criteria:

(1) The owner demonstrates that finished ~~drinking~~ water entering the distribution system has been maintained below the maximum permissible lead and copper concentrations specified by the ~~commissioner~~ department under 12VAC5-590-405 B 1 e for at least three consecutive years; or

(2) The ~~commissioner~~ department has determined that ~~water supply~~ source water treatment is not needed and the owner demonstrates that, during the last three

consecutive years, the concentration of lead in the ~~water supply~~ source water was less than or equal to 0.005 mg/L and the concentration of copper in the ~~water supply~~ source water was less than or equal to 0.65 mg/L.

c. ~~Owners~~ The owner of a waterworks that uses a new ~~water supply~~ source water is not eligible for reduced monitoring for lead or copper until concentrations in samples collected from the new ~~supply~~ source water during three consecutive monitoring periods are below the maximum permissible lead and copper concentrations specified in 12VAC5-590-405 B 1 e.

12VAC5-590-376. Surface water and GUDI sources treatment monitoring.

A. The owner of a waterworks that uses a surface water source, a GUDI source, or both and provides filtration treatment shall monitor in accordance with this section.

B. Turbidity measurements shall be performed on representative samples of the filtered water every four hours (or more frequently) that the waterworks serves water to the public. The owner may substitute continuous turbidity monitoring for grab sample monitoring if the owner validates the continuous measurement for accuracy on a regular basis using a protocol approved by the department. For a waterworks using slow sand filtration or filtration treatment other than conventional treatment, direct filtration, or diatomaceous earth filtration, the department may reduce the sampling frequency to once per day if the department determines that less frequent monitoring is sufficient to indicate effective filtration performance. For a waterworks serving 500 or fewer persons, the department may reduce the turbidity sampling frequency to once per day, regardless of the type of filtration treatment used, if the department determines that less frequent monitoring is sufficient to indicate effective filtration performance.

1. The owner of a waterworks supplied by a surface water source, a GUDI source, or both using conventional filtration treatment or direct filtration shall conduct continuous monitoring of turbidity for each individual filter. The turbidimeter shall be calibrated using the procedure specified by the turbidimeter manufacturer. The owner shall record the results of individual filter turbidity monitoring a minimum of every 15 minutes.

2. If there is a failure in the continuous turbidity monitoring equipment, then the owner shall conduct grab sampling every four hours instead of continuous monitoring but for no more than five working days (for a waterworks serving 10,000 or more persons) or 14 days (for a waterworks serving less fewer than 10,000 persons) following the failure of the equipment.

3. If a waterworks serving fewer than 10,000 persons consists of two or fewer filters, continuous monitoring of the CFE may be used instead of individual filter monitoring.

C. The residual disinfectant concentration of the water entering the distribution system shall be monitored continuously, and the lowest and highest values shall be recorded each day. If there is a failure in the continuous monitoring equipment, then grab sampling every four hours shall be conducted instead of continuous monitoring, but such grab sampling shall be conducted for no more than five working days following the failure of the equipment. The owner of a waterworks serving 3,300 or fewer persons may collect grab samples instead of continuous monitoring on an ongoing basis at the frequencies prescribed in Table 376.1.

1. The day's samples cannot be collected at the same time.

2. The sampling intervals are subject to department's evaluation and approval.

3. If at any time the residual disinfectant concentration falls below 0.2 mg/L in a waterworks using grab sampling instead of continuous monitoring, then the owner shall collect a grab sample every four hours until the residual disinfectant concentration is equal to or greater than 0.2 mg/L.

TABLE 376.1

Grab Sample Monitoring Frequency

WATERWORKS SIZE BY POPULATION	SAMPLES/DAY
500 or less	1
501 - 1,000	2
1,000 - 2,500	3
2,501 - 3,300	4

D. The residual disinfectant concentration shall be measured at least at the same points in the distribution system and at the same time as total coliform bacteria are sampled, as specified in 12VAC5-590-370 A and 12VAC5-590-380 D, except that the department may allow the owner of a waterworks that uses a groundwater source along with a surface water source, a GUDI source, or both to collect residual disinfectant samples at points other than the total coliform sampling points if the department determines that these points are more representative of treated (disinfected) water quality within the distribution system. Heterotrophic bacteria, measured as HPC as specified in 12VAC5-590-395 A 2 a (3), may be measured instead of residual disinfectant concentration.

E. The following information on the samples collected in the distribution system in conjunction with total coliform monitoring pursuant to 12VAC5-590-395 A 2 shall be reported monthly to the department by the owner:

1. Number of instances where the residual disinfectant concentration is measured;

2. Number of instances where the residual disinfectant concentration is not measured but heterotropic plate count (HPC) is measured;

3. Number of instances where the residual disinfectant concentration is measured but not detected and no HPC is measured;

4. Number of instances where no residual disinfectant concentration is detected and where the HPC is greater than 500/mL;

5. Number of instances where the residual disinfectant concentration is not measured and HPC is greater than 500/mL; and

6. For the current and previous month the waterworks serves water to the public, the value of "V," in percent, in the following formula:

$V = [(c + d + e) / (a + b)] \times 100$

where

a = the value in subdivision E 1 of this section;

b = the value in subdivision E 2 of this section;

c = the value in subdivision E 3 of this section;

d = the value in subdivision E 4 of this section;

e = the value in subdivision E 5 of this section.

12VAC5-590-377. Physical constituent monitoring.

A. Monitoring to determine compliance with the SMCLs for color, odor, pH, and total dissolved solids as specified in Table 340.3 shall be conducted as follows:

1. The owner shall collect one sample at each groundwater source entry point during each compliance period.

2. The owner shall collect one sample annually at each surface water source entry point, in whole or in part.

B. Onsite daily turbidity measurements may be required to be performed on representative samples collected at each entry point for groundwater sources not required to filter, to determine compliance set forth in 12VAC5-590-379 B. The turbidity monitoring requirements for a waterworks required to filter are specified in 12VAC5-590-376 B.

12VAC5-590-378. Radiological monitoring.

A. The location of sampling points, the radionuclides measured in community waterworks, the frequency, and the timing of sampling within each compliance period shall be established or approved by the department. The department may increase required monitoring where necessary to detect variations within the waterworks. Failure to comply with the sampling schedules in this section will require public notification pursuant to 12VAC5-590-540 A 3.

B. The owner of a community waterworks shall conduct monitoring to determine compliance with the PMCLs listed in Table 340.4 and 12VAC5-590-388 in accordance with this section.

1. Monitoring requirements for gross alpha particle activity, radium-226, radium-228, and uranium.

a. The owner shall conduct initial monitoring to determine compliance with the PMCLs listed in Table 340.4 for gross alpha particle activity, radium-226, radium-228, and uranium. For the purposes of monitoring for gross alpha particle activity, radium-226, radium-228, uranium, and beta particle and photon radioactivity in drinking water, "detection limit" is defined as specified in Table 378.1.

(1) Applicability and sampling location for an existing community waterworks or its sources. The owner using groundwater, surface water, or both groundwater and surface water shall sample at every entry point to the distribution system that is representative of all sources being used under normal operating conditions. The owner shall collect each sample at the same entry point unless conditions make another sampling point more representative of each source.

(2) Applicability and sampling location for a new community waterworks or its sources. A new community waterworks or a community waterworks that uses a new source water shall begin to conduct initial monitoring for the new source water within the first quarter after initiating use. The owner shall conduct more frequent monitoring when directed by the department in the event of possible contamination or when changes in the distribution system or treatment processes occur that may increase the concentration of radioactivity in the finished water.

b. Initial monitoring. The owner shall conduct initial monitoring for gross alpha particle activity, radium-226, radium-228, and uranium as follows:

(1) The owner shall collect four consecutive quarterly samples at all entry points.

(2) For gross alpha particle activity, uranium, radium-226, and radium-228 monitoring, the department may waive the final two quarters of initial monitoring for an entry point if the results of the samples from the previous two quarters are below the detection limit as defined by and as specified in Table 378.1.

(3) If the average of the initial monitoring results for an entry point is above the PMCL, then the owner shall collect and analyze quarterly samples at that entry point until the owner has results from four consecutive quarters

that are at or below the PMCL, unless the owner enters into another schedule as part of a formal compliance agreement with the department.

c. Reduced monitoring. The department may allow the owner to reduce the future frequency of monitoring from once every three years to once every six or nine years at each entry point, based on the following criteria:

(1) If the average of the initial monitoring results for each contaminant (i.e., gross alpha particle activity, uranium, radium-226, or radium-228) is below the detection limit as specified in Table 378.1, then the owner shall collect and analyze for that contaminant using at least one sample at that entry point every nine years.

(2) For gross alpha particle activity, combined radium, and uranium, if the average of the initial monitoring results for each contaminant is at or above the detection limit as specified in Table 378.1, but at or below half of the PMCL, then the owner shall collect and analyze for that contaminant using at least one sample at that entry point every six years.

(3) For gross alpha particle activity, combined radium, and uranium, if the average of the initial monitoring results for each contaminant is above half the PMCL but at or below the PMCL, then the owner shall collect and analyze at least one sample at that entry point every three years.

(4) The owner shall use the samples collected during the reduced monitoring period to determine the monitoring frequency for subsequent monitoring periods (e.g., if a waterworks entry point is on a nine-year monitoring period, and the sample result is above half the PMCL, then the next monitoring period for that entry point is three years).

(5) If the owner has a monitoring result that exceeds the PMCL while on reduced monitoring, then the owner shall collect and analyze quarterly samples at that entry point until the results from four consecutive quarters are below the PMCL, unless the waterworks enters into another schedule as part of a formal compliance agreement with the department.

d. Compositing. To fulfill quarterly monitoring requirements for gross alpha particle activity, radium-226, radium-228, or uranium, the owner may composite up to four consecutive quarterly samples from a single entry point if analysis is done within a year of the first sample. The department will treat analytical results from the composited sample as the average analytical result to determine compliance with the PMCLs and the future monitoring frequency. If the analytical result from the composited sample is greater than half the PMCL, then the department may direct the owner to collect additional quarterly samples before allowing the owner to sample under a reduced monitoring schedule.

e. A gross alpha particle activity measurement may be substituted for the required radium-226 measurement provided that the measured gross alpha particle activity does not exceed 5 pCi/L. A gross alpha particle activity measurement may be substituted for the required uranium measurement provided that the measured gross alpha particle activity does not exceed 15 pCi/L. The gross alpha measurement shall have a confidence interval of 95% (1.65 σ, where σ is the standard deviation of the net counting rate of the sample) for radium-226 and uranium. When an owner uses a gross alpha particle activity measurement instead of a radium-226 or uranium measurement, the gross alpha particle activity analytical result will be used to determine the future monitoring frequency for radium-226 or uranium. If the gross alpha particle activity result is less than the detection limit as specified in Table 378.1, then half the detection limit will be used to determine compliance and the future monitoring frequency.

2. Monitoring requirements for beta particle and photon radioactivity. To determine compliance with the PMCL in Table 340.4 for beta particle and photon radioactivity, an owner shall monitor at a frequency as follows:

a. The owner (using surface water or groundwater sources) designated by the department as vulnerable shall sample for beta particle and photon radioactivity. The owner shall collect quarterly samples for beta emitters and annual samples for tritium and strontium-90 at each entry point to the distribution system, beginning within one quarter after being notified by the department. A waterworks already designated by the department shall continue to sample until the department evaluates and either reaffirms or removes the designation.

(1) If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity at an entry point has an RAA (computed quarterly) less than or equal to 50 pCi/L (screening level), then the department may reduce the frequency of monitoring at that entry point to once every three years. The owner shall collect all samples required in subdivision B 2 a of this section during the reduced monitoring period.

(2) For a waterworks in the vicinity of a nuclear facility, the department may allow the owner to utilize environmental surveillance data collected by the nuclear facility instead of monitoring at the waterworks entry point, where the department determines the data is applicable to a particular waterworks. In the event that there is a release from a nuclear facility, the owner who is using surveillance data shall begin monitoring at the waterworks entry point in accordance with subdivision B 2 a of this section.

b. The owner (using a surface water, a groundwater source, or both) designated by the department as utilizing waters contaminated by effluents from nuclear facilities shall sample for beta particle and photon radioactivity. The owner shall collect quarterly samples for beta emitters and iodine-131 and annual samples for tritium and strontium-90 at each entry point to the distribution system, beginning within one quarter after being notified by the department. The owner of a waterworks already designated by the department as using waters contaminated by effluents from nuclear facilities shall continue to sample until the department evaluates and either reaffirms or removes the designation.

(1) Quarterly monitoring for gross beta particle activity shall be based on the analysis of monthly samples or the analysis of a composite of three monthly samples. The former procedure, analysis of monthly samples, is recommended.

(2) For iodine-131, a composite of five consecutive daily samples shall be analyzed once each quarter. As directed by the department, more frequent monitoring shall be conducted when iodine-131 is identified in the finished water.

(3) Annual monitoring for strontium-90 and tritium shall be conducted by means of the analysis of a composite of four consecutive quarterly samples or analysis of four quarterly samples. The latter procedure, analysis of monthly samples, is recommended.

(4) If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity at a sampling point has an RAA (computed quarterly) less than or equal to 15 pCi/L (screening level), then the department may reduce the frequency of monitoring at that sampling point to every three years. The owner shall collect all samples required in subdivision B 2 b of this section during the reduced monitoring period.

(5) For a waterworks in the vicinity of a nuclear facility, the department may allow the owner to utilize environmental surveillance data collected by the nuclear facility instead of the monitoring at the waterworks entry point, where the department determines the data is applicable to a particular waterworks. In the event that there is a release from a nuclear facility, the owner who is using surveillance data shall begin monitoring at the waterworks entry point in accordance with subdivision B 2 b of this section.

c. The owner of a waterworks designated by the department to monitor for beta particle and photon radioactivity cannot apply to the department for a waiver from the monitoring frequencies specified in subdivision B 2 a or B 2 b of this section.

d. The owner may analyze for naturally occurring potassium-40 beta particle activity from the same or equivalent sample used for the gross beta particle activity analysis. The owner is allowed to subtract the potassium-40 beta particle activity value from the total gross beta particle activity value to determine if the screening level is exceeded. The potassium-40 beta particle activity shall be calculated by multiplying elemental potassium concentrations (in mg/L) by a factor of 0.82.

e. If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity exceeds the appropriate screening level, then an analysis of the sample shall be performed to identify the major radioactive constituents present in the sample and the appropriate doses shall be calculated and summed to determine compliance with the PMCL for beta particles and photon radioactivity. Doses shall also be calculated and combined for measured levels of tritium and strontium to determine compliance.

f. The owner shall monitor monthly at each entry point that exceeds the PMCLs listed in Table 340.4 beginning the month after the exceedance occurs. The owner shall continue monthly monitoring until the waterworks has established, by a rolling average of three monthly samples, that the PMCL is being met. The owner who establishes that the PMCL is being met shall return to quarterly monitoring until the requirements set forth in subdivision B 2 a (1) or B 2 b (4) of this section are met.

3. General monitoring requirements for radionuclides.

a. The department may require more frequent monitoring than specified in subdivisions B 1 and B 2 of this section or may require confirmation samples at the department's discretion. The results of the initial and confirmation samples shall be averaged for use in compliance determinations.

b. The owner shall monitor at the time designated by the department during each compliance period.

c. The department has the discretion to delete results of obvious sampling or analytic errors.

d. Table 378.1 provides the minimum detection limits for radiological analyses.

TABLE 378.1

Minimum Detection Limits for Radiological Analyses

CONTAMINANT	DETECTION LIMIT (pCi/L unless otherwise noted)
Gross alpha	3
Gross beta	4

Cesium-134	10
Iodine-131	1
Radium-226	1
Radium 228	1
Strontium-89	10
Strontium-90	2
Tritium	1,000
Uranium	1 (µg/L)

12VAC5-590-379. Groundwater ~~waterworks~~ system monitoring.

A. General monitoring requirements.

1. ~~Owners~~ The owner of a groundwater ~~waterworks~~ system, including consecutive and wholesale waterworks, shall conduct monitoring in accordance with this section, except that requirements do not apply to waterworks that combine all of their groundwater sources with surface water sources or with ~~groundwater under the direct influence of surface water prior to~~ GUDI sources before treatment in accordance with ~~12VAC5-590-420~~ 12VAC5-590-395.

2. Source water monitoring ~~for owners of~~ by the owner of a groundwater ~~waterworks~~ system that ~~do~~ does not provide 4-log treatment of viruses for their groundwater sources before or at the first customer ~~are~~ is described in subsection B of this section.

3. ~~Owners of~~ The owner of a groundwater ~~waterworks~~ system that ~~provide~~ provides at least 4-log treatment of viruses before or at the first customer ~~are~~ is required to conduct compliance monitoring in accordance with 12VAC5-590-421 C.

4. ~~Owners~~ The owner of a groundwater ~~waterworks~~ system that ~~have~~ has confirmed ~~fecal~~ E. coli contamination, as determined by source water monitoring conducted under subsection B of this section or ~~have~~ has been notified of a significant deficiency as described in 12VAC5-590-350 D shall implement one or more of the corrective actions outlined in 12VAC5-590-421 A 1, as prescribed by the ~~commissioner~~ department.

5. ~~Owners~~ The owner of a groundwater ~~waterworks~~ system that ~~do~~ does not provide 4-log treatment of viruses before or at the first customer and ~~are~~ is not performing compliance monitoring shall provide a triggered source water monitoring ~~plans~~ plan to the ~~commissioner~~ department.

6. Any source water sample collected in accordance with this section shall be analyzed for E. coli using one of the analytical methods in 40 CFR 141.402(c).

B. Groundwater source microbial monitoring.

1. Triggered source water monitoring.

a. General requirements. ~~Groundwater waterworks owners~~ The groundwater system owner shall conduct triggered source water monitoring if both the conditions identified in subdivisions B 1 a (1) and B 1 a (2) of this section exist.

(1) The groundwater ~~waterworks~~ system owner does not provide at least 4-log treatment of viruses before or at the first customer for each groundwater source; and

(2) The groundwater ~~waterworks~~ system owner is notified that a sample collected under 12VAC5-590-370 A is total ~~coliform-positive~~ coliform positive and the sample is not invalidated under 12VAC5-590-380 E.

b. Sampling requirements. ~~Groundwater waterworks owners~~ The groundwater system owner shall collect, within 24 hours of notification of the total coliform-positive sample, one ~~groundwater~~ source water sample from each groundwater source in use at the time the total coliform-positive sample was collected under 12VAC5-590-370 A, except as provided in this subdivision B 1 b.

(1) The ~~commissioner~~ department may extend the 24-hour time limit on a case-by-case basis if the owner cannot collect the ~~groundwater~~ source water sample within 24 hours due to circumstances beyond his control. In the case of an extension, the ~~commissioner~~ department shall specify how much time the owner has to collect the sample.

(2) If approved by the ~~commissioner~~ department, ~~owners~~ the owner of a waterworks with more than one groundwater source may meet the requirements of this subdivision B 1 by sampling ~~a~~ representative groundwater ~~source or~~ sources. ~~Owners~~ The owner shall submit~~,~~ for the ~~commissioner's~~ department's approval~~,~~ a triggered source water monitoring plan that identifies one or more groundwater sources that are representative of each monitoring site in the waterworks' bacteriological sample siting report or that identifies groundwater sources that are ~~hydro-geologically~~ hydrogeologically similar and clearly identifies which sources will be sampled.

(3) A groundwater system serving 1,000 people or fewer may use a triggered source water sample collected from a groundwater source to meet both the requirements of 12VAC5-590-380 and to satisfy the monitoring requirements of this subdivision B 1 for a groundwater source.

c. Additional requirements.

(1) If an E. coli-positive triggered source water sample collected under this subdivision B 1 is not invalidated

under subdivision B 2 of this section, then the groundwater ~~waterworks~~ system owner shall provide public notification and collect five additional source water samples from the same source within 24 hours of being notified of the E. coli-positive sample.

(a) If the E. coli-positive triggered source water sample is also used as a repeat sample, then an E. coli PMCL violation is incurred under 12VAC5-590-380 B 1 a.

(b) If a waterworks ~~takes~~ collects more than one repeat sample at the monitoring location required for triggered source water monitoring, then the number of additional source water samples required under subdivision B 1 c (1) of this section may be reduced by the number of repeat samples ~~taken~~ collected at that location that were not E. coli positive.

(2) If any of the five additional samples are E. coli positive, the groundwater system owner shall comply with the treatment technique requirements of 12VAC5-590-421.

d. Consecutive and wholesale waterworks.

(1) A consecutive groundwater ~~waterworks~~ system owner that has a total coliform-positive sample collected in accordance with 12VAC5-590-370 A shall notify the wholesalewaterworks owner and the ~~district engineer~~ department within 24 hours of being notified of the total coliform-positive sample.

(2) ~~A~~ The wholesale groundwater ~~waterworks~~ system owner shall comply with the following:

(a) ~~A~~ The wholesale groundwater ~~waterworks~~ system owner that receives notice from a consecutive waterworks it serves that a sample collected in accordance with 12VAC5-590-370 A is total ~~coliform-positive~~ coliform positive shall, within 24 hours of being notified, collect a sample from ~~its~~ each groundwater ~~source(s)~~ source as described in subdivision B 1 of this section.

(b) If the sample collected under this subdivision B 1 is E. coli positive, then the wholesale groundwater system owner shall within 24 hours notify all consecutive waterworks served by that groundwater source of the E. ~~coli~~ coli-positive source water ~~positive~~ sample as described in 12VAC5-590-540 and shall meet the requirements of subdivision B 1 c of this section.

e. Exception to the triggered source water monitoring requirements. A groundwater system owner is not required to comply with the source water monitoring requirements of this subdivision B 1 if the ~~commissioner~~ department determines~~,~~ and documents in writing~~,~~ that:

(1) The total coliform-positive sample collected in accordance with 12VAC5-590-370 A is invalidated under 12VAC5-590-380 E.

(2) The total coliform-positive sample collected in accordance with 12VAC5-590-370 A is caused by a distribution system deficiency (sanitary defect).

(3) The total coliform-positive sample collected in accordance with 12VAC5-590-370 A was caused by distribution system conditions that will cause total coliform-positive samples.

2. Invalidation of an E. coli-positive groundwater source sample.

a. ~~A~~ The groundwater ~~waterworks~~ system owner may obtain the ~~commissioner's~~ department's invalidation of an E. coli-positive groundwater source sample collected under subdivision B 1 of this section only under the following conditions ~~specified in subdivisions B 2 a (1) and (2) of this section~~:

(1) The groundwater ~~waterworks~~ system owner provides the ~~commissioner~~ department with written notice from the laboratory that improper sample analysis occurred; or

(2) The ~~commissioner~~ 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.

b. If the ~~commissioner~~ department invalidates an E. ~~coli positive~~ coli-positive groundwater source sample, then the groundwater system owner shall collect another source water sample under subdivision B 1 of this section within 24 hours of being notified by the ~~commissioner~~ department of the invalidation decision and have ~~it~~ the source water sample analyzed for E. coli.

3. Sampling location. All groundwater source samples required under subdivision B 1 of this section shall be collected at a location ~~prior to~~ before any treatment of the groundwater source unless otherwise approved by the ~~commissioner~~ department.

4. Public notification. The owner of a groundwater ~~waterworks~~ system with a source water sample collected under this subsection that is E. coli positive and that is not invalidated under subdivision B 2 of this section, including consecutive waterworks served by the groundwater source, shall conduct public notification as required in 12VAC5-590-540 A 1.

5. Monitoring violations. Failure to meet the monitoring requirements of subdivision B 1 of this section is a violation and requires the groundwater ~~waterworks~~ system owner to provide public notification as required in 12VAC5-590-540 A 3.

C. Monitoring requirements for source water.

1. The owner of a groundwater source utilizing chlorine disinfection or any other treatment or chemical addition that may alter or affect the bacteriological quality of the source water shall collect source water samples for bacteriological analysis in accordance with this section.

2. All bacteriological samples under this section shall be collected from the source water before any treatment or chemical addition.

a. The owner shall provide a suitable source water sample tap at each groundwater source.

b. If conditions indicate that it is not possible to install a source water sample tap, then an alternate sample location acceptable to the department may be utilized for this monitoring.

3. All samples shall be analyzed by a test method that will yield a most probable number (MPN) result for both total coliforms and E. coli.

4. Number of samples.

a. The number of routine source water samples to be collected and the frequency of sampling shall be determined by the department. The department will notify the owner of the source water sampling requirements.

b. As a minimum, the owner shall collect source water samples in accordance with Table 379.1.

TABLE 379.1

Monitoring Requirements for Source Water Samples

SOURCE TYPE	MINIMUM ROUTINE SOURCE WATER MONITORING FREQUENCY	PARAMETERS
Well located in non-karst geology	One sample per year	Total coliforms MPN and E coli MPN
Well located in karst geology	One sample per calendar quarter	Total coliforms MPN and E coliMPN
Spring	One sample per month	Total coliforms MPN and E coliMPN

c. When a single sample result from a groundwater source that requires a routine source water monitoring frequency of less than monthly indicates total coliforms in excess of 50 colonies/100 mL or the presence of E. coli, the owner shall collect one confirmation sample within seven calendar days after notification of the results.

d. The department may require that additional source water samples be collected and will establish the specific number of samples and the monitoring frequency.

12VAC5-590-380. Bacteriological ~~quality~~ compliance.

A. ~~Analytical methodology. 1. The standard sample volume for the coliform test shall consist of 100 milliliters, regardless of the analytical method used. 2. Owners need~~ The owner needs only to determine the presence or absence of total coliforms and E. coli~~; a determination of total coliform density is not required~~ for routine bacteriological monitoring at entry points or distribution system locations.

~~3. The time from sample collection to initiation of test medium incubation shall not exceed 30 hours.~~

~~4. Owners are encouraged but not required to hold samples below 10°C during transit.~~

~~5. If water having residual chlorine (measured as free, combined, or total chlorine) is to be analyzed, sufficient sodium thiosulfate ($Na_2S_2O_3$) shall be added to the sample bottle before sterilization to neutralize any residual chlorine in the water sample.~~

B. PMCLs for microbial contaminants.

1. A waterworks is in compliance with the PMCL for E. coli unless any of the conditions identified in this subdivision occur. A violation may pose an acute risk to public health and is a Tier 1 condition requiring public notification as described in 12VAC5-590-540 A 1 when:

a. A repeat sample following a total coliform-positive routine sample is E. coli positive;

b. A repeat sample following an E. coli-positive routine sample is total coliform positive;

c. The owner fails to ~~take~~ collect all required repeat samples following an E. coli-positive routine sample; or

d. The owner fails to test for E. coli when any repeat sample tests positive for total coliform.

2. Compliance shall be determined with the PMCL for E. coli for each monitoring period for which monitoring for total coliforms is required.

C. The best available technology (BAT), treatment techniques, or other means available for achieving compliance with the PMCL for E. coli shall be:

1. Protection of wells from contamination by coliforms by appropriate placement ~~and~~, construction, and maintenance of the wells;

2. Maintenance of a ~~disinfectant~~ detectable residual disinfectant throughout the distribution system;

3. Proper maintenance of the distribution system including appropriate pipe replacement and repair procedures, water main flushing programs, proper operation and maintenance of storage tanks and reservoirs, continual maintenance of positive water pressure in all parts of the distribution system, and an approved ~~cross-connection~~ cross-connection control program;

4. Filtration and disinfection of a surface water ~~or surface influenced groundwater~~ source, a GUDI source, or both; and

5. Disinfection of groundwater using strong oxidants such as chlorine, chlorine dioxide, or ozone.

D. A total coliform-positive result is indicative of a breakdown in the protective barriers and shall be cause for repeat monitoring and special follow-up action to locate and eliminate the cause of contamination.

1. For each routine sample found to be total coliform positive, the ~~waterworks~~ owner shall collect a set of three repeat samples within 24 hours of being notified of the positive result. The ~~commissioner~~ department may extend the 24-hour limit on a case-by-case basis. For groundwater ~~waterworks~~ systems, the requirements of 12VAC5-590-379 shall also apply, and all repeat samples must be analyzed for E. coli using one of the analytical methods in 40 CFR 141.402(c).

a. The owner shall collect at least one repeat sample from the sampling tap where the original total coliform-positive sample was ~~taken~~ collected, and at least one repeat sample at a tap within five service connections upstream and at least one repeat sample at a tap within five service connections downstream of the original sampling site. If a total coliform-positive sample is at the end of the distribution system or one service connection away from the end of the distribution system, the owner must still ~~take~~ collect all required repeat samples.

b. The owner shall collect an additional set of repeat samples if one or more repeat samples in the current set of repeat samples is total coliform positive. The owner shall collect the additional set of repeat samples within 24 hours of being notified of the positive results, unless the ~~commissioner~~ department extends the limit as provided in this section. The owner shall continue to collect additional sets of repeat samples until either total coliforms are not detected in one complete set of repeat samples or the owner determines that a coliform treatment technique trigger specified in 12VAC5-590-392 B has been exceeded as a result of a repeat sample being total coliform positive and notifies the ~~appropriate ODW field office~~ department. If a trigger identified in 12VAC5-590-392 B is exceeded as a result of a routine sample being total coliform positive, ~~an~~ then the owner is required to conduct only one round of repeat monitoring for each total coliform-positive routine sample.

c. If the owner collects a routine sample before learning the results of the previous routine sample, and the sample is ~~taken~~ collected within five service connections of the initial routine sample, then the owner may count the subsequent sample as a repeat sample when the initial sample results are found to be total coliform positive.

d. If one or more repeat samples ~~taken~~ collected at the monitoring location required for triggered source water monitoring are E. coli positive, then the ~~waterworks~~ owner has exceeded the E. coli PMCL and must comply with the groundwater system treatment technique requirements specified in 12VAC5-590-421.

e. If all repeat samples ~~taken~~ collected at the monitoring location required for triggered source water monitoring are E. coli negative, and a repeat sample ~~taken~~ collected at a monitoring location other than the one required for triggered source water monitoring is E. coli positive, then the ~~waterworks~~ owner has exceeded the E. coli PMCL. However, the owner is not required to collect five additional source water samples from the same source within 24 hours of learning the E. coli-positive result.

f. The ~~waterworks~~ owner shall collect all repeat samples on the same day, except the ~~commissioner~~ department may allow the owner of a waterworks with a single service connection to collect the required set of repeat samples over a three-day period or to collect a larger volume repeat sample in one or more sample containers of any size as long as the total volume collected is at least 300 ml.

g. If a repeat sample ~~taken~~ collected at the monitoring location required for triggered source water monitoring is E. ~~coli positive~~ coli-positive, then the ~~waterworks~~ owner has exceeded the E. coli PMCL and must collect five additional source water samples from the same source within 24 hours of learning the E. coli-positive result.

2. Results of all routine and repeat samples not invalidated by the ~~commissioner~~ department shall be used to determine compliance with the PMCL for E. coli and whether a treatment technique trigger specified in 12VAC5-590-392 B has been exceeded.

3. ~~Special purpose~~ Special-purpose samples, such as those ~~taken~~ collected to determine whether disinfection practices are sufficient following pipe placement, replacement, or repair, and samples ~~taken~~ collected before start-up of a seasonal waterworks, shall not be used to determine compliance. Repeat samples are not considered ~~special purpose~~ special-purpose samples.

E. A total coliform-positive sample invalidated under this ~~paragraph~~ subsection does not count ~~towards~~ toward meeting the minimum monitoring requirements of this section. To invalidate a total coliform-positive sample under this subsection, the written decision and rationale shall be ~~reviewed~~ evaluated, approved, and signed by the ~~commissioner~~ department. The ~~commissioner~~ department shall make this document available to EPA and the public. The written documentation shall state the specific cause of the total coliform-positive sample and what action the owner has taken, or will take, to correct this problem. The ~~commissioner~~ department shall not invalidate a total coliform-positive sample solely on the grounds that all repeat samples are total coliform negative.

1. The ~~commissioner~~ department may invalidate a total coliform positive sample if any of the following conditions are met:

a. The laboratory establishes that improper sample analysis caused the total coliform-positive result;

b. The ~~commissioner~~ department, on the basis of the results of repeat samples collected as required by subdivision D 1 of this section, determines that the total coliform-positive sample resulted from a domestic or other nondistribution system plumbing problem. The ~~commissioner~~ department cannot invalidate a sample on the basis of repeat sample results unless all repeat ~~sample(s)~~ samples collected at the same tap as the original total coliform-positive sample are also total coliform positive, and all repeat samples collected at a location other than the original tap are total coliform negative (e.g., the ~~commissioner~~ department cannot invalidate a total coliform-positive sample on the basis of repeat samples if all the repeat samples are total coliform negative~~,~~ or if the waterworks has only one service connection); or

c. The ~~commissioner~~ department has substantial grounds to believe that a total coliform-positive result is due to a circumstance or condition that does not reflect water quality in the distribution system. In this case, the ~~waterworks~~ owner shall still collect all repeat samples required under subdivision D 1 of this section, and use them to determine whether a coliform treatment technique trigger in 12VAC5-590-392 B has been exceeded.

2. A laboratory must invalidate a sample because of sampling interference (i.e., turbid culture in absence of (i) gas production, or (ii) acid reaction; exhibition of confluent growth; or production of colonies too numerous to count). The ~~waterworks owners~~ owner shall collect a replacement sample from the same location within 24 hours, and have it analyzed for the presence of total coliforms. The ~~waterworks~~ owner must continue to resample within 24 hours and have the samples analyzed until ~~they obtain~~ a valid result is obtained. The ~~commissioner~~ department may waive the 24-hour time limit on a case-by-case basis.

F. Escherichia coli (E. coli).

1. If ~~any~~ a routine ~~or,~~ repeat ~~sample,~~ or replacement sample is total coliform positive, then the ~~waterworks~~ owner shall analyze ~~that~~ the total coliform-positive culture medium to determine if E. coli are present. If E. coli are present, then the ~~waterworks~~ owner shall notify the ~~appropriate ODW field office~~ department by the end of the day when the ~~waterworks~~ owner is notified of the test result, unless the ~~ODW's field office~~ department is closed, in which case the ~~appropriate ODW field office~~ department must be notified before the end of the next business day.

2. The ~~commissioner~~ department has the discretion to allow ~~a waterworks~~ an owner, on a case-by-case basis, to forgo E. coli testing on a total coliform-positive sample if the owner assumes that the total coliform-positive sample is E. coli positive. Accordingly, the owner must notify the ~~appropriate ODW field office~~ department as specified in subdivision F 1 of this subsection and the provisions of subdivision B 1 of this section apply.

G. Groundwater sources.

1. Groundwater sources shall be disinfected in accordance with ~~12VAC5-590-1000 when the total coliform geometric mean of 20 or more raw water samples measured by a method yielding a multiple portion decimal dilution (MPN) result is greater than three~~ 12VAC5-590-421 A 1 d when the results of the source water monitoring samples specified in 12VAC5-590-430 B 2 or 12VAC5-590-840 K 1 a indicate a total coliform concentration (geometric mean) of the 20 samples to be greater than 3 colonies/100 mL but less than 100 colonies/100mL. The value 1.0 shall be used to represent a ~~negative~~ zero coliform result in the calculation of the geometric mean.

2. Groundwater ~~sources containing a total coliform geometric mean of 100 or more organisms per 100 milliliters or with more than 10% of these samples exceeding 100 organisms per 100 milliliters constitutes unacceptable contamination for disinfection treatment only~~ source monitoring results conducted in accordance with 12VAC5-590-430 B 2 or 12VAC5-590-840 K 1 a that indicate a total coliform concentration equal to or greater than 100 colonies/100 ml constitutes contamination that is not treatable by single-barrier disinfection treatment alone.

3. Groundwater sources shall be disinfected in accordance the requirements of ~~12VAC5-590-1000~~ 12VAC5-590-421 A 1 d when the source water quality contributes to the waterworks' failure to meet the bacteriological PMCL specified in subsection B of this section.

~~4. Groundwater sources shall be disinfected in accordance with 12VAC5-590-421 A 1 d when the results of source~~

~~development samples specified in 12VAC5-590-840 B 11 indicate the presence of E. coli in two or more samples.~~

~~5. Groundwater sources shall be disinfected in accordance with 12VAC5-590-421 A 1 d when the results of raw water monitoring conducted in accordance with 12VAC5-590-425 indicate the presence of E. coli in two or more samples during any running six-month period.~~

4. If the results of the source water monitoring required by 12VAC5-590-379 C or 12VAC5-590-430 B 2 indicate the presence of E. coli in two or more samples collected during any running six-month period, then the owner shall:

a. Issue a Tier 1 public notice in accordance with 12VAC5-590-540 A 1.

b. Provide disinfection treatment to achieve a 4-log virus inactivation and removal as specified in 12VAC5-590-421 A 1 d.

c. Conduct compliance monitoring as specified in 12VAC5-590-421 B and 12VAC5-590-421 C.

5. If the results of the source water monitoring required in 12VAC5-590-379 C indicate total coliform concentration in excess of 50 colonies/100 mL in three or more samples collected during any running six-month period or the presence of E. coli in two or more samples collected during any running six-month period, then the source water shall be reevaluated for GUDI determination in accordance with 12VAC5-590-430.

6. The department may require that any groundwater source be disinfected in accordance with the requirements of 12VAC5-590-421 A 1 d.

H. ~~Groundwater systems conducting source water monitoring as described in 12VAC5-590-379 shall determine the presence or absence of E. coli.~~ All samples shall be analyzed in accordance with 12VAC5-590-440 by the ~~Division of Consolidated Laboratory Services (DCLS)~~ DCLS or by a laboratory certified by the DCLS for drinking water ~~samples~~ analyses.

12VAC5-590-382. Inorganic chemicals compliance.

A. When the results of sampling for antimony, arsenic, asbestos, barium, beryllium, cadmium, cyanide (as free cyanide), chromium, fluoride, mercury, nickel, selenium, or thallium exceed the applicable PMCL, the owner shall collect a confirmation sample at the same sampling point within two weeks of notification of the analytical results of the first sample. The fluoride PMCL applies only to community waterworks.

1. The results of the initial and confirmation samples shall be averaged to determine compliance with subsection A of this section. The department has the discretion to delete results of obvious sampling errors.

2. Compliance with the PMCLs for antimony, arsenic, asbestos, barium, beryllium, cadmium, cyanide (as free cyanide), chromium, fluoride, mercury, nickel, selenium, and thallium listed in Table 340.1 shall be determined based on the analytical results obtained at each sampling point.

a. For the owner of a waterworks that conducts monitoring more frequently than annually, compliance with the PMCL for antimony, arsenic, asbestos, barium, beryllium, cadmium, cyanide (as free cyanide), chromium, fluoride, mercury, nickel, selenium, or thallium is determined by an RAA at each sampling point. If the average at any sampling point is greater than the PMCL, then the waterworks is out of compliance. If any single sample would cause the annual average to be exceeded, then the waterworks is out of compliance immediately. A sample result below the MDL shall be calculated as zero for the purpose of determining the annual average. If the owner fails to collect the required number of samples, compliance (average concentration) shall be based on the total number of samples collected.

b. For the owner of a waterworks that monitors annually or less frequently, the waterworks is out of compliance with the PMCL for antimony, arsenic, asbestos, barium, beryllium, cadmium, cyanide (as free cyanide), chromium, fluoride, mercury, nickel, selenium, or thallium if the average of the original sample and a confirmation sample of a contaminant at any sampling point is greater than the PMCL. If sample results for the owner monitoring annually or less frequently exceed the PMCL, the owner shall begin quarterly sampling. The owner shall not be considered in violation of the PMCL until one year of quarterly sampling has been completed and the RAA is exceeded. However, if the confirmation sample is not collected, the owner is in violation of the PMCL for antimony, arsenic, asbestos, barium, beryllium, cadmium, cyanide (as free cyanide), chromium, fluoride, mercury, nickel, selenium, or thallium. If the owner fails to collect the required number of samples, then compliance (average concentration) shall be based on the total number of samples collected.

B. Compliance with the PMCLs for nitrate and nitrite shall be determined based on the analytical results obtained at each sampling point. The waterworks is not out of compliance with the PMCL if the concentrations of these contaminants are equal to or below the PMCLs. Where nitrate or nitrite sample results exceed the PMCL, the owner shall collect a confirmation sample, from the same sampling point that exceeded the PMCL within 24 hours of the owner's receipt of the analytical results of the first sample. The results of the initial and confirmation sample shall be averaged to determine compliance. The owner unable to comply with the 24-hour sampling requirement shall immediately notify the consumers in the area served by the waterworks in

accordance with 12VAC5-590-540 A 1. The owner exercising this option shall collect and analyze a confirmation sample within two weeks of notification of the analytical results of the first sample. The department may require more frequent monitoring. The department has the discretion to delete results of obvious sampling errors.

1. Nitrate nitrogen (NO_3-N) levels not exceeding 20 mg/L may be allowed in a noncommunity waterworks if the owner:

a. Demonstrates to the satisfaction of the department that this water will not be available to children under six months of age;

b. Provides continuous posting of the fact that NO_3-N levels exceed 10 mg/L and the potential health effects of exposure;

c. Notifies health officials annually of NO_3-N levels that exceed 10 mg/L; and

d. The department shall determine that no adverse health effects will result.

2. Nitrite in water poses a significant health hazard. Water with nitrite-nitrogen concentrations over 1 mg/L should not be used for infant feedings.

C. Compliance with the SMCLs for aluminum, chloride, copper, corrosivity, fluoride, foaming agents, iron, manganese, silver, sulfate, or zinc shall be determined based on the analytical results obtained at each sampling point. When the result of a sample exceeds the applicable SMCL, the owner shall collect a confirmation sample at the same sampling point within two weeks of notification of the analytical results of the first sample. The results of the initial and confirmation samples shall be averaged to determine compliance. If the average concentration level of any of these constituents exceeds the SMCL, then the department shall determine whether treatment for the constituents can be accomplished or more suitable source waters are, or can be made, available. This determination shall be made as quickly as possible. If either of these alternatives is feasible, then corrective action shall be promptly implemented by the owner if deemed necessary by the department. Exceeding the fluoride SMCL requires annual public notice in accordance with 12VAC5-590-540 G.

12VAC5-590-383. Organic chemicals compliance.

A. When the results of sampling indicate positive results for contaminants listed in Table 340.2, the owner shall collect a confirmation sample at the same sampling point within two weeks of notification of the analytical results of the first sample.

B. The results of the initial and confirmation samples shall be averaged to determine waterworks compliance in accordance with subsection C of this section. The department has the discretion to delete results of obvious sampling errors.

C. Compliance with Table 340.2 shall be determined based on the analytical results obtained at each sampling point. A sample result below the detection limit shall be calculated as zero for the purposes of determining the annual average. If the owner fails to collect the required number of samples, then compliance (average concentration) shall be based on the total number of samples collected.

1. For the owner of a waterworks that conducts monitoring more frequently than annually, compliance is determined by an RAA of all samples collected at each sampling point. If the annual average of any sampling point is greater than the PMCL, then the waterworks is out of compliance. If the initial sample or a subsequent sample would cause the annual average to be exceeded, then the waterworks is out of compliance immediately. A sample result below the detection limit shall be calculated as zero for purposes of determining the annual average.

2. If the owner is conducting monitoring annually or less frequently, then the owner is not in violation if the average of the initial and confirmation samples is greater than the PMCL for that contaminant; however, the owner shall begin quarterly sampling. The owner will not be considered in violation of the PMCL until one year of quarterly sampling has been completed and the RAA is exceeded. If any sample will cause the RAA to exceed the PMCL at any sampling point, then the waterworks is immediately out of compliance with the PMCL.

12VAC5-590-384. Residual disinfectant, DBPs, and DBPPs compliance.

A. General requirements.

1. Where compliance is based on an RAA of monthly or quarterly samples or averages and the owner fails to monitor for TTHM, HAA5, or bromate, this failure to monitor shall be treated as a monitoring violation for the entire period covered by the annual average. Where compliance is based on an RAA of monthly or quarterly samples or averages and the owner's failure to monitor makes it impossible to determine compliance with MRDLs for chlorine and chloramines, this failure to monitor shall be treated as a monitoring violation for the entire period covered by the annual average.

2. All samples collected and analyzed under the provisions of this section shall be included in determining compliance, even if that number is greater than the minimum required.

3. The owner is in violation of the PMCL when the LRAA exceeds the PMCLs listed in Table 340.6 calculated based on four consecutive quarters of monitoring, or the LRAA calculated based on fewer than four quarters of data if the

PMCL would be exceeded regardless of the monitoring results of subsequent quarters. The owner is in violation of the monitoring requirements for each quarter that a monitoring result would be used in calculating the LRAA if the owner fails to monitor.

B. Disinfection byproducts.

1. TTHM and HAA5.

a. The owner of a waterworks required to monitor quarterly shall calculate the LRAAs for TTHM and HAA5 using monitoring results collected under 12VAC5-590-374 F and determine that each LRAA does not exceed the PMCL in order to comply with the PMCLs listed in Table 340.6. If the owner fails to complete four consecutive quarters of monitoring, then the owner shall calculate compliance with the PMCL based on the average of the available data from the most recent four quarters. If the owner collects more than one sample per quarter at a monitoring location, then the owner shall average all samples collected in the quarter at that location to determine a quarterly average to be used in the LRAA calculation.

b. The owner of a waterworks required to monitor annually or less frequently shall determine that each sample collected is less than the PMCL in order to determine compliance with the PMCLs listed in Table 340.6. If any sample result exceeds the PMCL, then the owner shall comply with the requirements of 12VAC5–590-374 F 5. If no sample result exceeds the PMCL, then the sample result for each monitoring location is considered the LRAA for that monitoring location.

c. The owner is in violation of the monitoring requirements for each quarter that a monitoring result would be used in calculating an LRAA if the owner fails to monitor.

d. A waterworks has exceeded the operational evaluation level at any monitoring location where the sum of the two previous quarters' TTHM results plus twice the current quarter's TTHM result, divided by four to determine an average, exceeds 0.080 mg/L, or where the sum of the two previous quarters' HAA5 results plus twice the current quarter's HAA5 result, divided by four to determine an average, exceeds 0.060 mg/L.

(1) The owner of a waterworks that exceeds the operational evaluation level shall conduct an operational evaluation and submit a written report of the evaluation to the department on a form approved by the department no later than 90 days after being notified of the analytical result that caused the waterworks to exceed the operational evaluation level. The written report shall be made available to the public upon request.

(2) The operational evaluation report shall include an examination of the waterworks treatment and distribution operational practices, including source water conditions, storage tank operations, excess storage capacity, distribution system flushing, changes in source water or source water quality, and treatment changes or problems that may contribute to TTHM and HAA5 formation and what steps could be considered to minimize future exceedances.

(3) The owner may request and the department may allow the owner to limit the scope of the evaluation if the owner is able to identify the cause of the operational evaluation level exceedance. The request to limit the scope of the evaluation does not extend the schedule in subdivision B 1 d (1) of this section for submitting the written report. The department shall approve this limited scope of evaluation in writing, and the owner shall keep that approval with the completed report.

2. Bromate. Compliance shall be based on a running annual arithmetic average, computed quarterly, of monthly samples collected by the owner as prescribed by 12VAC5-590-374 H. For months in which the owner collects more than one sample, compliance is based on the average of all samples collected during the month. If the average result of the samples covering any consecutive four-quarter period exceeds the PMCL listed in Table 340.6, then the owner is in violation of the PMCL and shall notify the public pursuant to 12VAC5-590-540 A 2, in addition to reporting to the department pursuant to 12VAC5-590-530 and 12VAC5-590-531. If the owner fails to complete 12 consecutive months of monitoring, then compliance with the PMCL for the last four-quarter compliance period shall be based on the average of the available data.

3. Chlorite. Compliance shall be based on an arithmetic average of each three-sample set collected in the distribution system as prescribed by 12VAC5-590-374 G. If the arithmetic average of any three-sample set exceeds the PMCL listed in Table 340.6, then the owner is in violation of the PMCL and shall notify the public pursuant to 12VAC5-590-540 A 2, in addition to reporting to the department pursuant to 12VAC5-590-530 and 12VAC5-590-531.

C. Residual disinfectant.

1. Chlorine and chloramines.

a. Compliance shall be based on a running annual arithmetic average, computed quarterly, of monthly averages of all samples collected by the owner under 12VAC5-590-374 I 1 a. If the average covering any consecutive four-quarter period exceeds the MRDL listed in Table 340.7, then the owner is in violation of the MRDL and shall notify the public pursuant to 12VAC5-

590-540 A 2, in addition to reporting to the department pursuant to 12VAC5-590-530 and 12VAC5-590-531.

b. In cases where the owner switches between the use of chlorine and chloramines for residual disinfection during the year, compliance shall be determined by including together all monitoring results of both chlorine and chloramines in calculating compliance. Reports submitted pursuant to 12VAC5-590-530 and 12VAC5-590-531 shall clearly indicate which residual disinfectant was analyzed for each sample.

c. Notwithstanding the MRDLs listed in Table 340.7, operators may increase the residual disinfectant levels of chlorine or chloramines in the distribution system to a level and for a time necessary to protect public health to address specific microbiological contamination problems caused by circumstances such as water main breaks in the distribution system, storm runoff events, source water contamination, or cross-connections.

2. Chlorine dioxide.

a. Acute violations. Compliance shall be based on consecutive daily samples collected by the owner under 12VAC5-590-374 I 2 a. If any daily sample collected at the entrance to the distribution system exceeds the MRDL listed in Table 340.7, and on the following day one or more of the three samples collected in the distribution system exceed the MRDL, then the owner is in violation of the MRDL and shall take immediate corrective action to lower the level of chlorine dioxide below the MRDL and shall notify the public pursuant to the procedures for Tier 1 conditions in 12VAC5-590-540 A 1 in addition to reporting to the department pursuant to 12VAC5-590-530 and 12VAC5-590-531. Failure to collect samples in the distribution system the day following an exceedance of the chlorine dioxide MRDL at the entrance to the distribution system shall also be considered an MRDL violation, and the owner shall notify the public of the violation in accordance with the provisions for Tier 1 conditions in 12VAC5-590-540 A 1 in addition to reporting to the department pursuant to 12VAC5-590-530 and 12VAC5-590-531.

b. Nonacute violations. Compliance shall be based on consecutive daily samples collected by the owner under 12VAC5-590-374 I 2 a. If any two consecutive daily samples collected at the entrance to the distribution system exceed the MRDL listed in Table 340.7 and all distribution system samples collected are below the MRDL, then the owner is in violation of the MRDL and shall take corrective action to lower the level of chlorine dioxide below the MRDL at the point of sampling and shall notify the public pursuant to the procedures for Tier 2 conditions in 12VAC5-590-540 A 2 in addition to reporting to the department pursuant to 12VAC5-590-530 and 12VAC5-590-531. Failure to monitor at the entrance to the distribution system the day following an exceedance of the chlorine dioxide MRDL at the entrance to the distribution system is also an MRDL violation, and the owner shall notify the public of the violation in accordance with the provisions for Tier 2 conditions in 12VAC5-590-540 A 2 in addition to reporting to the department pursuant to 12VAC5-590-530 and 12VAC5-590-531.

D. Disinfection byproduct precursors (DBPPs).

1. Compliance shall be determined as specified by 12VAC5-590-411 A 3.

2. For the owner required to meet Step 1 TOC removals, if the value calculated under 12VAC5-590-411 A 3 a (4) is less than 1.00, then the owner is in violation of the treatment technique requirements and shall notify the public pursuant to 12VAC5-590-540 A 2 in addition to reporting to the department pursuant to 12VAC5-590-530 and 12VAC5-590-531.

12VAC5-590-385. Lead and copper ~~action level~~ AL compliance.

A. The lead ~~action level~~ AL is exceeded if the concentration of lead in more than 10% of tap water samples collected during any monitoring period conducted in accordance with 12VAC5-590-375 B is greater than 0.015 mg/L (i.e., if the 90th percentile lead level is greater than 0.015 mg/L).

B. The copper ~~action level~~ AL is exceeded if the concentration of copper in more than 10% of tap water samples collected during any monitoring period conducted in accordance with 12VAC5-590-375 B is greater than 1.3 mg/L (i.e., if the 90th percentile copper level is greater than 1.3 mg/L).

C. The 90th percentile lead and copper levels shall be computed as follows:

1. The results of all lead or copper samples taken during a monitoring period shall be placed in ascending order from the sample with the lowest concentration to the sample with the highest concentration. Each sampling result shall be assigned a number, ascending by single integers beginning with the number 1 for the sample with the lowest contaminant level. The number assigned to the sample with the highest contaminant level shall be equal to the total number of samples taken.

2. The number of samples taken during the monitoring period shall be multiplied by 0.9.

3. The contaminant concentration in the numbered sample yielded by the calculation in subdivision C 2 of this section is the 90th percentile contaminant level.

4. For a waterworks serving fewer than 100 people ~~that collect~~, and the owner collects five samples per monitoring

period, the 90th percentile is computed by taking the average of the highest and second highest concentrations.

5. For ~~an~~ the owner that has been allowed by the ~~commissioner~~ department to collect fewer than five samples in accordance with 12VAC5-590-375 B 3, the sample result with the highest concentration is considered the 90th percentile value.

12VAC5-590-388. Radiological compliance.

A. MCLGs for radionuclides are listed in Table 546.1 of 12VAC5-590-546 B.

B. PMCLs for radionuclides are applicable to community waterworks only and are listed in Table 340.4. Compliance with PMCLs will be determined based on the analytical results obtained at each entry point. If the sample result at one entry point exceeds the PMCL, then the owner is in violation of the PMCL.

1. For the owner that is monitoring more than once per year, compliance with the PMCL is determined by an RAA of the analytical results at each entry point. If the average result at any entry point is greater than the PMCL, then the waterworks is out of compliance with the PMCL.

2. For the owner of a waterworks that monitors more than once per year, if any sample result will cause the RAA to exceed the PMCL at any entry point, then the waterworks is out of compliance with the PMCL immediately.

3. All samples collected and analyzed under the provisions 12VAC5-590-378 shall be included in determining compliance, even if that number is greater than the minimum required.

4. If the owner does not collect all required samples when compliance is based on an RAA result of quarterly samples, then compliance will be based on the RAA result of the samples collected.

5. If a sample result is less than the detection limit as specified in Table 378.1, then zero will be used to calculate the RAA unless a gross alpha particle activity result is being used instead of radium-226 or uranium. If the gross alpha particle activity result is less than the detection limit as specified in Table 378.1, then one half the detection limit will be used to calculate the RAA.

C. Radiological (gross alpha, combined radium-226 and radium-228, uranium, and man-made radioactivity).

1. Compliance with the radiological PMCLs shall be based on the RAA results. PMCLs are indicated in Table 340.4. Sampling for radiological analysis shall be in compliance with 12VAC5-590-378.

2. Compliance shall be determined by rounding off results to the same number of significant figures as the PMCL for the radionuclide in question.

D. If a PMCL for radioactivity listed in Table 340.4 is exceeded, then the owner shall give notice to the department pursuant to 12VAC5-590-530 and to the public as required by 12VAC5-590-540 A 2.

12VAC5-590-390. ~~Chemical and physical quality~~ Physical constituent compliance.

~~A. Necessary action for noncompliance.~~

~~1. Inorganic chemicals. See 12VAC5-590-530 B and 12VAC5-590-540.~~

~~2. Organic chemicals. See 12VAC5-590-530 B and 12VAC5-590-540.~~

~~3. Turbidity. See 12VAC5-590-530 B and 12VAC5-590-540.~~

A. Color, odor, pH, and total dissolved solids.

1. When the sampling results for color, odor, pH, or total dissolved solids exceed the applicable SMCL, the owner shall collect a confirmation sample at the same sampling site within two weeks of notification of the analytical results of the first sample.

2. The results of the initial and confirmation samples shall be averaged to determine compliance with 12VAC5-590-340 C. The department has the discretion to void results of obvious sampling errors.

~~4.~~ 3. If the average concentration level ~~of a substance~~ of any contaminant of color, odor, pH, or total dissolved solids is greater than the ~~Secondary Maximum Contaminant Level~~ SMCL listed in Table 340.3, then the ~~division will~~ department shall determine whether treatment to remove ~~the substance~~ that contaminant can be accomplished or more suitable supplies of source water are, or can be made, available. ~~This determination will be made as quickly as possible. If either of these alternatives is possible, corrective action shall be promptly taken by the owner if deemed necessary by the division.~~

B. ~~Specific limits. No attempt has been made to prescribe specific limits for every contaminant that might enter a water supply or waterworks. Although the need exists for continued attention to the entry of chemical and physical substances into water, the limits are confined to substances recognized as being detrimental to the health or well being of the consumer. Limits for innumerable substances would require an impossible burden of analytical examination. The specific limits included in these regulations are listed in Tables 2.2, 2.3, and 2.4.~~ Turbidity in groundwater sources not required to filter shall not:

1. Interfere with disinfection throughout the distribution system;

2. Cause taste and odors upon disinfection; or

3. Cause consumers to question the safety of their drinking water.

12VAC5-590-391. Treatment technique requirements.

A. When it is not technically or economically feasible to monitor for a particular PMCL or a contaminant, one or more specific treatment techniques that lead to a reduction in the concentration level of that contaminant shall be required. The application of that treatment technique reduces the contaminant in question to a concentration level that achieves compliance with this chapter.

B. Failure to continuously maintain the treatment technique is a violation of this chapter and public notification in accordance with 12VAC5-590-540 A 2 is required.

12VAC5-590-392. Coliform treatment technique triggers and assessment requirements.

A. Assessments shall be conducted in accordance with subsections C, D, and E of this section after exceeding treatment technique triggers.

B. Treatment technique triggers.

1. Level 1 treatment technique triggers:

a. For ~~owners~~ the owner required to collect 40 or more samples per month, the number of total coliform-positive samples exceeds 5.0% of the number of samples collected for the month.

b. For ~~owners~~ the owner required to collect fewer than 40 samples per month, when there are two or more total coliform-positive samples in the same month.

c. The owner fails to collect every required repeat sample after any single total coliform-positive sample.

2. Level 2 treatment technique triggers:

a. An E. coli PMCL violation, as specified in 12VAC5-590-380 B 2.

b. A second Level 1 trigger occurs within a rolling 12-month period, unless the ~~commissioner~~ department has determined a likely reason for the first Level 1 treatment technique trigger and that the owner has corrected the problem.

C. Assessment requirements.

1. Level 1 and 2 assessments shall be conducted ~~in order~~ to identify the possible presence of sanitary defects and defects in the distribution system coliform monitoring practices. The owner shall be responsible for conducting Level 1 assessments. Level 2 assessments shall be conducted by the ~~commissioner~~ department.

2. When conducting Level 1 and Level 2 assessments, the assessor shall include:

a. ~~A review~~ An evaluation and identification of inadequacies in sample sites, sampling protocol, and sample processing;

b. ~~A review~~ An evaluation of atypical events that could affect distributed water quality or indicate that distributed water quality was impaired;

c. ~~Evaluation~~ An evaluation of changes in distribution system maintenance and operation that could affect distributed water quality, including water storage;

d. ~~Evaluation~~ An evaluation of source and treatment considerations that impact distributed water quality; and

e. ~~Evaluation~~ An evaluation of existing water quality monitoring data.

3. Level 1 assessment.

a. The owner shall complete the assessment and document the assessment on ~~the Waterworks Level 1 Assessment form~~ a form approved by the department. The owner shall submit the assessment form, as soon as practical, but within 30 days after the owner learns that a trigger in subdivision B 1 of this section has been exceeded.

b. If the ~~commissioner reviews~~ department evaluates the completed Level 1 assessment and determines that the assessment is not sufficient, including any proposed timetable for any corrective actions, then the ~~commissioner~~ department shall consult with the owner. If the ~~commissioner~~ department requires revisions after the consultation, then the owner shall submit a revised assessment form to the ~~appropriate ODW field office~~ department on an agreed upon schedule not to exceed 30 days from the date of consultation.

c. Upon completion and submission of the assessment form by the owner, the ~~commissioner~~ department shall determine if the owner has identified a likely cause for the Level 1 trigger and, if so, confirm that the owner has corrected the problem or has included a schedule acceptable to the ~~commissioner~~ department for correcting the problem.

4. Level 2 assessment.

a. ~~ODW~~ The department will complete the assessment and document the assessment ~~on the Waterworks Level 2 Assessment form~~ on a form approved by the department. ~~ODW staff~~ The department will consult with the owner during the assessment and complete the assessment within 30 days upon learning ~~a~~ that the waterworks has exceeded any trigger in subdivision B 2 of this section.

b. The ~~commissioner~~ department will send to the owner the completed assessment form, which will describe any detected sanitary defects, corrective actions completed or needed and, if needed, a timetable to complete the

corrective actions. The owner will return the form within seven days with a signature that indicates concurrence with the listed actions needed and timetable to complete the corrective actions. If the owner does not concur with either an action or timetable to complete a corrective action, then the owner shall notify the ~~commissioner~~ department, complete consultation with the ~~commissioner~~ department, and develop a revised corrective action schedule. The owner shall submit the revised schedule to the ~~commissioner~~ department for ~~review~~ evaluation and approval within 30 days of the date of the consultation.

D. Corrective actions.

1. The owner shall correct sanitary defects found through either the Level 1 or the Level 2 assessment conducted under subsection C of this section.

2. The owner shall complete the ~~corrective action or~~ corrective actions in compliance with the timetable approved by the ~~commissioner~~ department in consultation with the owner. The owner shall notify the ~~appropriate ODW field office~~ department no later than seven days after each scheduled corrective action is completed.

E. Consultation.

1. At any time during the assessment or corrective action phase, either the owner or the ~~commissioner~~ department may request a consultation with the other party to determine the appropriate actions to be taken.

2. The owner may consult with the ~~commissioner~~ department on all relevant information that may impact the ability to comply with subsection D of this section.

F. Violations. Failure to conduct the required assessment or corrective actions in accordance with subsections C and D of this section, after exceeding a treatment technique trigger specified in subsection B of this section, is a treatment technique violation. The owner shall provide public notification as required under Tier 2 conditions specified in 12VAC5-590-540 A 2.

12VAC5-590-395. Surface water and GUDI sources, polymers, and recycle treatment techniques.

A. Surface water and GUDI source treatment techniques.

1. The filtration and disinfection provisions of this section are required treatment techniques for a waterworks supplied by a surface water source, a GUDI source, or both. These treatment technique requirements are in place of a PMCL for the following contaminants: Giardia lamblia, viruses, heterotrophic bacteria, Cryptosporidium, Legionella, and turbidity. A waterworks that uses a surface water source, a GUDI source, or both shall provide treatment of that source water that complies with these treatment technique requirements. See 12VAC5-590-401 for filtration log removal credits and required log inactivation for Cryptosporidium. See 12VAC5-590-500 for log removal credits and required log inactivation for Giardia lamblia and viruses. These treatment technique requirements consist of installing and properly operating water treatment processes that reliably achieve:

a. At least 99.9% (3-log) removal or inactivation of Giardia lambliabetween a point where the source water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer;

b. At least 99.99% (4-log) removal or inactivation of viruses between a point where the source water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer; and

c. At least 99% (2-log) removal of Cryptosporidium between a point where the source water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer.

2. A waterworks that uses a surface water source, a GUDI source, or both is considered to be in compliance with the requirements of subdivision A 1 of this section if it meets the following disinfection and filtration requirements:

a. Disinfection requirements.

(1) The disinfection treatment shall be sufficient to ensure that the total treatment processes of that waterworks achieve at least 99.9% (3-log) inactivation or removal of Giardia lamblia and at least 99.99% (4-log) inactivation or removal of viruses. If any physical process can achieve at least a 3-log removal of Giardia lamblia but cannot adequately remove pathogens, then the disinfection treatment shall provide a second treatment barrier for Giardia lamblia, Legionella, heterotrophic bacteria, and viruses. The disinfection treatment shall be sufficient to assure at least a 0.5 log inactivation of Giardia lamblia.

(2) The residual disinfectant concentration in the water entering the distribution system shall not be less than 0.2 mg/L for more than four hours.

(3) The residual disinfectant concentration in the distribution system, measured as total chlorine, free chlorine, combined chlorine, or chlorine dioxide, shall not be undetectable in more than 5% of the samples each month, for any two consecutive months that the waterworks serves water to the public. If the department determines that a waterworks is experiencing excessive coliform occurrences in its distribution system, then the department may require the owner to maintain minimum chlorine residual levels of 0.2 mg/L or monochloramine levels of 0.5 mg/L throughout the distribution system. Water in the distribution system with a heterotrophic bacteria concentration less than or equal to 500/mL,

measured as HPC, is deemed to have a detectable residual disinfectant for the purposes of determining compliance with this requirement. Thus, the value "V," in percent, in the following formula shall not exceed 5% in one month, for any two consecutive months.

$$V = \left[\frac{(c + d + e)}{(a + b)} \right] * 100$$

where

a = number of instances where the residual disinfectant concentration is measured;

b = number of instances where the residual disinfectant concentration is not measured but HPC is measured;

c = number of instances where the residual disinfectant concentration is measured but not detected and no HPC is measured;

d = number of instances where no residual disinfectant concentration is detected and where the HPC is greater than 500/mL; and

e = number of instances where the residual disinfectant concentration is not measured and HPC is greater than 500/mL.

(4) The department may determine that the HPC compliance requirements of subdivision A 2 a (3) of this section do not apply based on site-specific considerations or if an owner has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature conditions and the waterworks is providing adequate disinfection in the distribution system.

b. Filtration requirements. A waterworks that uses a surface water source, a GUDI source, or both shall provide filtration treatment by using one of the following methods:

(1) Conventional filtration.

(a) Achieve a filtered water turbidity of less than or equal to 0.3 NTU in at least 95% of the measurements taken each month. Samples shall be representative of the waterworks' filtered water.

(b) The turbidity level of representative samples of a waterworks' filtered water shall at no time exceed one NTU, measured as specified in 12VAC5-590-440.

(c) A waterworks that uses lime softening may acidify representative samples before analysis using a protocol approved by the department.

(d) Water treatment plants utilizing conventional or direct filtration with gravity flow granular media filters are capable of producing filtered water with turbidity consistently less than 0.10 NTU. Therefore, for these types of water treatment plants, the operational goal for filter effluent turbidity for each filter, before any post-filtration chemical addition, shall be 0.10 NTU.

(2) Diatomaceous earth filtration.

(a) The turbidity level of representative samples of a waterworks' filtered water shall be less than or equal to one NTU in at least 95% of the measurements taken each month.

(b) The turbidity level of representative samples of a waterworks' filtered water shall at no time exceed five NTU.

(3) Slow sand filtration.

(a) The turbidity level of representative samples of a waterworks' filtered water shall be less than or equal to one NTU in at least 95% of the measurements taken each month, except that if the department determines there is no significant interference with disinfection at a higher turbidity level, then the department may substitute this higher turbidity limit for that waterworks.

(b) The turbidity level of representative samples of a waterworks' filtered water shall at no time exceed five NTU.

(4) Membrane filters, bag filters, and cartridge filters.

(a) The turbidity level of representative samples of a waterworks' filtered water shall be less than or equal to 0.3 NTU in at least 95% of the measurements taken each month, except that if the department determines there is no significant interference with disinfection at a higher turbidity level, then the department may substitute this higher turbidity limit for that waterworks.

(b) Water treatment plants utilizing membrane filtration are capable of producing filtered water with turbidity consistently less than 0.05 NTU. Therefore, for these types of water treatment plants, the operational goal for filter effluent turbidity for each filter, before any post-filtration chemical addition, is 0.05 NTU.

(c) The turbidity level of representative samples of a waterworks' filtered water shall at no time exceed one NTU.

(5) The owner may use a filtration technology not listed in this section if the owner demonstrates to the satisfaction of the department by full-scale, pilot plant, or challenge studies, or by other approved means that the alternative filtration technology, in combination with disinfection, will meet the requirements of this section.

3. Once the department has determined that a waterworks utilizes a surface water source, a GUDI source, or both (see 12VAC5-590-430), then filtration and disinfection

treatments are required. The owner shall install and have in operation treatment units that meet the requirements described in subdivisions A 1 and A 2 of this section no later than 18 months following the department's determination. During the interim period, and until filtration and disinfection treatments are installed and in operation, the owner shall discontinue use of the surface water source, GUDI source, or both unless the source must remain in service because discontinuing the source is not a viable option, at which point the owner shall:

a. Issue a continuous boil water notice through the public notification procedure in 12VAC5-590-540 A 1 until the required filtration and disinfection treatments are installed and are in operation;

b. Provide disinfection treatment to achieve a 4-log inactivation of virus during the interim period before the filtration treatment is installed. Monitoring equipment shall be installed that will ensure compliance with this requirement; and

c. Increase bacteriological sampling frequency in the distribution system. For the owner required to collect routine distribution system bacteriological samples at a monthly frequency, the owner shall collect twice the number of samples required for that population each month. For the owner required to collect routine bacteriological samples at a quarterly frequency, the owner shall increase the sampling frequency to monthly.

B. Polymer treatment techniques.

1. The owner shall certify annually in writing to the department (using third-party or manufacturer's certification) that, when polymers containing acrylamide or epichlorohydrin are used by the waterworks, the combination (or product) of dose and monomer level does not exceed the following specified levels:

a. Acrylamide = 0.05% dosed at one ppm (or equivalent) of polymer.

b. Epichlorohydrin = 0.01% dosed at 20 ppm (or equivalent) of polymer.

2. Certifications may rely on the manufacturers or third parties as approved by the department.

C. Recycle treatment techniques.

1. If spent filter backwash water, thickener supernatant, or liquids from dewatering processes are recycled, in a waterworks supplied by a surface water source, a GUDI source, or both that employ conventional filtration or direct filtration treatment, then the waterworks is subject to the treatment technique requirement described in subsection A of this section.

2. Under this requirement, recycle flows shall be returned through all the processes of the treatment system or an alternative location approved by the department.

12VAC5-590-400. ~~Radiological quality.~~ (Repealed.)

~~The effects of human radiation exposure are viewed as harmful, and any unnecessary exposure to ionizing radiation should be avoided.~~

~~A. Maximum contaminant level goals for radionuclides are listed in subsection A of Table 2.5 of 12VAC5-590-440.~~

~~B. Maximum contaminant levels for radionuclides are applicable to community waterworks only and are listed in this section and subsection B of Table 2.5.~~

~~1. (Reserved.)~~

~~2. PMCL for combined radium 226 and radium 228. The primary maximum contaminant level for combined radium 226 and radium 228 is 5 pCi/L. The combined radium-226 and radium-228 value is determined by the addition of the results of the analysis for radium 226 and the analysis for radium 228.~~

~~3. PMCL for gross alpha particle activity (excluding radon and uranium). The primary maximum contaminant level for gross alpha particle activity (including radium 226 but excluding radon and uranium) is 15 pCi/L.~~

~~4. PMCL for uranium. The primary maximum contaminant level for uranium is 30 µg/l.~~

~~5. PMCL for beta particle and photon radioactivity.~~

~~a. The average annual concentration of beta particle and photon radioactivity from man-made radionuclides in drinking water must not produce an annual dose equivalent to the total body or any internal organ greater than 4 millirem/year (mrem/year).~~

~~b. Except for the radionuclides listed in schedule 1 of Table 2.5, the concentration of man-made radionuclides causing 4 mrem total body or organ dose equivalents must be calculated on the basis of 2 liter per day drinking water intake using the 168 hour data list in "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure," NBX (National Bureau of Standards) Handbook 69 as amended August 1963, U.S. Department of Commerce. A copy of this document may be reviewed at the Virginia Department of Health Office of Drinking Water office in Richmond, Virginia. If two or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any organ shall not exceed 4 mrem/year.~~

~~6. Compliance dates. Compliance dates for combined radium 226 and radium 228, gross alpha particle activity, gross beta particle and photon radioactivity, and uranium:~~

~~community waterworks owners must comply with the PMCLs listed in subdivisions 2, 3, 4, and 5 of this subsection beginning December 8, 2003, and compliance shall be determined in accordance with the requirements of 12VAC5-590-370 D. Compliance with reporting requirements for the radionuclides under 12VAC5-590-545 and 12VAC5-590-540 is required on December 8, 2003.~~

12VAC5-590-401. Enhanced filtration and disinfection for Cryptosporidium treatment techniques.

A. A waterworks using a surface water source, a GUDI source, or both shall comply with the requirements of this section based on their population or if the waterworks is a wholesaler, based on the population of the largest waterworks in the combined distribution system.

B. The owner shall conduct an initial and a second round of source water monitoring for each water treatment plant that treats a surface water source, a GUDI source, or both. This monitoring may include sampling for Cryptosporidium, E. coli, and turbidity to determine what level, if any, of additional Cryptosporidium treatment is required.

1. Initial round of source water monitoring. The owner shall conduct the following monitoring on the schedule in subdivision B 3 of this section unless the monitoring avoidance criteria in subdivision B 4 of this section are met.

a. The owner of a waterworks serving at least 10,000 people shall sample the source water for Cryptosporidium, E. coli, and turbidity at least monthly for 24 months.

b. The owner of a waterworks serving fewer than 10,000 people:

(1) Shall sample the source water for E. coli at least once every two weeks for 12 months, or

(2) May avoid E. coli monitoring if the owner notifies the department that the owner will monitor for Cryptosporidium as described in subdivision B 1 c of this section. The owner shall notify the department no later than three months before the date at which the owner is otherwise required to start E. coli monitoring.

c. The owner of a waterworks serving fewer than 10,000 people shall sample the source water for Cryptosporidium at least twice per month for 12 months or at least monthly for 24 months if the owner meets one of the following, based on monitoring conducted under subdivision B 1 b of this section:

(1) For a waterworks using source water from a lake or reservoir, the annual mean E. coli concentration is greater than 10 E. coli/100 mL.

(2) For a waterworks using source water from flowing stream, the annual mean E. coli concentration is greater than 50 E. coli/100 mL.

(3) The waterworks does not conduct E. coli monitoring as described in subdivision B 1 b of this section.

(4) The waterworks using a GUDI source shall comply with the requirements of this subdivision B 1 c based on the E. coli level that applies to the nearest surface water body. If no surface water body is nearby, the waterworks shall comply based on the requirements that apply to a waterworks using source water from a lake or reservoir.

d. For the waterworks serving fewer than 10,000 people, the department may approve monitoring for an indicator other than E. coli under subdivision B 1 b (1) of this section. The department also may approve an alternative to the E. coli concentration in subdivision B 1 c (1), B 1 c (2), or B 1 c (4) of this section to trigger Cryptosporidium monitoring. This approval by the department shall be provided to the owner in writing and shall include the basis for the department's determination that the alternative indicator or trigger level will provide a more accurate identification of whether a waterworks will exceed the Bin 1 Cryptosporidium level in subdivision B 1 a of this section.

e. The waterworks may sample more frequently than required under this section if the sampling frequency is evenly spaced throughout the monitoring period.

2. Second round of source water monitoring. The owner shall conduct a second round of source water monitoring that meets the requirements for monitoring parameters, frequency, and duration described in subdivision B 1 of this section, unless the monitoring exemption criteria in subdivision B 4 of this section are met. The owner shall conduct this monitoring on the schedule in subdivision B 3 of this section.

3. Monitoring schedule. The owner shall begin the monitoring required in subdivisions B 1 and B 2 of this section no later than the month beginning with the date listed in Table 401.1:

TABLE 401.1

Source Water Monitoring Starting Dates

OWNERS OF WATERWORKS THAT SERVE...	SHALL BEGIN THE FIRST ROUND OF SOURCE WATER MONITORING NO LATER THAN THE MONTH BEGINNING...	AND SHALL BEGIN THE SECOND ROUND OF SOURCE WATER MONITORING NO LATER THAN THE MONTH BEGINNING...

At least 100,000 people	October 1, 2006	April 1, 2015
From 50,000 - 99,999 people	April 1, 2007	October 1, 2015
From 10,000 - 49,999 people	April 1, 2008	October 1, 2016
Fewer than 10,000 and monitor for E. coli	October 1, 2008	October 1, 2017
Fewer than 10,000 and monitor for Cryptosporidium[a]	April 1, 2010	April 1, 2019
[a]Applies to a waterworks that meet the conditions of subdivision B 1 c of this section.		

4. Monitoring avoidance.

a. The owner is not required to conduct source water monitoring if the waterworks will provide a total of at least 5.5-log of treatment for Cryptosporidium, equivalent to meeting the treatment requirements of Bin 4 in subdivision D 2 of this section.

b. If the owner chooses to provide the level of treatment in subdivision B 4 a of this section, rather than start source water monitoring, then the owner shall notify the department in writing no later than the date the owner is otherwise required to submit a sampling schedule for monitoring under subdivision B 5 of this section. Alternatively, the owner may choose to stop sampling at any point after initiating monitoring if the owner notifies the department in writing that he will provide this level of treatment. The owner shall install and operate technologies to provide this level of treatment by the applicable treatment compliance date in subdivision D 3of this section.

5. Sampling schedules.

a. The owner of a waterworks required to conduct source water monitoring in accordance with subsection B of this section shall submit a sampling schedule that specifies the calendar dates when the owner shall collect each required sample.

(1) The owner shall submit a sampling schedule to the department no later than three months before the applicable date listed in subdivision B 3 of this section for each round of required monitoring.

(2) If the department does not respond to the owner regarding the sampling schedule, then the owner shall sample at the reported schedule.

b. The owner shall collect samples within two days before or two days after the dates indicated in the sampling schedule (i.e., within a five-day period around the schedule date) unless one of the conditions of this subdivision b applies:

(1) If an extreme condition or situation exists that may pose danger to the sample collector or that cannot be avoided and causes the owner to be unable to sample in the scheduled five-day period, then the owner shall sample as close to the scheduled date as is feasible unless the department approves an alternative sampling date. The owner shall submit an explanation for the delayed sampling date to the department concurrent with the shipment of the sample to the laboratory.

(2) If the owner is unable to report a valid analytical result for a scheduled sampling date due to equipment failure, loss of or damage to the sample, failure to comply with the analytical method requirements, including the quality control requirements of 12VAC5-590-440, or the failure of an approved laboratory to analyze the sample, then the owner shall collect a replacement sample. The owner shall collect the replacement sample not later than 21 days after receiving information that an analytical result cannot be reported for the scheduled date unless the owner demonstrates that collecting a replacement sample within this timeframe is not feasible or the department approves an alternative resampling date. The owner shall submit an explanation for the delayed sampling date to the department concurrent with the shipment of the sample to the laboratory.

c. The owner of a waterworks that fails to meet the criteria of subdivision B 5 b of this section for any source water sample required under subsection B of this section shall revise the sampling schedule to add dates for collecting all missed samples. The owner shall submit the revised schedule to the department for approval before the owner begins collecting the missed samples.

6. Sampling locations.

a. The owner of a waterworks required to conduct source water monitoring under subsection B of this section shall collect samples for each water treatment plant that treats a surface water source, a GUDI source, or both. Where multiple water treatment plants draw source water from the same influent, such as the same pipe or intake, the department may approve one set of monitoring results to be used to satisfy the requirements of subsection Bof this section for all water treatment plants.

b. The owner shall collect source water samples before chemical treatment, such as coagulants, oxidants, and disinfectants. However, the department may approve the collection of a source water sample after chemical treatment. To grant this approval, the department shall determine that collecting a sample before chemical

treatment is not feasible for the owner and that the chemical treatment is unlikely to have a significant adverse effect on the analysis of the sample.

c. The owner of a waterworks that recycles filter backwash water shall collect source water samples before the point of filter backwash water addition.

d. Bank filtration.

(1) The owner that receives Cryptosporidium treatment credit for bank filtration under 12VAC5-590-395 A 2 b (1) shall collect source water samples from the surface water before bank filtration.

(2) The owner that uses bank filtration as pretreatment to a water treatment plant shall collect source water samples from the well (i.e., after bank filtration). The use of bank filtration during monitoring shall be consistent with routine operational practice. The owner collecting samples after a bank filtration process may not receive treatment credit for the bank filtration under subdivision E 4 c of this section.

e. Multiple sources. The owner of a waterworks that uses multiple source waters, including multiple surface water sources and blended surface water and groundwater sources, shall collect samples as specified in subdivision B 6 e (1) or B 6 e (2) of this section. The use of multiple source waters during monitoring shall be consistent with routine operational practice.

(1) If a sampling tap is available where the source waters are combined before treatment, then the owner shall collect samples from the tap.

(2) If a sampling tap is not available where the source waters are combined before treatment, then the owner shall collect samples at each source near the intake on the same day and shall follow either subdivision B 6 e (2) (a) or B 6 e (2) (b) of this section for sample analysis.

(a) The owner may composite samples from each source into one sample before analysis. The volume of sample from each source shall be weighted according to the proportion of the source water in the total water treatment plant flow at the time the sample is collected.

(b) The owner may choose to have samples analyzed from each source separately and calculate a weighted average of the analysis results for each sampling date. The weighted average shall be calculated by multiplying the analysis result for each source water by the fraction the source water contributed to the total water treatment plant flow at the time the sample was collected and then summing these values.

f. Additional requirements. The owner shall submit a description of each sampling location to the department at the same time as the sampling schedule required in subdivision B 3 of this section. This description shall address the position of the sampling location in relation to the waterworks' source waters and treatment processes, including pretreatment, points of chemical treatment, and filter backwash recycle. If the department does not respond to an owner regarding sampling location, then the owner shall sample at each reported location.

7. Analytical methods. All analytical methods shall be conducted in accordance with 12VAC5-590-440.

8. Approved laboratories.

a. Cryptosporidium. The owner shall have Cryptosporidium samples analyzed by a laboratory that has received reciprocal certification approved under the DCLS Laboratory Certification Program for Analysis of Cryptosporidium in Water.

b. E. coli. A laboratory certified by the DCLS for total coliform analysis under 12VAC5-590-440 is approved for E. coli analysis when the laboratory uses the same technique for E. coli that the laboratory uses under 12VAC5-590-440. Laboratories shall use methods for enumeration of E. coli in source water approved in 12VAC5-590-440.

c. Turbidity. Measurements of turbidity shall be made by a party approved by the department.

9. Reporting of the source water results shall be in accordance with 12VAC5-590-531.

10. The owner of a waterworks treating a surface water source, a GUDI source, or both, that operates for only part of the year shall conduct source water monitoring in accordance with this section, but with the following modifications:

a. The owner shall sample the source water only during the months that the waterworks operates unless the department specifies another monitoring period based on waterworks operating practices.

b. The owner of a waterworks that operates less than six months per year and that monitors for Cryptosporidium shall collect at least six Cryptosporidium samples per year during each of two years of monitoring. Samples shall be evenly spaced throughout the period the waterworks operates.

11. New sources.

a. The owner of a waterworks that begins using a surface water source, a GUDI source, or both, is required to begin monitoring under subdivision B 3 of this section and shall monitor the new source on a schedule approved by the department. Source water monitoring shall meet the requirements of this section. The owner shall also meet the bin classification and Cryptosporidium

treatment requirements of subdivisions D 1 and D 2 of this section, for the new source on a schedule approved by the department.

b. The requirements of this section apply to a waterworks using a surface water source, a GUDI source, or both, that begins operation after the monitoring start date applicable to the size of the waterworks under subdivision B 3 of this section.

c. The owner shall begin a second round of source water monitoring no later than six years following the initial bin classification under subdivision D 1 of this section.

12. Failure to collect any source water sample required under this section in accordance with the sampling schedule, sampling location, analytical method, approved laboratory, and reporting requirements of subdivisions B 5 through B 9 of this section is a monitoring violation.

13. Grandparenting monitoring data. The owner may use grandparenting monitoring data collected before the applicable monitoring start date in subdivision B 3 of this section to meet the initial source water monitoring requirements in subdivision B 1 of this section. Grandparented data may be substituted for an equivalent number of months at the end of the monitoring period. All data submitted under this subdivision B 13 shall meet the requirements in subdivisions B 13 a through B 13 h of this section and be approved by the department:

a. The owner may grandparent Cryptosporidium samples to meet the requirements of this section when the owner does not have corresponding E. coli and turbidity samples. The owner who grandparents Cryptosporidium samples without E. coli and turbidity samples is not required to collect E. coli and turbidity samples when the owner completes the requirements for Cryptosporidium monitoring under this section.

b. The analysis of E. coli samples shall meet the analytical method and approved laboratory requirements of subdivisions B 7 and B 8 of this section.

c. The analysis of Cryptosporidium samples shall meet the requirements of subdivision B 8 of this section.

d. The sampling location shall meet the conditions in subdivision B 6 of this section.

e. Cryptosporidium sample collection intervals may vary for the conditions specified in subdivisions B 5 b (1) and B 5 b (2) of this section if the owner provides documentation of the condition when reporting monitoring results.

(1) The department may approve grandparenting of previously collected data where there are time gaps in the sampling frequency if the owner conducts additional monitoring the department specifies to ensure that the data used to comply with the initial source water monitoring requirements of subsection B of this section are seasonally representative and unbiased.

(2) The owner may grandparent previously collected data where the sampling frequency within each month varied. If the Cryptosporidium sampling frequency varied, then the owner shall follow the monthly averaging procedure in subdivision D 1 a (5) of this section when calculating the bin classification for a filtered waterworks.

f. The owner of a waterworks that requests to grandparent previously collected monitoring results shall report the following information by the applicable dates listed in the following subdivisions. The owner shall report this information to the department.

(1) The owner shall report the intent to submit previously collected monitoring results for grandparenting. This report shall specify the number of previously collected results the owner shall submit, the dates of the first and last sample, and whether an owner shall conduct additional source water monitoring to meet the requirements in subsection B of this section. The owner shall report this information no later than the date the sampling schedule listed in subdivision B 3 of this section is required.

(2) The owner shall report previously collected monitoring results for grandparenting no later than two months after the applicable date listed in subdivision B 3 of this section.

(a) For each sample result, the owner shall report the applicable data elements in 12VAC5-590-531 A 5.

(b) The owner shall certify that the reported monitoring results include all results the waterworks generated during the time period beginning with the first reported result and ending with the final reported result. This applies to samples that were collected from the sampling location specified for source water monitoring under subdivision B 1 of this section, not spiked, and analyzed using the laboratory's routine process for the analytical methods listed in this section.

(c) The owner shall certify that the samples were representative of a waterworks' source waters and the source waters have not changed. The owner shall report a description of each sampling location, which shall address the position of the sampling location in relation to the waterworks' source waters and treatment processes, including points of chemical addition and filter backwash recycle.

(d) For Cryptosporidium samples, the laboratory that analyzed the samples shall provide a letter certifying that the quality control criteria specified in the methods listed in subdivision B 8 of this section were met for each

sample batch associated with the reported results. Alternatively, the laboratory may provide bench sheets and sample examination report forms for each field, matrix spike, initial precision and recovery (IPR), ongoing precision and recovery (OPR), and method blank sample associated with the reported results.

g. If the department determines that a previously collected data set submitted for grandparenting was generated during source water conditions that were not normal for the waterworks, such as a drought, the department may disapprove the data. Alternatively, the department may approve the previously collected data if the owner reports additional source water monitoring data, as determined by the department, to ensure that the data set used under subdivision D 1 of this section represents average source water conditions for the waterworks.

h. If the owner submits previously collected data that fully meets the number of samples required for initial source water monitoring under subdivision B 1 of this section and some of the data are rejected due to not meeting the requirements of this section, then the owner shall conduct additional monitoring to replace rejected data on a schedule approved by the department. The owner is not required to begin this additional monitoring until two months after notification that data have been rejected and additional monitoring is necessary.

C. The owner of a waterworks that plans to make a significant change to the disinfection practice shall develop disinfection profiles and calculate disinfection benchmarks as described in 12VAC5-590-500.

1. The owner shall notify the department before changing the disinfection practice and shall include in this notice the following information:

a. A completed disinfection profile and disinfection benchmark for Giardia lamblia and viruses;

b. A description of the proposed change in disinfection practice; and

c. An analysis of how the proposed change will affect the current level of disinfection.

2. Significant changes to the disinfection practice are defined as follows:

a. Changes to the point of disinfection;

b. Changes to any disinfectant used in the water treatment plant;

c. Changes to the disinfection process; or

d. Any other modification identified by the department as a significant change to disinfection practice.

D. The owner shall determine the Cryptosporidium treatment bin classification as described in subdivision D 1 of this section and provide additional treatment for Cryptosporidium, if required, as described in subdivision D 2 of this section. The owner shall implement Cryptosporidium treatment according to the schedule in subdivision D 3 of this section.

1. Bin classification for waterworks.

a. Following completion of the initial round of source water monitoring required under subdivision B 1 of this section, the owner shall calculate an initial Cryptosporidium bin concentration for each water treatment plant for which monitoring was required. Calculation of the bin concentration shall use the Cryptosporidium results reported under subdivision B 1 of this section and shall follow these procedures:

(1) For the owner who collects a total of at least 48 samples, the bin concentration is equal to the arithmetic mean of all sample concentrations.

(2) For the owner who collects a total of at least 24 samples, but not more than 47 samples, the bin concentration is equal to the highest arithmetic mean of all sample concentrations in any 12 consecutive months during which Cryptosporidium samples were collected.

(3) For the owner of a waterworks that serves fewer than 10,000 people and monitors for Cryptosporidium for only one year (i.e., collect 24 samples in 12 months), the bin concentration is equal to the arithmetic mean of all sample concentrations.

(4) For water treatment plants that operate only part of the year and that monitor fewer than 12 months per year under subdivision B 1 of this section, the bin concentration is equal to the highest arithmetic mean of all sample concentrations during any year of Cryptosporidium monitoring.

(5) If the monthly Cryptosporidium sampling frequency varies, then the owner shall first calculate a monthly average for each month of monitoring. The owner shall then use these monthly average concentrations, rather than individual sample concentrations, in the applicable calculation for bin classification in subdivisions D 1 a (1) through D 1 a (4) of this section.

b. The owner shall determine the initial bin classification from Table 401.2 using the Cryptosporidium bin concentration calculated under subdivision D 1 a of this section:

TABLE 401.2

Bin Classification for Filtered Waterworks

FOR OWNERS OF WATERWORKS THAT ARE...	WITH A CRYPTOSPORIDIUM BIN CONCENTRATION OF[a] ...	THE BIN CLASSIFICATION IS...
Required to monitor for Cryptosporidium under subdivision B 1 of this section	Cryptosporidium less than 0.075 oocysts/L	Bin 1
	Cryptosporidium equal to or greater than 0.075 oocysts/L but less than 1.0 oocysts/L	Bin 2
	Cryptosporidium equal to or greater than 1.0 oocysts/L but less than 3.0 oocysts/L	Bin 3
	Cryptosporidium equal to or greater than 3.0 oocysts/L	Bin 4
Serving fewer than 10,000 people and NOT required to monitor for Cryptosporidium under subdivision B 1 c of this section	Not Applicable	Bin 1

[a]Based on calculations in subdivision D 1 a or D 1 c of this section, as applicable.

c. Following completion of the second round of source water monitoring required under subdivision B 2 of this section, the owner shall recalculate the Cryptosporidium bin concentration using the Cryptosporidium results reported under subdivision B 2 of this section and following the procedures in subdivisions D 1 a (1) through D 1 a (4) of this section. The owner shall then redetermine the bin classification using this bin concentration and Table 401.3.

d. Reporting of bin classifications.

(1) The owner shall report the initial bin classification under subdivision D 1 b of this section to the department for approval no later than six months after the waterworks is required to complete the initial source water monitoring based on the schedule in subdivision B 3 of this section.

(2) The owner shall report the bin classification under subdivision D 1 c of this section to the department for approval no later than six months after the owner is required to complete the second round of source water monitoring based on the schedule in subdivision D 1 a (3) of this section.

(3) The bin classification report to the department shall include a summary of source water monitoring data and the calculation procedure used to determine bin classification.

e. Failure to comply with the conditions of subdivision D 1 d of this section is a violation of the treatment technique requirement.

2. Waterworks additional Cryptosporidium treatment requirements.

a. A waterworks shall provide the level of additional treatment for Cryptosporidium specified in this subdivision based on the bin classification as determined under subdivision D 1 of this section and according to the schedule in subdivision D 3 b of this section.

TABLE 401.3
Cryptosporidium Treatment Requirements

IF THE WATERWORKS BIN CLASSIFICATION IS...	AND THE WATERWORKS USES THE FOLLOWING FILTRATION TREATMENT IN FULL COMPLIANCE WITH 12VAC5-590-395 A 1 AND 12VAC5-590-395 A 2, THEN THE ADDITIONAL CRYPTOSPORIDIUM TREATMENT REQUIREMENTS ARE...			
	Conventional filtration treatment (including softening)	Direct filtration	Slow sand or diatomaceous earth filtration	Alternative filtration technologies
Bin 1	No additional treatment	No additional treatment	No additional treatment	No additional treatment
Bin 2	1-log treatment	1.5-log treatment	1-log treatment	a

Bin 3	2-log treatment	2.5-log treatment	2-log treatment	b
Bin 4	2.5-log treatment	3-log treatment	2.5-log treatment	c

[a]As determined by the department such that the total Cryptosporidium removal and inactivation is at least 4.0-log.

[b]As determined by the department such that the total Cryptosporidium removal and inactivation is at least 5.0-log.

[c]As determined by the department such that the total Cryptosporidium removal and inactivation is at least 5.5-log.

b. Additional treatment.

(1) The owner shall use one or more of the treatment and management options listed in subsection E of this section, termed the microbial toolbox, to comply with the additional Cryptosporidium treatment required in subdivision D 2 a of this section.

(2) A waterworks classified in Bin 3 and Bin 4 shall achieve at least 1-log of the additional Cryptosporidium treatment required under subdivision D 2 a of this section using either one or a combination of the following: (i) bag filters, (ii) bank filtration, (iii) cartridge filters, (iv) chlorine dioxide, (v) membranes, (vi) ozone, or (vii) UV as described in subdivisions E 3 through E 7 of this section.

c. Failure by a waterworks in any month to achieve treatment credit by meeting criteria in subdivisions E 3 through E 7 of this section for microbial toolbox options that is at least equal to the level of treatment required in subdivision D 2 a of this section is a violation of the treatment technique requirement.

d. If the department determines during a sanitary survey or an equivalent source water assessment that after an owner completed the monitoring conducted under subdivision B 1 or B 2 of this section, significant changes occurred in the waterworks watershed that could lead to increased contamination of the source water by Cryptosporidium, then the owner shall take actions specified by the department to address the contamination. These actions may include additional source water monitoring or implementing microbial toolbox options listed in subdivision E 2 of this section.

3. Schedule for compliance with Cryptosporidium treatment requirements.

a. Following the initial bin classification in accordance with subdivision D 1 b of this section, the owner shall provide the level of treatment for Cryptosporidium required under subdivision D 2 of this section according to the schedule in subdivision D 3 b of this section.

b. If the bin classification for a filtered waterworks changes following the second round of source water monitoring, as determined under subdivision D 1 c of this section, then the owner shall provide the level of treatment for Cryptosporidium required under subdivision D 2 of this section on a schedule approved by the department.

E. The owner of a waterworks required to provide additional treatment for Cryptosporidium shall implement microbial toolbox options that are designed and operated as described in subdivisions E 1 through E 7 of this section.

1. The owner receives the treatment credits listed in Table 401.4 by meeting the conditions for microbial toolbox options described in subdivisions E 3 through E 7 of this section. The owner shall apply these treatment credits to meet the treatment requirements in subdivision D 2 of this section.

2. Microbial Toolbox Summary Table: Options, Treatment Credits and Criteria.

TABLE 401.4

Microbial Toolbox Summary: Options, Treatment Credits and Criteria

TOOLBOX OPTION	CRYPTOSPORIDIUM TREATMENT CREDIT WITH DESIGN AND IMPLEMENTATION CRITERIA
Source Protection and Management Toolbox Options	
Alternative source and intake management	No prescribed credit. The owner may conduct simultaneous monitoring for treatment bin classification at alternative intake locations or under alternative intake management strategies. Specific criteria are in subdivision E 3 b of this section.
Prefiltration Toolbox Options	
Presedimentation basin with coagulation	0.5-log credit during any month that presedimentation basins achieve a monthly mean reduction of 0.5-log or greater in turbidity or alternative performance criteria approved by the department. To be eligible, basins shall be operated continuously with coagulant

	addition and all water treatment plant flow shall pass through basins. Specific criteria are in subdivision E 4 a of this section.
Two-stage lime softening	0.5-log credit for two-stage softening where chemical addition and hardness precipitation occur in both stages. All water treatment plant flow shall pass through both stages. Single-stage softening is credited as equivalent to conventional treatment. Specific criteria are in subdivision E 4 b of this section.
Bank filtration	0.5-log credit for 25-foot setback; 1.0-log credit for 50-foot setback; aquifer shall be unconsolidated sand containing at least 10% fines; average turbidity in wells shall be less than 1 NTU. A waterworks using wells followed by filtration when conducting source water monitoring shall sample the well to determine bin classification and is not eligible for additional credit. Specific criteria are in subdivision E 4 c of this section.
Treatment Performance Toolbox Options	
Combined filter performance	0.5-log credit for CFE turbidity less than or equal to 0.15 NTU in at least 95% of measurements each month. Specific criteria are in subdivision E 5 a of this section.
Individual filter performance	0.5-log credit (in addition to 0.5-log combined filter performance credit) if individual filter effluent turbidity is less than or equal to 0.15 NTU in at least 95% of samples each month in each filter and is never greater than 0.3 NTU in two consecutive measurements in any filter. Specific criteria are in subdivision E 5 b of this section.
Additional Filtration Toolbox Options	
Bag or cartridge filters (individual filters)	Up to 2-log credit based on the removal efficiency demonstrated during challenge testing with a 1.0-log factor of safety. Specific criteria are in subdivision E 6 a of this section.
Bag or cartridge filters (in series)	Up to 2.5-log credit based on the removal efficiency demonstrated during challenge testing with a 0.5-log factor of safety. Specific criteria are in subdivision E 6 a of this section.
Membrane filtration	Log credit equivalent to removal efficiency demonstrated in challenge test for device if supported by direct integrity testing. Specific criteria are in subdivision E 6 b of this section.
Second stage filtration	0.5-log credit for second separate granular media filtration stage if treatment train includes coagulation before first filter. Specific criteria are in subdivision E 6 c of this section.
Slow sand filters	2.5-log credit as a secondary filtration step; 3.0-log credit as a primary filtration process. No prior chlorination for either option. Specific criteria are in subdivision E 6 d of this section.
Inactivation Toolbox Options	
Chlorine dioxide	Log credit based on measured CT in relation to Table 401.5. Specific criteria in subdivision E 7 b of this section.
Ozone	Log credit based on measured CT in relation to Table 401.6. Specific criteria in subdivision E 7 b of this section.
UV	Log credit based on validated UV dose in relation to Table 401.7; reactor validation testing required to establish UV dose and associated operating conditions. Specific criteria in subdivision E 7 c of this section.

3. Source toolbox components.

a. Reserved.

b. Alternative source.

(1) The owner may conduct source water monitoring that reflects a different intake location (either in the same source or for an alternate source) or a different procedure for the timing or level of withdrawal from the source (alternative source water monitoring). If the department approves, then the owner may determine the bin

classification under subdivision D 1 of this section based on the alternative source water monitoring results.

(2) If the owner conducts alternative source water monitoring under subdivision E 3 b (1) of this section, then the owner shall also monitor the current water treatment plant intake concurrently as described in subsection B of this section. "Plant intake" means the works or structures at the head of a conduit through which source water is diverted (e.g., river or lake) into the water treatment plant.

(3) Alternative source water monitoring under subdivision E 3 b (1) of this section shall meet the requirements for source water monitoring to determine bin classification, as described in subdivisions B 1 through B 13 of this section. The owner shall report the alternative source water monitoring results to the department, along with supporting information documenting the operating conditions under which the samples were collected.

(4) If the owner determines the bin classification under subdivision D 1 of this section using alternative source water monitoring results that reflect a different intake location or a different procedure for managing the timing or level of withdrawal from the source, then the owner shall relocate the intake or permanently adopt the withdrawal procedure, as applicable, no later than the applicable treatment compliance date in subdivision D 3 of this section.

4. Prefiltration treatment toolbox components.

a. Presedimentation. The owner receives 0.5-log Cryptosporidium treatment credit for a presedimentation basin during any month the process meets the following criteria:

(1) The presedimentation basin shall be in continuous operation and shall treat the entire water treatment plant flow at a waterworks using a surface water source, a GUDI source, or both.

(2) A coagulant shall be continuously added to the presedimentation basin.

(3) The presedimentation basin shall achieve the performance criteria in either of the following:

(a) Demonstrates at least 0.5-log mean reduction of influent turbidity. This reduction shall be determined using daily turbidity measurements in the presedimentation process influent and effluent and shall be calculated as follows: log10 (monthly mean of daily influent turbidity) - log10 (monthly mean of daily effluent turbidity).

(b) Complies with the performance criteria approved by the department that demonstrate at least 0.5-log mean removal of micron-sized particulate material through the presedimentation process.

b. Two-stage lime softening. The owner receives an additional 0.5-log Cryptosporidium treatment credit for a two-stage lime softening plant if chemical addition and hardness precipitation occur in two separate and sequential softening stages before filtration. Both softening stages shall treat the entire plant flow taken from a surface water source, a GUDI source, or both.

c. Bank filtration. The owner receives Cryptosporidium treatment credit for bank filtration that serves as pretreatment to a water filtration plant by meeting the criteria in this subdivision. The owner using bank filtration upon beginning source water monitoring under subdivision B 1 of this section shall collect samples as described in subdivision B 6 d of this section and is not eligible for this credit.

(1) Wells with a groundwater flow path of at least 25 feet receive 0.5-log treatment credit; and wells with a groundwater flow path of at least 50 feet receive 1.0-log treatment credit. The groundwater flow path shall be determined as specified in subdivision E 4 c (4) of this section.

(2) Only wells in granular aquifers are eligible for treatment credit. Granular aquifers are those comprised of sand, clay, silt, rock fragments, pebbles or larger particles, and minor cement. The owner shall characterize the aquifer at the well site to determine aquifer properties. The owner shall extract a core from the aquifer and demonstrate that in at least 90% of the core length, grains less than 1.0 mm in diameter constitute at least 10% of the core material.

(3) Only horizontal and vertical wells are eligible for treatment credit.

(4) For vertical wells, the groundwater flow path is the measured distance from the edge of the surface water body under high flow conditions (determined by the 100-year flood elevation boundary or by the floodway, as defined in Federal Emergency Management Agency flood hazard maps) to the well screen. For horizontal wells, the groundwater flow path is the measured distance from the bed of the river under normal flow conditions to the closest horizontal well lateral screen.

(5) The owner shall monitor each wellhead for turbidity at least once every four hours while the bank filtration process is in operation. If monthly average turbidity levels, based on daily maximum values in the well, exceed 1 NTU, the owner shall report this result to the department and conduct an assessment within 30 days to determine the cause of the high turbidity levels in the well. If the department determines that microbial removal has been compromised, the department may revoke

treatment credit until the owner implements corrective actions approved by the department to remediate the problem.

(6) Springs and infiltration galleries are not eligible for treatment credit under this section.

(7) Bank filtration demonstration of performance. The department may approve Cryptosporidium treatment credit for bank filtration based on a demonstration-of-performance study that meets the criteria in this subdivision. This treatment credit may be greater than 1.0-log and may be awarded to bank filtration that does not meet the criteria in subdivisions E 4 c (1) through E 4 c (5) of this section.

(a) The study shall follow a protocol approved by the department and shall involve the collection of data on the removal of Cryptosporidium or a surrogate for Cryptosporidium and related hydrogeologic and water quality parameters during the full range of operating conditions.

(b) The study shall include sampling both from any production well and from monitoring wells that are screened and located along the shortest flow path between the surface water source and the production well.

5. Treatment performance toolbox components.

a. Combined filter performance. The owner using conventional filtration treatment or direct filtration treatment receives an additional 0.5-log Cryptosporidium treatment credit during any month the waterworks meets the criteria in this subdivision. Combined filter effluent (CFE) turbidity shall be less than or equal to 0.15 NTU in at least 95% of the measurements. Turbidity shall be measured as described in 12VAC5-590-376 B.

b. Individual filter performance. The owner using conventional filtration treatment or direct filtration treatment receives 0.5-log Cryptosporidium treatment credit, which can be in addition to the 0.5-log credit under subdivision E 5 a of this section, during any month the waterworks meets the criteria in this subdivision. Compliance with these criteria shall be based on individual filter turbidity monitoring as described in 12VAC5-590-376 B.

(1) The filtered water turbidity for each individual filter shall be less than or equal to 0.15 NTU in at least 95% of the measurements recorded each month.

(2) No individual filter may have a measured turbidity greater than 0.3 NTU in two consecutive measurements collected 15 minutes apart.

(3) The owner that has received treatment credit for individual filter performance and fails to meet the requirements of subdivision E 5 b (1) or E 5 b (2) of this section during any month does not receive a treatment technique violation under subdivision D 2 c of this section if the department determines the following:

(a) The failure was due to unusual and short-term circumstances that could not reasonably be prevented through optimizing water treatment plant design, operation, and maintenance.

(b) The waterworks has experienced no more than two failures in any calendar year.

6. Additional filtration toolbox components.

a. Bag and cartridge filters. The owner receives Cryptosporidium treatment credit of up to 2.0-log for individual bag or cartridge filters and up to 2.5-log for bag or cartridge filters operated in series by meeting the criteria in subdivisions E 6 a (1) through E 6 a (10) of this section. To be eligible for this credit, the owner shall report the results of challenge testing that meets the requirements of subdivisions E 6 a (2) through E 6 a (9) of this section to the department. The filters shall treat the entire water treatment plant flow taken from a surface water source, a GUDI source, or both.

(1) The Cryptosporidium treatment credit awarded to bag or cartridge filters shall be based on the removal efficiency demonstrated during challenge testing that is conducted according to the criteria in subdivisions E 6 a (2) through E 6 a (9) of this section. A factor of safety equal to 1-log for individual bag or cartridge filters and 0.5-log for bag or cartridge filters in series shall be applied to challenge testing results to determine removal credit. The owner may use the results from challenge testing conducted before January 5, 2006, if the prior testing was consistent with the criteria specified in subdivisions E 6 a (2) through E 6 a (9) of this section.

(2) Challenge testing shall be performed on full-scale bag or cartridge filters, and the associated filter housing or pressure vessel, that are identical in material and construction to the filters and housings the waterworks will use for removal of Cryptosporidium. Bag or cartridge filters shall be challenge tested in the same configuration that the waterworks will use, either as individual filters or as a series configuration of filters.

(3) Challenge testing shall be conducted using Cryptosporidium or a surrogate that is removed no more efficiently than Cryptosporidium. The microorganism or surrogate used during challenge testing is referred to as the challenge particulate. The concentration of the challenge particulate shall be determined using a method capable of discreetly quantifying the specific microorganism or surrogate used in the test; gross measurements such as turbidity shall not be used.

(4) The maximum feed water concentration that can be used during a challenge test shall be based on the detection limit of the challenge particulate in the filtrate (i.e., filtrate detection limit) and shall be calculated using the following equation:

Maximum Feed Concentration = 1 x 10^4 x (Filtrate Detection Limit)

(5) Challenge testing shall be conducted at the maximum design flow rate for the filter as specified by the manufacturer.

(6) Each filter evaluated shall be tested for a duration sufficient to reach 100% of the terminal pressure drop that establishes the maximum pressure drop under which the filter may be used to comply with the requirements of this subdivision E 6.

(7) Removal efficiency of a filter shall be determined from the results of the challenge test and expressed in terms of log removal values using the following equation:

$LRV = LOG_{10}(C_f) - LOG_{10}(C_p)$,

where LRV = log removal value demonstrated during challenge testing;

C_f = the feed concentration measured during the challenge test; and

C_p = the filtrate concentration measured during the challenge test.

In applying this equation, the same units shall be used for the feed and filtrate concentrations. If the challenge particulate is not detected in the filtrate, then the term C_p shall be set equal to the detection limit.

(8) Each filter tested shall be challenged with the challenge particulate during three periods over the filtration cycle: within two hours of start-up of a new filter; when the pressure drop is between 45% and 55% of the terminal pressure drop; and at the end of the cycle after the pressure drop has reached 100% of the terminal pressure drop. An LRV shall be calculated for each of these challenge periods for each filter tested. The LRV for the filter (LRV filter) shall be assigned the value of the minimum LRV observed during the three challenge periods for that filter.

(9) If fewer than 20 filters are tested, then the overall removal efficiency for the filter product line shall be set equal to the lowest LRV filter among the filters tested. If 20 or more filters are tested, then the overall removal efficiency for the filter product line shall be set equal to the 10th percentile of the set of LRV filter values for the various filters tested. The percentile is defined by (i/(n+1)), where i is the rank of n individual data points ordered lowest to highest. If necessary, the 10th percentile may be calculated using linear interpolation.

(10) If a previously tested filter is modified in a manner that could change the removal efficiency of the filter product line, then challenge testing to demonstrate the removal efficiency of the modified filter shall be conducted and submitted to the department.

b. Membrane filtration.

(1) The owner receives Cryptosporidium treatment credit for membrane filtration that meets the criteria of this subdivision E 6 b. Membrane cartridge filters that meet the definition of membrane filtration in 12VAC5-590-10 are eligible for this credit. The level of treatment credit the owner receives is equal to the lower of the values determined as follows:

(a) The removal efficiency demonstrated during challenge testing conducted under the conditions in subdivision E 6 b (2) of this section.

(b) The maximum removal efficiency that can be verified through direct integrity testing used with the membrane filtration process under the conditions in subdivision E 6 b (3) of this section.

(2) Challenge Testing. The membrane used by the waterworks shall undergo challenge testing to evaluate removal efficiency and the owner shall report the results of the challenge testing to the department. Challenge testing shall be conducted according to the criteria in subdivisions E 6 b (2) (a) through E 6 b (2) (g) of this section. The owner may use data from challenge testing conducted before January 5, 2006, if the prior testing was consistent with the following criteria:

(a) Challenge testing shall be conducted on either a full-scale membrane module, identical in material and construction to the membrane modules used in the waterworks treatment facility, or a smaller-scale membrane module, identical in material and similar in construction to the full-scale module. A module is defined as the smallest component of a membrane unit in which a specific membrane surface area is housed in a device with a filtrate outlet structure.

(b) Challenge testing shall be conducted using Cryptosporidium or a surrogate that is removed no more efficiently than Cryptosporidium. The organism or surrogate used during challenge testing is referred to as the challenge particulate. The concentration of the challenge particulate, in both the feed and filtrate water, shall be determined using a method capable of discretely quantifying the specific challenge particulate used in the test; gross measurements such as turbidity shall not be used.

(c) The maximum feed water concentration that can be used during a challenge test is based on the detection limit of the challenge particulate in the filtrate and shall be determined according to the following equation:

Maximum Feed Concentration = 3.16×10^6 x (Filtrate Detection Limit)

(d) Challenge testing shall be conducted under representative hydraulic conditions at the maximum design flux and maximum design process recovery specified by the manufacturer for the membrane module. Flux is defined as the throughput of a pressure-driven membrane process expressed as flow per unit of membrane area. Recovery is defined as the volumetric percent of feed water that is converted to filtrate over the course of an operating cycle uninterrupted by events such as chemical cleaning or a solids removal process (i.e., backwashing).

(e) Removal efficiency of a membrane module shall be calculated from the challenge test results and expressed as a log removal value according to the following equation:

$LRV = LOG_{10}(C_f) - LOG_{10}(C_p)$,

where LRV = log removal value demonstrated during the challenge test;

C_f = the feed concentration measured during the challenge test; and

C_p = the filtrate concentration measured during the challenge test.

Equivalent units shall be used for the feed and filtrate concentrations. If the challenge particulate is not detected in the filtrate, then the term C_p is set equal to the detection limit for the purpose of calculating the LRV. An LRV shall be calculated for each membrane module evaluated during the challenge test.

(f) The removal efficiency of a membrane filtration process demonstrated during challenge testing shall be expressed as a log removal value ($LRV_{C\text{-}Test}$). If fewer than 20 modules are tested, then $LRV_{C\text{-}Test}$ is equal to the lowest of the representative LRVs among the modules tested. If 20 or more modules are tested, then $LRV_{C\text{-}Test}$ is equal to the 10th percentile of the representative LRVs among the modules tested. The percentile is defined by (i/(n+1)), where i is the rank of n individual data points ordered lowest to highest. If necessary, the 10th percentile may be calculated using linear interpolation.

(g) The challenge test shall establish a QCRV for a nondestructive performance test that demonstrates the Cryptosporidium removal capability of the membrane filtration module. This performance test shall be applied to each production membrane module used by the waterworks that was not directly challenge tested to verify Cryptosporidium removal capability. Production modules that do not meet the established QCRV are not eligible for the treatment credit demonstrated during the challenge test.

(h) If a previously tested membrane is modified in a manner that could change the removal efficiency of the membrane or the applicability of the nondestructive performance test and associated QCRV, then additional challenge testing to demonstrate the removal efficiency of, and determine a new QCRV for, the modified membrane shall be conducted and submitted to the department.

(3) Direct integrity testing. The owner shall conduct direct integrity testing in a manner that demonstrates a removal efficiency equal to or greater than the removal credit awarded to the membrane filtration process and meets the requirements described in subdivisions E 6 b (3) (a) through E 6 b (3) (f) of this section. A direct integrity test is defined as a physical test applied to a membrane unit to identify and isolate integrity breaches (i.e., one or more leaks that could result in contamination of the filtrate).

(a) The direct integrity test shall be independently applied to each membrane unit in service. A membrane unit is defined as a group of membrane modules that share common valving that allows the unit to be isolated from the rest of the waterworks for the purpose of integrity testing or other maintenance.

(b) The direct integrity method shall have a resolution of three micrometers or less, where resolution is defined as the size of the smallest integrity breach that contributes to a response from the direct integrity test.

(c) The direct integrity test shall have a sensitivity sufficient to verify the log treatment credit awarded to the membrane filtration process by the department, where sensitivity is defined as the maximum log removal value that can be reliably verified by a direct integrity test. Sensitivity shall be determined using the approach in either of the following as applicable to the type of direct integrity test the waterworks uses:

(i) For direct integrity tests that use an applied pressure or vacuum, the direct integrity test sensitivity shall be calculated according to the following equation:

$LRV_{DIT} = LOG_{10}(Q_p / (VCF \times Q_{breach}))$,

where LRV_{DIT} = the sensitivity of the direct integrity test;

Q_p = total design filtrate flow from the membrane unit;

Q_{breach} = flow of water from an integrity breach associated with the smallest integrity test response that can be reliably measured; and

VCF = volumetric concentration factor.

The volumetric concentration factor is the ratio of the suspended solids concentration on the high-pressure side of the membrane relative to that in the feed water.

(ii) For direct integrity tests that use a particulate or molecular marker, the direct integrity test sensitivity shall be calculated according to the following equation:

$LRV_{DIT} = LOG_{10}(C_f) - LOG_{10}(C_p)$,

where LRV_{DIT} = the sensitivity of the direct integrity test;

C_f = the typical feed concentration of the marker used in the test; and

C_p = the filtrate concentration of the marker from an integral membrane unit.

(d) The owner shall establish a control limit within the sensitivity limits of the direct integrity test that is indicative of an integral membrane unit capable of meeting the removal credit awarded by the department.

(e) If the result of a direct integrity test exceeds the control limit established under subdivision E 6 b (3) (d) of this section, then the owner shall remove the membrane unit from service. The owner shall conduct a direct integrity test to verify any repairs, and may return the membrane unit to service only if the direct integrity test is within the established control limit.

(f) The owner shall conduct direct integrity testing on each membrane unit at a frequency of not less than once each day that the membrane unit is in operation. The department may approve less frequent testing based on demonstrated process reliability, the use of multiple barriers effective for Cryptosporidium, or reliable process safeguards.

(4) Indirect integrity monitoring. The owner shall conduct continuous indirect integrity monitoring on each membrane unit according to the criteria in subdivisions E 6 b (4) (a) through E 6 b (4) (e). Indirect integrity monitoring is defined as monitoring some aspect of filtrate water quality that is indicative of the removal of particulate matter. The owner that implements continuous direct integrity testing of membrane units in accordance with the criteria in subdivisions E 6 b (3) (a) through E 6 b (3) (f) of this section is not subject to the requirements for continuous indirect integrity monitoring. The owner shall submit a monthly report to the department summarizing all continuous indirect integrity monitoring results triggering direct integrity testing and the corrective action that was taken in each case.

(a) Unless the department approves an alternative parameter, continuous indirect integrity monitoring shall include continuous filtrate turbidity monitoring.

(b) Continuous monitoring shall be conducted at a frequency of no less than once every 15 minutes.

(c) Continuous monitoring shall be separately conducted on each membrane unit.

(d) If indirect integrity monitoring includes turbidity and if the filtrate turbidity readings are above 0.15 NTU for a period greater than 15 minutes (i.e., two consecutive 15-minute readings above 0.15 NTU), direct integrity testing shall immediately be performed on the associated membrane unit as specified in subdivisions E 6 b (3) (a) through E 6 b (3) (f) of this section.

(e) If indirect integrity monitoring includes an alternative parameter approved by the department and if the alternative parameter exceeds a control limit approved by the department for a period greater than 15 minutes, then direct integrity testing shall immediately be performed on the associated membrane units as specified in subdivisions E 6 b (3) (a) through E 6 b (3) (f) of this section.

c. Second stage filtration. The owner receives 0.5-log Cryptosporidium treatment credit for a separate second stage of filtration that consists of sand, dual media, GAC, or other fine grain media following granular media filtration if approved by the department. To be eligible for this credit, the first stage of filtration shall be preceded by a coagulation step and both filtration stages shall treat the entire water treatment treatment plant flow taken from a surface water source, a GUDI source, or both. A cap, such as GAC, on a single stage of filtration is not eligible for this credit. The department shall approve the treatment credit based on an assessment of the design characteristics of the filtration process.

d. Slow sand filtration as secondary filter. The owner is eligible to receive 2.5-log Cryptosporidium treatment credit for a slow sand filtration process that follows a separate stage of filtration if both filtration stages treat the entire water treatment plant flow taken from a surface water source, a GUDI source, or both and no residual disinfectant is present in the influent water to the slow sand filtration process. The department shall approve the treatment credit based on an assessment of the design characteristics of the filtration process. This subdivision does not apply to treatment credit awarded to slow sand filtration used as a primary filtration process.

7. Inactivation toolbox components.

a. Calculation of CT values.

(1) CT is the product of the disinfectant contact time (T, in minutes) and disinfectant concentration (C, in milligrams per liter). The owner of a waterworks with treatment credit for chlorine dioxide or ozone under subdivision E 7 b of this section shall calculate CT at

least once each day, with both C and T measured during peak hourly flow in accordance with the procedure listed in 12VAC5-590-500.

(2) A waterworks with several disinfection segments in sequence may calculate CT for each segment, where a disinfection segment is defined as a treatment unit process with a measurable residual disinfectant level and a liquid volume. Under this approach, the owner shall add the Cryptosporidium CT values in each segment to determine the total CT for the treatment plant.

b. CT values for chlorine dioxide and ozone.

(1) The owner receives the Cryptosporidium treatment credit listed in Table 401.5 by meeting the corresponding chlorine dioxide CT value for the applicable water temperature, as described in subdivision E 7 a of this section.

TABLE 401.5

CT Values (mg-min/L) for Cryptosporidium Inactivation by Chlorine Dioxide[a]

	WATER TEMPERATURE, °C					
LOG CREDIT	≤0.5	1	2	3	5	7
0.25	159	153	140	128	107	90
0.5	319	305	279	256	214	180
1.0	637	610	558	511	429	360
1.5	956	915	838	767	643	539
2.0	1275	1220	1117	1023	858	719
2.5	1594	1525	1396	1278	1072	899
3.0	1912	1830	1675	1534	1286	1079

	WATER TEMPERATURE, °C					
LOG CREDIT	10	15	20	25	30	
0.25	69	45	29	19	12	
0.5	138	89	58	38	24	
1.0	277	179	116	75	49	
1.5	415	268	174	113	73	
2.0	553	357	232	150	98	
2.5	691	447	289	188	122	
3.0	830	536	347	226	147	

[a]The owner may use this equation to determine log credit between the indicated values: Log credit = $(0.001506 \times (1.09116)^{Temp}) \times CT$.

(2) The owner receives the Cryptosporidium treatment credit listed in Table 401.6 by meeting the corresponding ozone CT values for the applicable water temperature, as described in subdivision E 7 a of this section.

TABLE 401.6

CT Values (mg-min/L) for Cryptosporidium Inactivation by Ozone[a]

LOG CREDIT	WATER TEMPERATURE, °C										
	≤0.5	1	2	3	5	7	10	15	20	25	30
0.25	6.0	5.8	5.2	4.8	4.0	3.3	2.5	1.6	1.0	0.6	0.39
0.5	12	12	10	9.5	7.9	6.5	4.9	3.1	2.0	1.2	0.78
1.0	24	23	21	19	16	13	9.9	6.2	3.9	2.5	1.6
1.5	36	35	31	29	24	20	15	9.3	5.9	3.7	2.4
2.0	48	46	42	38	32	26	20	12	7.8	4.9	3.1
2.5	60	58	52	48	40	33	25	16	9.8	6.2	3.9
3.0	72	69	63	57	47	39	30	19	12	7.4	4.7

[a]The owner may use this equation to determine log credit between the indicated values: Log credit = $(0.0397\times(1.09757)^{Temp})\times CT$.

c. UV light. The owner receives Cryptosporidium, Giardia lamblia, and virus treatment credits for UV light reactors by achieving the corresponding UV dose values shown in subdivision E 7 c (1) of this section. The owner shall validate and monitor UV reactors as described in subdivisions E 7 c (2) and E 7 c (3) of this section to demonstrate that they are achieving a particular UV dose value for treatment credit.

(1) UV dose table. The treatment credits listed in Table 401.7 are for UV light at a wavelength of 254 nm as produced by a low-pressure mercury vapor lamp. To receive treatment credit for other lamp types, the owner shall demonstrate an equivalent germicidal dose through reactor validation testing as described in subdivision E 7 c (2) of this section. The UV dose values listed in Table 401.7 are applicable only to post-filter applications of UV in filtered waterworks.

TABLE 401.7

UV Doses for Cryptosporidium, Giardia lamblia and Virus Inactivation Credit

LOG CREDIT	CRYPTOSPORIDIUM UV DOSE (mJ/cm2)	GIARDIA LAMBLIA UV DOSE (mJ/cm2)	VIRUS UV DOSE (mJ/cm^2)
0.5	1.6	1.5	39
1.0	2.5	2.1	58
1.5	3.9	3.0	79
2.0	5.8	5.2	100
2.5	8.5	7.7	121
3.0	12	11	143
3.5	15	15	163
4.0	22	22	186

(2) Reactor validation testing. The owner shall use UV reactors that have undergone validation testing to determine the operating conditions under which the reactor delivers the UV dose required in subdivision E 7 c (1) of this section (i.e., validated operating conditions). These operating conditions shall include flow rate, UV intensity as measured by a UV sensor, and UV lamp status.

(a) When determining validated operating conditions, the owner shall account for the following factors: (i) UV absorbance of the water; (ii) lamp fouling and aging; (iii) measurement uncertainty of online sensors; (iv) UV dose distributions arising from the velocity profiles through the reactor; (v) failure of UV lamps or other critical waterworks components; and (vi) inlet and outlet piping or channel configurations of the UV reactor.

(b) Validation testing shall include the following: full-scale testing of a reactor that conforms uniformly to the UV reactors used by the waterworks and inactivation of a test microorganism whose dose-response characteristics have been quantified with a low-pressure mercury vapor lamp.

(c) UV reactor validation testing shall be in accordance with EPA's recommended validation protocol for UV reactors, as described in EPA's "Ultraviolet Disinfection Guidance Manual for the Final Long Term 2 Enhanced Surface Water Treatment Rule," November 2006, EPA Office of Water. Alternative protocols may be considered for approval by the department on a case-by-case basis.

(d) Validation testing, whether onsite or offsite, shall be performed by a third party independent of the UV reactor manufacturer and the owner to ensure that validation testing and data analysis are conducted in a technically sound manner without bias.

(e) To receive credit for lamp types other than low-pressure types, the owner shall demonstrate an equivalent germicidal dose through reactor validation testing.

(f) A validation report shall be submitted and approved by the department to receive disinfection credit.

(3) UV reactor monitoring.

(a) The owner shall monitor the UV reactors to determine if the reactors are operating within validated conditions as determined under subdivision E 7 c (2) of this section. This monitoring shall include UV intensity as measured by a UV sensor, flow rate, lamp status, and other parameters the department designates based on UV reactor operation. The owner shall verify the calibration of UV sensors and shall recalibrate sensors in accordance with a protocol approved by the department.

(b) To receive treatment credit for UV light, the owner shall treat at least 95% of the water delivered to the public during each month by the UV reactors operating within validated conditions for the required UV dose as described in subdivisions E 7 c (1) and E 7 c (2) of this section. The owner shall demonstrate compliance with this condition by the monitoring required under subdivision E 7 c (3) (a) of this section.

F. The owner shall comply with the applicable recordkeeping and reporting requirements described in 12VAC5-590-530, 12VAC5-590-531, 12VAC5-590-550, and 12VAC5-590-570.

12VAC5-590-405. Lead and copper treatment techniques.

A. Lead and copper corrosion control techniques.

1. Corrosion control treatment requirements. The ~~owners~~ owner of ~~all~~ a community ~~and nontransient noncommunity waterworks~~ waterworks or a NTNC shall install and operate optimum corrosion control treatment by completing the corrosion control treatment requirements described below which are applicable to ~~such owners~~ these waterworks under subdivision A 2 of this section.

a. Owner's proposal regarding corrosion control treatment. Based upon the results of lead and copper tap monitoring and water quality parameter monitoring, the ~~owners~~ owner of a small ~~and~~ or a medium waterworks exceeding the lead or copper ~~action level~~ AL shall propose installation of one or more of the corrosion control treatments listed in subdivision A 1 c (1) of this section that the owner believes constitutes optimal corrosion control for that waterworks. The ~~commissioner~~ department may require the owner to conduct additional water quality parameter monitoring in accordance with 12VAC5-590-375 C 2 to assist the ~~commissioner~~ department in ~~reviewing~~ evaluating the proposal.

b. Applicability of studies of corrosion control treatment (applicable to small and medium waterworks). The ~~commissioner~~ department may require the owner of ~~any~~ a small or a medium waterworks that exceeds the lead or copper ~~action level~~ AL to perform corrosion control studies under subdivision A 1 cof this section to identify optimal corrosion control treatment for the waterworks.

c. Corrosion control studies.

(1) The owner of ~~any~~ a waterworks required by the ~~commissioner~~ department to perform corrosion control studies shall evaluate the effectiveness of each of the following treatments, and, if appropriate, combinations of the following treatments to identify the optimal corrosion control treatment for that waterworks:

(a) Alkalinity and pH adjustment;

(b) Calcium hardness adjustment; and

(c) The addition of a ~~phosphate~~ phosphate-based or ~~silicate based~~ silicate-based corrosion inhibitor at a concentration sufficient to maintain an effective corrosion inhibitor residual concentration in all test tap samples, such that a passivating film is formed on the interior walls of the pipe.

(2) The owner shall evaluate each of the corrosion control treatments using either pipe ~~rig/loop~~ rig or loop tests, metal coupon tests, partial-system tests, or analyses based on documented analogous treatments with other waterworks of similar size, water chemistry, and distribution system configuration.

(3) The owner shall measure the following water quality parameters in any tests conducted under subdivision A 1 cof this section before and after evaluating the corrosion control treatments listed ~~above~~ in subdivision A 1 c (1) of this section:

(a) Lead;

(b) Copper;

(c) pH;

(d) Alkalinity;

(e) Calcium;

(f) Conductivity;

(g) Orthophosphate (when an inhibitor containing a phosphate compound is used);

(h) Silicate (when an inhibitor containing a silicate compound is used); and

(i) Water temperature.

(4) The owner shall identify all chemical or physical constraints that limit or prohibit the use of a particular corrosion control treatment and document such constraints with at least one of the following:

(a) Data and documentation showing that a particular corrosion control treatment has adversely affected other water treatment processes when used by another waterworks with comparable water quality characteristics; or

(b) Data and documentation demonstrating that the owner has previously attempted to evaluate a particular corrosion control treatment and has found that the treatment is ineffective or adversely affects other water quality treatment processes.

(5) The owner shall evaluate the effect of the chemicals used for corrosion control treatment on other water quality treatment processes.

(6) On the basis of an analysis of the data generated during each evaluation, the owner shall propose in writing to the ~~district engineer in writing,~~ department that the treatment option ~~that~~ resulting from the corrosion control studies ~~indicate~~ constitutes optimal corrosion control treatment for that waterworks. The owner shall provide a rationale for ~~its~~ the recommendation along with all supporting documentation specified in subdivisions A 1 c (1) through A 1 c (5) of this section.

d. Approval of optimal corrosion control treatment.

(1) Based upon consideration of available information including, where applicable, studies performed under subdivision A 1 c of this section and ~~an~~ the owner's proposed treatment alternative, the ~~commissioner~~ department shall either approve the corrosion control treatment option recommended by the owner, or designate alternative corrosion control treatment ~~or treatments~~ from among those listed in subdivision A 1 c (1) of this section. When approving optimal treatment, the ~~commissioner~~ department shall consider the effects that additional corrosion control treatment will have on water quality parameters and on other water quality treatment processes.

(2) The ~~commissioner~~ department shall notify the owner of ~~his~~ the determination on optimal corrosion control treatment in writing and explain the basis for this determination. If the ~~commissioner~~ department requests additional information to aid ~~a review~~ an evaluation, then the owner shall provide the information.

e. Installation of optimal corrosion control. ~~Each~~ The owner shall properly install and operate throughout the waterworks the optimal corrosion control treatment approved by the ~~commissioner~~ department under subdivision A 1 d of this section. ~~Also see 12VAC5-590-190~~ A construction permit is required before installation of any treatment in accordance with 12VAC5-590-200.

f. ~~Commissioner's review~~ The department's evaluation of treatment and specification of the optimal water quality control parameters~~.~~ shall consist of the following:

(1) The ~~commissioner~~ department shall evaluate the results of all lead and copper tap samples and water quality parameter samples submitted by the owner and determine whether the owner has properly installed and operated the optimal corrosion control treatment approved by the ~~commissioner~~ department under subdivision A 1 d of this section. Upon ~~reviewing~~ evaluating the results of tap water and water quality parameter monitoring by the owner, both before and after the owner installs optimal corrosion control treatment, the ~~commissioner~~ department shall designate:

(a) A minimum value or a range of values for pH measured at each entry point to the distribution system;

(b) A minimum pH value, measured in all tap samples. ~~Such~~ The value shall be equal to or greater than 7.0, unless the ~~commissioner~~ department determines that meeting a pH level of 7.0 is not technologically feasible or is not necessary for the owner to optimize corrosion control;

(c) If a corrosion inhibitor is used, then a minimum concentration or a range of concentrations for the inhibitor, measured at each entry point to the distribution system and in all tap samples, that the ~~commissioner~~ department determines is necessary to form a passivating film on the interior walls of the pipes of the distribution system;

(d) If alkalinity is adjusted as part of the optimal corrosion control treatment, then a minimum concentration or a range of concentrations for alkalinity, measured at each entry point to the distribution system and in all tap samples; or

(e) If calcium carbonate stabilization is used as part of the corrosion control, then a minimum concentration or a range of concentrations for calcium, measured in all tap samples.

(2) The values for the applicable water quality control parameters listed ~~above~~ in subdivision A 1 c (3) of this section shall be those that the ~~commissioner~~ department determines to reflect optimal corrosion control treatment for the waterworks. The ~~commissioner~~ department may designate values for additional water quality control parameters determined by the ~~commissioner~~ department to reflect optimal corrosion control for the waterworks. The ~~commissioner~~ department shall notify the owner in writing of these determinations and explain the basis for ~~his~~ the decisions.

g. Continued operation and monitoring. The ~~owners~~ owner of ~~all~~ a waterworks optimizing corrosion control shall continue to operate and maintain optimal corrosion control treatment, including maintaining water quality parameters at or above minimum values or within ranges designated by the ~~commissioner~~ department under subdivision A 1 f of this section as verified by all samples collected under 12VAC5-590-375 C 4 ~~through~~,12VAC5-590-375 C 5, and 12VAC5-590-375 C 6. Compliance with the requirements of this subdivision shall be determined every six months, as specified under 12VAC5-590-375 C 4. The ~~owner of a~~ waterworks is out of compliance with the requirements of this subdivision for a six-month period if excursions occur for any ~~commissioner-specified~~ department-specified parameter on more than nine days during the period. An excursion occurs whenever the daily value for one or more of the water quality parameters measured at a sampling location is below the minimum value or outside the range designated by the ~~commissioner~~ department. ~~Daily values shall be calculated as follows.~~ The ~~commissioner~~ department has discretion to delete results of obvious sampling errors from this calculation. Daily values shall be calculated as follows:

(1) On days when more than one measurement for the water quality parameter is collected at the sampling location, the daily value shall be the average of all results collected during the day regardless of whether they are collected through continuous monitoring, grab sampling, or a combination of both.

(2) On days when only one measurement for the water quality parameter is collected at the sampling location, the daily value shall be the result of that measurement.

(3) On days when no measurement is collected for the water quality parameter at the sampling location, the daily value shall be the daily value calculated on the most recent day on which the water quality parameter was measured at the sample site.

h. Modification of the ~~commissioner's~~ department's treatment decisions. Upon ~~his own~~ the department's initiative or in response to a request by an owner or other interested party, the ~~commissioner~~ department may modify ~~his~~ the determination of the optimal corrosion control treatment under subdivision A 1 d of this section or optimal water quality control parameters under subdivision A 1 f of this section. A request for modification by an owner or other interested party shall be in writing, explain why the modification is appropriate, and provide supporting documentation. The ~~commissioner~~ department may modify the determination where it is concluded that ~~such~~ the change is necessary to ensure that the waterworks continues to optimize corrosion control treatment. A revised determination shall be made in writing, set forth the new treatment requirements, explain the basis for the ~~commissioner's~~ department's decision, and provide an implementation schedule for completing the treatment modifications.

2. Corrosion control treatment steps.

a. ~~Owners~~ The owner shall complete the applicable corrosion control treatment requirements described in subdivision A 1 of this section by the deadlines established in this subdivision.

(1) The owner of a large waterworks (serving ~~>~~ greater than 50,000 persons) shall complete the corrosion control treatment steps specified in subdivision A 2 d of this section, unless the owner is deemed to have optimized corrosion control under subdivision A 2 b (2) or ~~subdivision~~ A 2 b (3) of this section.

(2) The owner of a small waterworks (serving ≤ fewer than or equal to 3300 persons) ~~and~~ or a medium waterworks (serving ~~>~~ greater than 3,300 and ≤ fewer than or equal to 50,000 persons) shall complete the corrosion control treatment steps specified in subdivision A 2 e of this section, unless the owner is deemed to have optimized corrosion control under subdivisions A 2 b (1) through A 2 b (3) of this section.

b. ~~An~~ The owner is deemed to have optimized corrosion control and is not required to complete the applicable corrosion control treatment steps identified in this subdivision if the waterworks satisfies one of the criteria specified in subdivisions A 2 b (1) through A 2 b (3) of this section. ~~Any such~~ The owner deemed to have optimized corrosion control under this subdivision~~,~~ and ~~which has~~ to have treatment in place~~,~~ shall continue to operate and maintain optimal corrosion control treatment and meet any requirements that the ~~commissioner~~ department determines appropriate to ensure optimal corrosion control treatment is maintained.

(1) The owner of a small or a medium waterworks is deemed to have optimized corrosion control if the

waterworks meets the lead and copper ~~action levels~~ ALs during each of two consecutive six-month monitoring periods conducted in accordance with 12VAC5-590-375.

(2) ~~Any~~ The owner may be deemed by the ~~commissioner~~ department to have optimized corrosion control treatment if the owner demonstrates to the satisfaction of the ~~commissioner~~ department that the owner has conducted activities equivalent to the corrosion control steps applicable to ~~such~~ the waterworks under this section. If the ~~commissioner~~ department makes this determination, then the owner shall be provided with a written notice explaining the basis for the decision and the notice shall specify the water quality control parameters representing optimal corrosion control in accordance with subdivision A 1 f of this section. ~~Waterworks owners~~ The owner deemed to have optimized corrosion control under this subdivision shall operate in compliance with the ~~commissioner designated~~ department designated optimal water quality control parameters in accordance with subdivision A 1 g and continue to conduct lead and copper tap and water quality parameter sampling in accordance with 12VAC5-590-375 B 4 c and 12VAC5-590-375 C 4, respectively. The owner shall provide the ~~commissioner~~ department with the following information ~~in order~~ to support a determination under this subdivision:

(a) The results of all test samples collected for each of the water quality parameters in subdivision A 1 c (3) of this section;

(b) A report explaining the test methods used by the owner to evaluate the corrosion control treatments listed in subdivision A 1 c (1) of this section, the results of all tests conducted, and the basis for the owner's selection of optimal corrosion control treatment;

(c) A report explaining how corrosion control has been installed and how it is being maintained to insure minimal lead and copper concentrations at consumers' taps; and

(d) The results of tap water samples collected in accordance with 12VAC5-590-375 Bat least once every six months for one year after corrosion control treatment has been installed.

(3) ~~Any~~ A waterworks is deemed to have optimized corrosion control if the owner submits results of tap water monitoring conducted in accordance with 12VAC5-590-375 B and source water monitoring conducted in accordance with 12VAC5-590-375 D that demonstrates for two consecutive six-month monitoring periods that the difference between the 90th percentile tap water lead level, computed under 12VAC5-590-385 C, and the highest source water lead concentration is less than the PQL for lead (0.005 mg/L).

(a) ~~Any~~ The owner that submits monitoring results indicating that the highest source water lead level is below the ~~method detection limit~~ MDL may also be deemed to have optimized corrosion control under this subdivision if the 90th percentile tap water lead level is less than or equal to the PQL for lead (0.005 mg/L) for two consecutive six-month monitoring periods.

(b) ~~Any~~ The owner deemed to have optimized corrosion control under this subdivision shall continue monitoring for lead and copper at the tap no less frequently than once every three calendar years using the reduced number of sites specified in 12VAC5-590-375 B 3 and collecting the samples at times and locations specified in 12VAC5-590-375 B 4 d (4).

(c) ~~Any~~ The owner deemed to have optimized corrosion control pursuant to this subdivision shall notify the ~~district engineer~~ department in writing pursuant to ~~12VAC5-590-530 F 1 c~~ 12VAC5-590-532 B 3 of any upcoming long-term change in treatment or addition of a new ~~water~~ source water as described in ~~that subdivision~~ 12VAC5-590-532 B 3. The ~~commissioner must review~~ department shall evaluate and approve the addition of a new source water ~~source~~ or long-term change in water treatment before it is implemented by the owner. The ~~commissioner~~ department may require the owner of ~~any such~~ a waterworks to conduct additional monitoring or to take other actions the ~~commissioner~~ department deems appropriate to ensure that minimum levels of corrosion control are being maintained in the distribution system.

(d) ~~An~~ The owner is not deemed to have optimized corrosion control under this subdivision, and shall implement corrosion control treatment specified in subdivision A 2 b (3) (e) of this section, unless the copper ~~action level~~ AL is met.

(e) The owner of a waterworks triggered into corrosion control because the waterworks ~~no longer~~ is no longer deemed to have optimized corrosion control under this subsection shall implement corrosion control treatment in accordance with the deadlines in subdivision A 2 e of this section. The owner of ~~any such~~ a large waterworks shall adhere to the schedule specified in subdivision A 2 e of this section for ~~medium size systems~~ a medium waterworks, with the time period for completing each step being triggered by the date the owner is no longer deemed to have optimized corrosion control treatment under this subsection.

c. The owner of ~~any~~ a small or a medium waterworks that is required to complete the corrosion control steps due to the exceedance of the lead or copper ~~action level~~ AL may cease completing the treatment steps whenever the waterworks meets both ~~action levels~~ ALs during each of two consecutive six-month monitoring periods conducted pursuant to 12VAC5-590-375 B 4 a and submits the

results to the ~~district engineer~~ department. If ~~any such~~ a waterworks thereafter exceeds the lead or copper ~~action level~~ AL during any monitoring period, the owner shall recommence completion of the applicable treatment steps, beginning with the first treatment step ~~which~~ that was not previously completed in its entirety. The ~~commissioner~~ department may require the owner to repeat treatment steps previously completed where the ~~commissioner~~ department determines that this is necessary to properly implement the treatment requirements of this section. The ~~commissioner~~ department shall notify the owner in writing of ~~such a~~ the determination and explain the basis for ~~his~~ the decision. The requirement for the owner of ~~any~~ a small or a medium waterworks to implement corrosion control treatment steps in accordance with subdivision A 2 e of this section (including waterworks deemed to have optimized corrosion control under subdivision A 2 b (1) of this section) is triggered whenever ~~any~~ a small or a medium waterworks exceeds the lead or copper ~~action level~~ AL.

d. Treatment steps and deadlines for large waterworks. Except as provided in subdivisions A 2 b (2) and A 2 b (3) of this section, ~~owners~~ the owner of a large waterworks shall complete the following corrosion control treatment steps (described in the referenced portions of subdivision A 1 of this section, 12VAC5-590-375 B, and 12VAC5-590-375 C).

(1) Step 1: The owner shall conduct initial monitoring (12VAC5-590-375 B 4 a and 12VAC5-590-375 C 2) during two consecutive six-month monitoring periods by a date specified by the ~~commissioner~~ department.

(2) Step 2: The owner shall complete corrosion control studies (subdivision A 1 c of this section) and submit the study and recommendations to the ~~commissioner~~ department no later than 18 months after the date that initial monitoring is completed as specified in Step 1.

(3) Step 3: The ~~commissioner~~ department shall approve optimal corrosion control treatment (subdivision A 1 d of this section) no later than 12 months following receipt of the corrosion control study required in Step 2.

(4) Step 4: The owner shall install optimal corrosion control treatment (subdivision A 1 e of this section) no later than 24 months following the ~~commissioner's~~ department's approval of optimal corrosion control treatment specified in Step 3 ~~(See 12VAC5-590-200)~~.

(5) Step 5: The owner shall complete follow-up sampling (12VAC5-590-375 B 4 b and 12VAC5-590-375 C 3) no later than 12 months following the installation of optimal corrosion control treatment specified in Step 4.

(6) Step 6: The ~~commissioner~~ department shall ~~review~~ evaluate the installation of treatment and designate optimal water quality control parameters (subdivision A 1 f of this section) no later than six months following completion of follow-up sampling specified in Step 5.

(7) Step 7: The owner shall operate the waterworks in compliance with the ~~commissioner-specified~~ department-specified optimal water quality control parameters (subdivision A 1 g of this section) and continue to conduct tap sampling (12VAC5-590-375 B 4 c and 12VAC5-590-375 C 4).

e. Treatment steps and deadlines for small and medium waterworks. Except as provided in subdivision A 2 b of this section, ~~owners~~ the owner of a small ~~and~~ or a medium waterworks shall complete the following corrosion control treatment steps (described in the referenced portions of subdivision A 1 of this section, 12VAC5-590-375 B, and 12VAC5-590-375 C)~~.~~:

(1) ~~Step 1:~~ The owner shall conduct initial tap sampling (12VAC5-590-375 B 4 a and 12VAC5-590-375 C 2) until the waterworks either exceeds the lead or copper ~~action level~~ AL or becomes eligible for reduced monitoring under 12VAC5-590-375 B 4 d. The owner of a waterworks exceeding the lead or copper ~~action level~~ AL shall propose optimal corrosion control treatment (subdivision A 1 a of this section) within six months after the end of the monitoring period during which it exceeds one of the ~~action levels~~ ALs.

(2) ~~Step 2:~~ Within 12 months after the end of the monitoring period during which a waterworks exceeds the lead or copper ~~action level~~ AL, the ~~commissioner~~ department may require the owner to perform corrosion control studies (subdivision A 1 b of this section). If the ~~commissioner~~ department does not require the owner to perform ~~such~~ these studies, the ~~commissioner~~ department shall specify optimal corrosion control treatment (subdivision A 1 d of this section) within the following timeframes:

(a) For a medium waterworks, within 18 months after the end of the monitoring period during which ~~such~~ the waterworks exceeds the lead or copper ~~action level~~ AL.

(b) For a small waterworks, within 24 months after the end of the monitoring period during which ~~such~~ the waterworks exceeds the lead or copper ~~action level~~ AL.

(3) ~~Step 3:~~ If the ~~commissioner~~ department requires ~~an~~ the owner to perform corrosion control studies under ~~Step 2~~ subdivision A 2 e (2) of this section, then the owner shall complete the studies (subdivision A 1 c of this section) and submit the study and recommendations to the ~~commissioner~~ department within 18 months after the ~~commissioner~~ department requires that ~~such~~ the studies be conducted.

(4) ~~Step 4:~~ If the ~~waterworks~~ owner has performed corrosion control studies under ~~Step 2~~ subdivision A 2 e (2) of this section, then the ~~commissioner~~ department shall designate optimal corrosion control treatment (subdivision A 1 d of this section) within six months after completion of ~~Step 3~~ the provisions of subdivision A 2 e (3) of this section.

(5) ~~Step 5:~~ The owner shall install optimal corrosion control treatment (subdivision A 1 e of this section) within 24 months after the ~~commissioner~~ department designates such treatment. ~~See~~ A construction permit is required before installation of any treatment, in accordance with 12VAC5-590-200.

(6) ~~Step 6:~~ The owner shall complete follow-up sampling (12VAC5-590-375 B 4 b and 12VAC5-590-375 C 3) within 36 months after the ~~commissioner~~ department designates optimal corrosion control treatment.

(7) ~~Step 7:~~ The ~~commissioner~~ department shall ~~review~~ evaluate the owner's installation of treatment and designate optimal water quality control parameters (subdivision A 1 f of this section) within six months after completion of ~~Step 6~~ the provisions of subdivision A 2 e (6) of this section.

(8) ~~Step 8:~~ The owner shall operate the waterworks in compliance with the ~~commissioner designated~~ department-designated optimal water quality control parameters (subdivision A 1 g of this section) and continue to conduct tap sampling (12VAC5-590-375 B 4 c and 12VAC5-590-375 C 4).

B. ~~Water supply (source water)~~ Source water treatment technique requirements for lead and copper. The owner of ~~any~~ a waterworks exceeding the lead or copper ~~action level~~ AL shall complete the applicable ~~water supply~~ source water monitoring and treatment requirements (described in the referenced portions of subdivision B 2 of this section, and in 12VAC5-590-375 B and D) by the following deadlines~~.~~:

1. Deadlines for completing source water ~~supply~~ treatment steps.

a. ~~Step 1:~~ The owner of a waterworks exceeding the lead or copper ~~action level~~ AL shall complete lead and copper source water ~~supply~~ monitoring (12VAC5-590-375 D 2) and ~~make~~ submit a treatment proposal to the ~~district engineer~~ department (subdivision B 2 a of this section) no later than 180 days after the end of the monitoring period during which the lead or copper ~~action level~~ AL was exceeded.

b. ~~Step 2:~~ The ~~commissioner~~ department shall make a determination regarding the need for source water ~~supply~~ treatment (subdivision B 2 b of this section) within six months after submission of monitoring results under ~~Step 1~~ subdivision B 1 a of this section.

c. ~~Step 3:~~ If the ~~commissioner~~ department requires installation of source water ~~supply~~ treatment, then the owner shall install the treatment (subdivision B 3 of this section) within 24 months after completion of ~~Step 2~~ subdivision B 1 b of this section.

d. ~~Step 4:~~ The owner shall complete follow-up tap water monitoring (12VAC5-590-375 B 4 b) and source water ~~supply~~ lead and copper monitoring (12VAC5-590-375 D 3) within 36 months after completion of ~~Step 2~~ subdivision B 1 b.

e. ~~Step 5:~~ The ~~commissioner~~ department shall ~~review~~ evaluate the owner's installation and operation of the source water ~~supply~~ treatment and specify maximum permissible source water ~~supply~~ lead and copper levels (subdivision B 4 of this section) within six months after completion of ~~Step 4~~ subdivision B 1 d of this section.

f. ~~Step 6:~~ The owner shall operate the waterworks in compliance with the ~~commissioner specified~~ department-specified maximum permissible source water lead and copper ~~water supply~~ levels (subdivision B 4 of this section) and continue source water ~~supply~~ monitoring (12VAC5-590-375 D 4).

2. Description of source water ~~supply~~ treatment requirements.

a. Waterworks treatment recommendation. The owner of ~~any~~ a waterworks ~~which~~ that exceeds the lead or copper ~~action level~~ AL shall propose in writing to the ~~district engineer,~~ department the installation and operation of one of the source water ~~supply~~ treatments listed in subdivision B 2 b of this section. ~~An~~ The owner may propose that no treatment be installed based upon a demonstration that source water ~~supply~~ treatment is not necessary to minimize lead and copper levels at ~~users'~~ consumer taps.

b. ~~Commissioner's~~ Department's determination regarding source water ~~supply~~ treatment. The ~~commissioner~~ department shall complete an evaluation of the results of all source water ~~supply~~ samples submitted by the owner to determine whether source water ~~supply~~ treatment is necessary to minimize lead or copper levels in water delivered to ~~users'~~ consumer taps. If the ~~commissioner~~ department determines that treatment is needed, then the ~~commissioner~~ department shall either require installation and operation of the source water ~~supply~~ treatment recommended by the owner or require the installation and operation of another source water ~~supply~~ treatment from among the following: (i) ion exchange, ~~reverse osmosis~~ (ii) RO, (iii) lime softening, or (iv) ~~coagulation/filtration~~ coagulation or filtration. If the ~~commissioner~~ department requests additional information to aid in the ~~review~~ evaluation, then the owner shall provide the information by the date specified by the

~~commissioner~~ department in the request. The ~~commissioner~~ department shall notify the owner in writing of the determination and set forth the basis for the decision.

3. Installation of source water ~~supply~~ treatment. ~~Each~~ The owner shall properly install and operate the source water ~~supply~~ treatment designated by the ~~commissioner~~ department under subdivision B 2 b of this section.

4. ~~Commissioner's review~~ The department's evaluation of source water ~~supply~~ treatment and specification of maximum permissible source water ~~supply~~ lead and copper levels. The ~~commissioner~~ department shall ~~review~~ evaluate the source water ~~supply~~ samples ~~taken~~ collected by the owner both before and after the owner installs source water ~~supply~~ treatment, and determine whether the owner has properly installed and operated the source water ~~supply~~ treatment designated by the ~~commissioner~~ department. Based upon the ~~review~~ evaluation, the ~~commissioner~~ department shall designate the maximum permissible lead and copper concentrations for finished water entering the distribution system. ~~Such~~ The levels shall reflect the contaminant removal capability of the treatment properly operated and maintained. The ~~commissioner~~ department shall notify the owner in writing and explain the basis for the decision.

5. Continued operation and maintenance. ~~Each~~ The waterworks shall be operated to maintain lead and copper levels below the maximum permissible concentrations designated by the ~~commissioner~~ department at each sampling point monitored in accordance with 12VAC5-590-375 D. The waterworks is out of compliance with this subdivision A 5 if the level of lead or copper at any sampling point is greater than the maximum permissible concentration designated by the ~~commissioner~~ department.

6. Modification of the ~~commissioner's~~ department's treatment decisions. Upon ~~his own~~ the department's initiative or in response to a request by an owner or other interested party, the ~~commissioner~~ department may modify ~~his~~ the determination of the source water ~~supply~~ treatment under subdivision B 2 b of this section, or may modify the maximum permissible lead and copper concentrations for finished water entering the distribution system under subdivision B 4 of this section. A request for modification by an owner or other interested party shall be in writing, explain why the modification is appropriate, and provide supporting documentation. The ~~commissioner~~ department may modify the determination where ~~he concludes~~ the conclusion is made that ~~such~~ the change is necessary to ensure that the waterworks continues to minimize lead and copper concentrations in ~~water supplies~~ source waters. A revised determination shall be made in writing, set forth the new treatment requirements, explain the basis for the ~~commissioner's~~ department's decision, and provide an implementation schedule for completing the treatment modifications.

C. Lead service line replacement treatment technique requirements:

1. ~~Owners~~ The owner of a waterworks that ~~fail~~ fails to meet the lead ~~action level~~ AL in tap samples ~~taken~~ collected pursuant to 12VAC5-590-375 B 4 b, after installing corrosion control or source water ~~supply~~ treatment (whichever sampling occurs later), shall replace lead service lines in accordance with the requirements of this section. If ~~a waterworks~~ the owner is in violation of subdivision A 2 of this section or subsection B of this section for failure to install source water ~~supply~~ or corrosion control treatment, then the ~~commissioner~~ department may require the owner to commence lead service line replacement under this section after the date by which the owner was required to conduct monitoring under 12VAC5-590-375 B 4 b has passed.

2. ~~An~~ The owner shall replace annually at least 7.0% of the initial number of lead service lines in its distribution system. The initial number of lead service lines is the number of lead lines in place at the time the replacement program begins. The owner shall identify the initial number of lead service lines in its distribution system based upon a materials evaluation, including the evaluation required under 12VAC5-590-375 B 1. The first year of lead service line replacement shall begin on the first day following the end of the monitoring period in which the lead ~~action level~~ AL was exceeded under subdivision C 1 of this ~~subsection~~ section. If monitoring is required annually or less frequently, then the end of the monitoring period is September 30 of the calendar year in which the sampling occurs. If the ~~commissioner~~ department has established an alternate monitoring period, then the end of the monitoring period will be the last day of that period.

3. The owner of ~~any~~ a waterworks resuming a lead service line replacement program after the cessation of the lead service line replacement program as allowed by subdivision C 7 of this section shall update the inventory of lead service lines to include those sites that were previously determined not to require replacement through the sampling provision under subdivision C 4 of this section. The owner shall then divide the updated number of remaining lead service lines by the number of remaining years in the program to determine the number of lines that must be replaced per year (7.0% lead service line replacement is based on a 15-year replacement program; so, for example, ~~owners~~ the owner resuming lead service line replacement after previously conducting two years of replacement would divide the updated inventory by 13). For ~~those owners that have~~ the owner that has completed a 15-year lead service line replacement program, the ~~commissioner~~ department will determine a schedule for

replacing or retesting lines that were previously tested out under the replacement program when the waterworks re-exceeds the lead ~~action level~~ AL.

4. ~~An~~ The owner is not required to replace an individual lead service line if the lead concentration in all service line samples from that line, ~~taken~~ collected pursuant to 12VAC5-590-375 B 2 c, is less than or equal to 0.015 mg/L.

5. ~~An~~ The owner shall replace that portion of the lead service line that is owned by the waterworks. In cases where the ~~waterworks~~ owner does not own the entire lead service line, the ~~waterworks~~ owner shall notify the building owner, or the building owner's authorized agent, that the ~~waterworks~~ owner will replace that portion of the service line that is owned by the waterworks and shall offer to replace the building owner's portion of the line. The ~~waterworks~~ owner is not required to bear the cost of replacing the building owner's portion of the service line, nor is the ~~waterworks~~ owner required to replace the building owner's portion where the ~~waterworks~~ owner chooses not to pay the cost of replacing the building owner's portion of the line, or where replacing the building owner's portion would be precluded by state, local, or common law. ~~A waterworks~~ The owner that does not replace the entire length of the service line also shall complete the following tasks~~.~~:

a. At least 45 days ~~prior to~~ before commencing with the partial replacement of a lead service line, the ~~waterworks~~ owner shall provide notice to the resident or residents of all buildings served by the line explaining that they may experience a temporary increase of lead levels in ~~their~~ the drinking water, along with guidance on measures consumers can take to minimize their exposure to lead. The ~~commissioner~~ department may allow the ~~waterworks~~ owner to provide notice under the previous sentence less than 45 days ~~prior to~~ before commencing partial lead service line replacement where ~~such~~ the replacement is in conjunction with emergency repairs. In addition, the ~~waterworks~~ owner shall inform ~~the~~ each resident ~~or residents~~ served by the lead service line that the ~~waterworks~~ owner will, at the ~~waterworks~~ owner's expense, collect a sample from each ~~partially replaced~~ partially replaced lead service line that is representative of the water in the service line for analysis of lead content, as prescribed in 12VAC5-590-375 B 2 c, within 72 hours after the completion of the partial replacement of the lead service line. The ~~waterworks~~ owner shall collect the sample and report the results of the analysis to the building owner and each resident ~~or residents~~ served by the service line within three business days of receiving the results. Mailed notices post-marked within three business days of receiving the results shall be considered on time.

b. The ~~waterworks~~ owner shall provide the information required by subdivision C 5 a of this section to the residents of individual dwellings by mail or by other methods approved by the ~~commissioner~~ department. In instances where multi-family dwellings are served by the service line, the ~~waterworks~~ owner shall have the option to post the information at a conspicuous location.

6. The ~~commissioner~~ department shall require ~~an~~ the owner to replace lead service lines on a shorter schedule than that required by this subsection, taking into account the number of lead service lines in the waterworks, where ~~such~~ a shorter replacement schedule is feasible. The ~~commissioner~~ department shall make this determination in writing and notify the owner of the findings within six months after the waterworks is triggered into lead service line replacement based on monitoring referenced in subdivision C 1 of this section.

7. ~~Any~~ The owner may cease replacing lead service lines whenever ~~first-draw~~ first-draw tap samples collected pursuant to 12VAC5-590-375 B 2 b meet the lead ~~action level~~ AL during each of two consecutive six-month monitoring periods and the owner submits the results to the ~~district engineer~~ department. If the ~~first-draw~~ first-draw tap samples collected in ~~any such~~ a waterworks thereafter ~~exceeds~~ exceed the lead ~~action level~~ AL, then the owner shall recommence replacing lead service lines, pursuant to subdivision C 3 of this section.

8. To demonstrate compliance with subdivisions C 1 through C 5 of this section, an owner shall report to the ~~district engineer~~ department the information specified in ~~12VAC5-590-530 F 5~~ 12VAC5-590-532.

D. Lead public education requirements. The ~~waterworks~~ owner shall deliver a consumer notice of lead tap water monitoring results to all persons served by the ~~water system~~ waterworks at sites that are tested in accordance with subdivision D 4 of this section. The owner of a waterworks that exceeds the lead ~~action level~~ AL based on tap water samples collected in accordance with 12VAC5-590-375 B shall deliver the public education materials contained in ~~subdivisions~~ subdivision D 1 of this section in accordance with the requirements in subdivision D 2 of this section. The owner of a waterworks that exceeds the lead ~~action level~~ AL shall sample the tap water of any customer who requests it in accordance with subdivision D 3 of this section.

1. Content of written materials. The owner shall include the following text in all of the printed materials distributed through the lead public education program~~.~~:

a. Community waterworks and ~~nontransient noncommunity waterworks~~ NTNCs. ~~Owners~~ The owner of community waterworks or ~~nontransient noncommunity waterworks~~ a NTNC shall include the following elements in printed materials (e.g., brochures

and pamphlets) in the same order as listed ~~below~~ in this subdivision a. In addition, the language specified in subdivisions D 1 a (1) ~~through~~ and D 1 a (2) and in subdivision D 1 a (6) of this section shall be included in materials, exactly as written, except for the text in brackets for which the ~~waterworks~~ owner shall include system-specific information. Any additional information presented by the owner shall be consistent with the information ~~below~~ in this subdivision a and be in plain language that can be understood by the general public. The ~~commissioner~~ department may require the ~~waterworks~~ owner to obtain approval of the content of written material ~~prior to~~ before delivery.

(1) IMPORTANT INFORMATION ABOUT LEAD IN YOUR DRINKING WATER. ~~[INSERT NAME OF WATERWORKS]~~ "(Insert name of waterworks) found elevated levels of lead in drinking water in some ~~homes/buildings~~ homes or buildings. Lead can cause serious health problems, especially for pregnant women and young children. Please read this information closely to see what you can do to reduce lead in your drinking water."

(2) Health effects of lead. "Lead can cause serious health problems if too much enters your body from drinking water or other sources. It can cause damage to the brain and kidneys, and can interfere with the production of red blood cells that carry oxygen to all parts of your body. The greatest risk of lead exposure is to infants, young children, and pregnant women. Scientists have linked the effects of lead on the brain with lowered IQ in children. Adults with kidney problems and high blood pressure can be affected by low levels of lead more than healthy adults. Lead is stored in the bones, and it can be released later in life. During pregnancy, the child receives lead from the mother's bones, which may affect brain development."

(3) Sources of lead.

(a) Explain what lead is.

(b) Explain possible sources of lead in drinking water and how lead enters drinking water. Include information on ~~home/building~~ home or building materials and services lines that may contain lead.

(c) Discuss other important sources of lead exposure in addition to drinking water (e.g., paint).

(4) Discuss the steps the consumer can take to reduce their exposure to lead in drinking water.

(a) Encourage running the water to flush out the lead.

(b) Explain concerns with using hot water from the tap and specifically caution against the use of hot water for preparing baby formula.

(c) Explain that boiling water does not reduce lead levels.

(d) Discuss other options consumers can take to reduce exposure to lead in drinking water, such as alternative sources or treatment of water.

(e) Suggest that parents have their child's blood tested for lead.

(5) Explain why there are elevated levels of lead in the waterworks' drinking water (if known) and what the ~~waterworks~~ owner is doing to reduce the lead levels in ~~homes/buildings~~ homes and buildings.

(6) "For more information call us at ~~[INSERT WATERWORKS OWNER'S CONTACT PHONE NUMBER], or [IF APPLICABLE]~~ (Insert owner's contact phone number), or if applicable, visit our website at ~~[INSERT WATERWORKS' WEBSITE HERE]~~ (Insert waterworks' website URL here). For more information on reducing lead exposure around your ~~home/building~~ home or building and the health effects of lead, visit EPA's website at http://www.epa.gov/lead or contact your health care provider."

b. In addition to including the elements specified in subdivision D 1 a of this section, the ~~owners~~ owner of a community waterworks shall:

(1) Tell consumers how to get their water tested.

(2) Discuss lead in plumbing components and the difference between low lead and lead free. "Lead free" means (i) when used with respect to solders and flux refers to solders and flux containing not more than 0.2% lead, and (ii) when used with respect to pipes, pipe fittings, plumbing fittings, and plumbing fixtures refers to the weighted average of wetted surfaces of pipes, pipe fittings, plumbing fittings, and plumbing fixtures containing not more than 0.25% lead.

2. Delivery of public education materials.

a. The owner of ~~any~~ a waterworks serving a large proportion of non-English speaking consumers, as determined by the ~~commissioner~~ department, shall include in all public education materials information in the appropriate ~~language(s)~~ languages regarding the importance of the notice or contain a telephone number or address where persons served may contact the ~~water system~~ waterworks to obtain a translated copy of the public education materials or to request assistance in the appropriate language.

b. The owner of a community waterworks that exceeds the lead ~~action level~~ AL on the basis of tap water samples collected in accordance with 12VAC5-590-375 B, and that is not already conducting public education tasks, shall conduct the public education tasks under this subdivision within 60 days after the end of the

monitoring period in which the exceedance occurred. For a waterworks that ~~are~~ is required to conduct monitoring annually or less frequently, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs, or, if the ~~commissioner~~ department has established an alternate monitoring period, the last day of that period. These public education tasks include:

(1) ~~Deliver~~ Delivering printed materials meeting the content requirements of subdivision D 1 of this section to all bill paying customers.

(2) ~~Contact~~ Contacting customers who are most at risk by delivering education materials that meet the content requirements of subdivision D 1 of this section to the local health department even if they are not located within the ~~water system's~~ waterworks service area, along with an informational notice that encourages distribution to all the organization's potentially affected customers or community ~~water system's users~~ waterworks consumers. The ~~waterworks~~ owner shall contact the local health department directly by phone or in person. The local health department may provide a specific list of additional community based organizations serving target populations, which may include organizations outside the service area of the ~~water system~~ waterworks. If ~~such~~ these lists are provided, then the ~~waterworks~~ owner shall deliver education materials that meet the content requirements of subdivision D 1 of this section to all organizations on the provided lists.

(3) ~~Contact~~ Contacting customers who are most at risk by delivering materials that meet the content requirements of subdivision D 1 of this section to the following organizations that are located within the ~~water system's~~ waterworks service area, along with an informational notice that encourages distribution to all the organization's potentially affected customers or community ~~water system's~~ waterworks users: (i) public and private schools or school boards; (ii) Women, Infants and Children (WIC) and Head Start programs; (iii) public and private hospitals and medical clinics; (iv) pediatricians; (v) family planning clinics; and (vi) local welfare agencies.

(4) Make a good faith effort to locate the following organizations within the service area and deliver materials that meet the content requirements of subdivision D 1 of this section to them, along with an informational notice that encourages distribution to all potentially affected customers or ~~users~~ consumers. The good faith effort to contact at-risk customers may include requesting a specific contact list of these organizations from the local health department, even if the agencies are not located within the ~~water system's~~ waterworks service area: (i) licensed childcare centers~~;~~, (ii) public and private preschools~~;~~, and (iii) obstetricians-gynecologists and midwives.

(5) No less often than quarterly, ~~provide~~ providing information on or in each water bill as long as the waterworks exceeds the ~~action level~~ AL for lead. The message on the water bill shall include the following statement exactly as written except for the text in brackets for which the owner shall include system-specific information: ~~[INSERT NAME OF WATERWORKS]~~ "(Insert name of waterworks) found high levels of lead in drinking water in some homes. Lead can cause serious health problems. For more information please call ~~[INSERT NAME OF WATERWORKS] or visit [IF APPLICABLE INSERT WATERWORKS' WEBSITE]~~ (insert name of waterworks) or (if applicable) visit our website at (insert waterworks website URL here)". The message or delivery mechanism can be modified in consultation with the ~~commissioner~~ department; specifically, the ~~commissioner~~ department may allow a separate mailing of public education materials to customers if the ~~waterworks~~ owner cannot place the information on water bills.

(6) ~~Post~~ Posting materials meeting the content requirements of subdivision D 1 of this section on the ~~waterworks'~~ waterworks website if the waterworks serves a population greater than 100,000 persons.

(7) ~~Submit~~ Submitting a press release to newspapers, television, and radio stations.

(8) In addition to the delivery requirements contained in subdivisions D 2 b (1) through D 2 b (7) of this section, the ~~owners of~~ owner of a waterworks exceeding the lead ~~action level~~ AL shall implement at least three activities from one or more of the following categories: (i) public service announcements~~;~~, (ii) paid advertisements~~;~~, (iii) public area informational displays~~;~~, (iv) ~~e-mails~~ emails to customers~~;~~, (v) public meetings~~;~~, (vi) household deliveries~~;~~, (vii) targeted individual customer contact~~;~~, (viii) direct material distribution to all multi-family homes and institutions~~;~~, and (ix) other methods approved by the ~~commissioner~~ department. The educational content and selection of these activities shall be determined in consultation with the ~~district engineer~~ department.

(9) As long as a community ~~water system~~ waterworks exceeds the lead ~~action level~~ AL, the ~~waterworks~~ owner shall repeat the following public education activities:

(a) The owner of a community ~~water system owner~~ waterworks shall repeat the tasks contained in subdivisions D 2 b (1) ~~through~~, D 2 b (2), D 2 b (3), and D 2 b (8) of this section every 12 months.

(b) The owner of a community ~~water system owner~~ waterworks shall repeat tasks contained in subdivision D 2 b (5) of this section with each billing cycle.

(c) The owner of a community ~~water system~~ waterworks serving a population greater than 100,000 shall post and retain the material on a publicly accessible website pursuant to subdivision D 2 b (6) of this section.

(d) The owner of a community ~~water system owner~~ waterworks shall repeat the task in subdivision D 2 b (7) of this section twice every 12 months on a schedule agreed upon with the ~~commissioner~~ department.

(10) The ~~commissioner~~ department may allow the public education activities described in subdivision D 2 b of this section to extend beyond the 60-day requirement if needed for implementation purposes on a case-by-case basis; however, this extension must be approved in writing by the ~~commissioner~~ department in advance of the 60-day deadline.

c. The owner of a ~~nontransient noncommunity waterworks~~ NTNC that exceeds the lead ~~action level~~ AL on the basis of tap water samples collected in accordance with 12VAC5-590-375 B, and that is not already conducting public education tasks, shall conduct the public education tasks under this subdivision within 60 days after the end of the monitoring period in which the exceedance occurred. For a waterworks that ~~are~~ is required to conduct monitoring annually or less frequently, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs, or, if the ~~commissioner~~ department has established an alternate monitoring period, the last day of that period. These public education tasks include:

(1) ~~Post~~ Posting informational posters containing all of the public education elements contained in subdivision D 1 of this section in a public place or common area in each of the buildings served by the waterworks; and

(2) ~~Distribute~~ Distributing informational pamphlets or brochures on lead in drinking water containing all of the public education elements in subdivision D 1 of this section to each person served by the ~~nontransient noncommunity waterworks~~ NTNC. The ~~commissioner~~ department may allow the owner to utilize electronic transmission ~~in lieu~~ instead of or combined with printed materials as long as it achieves at least the same coverage.

(3) The owner of a ~~nontransient noncommunity waterworks~~ NTNC shall repeat the tasks contained in subdivisions D 2 c (1) ~~through~~ and D 2 c (2) of this section at least once during each calendar year in which the waterworks exceeds the lead ~~action level~~ AL.

(4) The ~~commissioner~~ department may allow the public education activities described in subdivision D 2 c of this section to extend beyond the 60-day requirement if needed for implementation purposes on a case-by-case basis; however, this extension must be approved in writing by the ~~commissioner~~ department in advance of the 60-day deadline.

d. ~~An~~ The owner may discontinue delivery of public education materials if the waterworks has met the lead ~~action level~~ AL during the most recent six-month monitoring period conducted pursuant to 12VAC5-590-375 B. The owner shall recommence public education in accordance with this subsection if the waterworks subsequently exceeds the lead ~~action level~~ AL during any monitoring period.

e. The owner of a community waterworks may apply to the ~~district engineer,~~ department, in writing, (unless the ~~commissioner~~ department has waived the requirement for prior approval) to use only the text specified in subdivision D 1 a of this section ~~in lieu~~ instead of the text in subdivisions D 1 a ~~through~~ and D 1 b of this section and to perform the tasks listed in subdivisions D 2 c (1) ~~through~~ and D 2 c (2) of this section ~~in lieu~~ instead of the tasks in subdivisions D 2 b (1) through D 2 b (9) of this section if:

(1) The waterworks serves a facility, such as a prison or a hospital, where the population served is not capable of or is prevented from making improvements to plumbing or installing POU treatment devices; and

(2) The owner provides water as part of the cost of services provided and does not separately charge for water consumption.

f. The owner of a community waterworks serving 3,300 or fewer people may limit certain aspects ~~their~~ of the public education programs as follows:

(1) With respect to the requirements of subdivision D 2 b (8) of this section, the owner of a waterworks serving 3,300 or fewer people shall implement at least one of the activities listed in that subdivision.

(2) With respect to the requirements of subdivision D 2 b (2) of this section, the owner of a waterworks serving 3,300 or fewer people may limit the distribution of the public education materials required under that subdivision to facilities and organizations served by the waterworks that are most likely to be visited regularly by pregnant women and children.

(3) With respect to the requirements of subdivision D 2 b (7) of this section, the ~~commissioner~~ department may waive this requirement for ~~systems~~ waterworks serving 3,300 or fewer persons as long as the owner distributes notices to every household served by the waterworks.

3. Supplemental monitoring and notification of results. The owner of a waterworks that fails to meet the lead ~~action level~~ AL on the basis of tap samples collected in accordance with 12VAC5-590-375 B shall offer to sample the tap water of any customer who requests it. The owner is not required to pay for collecting or analyzing the sample, nor is the owner required to collect and analyze the sample itself.

4. Notification of results. The ~~owners of all~~ owner of a community ~~and nontransient noncommunity~~ waterworks or a NTNC shall provide a notice of the individual tap results from lead tap water monitoring carried out under the requirements of 12VAC5-590-375 B to the persons served by the waterworks at the specific sampling site from which the sample was ~~taken~~ collected (e.g., the occupants of the residence or buildings where the tap was tested).

a. Timing of notification. ~~An~~ The owner shall provide this consumer notice as soon as practical, but no later than 30 days after the owner learns of the tap monitoring results.

b. Content. The consumer notice shall include the results of lead tap water monitoring for the tap that was tested, an explanation of the health effects of lead, list steps consumers can take to reduce exposure to lead in drinking water, and contact information for the waterworks. The notice shall also provide the ~~maximum contaminant level goal~~ MCLG and the ~~action level~~ AL for lead and the definitions for these two terms from 12VAC5-590-10.

c. Delivery. The consumer notice shall be provided to persons served at the tap that was tested, either by postal mail or by another method approved by the ~~commissioner~~ department. For example, the owner of a ~~nontransient noncommunity waterworks~~ NTNC may post the results on a bulletin board in the facility to allow ~~users~~ consumers to review the information. The owner shall provide the notice to customers at sample taps tested, including consumers who do not receive water bills.

12VAC5-590-410. ~~Determination of compliance.~~ (Repealed.)

~~For the purposes of determining compliance with a PMCL or action level, the following criteria shall be used:~~

~~A. Bacteriological results. Compliance with the PMCL for coliform bacteria shall be determined as specified in 12VAC5-590-380 B. Repeat samples shall be used as a basis for determining compliance with these regulations.~~

~~B. Inorganic chemicals.~~

~~1. Antimony, arsenic, asbestos, barium, beryllium, cadmium, cyanide (as free cyanide), chromium, fluoride, mercury, nickel, selenium, and thallium. Where the results of sampling for antimony, arsenic, asbestos, barium, beryllium, cadmium, cyanide (as free cyanide), chromium, fluoride, mercury, nickel, selenium, or thallium exceed the PMCL, the owner shall take a confirmation sample, at the same sampling point, within two weeks of notification of the analytical results of the first sample.~~

~~a. The results of the initial and confirmation samples shall be averaged to determine compliance with subdivision B 1 c of this subsection. The commissioner has the discretion to delete results of obvious sampling errors.~~

~~b. The commissioner may require more frequent monitoring.~~

~~c. Compliance with antimony, arsenic, asbestos, barium, beryllium, cadmium, cyanide (as free cyanide), chromium, fluoride, mercury, nickel, selenium, and thallium in Table 2.2 of 12VAC5-590-440 shall be determined based on the analytical result(s) obtained at each sampling point.~~

~~(1) Owners that are conducting monitoring more frequently than annually, compliance with the PMCL for antimony, arsenic, asbestos, barium, beryllium, cadmium, cyanide (as free cyanide), chromium, fluoride, mercury, nickel, selenium, and thallium is determined by a running annual average at each sampling point. If the average at any sampling point is greater than the PMCL, then the waterworks is out of compliance. If any one sample would cause the annual average to be exceeded, then the waterworks is out of compliance immediately. Any sample below the method detection limit shall be calculated at zero for the purpose of determining the annual average. If an owner fails to collect the required number of samples, compliance (average concentration) shall be based on the total number of samples collected.~~

~~(2) Owners that are monitoring annually, or less frequently, the waterworks is not out of compliance with the PMCL for antimony, arsenic, asbestos, barium, beryllium, cadmium, cyanide (as free cyanide), chromium, fluoride, mercury, nickel, selenium, and thallium if the average of the original sample and a confirmation sample of a contaminant at any sampling point is greater than the PMCL. Owners of waterworks monitoring annually or less frequently whose sample result exceeds the PMCL shall begin quarterly sampling. The waterworks shall not be considered in violation of the PMCL until it has completed one year of quarterly sampling. However, if the confirmation sample is not collected, the waterworks is in violation of the PMCL for antimony, arsenic, asbestos, barium, beryllium, cadmium, cyanide (as free cyanide), chromium, fluoride, mercury, nickel, selenium, or thallium. If an owner fails to collect the required number of samples, compliance~~

(average concentration) shall be based on the total number of samples collected.

2. Nitrate and nitrite. Compliance with the PMCL is determined based on one sample from each sampling point if the levels of these contaminants are below the PMCLs. Where nitrate or nitrite sample results exceed the PMCL, the owner shall take a confirmation sample from the same sampling point that exceeded the PMCL within 24 hours of the owner's receipt of the analytical results of the first sample. The results of the initial and confirmation sample shall be averaged to determine compliance with this subdivision. Owners unable to comply with the 24 hour sampling requirement shall immediately notify the consumers in the area served by the waterworks in accordance with 12VAC5-590-540. Owners exercising this option shall take and analyze a confirmation sample within two weeks of notification of the analytical results of the first sample. The commissioner may require more frequent monitoring. The commissioner has the discretion to delete results of obvious sampling errors.

C. Organic chemicals.

1. VOCs and SOCs. A confirmation sample shall be required for positive results for contaminants listed in Table 2.3. The commissioner has the discretion to delete results of obvious sampling errors from this calculation.

a. The results of the initial and confirmation sample shall be averaged to determine the waterworks' compliance in accordance with subdivision C 1 b of this subsection.

b. Compliance with Table 2.3 shall be determined based on the analytical results obtained at each sampling point. Any samples below the detection limit shall be calculated as zero for the purposes of determining the annual average. (Note: Refer to detection definition at 12VAC5-590-370 B 2 h.) If an owner fails to collect the required number of samples, compliance (average concentration) will be based on the total number of samples collected.

(1) Owners that are conducting monitoring more frequently than annually, compliance is determined by a running annual average of all samples taken at each sampling point. If the annual average of any sampling point is greater than the PMCL, then the waterworks is out of compliance. If the initial sample or a subsequent sample would cause the annual average to be exceeded, then the waterworks is out of compliance immediately. Any samples below the detection limit shall be calculated as zero for purposes of determining the annual average. (Note: Refer to detection definition at 12VAC5-590-370 B 2 h.)

(2) If monitoring is conducted annually, or less frequently, the waterworks is not in violation if the average of the initial and confirmation sample is greater than the PMCL for that contaminant; however, the owner shall begin quarterly sampling. The waterworks will not be considered in violation of the PMCL until the owner has completed one year of quarterly sampling. If any sample will cause the running annual average to exceed the PMCL at any sampling point, the waterworks is immediately out of compliance with the PMCL.

2. Disinfectant residuals, disinfection byproducts and disinfection byproduct precursors. Compliance with 12VAC5-590-370 B 3 a through B 3 k is as follows:

a. General requirements.

(1) Where compliance is based on a running annual average of monthly or quarterly samples or averages and the owner fails to monitor for TTHM, HAA5, or bromate, this failure to monitor will be treated as a monitoring violation for the entire period covered by the annual average. Where compliance is based on a running annual average of monthly or quarterly samples or averages and the owner's failure to monitor makes it impossible to determine compliance with MRDLs for chlorine and chloramines, this failure to monitor shall be treated as a monitoring violation for the entire period covered by the annual average.

(2) All samples taken and analyzed under subdivision C 2 of this section shall be included in determining compliance, even if that number is greater than the minimum required.

(3) If during the first year of monitoring under 12VAC5-590-370 B 3 b, any individual quarter's average will cause the running annual average of that waterworks to exceed the PMCL in Table 2.12 and Table 2.13, the waterworks is out of compliance at the end of that quarter.

b. Disinfection byproducts.

(1) TTHMs and HAA5.

(a) Running Annual Average. All waterworks using surface water or groundwater under the direct influence of surface water serving 10,000 or more persons shall comply with this section beginning January 1, 2002. All waterworks using surface water or groundwater under the direct influence of surface water serving less than 10,000 persons and all waterworks using groundwater not under the direct influence of surface water shall comply with this section beginning January 1, 2004. All waterworks shall comply with this section until the dates listed in 12VAC5-590-370 B e (3) (c).

(i) For waterworks monitoring quarterly, compliance with PMCLs in Table 2.13 shall be based on a running annual arithmetic average, computed quarterly, of quarterly arithmetic averages of all samples collected by the owner as prescribed by 12VAC5-590-370 B 3 e (1).

(ii) For waterworks monitoring less frequently than quarterly, the owner demonstrates PMCL compliance if the average of samples taken that year under the provisions of 12VAC5-590-370-B-3-e-(1) does not exceed the PMCLs in Table 2.13. If the average of these samples exceeds the PMCL, the owner shall increase monitoring to once per quarter per treatment plant and such a waterworks is not in violation of the PMCL until it has completed one year of quarterly monitoring, unless the result of fewer than four quarter of monitoring will cause the running annual average to exceed the PMCL, in which case the waterworks is in violation at the end of that quarter. Owners of waterworks required to increase monitoring frequency to quarterly monitoring shall calculate compliance by including the sample that triggered the increase monitoring plus the following three quarter of monitoring.

(iii) If the running annual arithmetic average of quarterly averages covering any consecutive four quarter period exceeds the PMCL in Table 2.12 and Table 2.13, the waterworks is in violation of the PMCL and the owner shall notify the public pursuant to 12VAC5-590-540 in addition to reporting to the commissioner pursuant to 12VAC5-590-530.

(iv) If an owner fails to complete four consecutive quarters of monitoring, compliance with the PMCL in Table 2.13 for the last four quarter compliance period shall be based on an average of the available data.

(b) Locational Running Annual Average (LRAA). All waterworks shall comply with this section beginning on the dates listed in 12VAC5-590-370-B-e-(3)-(c).

(i) Owners of waterworks required to monitor quarterly shall calculate LRAAs for TTHM and HAA5 using monitoring results collected under 12VAC5-590-370-B-3-e-(3) and determine that each LRAA does not exceed the PMCL in order to comply with PMCLs in Table 2.13. If the owner fails to complete four consecutive quarters of monitoring, the owner shall calculate compliance with the PMCL based on the average of the available data from the most recent four quarters. If the owner takes more than one sample per quarter at a monitoring location, the owner shall average all samples taken in the quarter at that location to determine a quarterly average to be used in the LRAA calculation.

(ii) Owners of waterworks required to monitor yearly or less frequently shall determine that each sample taken is less than the PMCL in order to determine compliance with PMCLs in Table 2.13. If any sample exceeds the PMCL, the owner shall comply with the requirements of 12VAC5-590-370-B-3-e-(3)-(g). If no sample exceeds the PMCL, the sample result for each monitoring location is considered the LRAA for that monitoring location.

(iii) Waterworks are in violation of the monitoring requirements for each quarter that a monitoring result would be used in calculating an LRAA if the owner fails to monitor.

(iv) Waterworks have exceeded the operational evaluation level at any monitoring location where the sum of the two previous quarters' TTHM results plus twice the current quarter's TTHM result, divided by four to determine an average, exceeds 0.080 mg/L, or where the sum of the two previous quarters' HAA5 results plus twice the current quarter's HAA5 result, divided by four to determine an average, exceeds 0.060 mg/L.

((a)) Owners of waterworks that exceed the operational evaluation level shall conduct an operational evaluation and submit a written report of the evaluation to the commissioner no later than 90 days after being notified of the analytical result that causes the waterworks to exceed the operational evaluation level. The written report shall be made available to the public upon request.

((b)) The operational evaluation report shall include an examination of waterworks treatment and distribution operational practices, including storage tank operations, excess storage capacity, distribution system flushing, changes in sources or source water quality, and treatment changes or problems that may contribute to TTHM and HAA5 formation and what steps could be considered to minimize future exceedances.

((c)) The owner may request and the commissioner may allow waterworks to limit the scope of the evaluation if the owner is able to identify the cause of the operational evaluation level exceedance. The request to limit the scope of the evaluation does not extend the schedule in paragraph ((a)) of this section for submitting the written report. The commissioner shall approve this limited scope of evaluation in writing and the owner shall keep that approval with the completed report.

(2) Bromate. Compliance shall be based on a running annual arithmetic average, computed quarterly, of monthly samples (or, for months in which the waterworks takes more than one sample, the average of all samples taken during the month) collected by the owner as prescribed by 12VAC5-590-370-B-3-g. If the average of samples covering any consecutive four-quarter period exceeds the PMCL in Table 2.13, the waterworks is in violation of the PMCL and the owner shall notify the public pursuant to 12VAC5-590-540, in addition to reporting to the commissioner pursuant to 12VAC5-590-530. If an owner fails to complete 12 consecutive months' monitoring, compliance with the PMCL for the last four-quarter compliance period shall be based on an average of the available data.

(3) Chlorite. Compliance shall be based on an arithmetic average of each three sample set taken in the distribution system as prescribed by 12VAC5-590-370-B-3-f-(1)-(a), (b) and (c). If the arithmetic average of any three sample set exceeds the PMCL in Table 2.13, the waterworks is in violation of the PMCL and the owner shall notify the public pursuant to 12VAC5-590-540, in addition to reporting to the commissioner pursuant to 12VAC5-590-530.

c. Disinfectant residuals.

(1) Chlorine and chloramines.

(a) Compliance shall be based on a running annual arithmetic average, computed quarterly, of monthly averages of all samples collected by the waterworks under 12VAC5-590-370-B-3-h-(1)-(a). If the average covering any consecutive four-quarter period exceeds the MRDL in Table 2.12, the waterworks is in violation of the MRDL and the owner shall notify the public pursuant to 12VAC5-590-540, in addition to reporting to the commissioner pursuant to 12VAC5-590-530.

(b) In cases where waterworks switch between the use of chlorine and chloramines for residual disinfection during the year, compliance shall be determined by including together all monitoring results of both chlorine and chloramines in calculating compliance. Reports submitted pursuant to 12VAC5-590-530 shall clearly indicate which residual disinfectant was analyzed for each sample.

(2) Chlorine dioxide.

(a) Acute violations. Compliance shall be based on consecutive daily samples collected by the owner under 12VAC5-590-370-B-3-h-(2)-(a). If any daily sample taken at the entrance to the distribution system exceeds the MRDL in Table 2.12, and on the following day one (or more) of the three samples taken in the distribution system exceed the MRDL, the waterworks is in violation of the MRDL and the owner shall take immediate corrective action to lower the level of chlorine dioxide below the MRDL and the owner shall notify the public pursuant to the procedures for Tier 1 conditions in 12VAC5-590-540 in addition to reporting to the commissioner in pursuant to 12VAC5-590-530. Failure to take samples in the distribution system the day following an exceedance of the chlorine dioxide MRDL at the entrance to the distribution system will also be considered an MRDL violation and the owner shall notify the public of the violation in accordance with the provisions for Tier 1 conditions in 12VAC5-590-540 in addition to reporting to the commissioner in pursuant to 12VAC5-590-530.

(b) Nonacute violations. Compliance shall be based on consecutive daily samples collected by the owner under 12VAC5-590-370-B-3-h-(2)-(a). If any two consecutive daily samples taken at the entrance to the distribution system exceed the MRDL in Table 2.12 and all distribution system samples taken are below the MRDL, the waterworks is in violation of the MRDL and the owner shall take corrective action to lower the level of chlorine dioxide below the MRDL at the point of sampling and shall notify the public pursuant to the procedures for Tier 2 conditions in 12VAC5-590-540 in addition to reporting to the commissioner in pursuant to 12VAC5-590-530. Failure to monitor at the entrance to the distribution system the day following an exceedance of the chlorine dioxide MRDL at the entrance to the distribution system is also an MRDL violation and the owner shall notify the public of the violation in accordance with the provisions for Tier 2 conditions in 12VAC5-590-540 in addition to reporting to the commissioner in pursuant to 12VAC5-590-530.

d. Disinfection byproduct precursors (DBPP). Compliance shall be determined as specified by 12VAC5-590-420-H-3. Owners may begin monitoring to determine whether Step 1 TOC removals can be met 12 months prior to the compliance date for the waterworks. This monitoring is not required and failure to monitor during this period is not a violation. However, any owner that does not monitor during this period, and then determines in the first 12 months after the compliance date that it is not able to meet the Step 1 requirements in 12VAC5-590-420-H-2-b and shall therefore apply for alternate minimum TOC removal (Step 2) requirements, is not eligible for retroactive approval of alternate minimum TOC removal (Step 2) requirements as allowed pursuant to 12VAC5-590-420-H-2-c and is in violation. Owners may apply for alternate minimum TOC removal (Step 2) requirements any time after the compliance date. For waterworks required to meet Step 1 TOC removals, if the value calculated under 12VAC5-590-420-H-3-a-(4) is less than 1.00, the waterworks is in violation of the treatment technique requirements and the owner shall notify the public pursuant to 12VAC5-590-540 in addition to reporting to the commissioner pursuant to 12VAC5-90-530.

D. Radiological results (gross alpha, combined radium-226 and radium-228, uranium and man-made radioactivity). Compliance with the radiological PMCLs shall be in accordance with 12VAC5-590-370-D-3-c. PMCLs are indicated in subsection B of Table 2.5. Sampling for radiological analysis shall be in compliance with 12VAC5-590-370-D-1 and D-2. Furthermore, compliance shall be determined by rounding off results to the same number of significant figures as the PMCL for the substance in question.

~~E. Reserved.~~

~~F. Turbidity. The requirements in this subsection apply to filtered waterworks until June 29, 1993. The requirements in this section apply to unfiltered waterworks with surface water sources or groundwater sources under the direct influence of surface water that are required to install filtration equipment until June 29, 1993, or until filtration is installed, whichever is later. When a sample exceeds the PMCL for turbidity a confirmation sample shall be collected for analysis as soon as possible. In cases where a turbidimeter is required at the waterworks, the preferable resampling time is within one hour of the initial sampling. The repeat sample shall be the sample used for the purpose of calculating the monthly average. Compliance for public notification purposes shall be based on the monthly averages of the daily samples. However, public notification is also required if the average of samples taken on two consecutive days exceeds five NTU.~~

~~G. All analyses for PMCL and action level compliance determinations shall be consistent with current Environmental Protection Agency Regulations found at 40 CFR Part 141.~~

12VAC5-590-411. Disinfection byproduct precursors, disinfection byproducts, and maximum residual disinfection level treatment techniques.

A. Treatment technique for control of DBPPs.

1. Applicability.

a. The owner of a community waterworks or a NTNC shall comply with treatment techniques for the control of DBPPs.

b. A waterworks that uses a surface water source, a GUDI source, or both using conventional filtration treatment shall operate with enhanced coagulation or enhanced softening to achieve the TOC percentage removal levels specified in subdivision A 2 of this section unless the waterworks meets at least one of the alternative compliance criteria listed in subdivision A 1 c or A 1 d of this section.

c. Alternative compliance criteria for enhanced coagulation and enhanced softening waterworks. A waterworks that uses a surface water source, a GUDI source, or both provided with conventional filtration treatment may use the alternative compliance criteria in subdivisions A 1 c (1) through A 1 c (6) of this section to comply with this section instead of complying with subdivision A 2 of this section. The owner shall comply with monitoring requirements in 12VAC5-590-374 I.

(1) The waterworks' source water TOC level is less than 2.0 mg/L, calculated quarterly as an RAA.

(2) The waterworks' treated water TOC level is less than 2.0 mg/L, calculated quarterly as an RAA.

(3) The waterworks' source water TOC level is less than 4.0 mg/L, calculated quarterly as an RAA; the source water alkalinity is greater than 60 mg/L (as $CaCO_3$), calculated quarterly as an RAA; and no TTHM and HAA5 LRAAs are greater than 0.040 mg/L and 0.030 mg/L, respectively.

(4) No TTHM and HAA5 LRAAs are greater than 0.040 mg/L and 0.030 mg/L, respectively, and the waterworks uses only chlorine for primary disinfection and maintains a residual in the distribution system.

(5) The waterworks' source water SUVA, before any treatment and measured monthly, is less than or equal to 2.0 liters per milligram-meter (L/mg-m), calculated quarterly as an RAA.

(6) The waterworks' finished water SUVA, measured monthly, is less than or equal to 2.0 L/mg-m, calculated quarterly as an RAA.

d. Additional alternative compliance criteria for softening waterworks. A waterworks practicing enhanced softening that cannot achieve the TOC removals required by subdivision A 2 b of this section may use the alternative compliance criteria in subdivisions A 1 c (1) and A 1 c (2) instead of complying with subdivision A 2 of this section. A waterworks shall comply with monitoring requirements in 12VAC5-590-374 I.

(1) Softening that results in lowering the treated water alkalinity to less than 60 mg/L (as CaCO3), measured monthly and calculated quarterly as an RAA.

(2) Softening that results in removing at least 10 mg/L of magnesium hardness (as CaCO3), measured monthly and calculated quarterly as an RAA.

2. Enhanced coagulation and enhanced softening performance requirements.

a. A waterworks shall achieve the percentage reduction of TOC specified in subdivision A 2 b of this section between the source water and the CFE, unless the department approves an owner's request for alternate minimum TOC removal (Step 2) requirements under subdivision A 2 c of this section.

Required Step 1 TOC reductions, indicated in Table 411.1, are based upon specified source water parameters. A waterworks practicing softening is required to meet the Step 1 TOC reductions in the far-right column (source water alkalinity greater than 120 mg/L) for the specified source water TOC.

b. Step 1 Required removal of TOC by "Enhanced Coagulation and Enhanced Precipitative Softening Guidance Manual," May 1999, EPA Office of Water.

TABLE 411.1
Required Percentage Removals of TOC[a,b]

SOURCE WATER TOC, mg/L	SOURCE WATER ALKALINITY, mg/L as $CaCO_3$		
	0 - 60	>60 - 120	>120[c]
>2.0 - 4.0	35.0%	25.0%	15.0%
>4.0 - 8.0	45.0%	35.0%	25.0%
>8.0	50.0%	40.0%	30.0%

[a]A waterworks meeting at least one of the conditions in subdivisions A 1 c (1) through A 1 c (6) of this section is not required to operate with enhanced coagulation.

[b]A waterworks utilizing softening and meeting one of the alternative compliance criteria in subdivision A 1 d of this section is not required to operate with enhanced softening.

[c]A waterworks practicing softening shall meet the TOC removal requirements in this column.

c. A waterworks that uses a surface water source, a GUDI source, or both with conventional treatment that cannot achieve the Step 1 TOC removals required by subdivision A 2 b due to water quality parameters or operational constraints shall apply to the department within three months of failure to achieve the TOC removals required by subdivision A 2 b of this section for approval of alternative minimum TOC (Step 2) removal requirements submitted by the owner. If the department approves the alternative minimum TOC removal (Step 2) requirements, then the department may make those requirements retroactive for the purposes of determining compliance. Until the department approves the alternate minimum TOC removal (Step 2) requirements, the waterworks shall meet the Step 1 TOC removals contained in subdivision A 2 b of this section.

d. Alternate minimum TOC removal (Step 2) requirements. Applications made to the department by the owner of a waterworks using enhanced coagulation for approval of alternative minimum TOC removal (Step 2) requirements under subdivision A 2 c of this section shall include, at a minimum, results of bench-scale or pilot-scale testing conducted under subdivision A 2 d (1) of this section. The submitted bench-scale or pilot-scale testing shall be used to determine the alternate enhanced coagulation level.

(1) Alternate enhanced coagulation level is defined as coagulation at a coagulant dose and pH as determined by the method described in subdivisions A 2 d (1) through A 2 d (5) of this section so that an incremental addition of 10 mg/L of alum (or equivalent amount of ferric salt) results in a TOC removal of equal to or less than 0.3 mg/L. The percentage removal of TOC at this point on the "TOC removal versus coagulant dose" curve is then defined as the minimum TOC removal required for the waterworks. Once approved by the department, this minimum requirement supersedes the minimum TOC removal requirements listed in Table 411.1. This requirement shall be effective until the department approves a new value based on the results of a new bench-scale and pilot-scale test. Failure to achieve the alternative minimum TOC removal levels set by the department is a violation of this section.

(2) Bench-scale or pilot-scale testing of enhanced coagulation shall be conducted by using representative water samples and adding 10 mg/L increments of alum (or equivalent amounts of ferric salt) until the pH is reduced to a level less than or equal to the enhanced coagulation Step 2 target pH shown in Table 411.2.

TABLE 411.2
Enhanced Coagulation

ALKALINITY (mg/L as CaCO3)	TARGET pH
0 - 60	5.5
>60 -120	6.3
>120 - 240	7.0
>240	7.5

(3) For source waters with alkalinities of less than 60 mg/L for which addition of small amounts of alum or equivalent addition of iron coagulant drives the pH below 5.5 before significant TOC removal occurs, the waterworks shall add necessary chemicals to maintain the pH between 5.3 and 5.7 in samples until the TOC removal of 0.3 mg/L per 10 mg/L alum added (or equivalent addition of iron coagulant) is reached.

(4) The waterworks may operate at any coagulant dose or pH necessary (consistent with other sections of this chapter) to achieve the minimum TOC percentage removal approved under subdivision A 2 c of this section.

(5) If the TOC removal is consistently less than 0.3 mg/L of TOC per 10 mg/L of incremental alum dose at all dosages of alum (or equivalent addition of iron coagulant), then the water is deemed to contain TOC not amenable to enhanced coagulation. The owner may then apply to the department for a waiver of enhanced coagulation requirements.

3. Compliance calculations.

a. A waterworks that uses a surface water source, a GUDI source, or both other than those identified in subdivision A 1 b or A 1 c of this section shall comply with requirements contained in subdivision A 2 b or A 2

c of this section. The owner shall calculate compliance quarterly, beginning after the waterworks has collected 12 months of data, by determining an annual average using the following method:

(1) Determine actual monthly TOC percentage removal, equal to:

[1-(treated water TOC/source water TOC)] X 100.

(2) Determine the required monthly TOC percentage removal (from either Table 411.1 or from subdivision A 2 c of this section).

(3) Divide the value in subdivision A 3 a (1) of this section by the value in subdivision A 3 a (2) of this section.

(4) Add together the results of subdivision A 3 a (3) of this section for the last 12 months and divide by 12.

(5) If the value calculated in subdivision A 3 a (4) of this section is less than 1.00, then the waterworks is not in compliance with the TOC percentage removal requirements.

b. The owner may use the provisions in subdivisions A 3 b (1) through A 3 b (5) of this section instead of the calculations in subdivisions A 3 a (1) through A 3 a (5) of this section to determine compliance with TOC percentage removal requirements.

(1) In any month that the waterworks' treated or source water TOC level is less than 2.0 mg/L, the waterworks may assign a monthly value of 1.0 (instead of the value calculated in subdivision A 3 a (3) of this section) when calculating compliance under the provisions of subdivision A 3 a of this section.

(2) In any month that a waterworks practicing softening removes at least 10 mg/L of magnesium hardness (as CaCO3), the waterworks may assign a monthly value of 1.0 (instead of the value calculated in subdivision A 3 a (3) of this section) when calculating compliance under the provisions of subdivision A 3 a of this section.

(3) In any month that the waterworks source water SUVA before any treatment is equal to or less than 2.0 L/mg-m, the waterworks may assign a monthly value of 1.0 (instead of the value calculated in subdivision A 3 a (3) of this section) when calculating compliance under the provisions of subdivision A 3 a of this section.

(4) In any month that the waterworks finished water SUVA is equal to or less than 2.0 L/mg-m, the waterworks may assign a monthly value of 1.0 (instead of the value calculated in subdivision A 3 a (3) of this section) when calculating compliance under the provisions of subdivision A 3 a of this section.

(5) In any month that the waterworks practicing enhanced softening lowers the alkalinity below 60 mg/L (as $CaCO_3$), the waterworks may assign a monthly value of 1.0 (instead of the value calculated in subdivision A 3 a (3) of this section) when calculating compliance under the provisions of subdivision A 3 a of this section.

c. A waterworks that uses a surface water source, a GUDI source, or both and uses conventional treatment may also comply with the requirements of this section by meeting the criteria in subdivision A 1 b or A 1 c of this section.

4. Enhanced coagulation or enhanced softening is the treatment technique required to control the level of DBP precursors in water treatment and distribution system for a waterworks using a surface water source, a GUDI source, or both and using conventional treatment.

B. The BAT, treatment techniques, or other means available for achieving compliance with the PMCLs for DBPs shown in Table 340.6 are listed in this subsection:

1. The BAT, treatment techniques, or other means available for achieving compliance with the PMCLs for bromate and chlorite:

DISINFECTION BYPRODUCT	BEST AVAILABLE TECHNOLOGY
Bromate	Control of ozone treatment process to reduce production of bromate
Chlorite	Control of treatment processes to reduce disinfectant demand and control of disinfection treatment processes to reduce disinfectant levels

2. The BAT, treatment techniques, or other means available for achieving compliance with the RAA PMCLs for TTHM and HAA5:

DISINFECTION BYPRODUCT	BEST AVAILABLE TECHNOLOGY
TTHM and HAA5	Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant

3. The BAT, treatment techniques, or other means available for achieving compliance with the LRAA PMCLs for TTHM and HAA5 for a waterworks that disinfects its source water:

DISINFECTION BYPRODUCT	BEST AVAILABLE TECHNOLOGY
TTHM and HAA5	Enhanced coagulation or enhanced softening, plus GAC10; or NF with a molecular weight cutoff fewer than or equal to 1,000 Daltons; or GAC20

4. The BAT, treatment techniques, or other means available for achieving compliance with the LRAA MCLs for TTHM and HAA5 for a a consecutive waterworks and applies only to the disinfected water that a consecutive waterworks buys or otherwise receives:

DISINFECTION BYPRODUCT	BEST AVAILABLE TECHNOLOGY
TTHM and HAA5	A waterworks serving equal to or greater than 10,000 people: Improved distribution system and storage tank management to reduce residence time, plus the use of chloramines for residual disinfectant maintenance A waterworks serving fewer than 10,000 people: Improved distribution system and storage tank management to reduce residence time

C. The BAT, treatment techniques, or other means available for achieving compliance with the MRDLs identified in Table 340.7 are the controls of treatment processes to reduce disinfectant demand and controls of disinfection treatment processes to reduce disinfectant levels.

12VAC5-590-415. Uncovered finished water storage.

A. A waterworks with uncovered finished water storage facilities shall comply with the requirements to cover the facility as described in this section.

B. The owner shall immediately notify the department of the use of each uncovered finished water storage facility.

C. All uncovered finished water storage facilities shall be covered in compliance with a schedule approved by the department.

D. Failure to comply with the requirements of this section is a violation of the treatment technique requirement.

12VAC5-590-420. ~~Treatment technique requirement.~~ (Repealed.)

~~This section establishes treatment technique requirements in lieu of maximum contaminant levels for specified contaminants. Failure to meet any requirement of this section after the applicable date specified is a treatment technique violation.~~

~~A. The filtration and disinfection provisions of this section are required treatment techniques for any waterworks supplied by a surface water source and waterworks supplied by a groundwater source under the direct influence of surface water. This section establishes treatment technique requirements in lieu of PMCL's for the following contaminants: Giardia lamblia, viruses, heterotrophic bacteria (HPC), Legionella, Cryptosporidium and turbidity. Each waterworks with a surface water source or a groundwater source under the direct influence of surface water shall provide treatment of that source water that complies with these treatment technique requirements. The treatment technique requirements consist of installing and properly operating water treatment processes which reliably achieve:~~

~~1. At least 99.9% (3 log) removal and/or inactivation of Giardia lamblia cysts between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer; and~~

~~2. At least 99.99% (4 log) removal and/or inactivation of viruses between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer; and~~

~~3. At least 99% (2 log) removal of Cryptosporidium between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer.~~

~~B. A waterworks using a surface water source or a groundwater source under the direct influence of surface water is considered to be in compliance with the requirements of subsection A of this section if it meets the following disinfection filtration and enhanced filtration and disinfection for Cryptosporidium requirements:~~

~~1. Disinfection. Waterworks with a surface water source or a groundwater source under the direct influence of surface water shall provide disinfection treatment in accordance with this section.~~

~~a. The disinfection treatment shall be sufficient to ensure that the total treatment processes of that waterworks achieve at least 99.9% (3 log) inactivation and/or removal of Giardia lamblia cysts and at least 99.99% (4 log) inactivation and/or removal of viruses.~~

~~b. The residual disinfectant concentration in the water entering the distribution system cannot be less than 0.2 mg/L for more than four hours.~~

~~c. The residual disinfectant concentration in the distribution system, measured as total chlorine, combined chlorine, or chlorine dioxide cannot be undetectable in more than 5.0% of the samples each month, for any two~~

consecutive months that the waterworks serves water to the public. Water in the distribution system with a heterotrophic bacteria concentration less than or equal to 500/mL, measured as heterotrophic plate count (HPC) is deemed to have a detectable disinfectant residual for purposes of determining compliance with this requirement. Thus, the value "V" in percent in the following formula cannot exceed 5.0% in one month, for any two consecutive months.

V = (c + d + e) / (a + b) X 100

a = number of instances where the residual disinfectant concentration is measured;

b = number of instances where the residual disinfectant concentration is not measured but HPC is measured;

c = number of instances where the residual disinfectant concentration is measured but not detected and no HPC is measured;

d = number of instances where no residual disinfectant concentration is detected and where the HPC is greater than 500/mL; and

e = number of instances where the residual disinfectant concentration s not measured and HPC is greater than 500/mL.

d. The commissioner may determine, based on site-specific considerations, that an owner has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature conditions and the waterworks is providing adequate disinfection in the distribution system, that the requirements of subdivision B 1 c of this section does not apply.

2. Filtration. (Also see 12VAC5-590-880.) All waterworks that use a surface water source or a groundwater source under the direct influence of surface water shall provide filtration treatment by using one of the following methods:

a. Conventional filtration or direct filtration.

(1) Achieve a filtered water turbidity of less than or equal to 0.3 NTU in at least 95% of the measurements taken each month. Samples shall be representative of the waterworks' filtered water.

(2) The turbidity level of representative samples of a system's filtered water shall at no time exceed 1 NTU, measured as specified in 12VAC5-590-440.

(3) A system that uses lime softening may acidify representative samples prior to analysis using a protocol approved by the commissioner.

b. Slow sand filtration.

(1) The turbidity level of representative samples of a waterworks' filtered water shall be less than or equal to one NTU in at least 95% of the measurements taken each month, except that if the commissioner determines there is no significant interference with disinfection at a higher turbidity level, the commissioner may substitute this higher turbidity limit for that waterworks.

(2) The turbidity level of representative samples of a waterworks' filtered water shall at no time exceed five NTU.

c. Diatomaceous earth filtration.

(1) The turbidity level of representative samples of a waterworks' filtered water shall be less than or equal to one NTU in at least 95% of the measurements taken each month.

(2) The turbidity level of representative samples of a waterworks' filtered water shall at no time exceed five NTU.

d. Other filtration technologies. An owner may use a filtration technology not listed in subdivisions 2 a through c of this subsection if the owner demonstrates to the commissioner (by pilot plant studies or other means) that the alternative filtration technology, in combination with disinfection treatment, achieves 99.9% removal (3-log) and/or inactivation of Giardia lamblia cysts, 99.99% removal (4-log) and/or inactivation of viruses, and 99% removal (2-log) of Cryptosporidium oocysts. For an owner that makes this demonstration, a turbidity limit of representative samples of a waterworks' filtered water, not to exceed 0.3 NTU, shall be established by the commissioner, which the waterworks must meet at least 95% of the time. In addition, the commissioner shall establish a maximum turbidity limit of representative samples of a waterworks' filtered water, not to exceed 1 NTU that the waterworks must not exceed at any time. These turbidity limits shall consistently achieve the removal rates and/or inactivation rates stated in this subdivision.

e. Each waterworks using a surface water source or groundwater source under the direct influence of surface water shall be operated by licensed operators of the appropriate classification as per the Virginia Board for Waterworks and Wastewater Works Operators Regulations (18VAC155-20).

f. If the commissioner has determined that a waterworks has a surface water source or a groundwater source under the direct influence of surface water, filtration is required. The waterworks shall provide disinfection during the interim before filtration is installed as follows:

(1) The residual disinfectant concentration in the distribution system shall not be less than 2.0 mg/L for more than four hours.

(2) The owner shall issue continuing boil water notices through the public notification procedure in 12VAC5-590-540 until such time as the required filtration equipment is installed.

(3) As an alternative to subdivisions B f 2 (1) and (2) of this section, the owner may demonstrate that the source can meet the appropriate C T values shown in Appendix L and be considered to satisfy the requirements for 99.9% removal of Giardia cysts and virus, respectively. In addition, the waterworks owner shall comply with the following:

(a) Justify that other alternative sources of supply meeting these regulations are not immediately available.

(b) Analysis of the source is performed quarterly for the contaminants listed in Tables 2.2, 2.3, and 2.4. The primary maximum contaminant levels shall not be exceeded.

(c) Daily turbidity monitoring and maintenance of the turbidity level not to exceed five NTU.

(d) MPN analysis of the raw water based on the minimum sample frequency chart below:

Population Served	Coliform Samples/Week
≤500	1
501 - 3,300	2
3,301 - 10,000	3
10,001 - 25,000	4
>25,000	5
Note: Shall be taken on separate days.	

(e) Bacteriological sampling of the distribution system at a frequency of twice that required by Table 2.1.

3. Enhanced filtration and disinfection for Cryptosporidium. All waterworks using a surface water source or a groundwater source under the direct influence of surface water shall comply with the following requirements based on their population or if the waterworks is a wholesaler, based on the population of the largest waterworks in the combined distribution system:

a. Owners shall conduct an initial and a second round of source water monitoring for each plant that treats a surface water or groundwater under the direct influence of surface water source. This monitoring may include sampling for Cryptosporidium, E. coli, and turbidity to determine what level, if any, of additional Cryptosporidium treatment is required.

(1) Initial round of source water monitoring. Owners shall conduct the following monitoring on the schedule in subdivision B 3 a (3) of this section unless they meet the monitoring avoidance criteria in subdivision B 3 a (4) of this section.

(a) Owners of waterworks serving at least 10,000 people shall sample their source water for Cryptosporidium, E. coli, and turbidity at least monthly for 24 months.

(b) Owners of waterworks serving fewer than 10,000 people:

(i) shall sample their source water for E. coli at least once every two weeks for 12 months, or

(ii) may avoid E. coli monitoring if the waterworks notifies the commissioner that it will monitor for Cryptosporidium as described in paragraph (c) of this section. The owner shall notify the commissioner no later than three months prior to the date the waterworks is otherwise required to start E. coli monitoring.

(c) Owners of waterworks serving fewer than 10,000 people shall sample their source water for Cryptosporidium at least twice per month for 12 months or at least monthly for 24 months if they meet one of the following, based on monitoring conducted under subdivision B 3 a (1) (b) of this section:

(i) For waterworks using lake/reservoir sources, the annual mean E. coli concentration is greater than 10 E. coli/100 mL.

(ii) For waterworks using flowing stream sources, the annual mean E. coli concentration is greater than 50 E. coli/100 mL.

(iii) The waterworks does not conduct E. coli monitoring as described in paragraph (1) (b) of this section.

(iv) Waterworks using ground water under the direct influence of surface water shall comply with the requirements of subdivision B 3 a (1) (c) of this section based on the E. coli level that applies to the nearest surface water body. If no surface water body is nearby, the waterworks shall comply based on the requirements that apply to waterworks using lake/reservoir sources.

(d) For waterworks serving fewer than 10,000 people, the commissioner may approve monitoring for an indicator other than E. coli under subdivision B 3 a (1) (b) (i) of this section. The commissioner also may approve an alternative to the E. coli concentration in subdivision B 3 a (1) (c) (i), (ii) or (iv) of this section to trigger Cryptosporidium monitoring. This approval by the commissioner shall be provided to the waterworks in writing and shall include the basis for the commissioner's

determination that the alternative indicator and/or trigger level will provide a more accurate identification of whether a waterworks will exceed the Bin 1 Cryptosporidium level in subdivision B 3 c (1) (a) of this section.

(e) Waterworks may sample more frequently than required under this section if the sampling frequency is evenly spaced throughout the monitoring period.

(2) Second round of source water monitoring: Owners shall conduct a second round of source water monitoring that meets the requirements for monitoring parameters, frequency, and duration described in subdivision B 3 a (1) of this section, unless they meet the monitoring exemption criteria in subdivision B 3 a (4) of this section. Owners shall conduct this monitoring on the schedule in subdivision B 3 a (3) of this section.

(3) Monitoring schedule. Owners shall begin the monitoring required in subdivisions B 3 a (1) and (2) of this section no later than the month beginning with the date listed in the following table:

Source Water Monitoring Starting Dates Table

Owners of waterworks that serve...	Shall begin the first round of source water monitoring no later than the month beginning...	And shall begin the second round of source water monitoring no later than the month beginning...
At least 100,000 people	October 1, 2006	April 1, 2015
From 50,000 to 99,999 people	April 1, 2007	October 1, 2015
From 10,000 to 49,999 people	April 1, 2008	October 1, 2016
Fewer than 10,000 and monitor for E. coli	October 1, 2008	October 1, 2017
Fewer than 10,000 and monitor for Cryptosporidium[1]	April 1, 2010	April 1, 2019

[1]Applies to waterworks that meet the conditions of subdivision B 3 a (1) (c) of this section.

(4) Monitoring avoidance.

(a) Owners are not required to conduct source water monitoring under subdivision C 3 a of this section if the waterworks will provide a total of at least 5.5 log of treatment for Cryptosporidium, equivalent to meeting the treatment requirements of Bin 4 in subdivision B 3 c (2) of this section.

(b) If an owner chooses to provide the level of treatment in subdivision B 3 a (4) (a) of this section, rather than start source water monitoring, the owners shall notify the commissioner in writing no later than the date the owner is otherwise required to submit a sampling schedule for monitoring under subdivision B 3 a (5) of this section. Alternatively, an owner may choose to stop sampling at any point after the owner has initiated monitoring if the owner notifies the commissioner in writing that it will provide this level of treatment. Owners shall install and operate technologies to provide this level of treatment by the applicable treatment compliance date in subdivision B 3 c (3).

(5) Sampling schedules.

(a) Owners of waterworks required to conduct source water monitoring in accordance with subdivision B 3 a shall submit a sampling schedule that specifies the calendar dates when the owner shall collect each required sample.

(i) Owners shall submit sampling schedules to the commissioner no later than three months prior to the applicable date listed in subdivision B 3 a (3) for each round of required monitoring.

(ii) If the commissioner does not respond to an owner regarding the sampling schedule, the owner shall sample at the reported schedule.

(b) Owners shall collect samples within two days before or two days after the dates indicated in their sampling schedule (i.e., within a five day period around the schedule date) unless one of the conditions of the following paragraphs apply.

(i) If an extreme condition or situation exists that may pose danger to the sample collector, or that cannot be avoided and causes the owner to be unable to sample in the scheduled five day period, the owner shall sample as close to the scheduled date as is feasible unless the commissioner approves an alternative sampling date. The owner shall submit an explanation for the delayed sampling date to the commissioner concurrent with the shipment of the sample to the laboratory.

(ii) If an owner is unable to report a valid analytical result for a scheduled sampling date due to equipment failure, loss of or damage to the sample, failure to comply with the analytical method requirements, including the quality control requirements of 12VAC5-590-440, or the failure of an approved laboratory to analyze the sample, then the owner shall collect a replacement sample. The owner shall collect the replacement sample not later than 21 days after receiving information that an analytical result cannot be reported for the scheduled date unless the owner demonstrates that collecting a replacement sample within this time frame is

not feasible or the commissioner approves an alternative resampling date. The owner shall submit an explanation for the delayed sampling date to the commissioner concurrent with the shipment of the sample to the laboratory.

(c) Owners of waterworks that fail to meet the criteria of subdivision B 3 a (5) (b) of this section for any source water sample required under subdivision B 3 a shall revise their sampling schedules to add dates for collecting all missed samples. Owners shall submit the revised schedule to the commissioner for approval prior to when the owner begins collecting the missed samples.

(6) Sampling locations.

(a) Owners of waterworks required to conduct source water monitoring under subdivision B 3 a shall collect samples for each plant that treats a surface water or groundwater under the direct influence of surface water source. Where multiple plants draw water from the same influent, such as the same pipe or intake, the commissioner may approve one set of monitoring results to be used to satisfy the requirements subdivision B 3 a for all plants.

(b) Owners shall collect source water samples prior to chemical treatment, such as coagulants, oxidants and disinfectants. However, the commissioner may approve the collection of a source water sample after chemical treatment. To grant this approval, the commissioner shall determine that collecting a sample prior to chemical treatment is not feasible for the waterworks and that the chemical treatment is unlikely to have a significant adverse effect on the analysis of the sample.

(c) Owners of waterworks that recycle filter backwash water shall collect source water samples prior to the point of filter backwash water addition.

(d) Bank filtration.

(i) Waterworks that receive Cryptosporidium treatment credit for bank filtration under 12VAC5-590-420 B 2 d, shall collect source water samples in the surface water prior to bank filtration.

(ii) Waterworks that use bank filtration as pretreatment to a filtration plant shall collect source water samples from the well (i.e., after bank filtration). Use of bank filtration during monitoring shall be consistent with routine operational practice. Waterworks collecting samples after a bank filtration process may not receive treatment credit for the bank filtration under subdivision B 3 d (4) (c) of this section.

(e) Multiple sources. Owners of waterworks with plants that use multiple water sources, including multiple surface water sources and blended surface water and ground water sources shall collect samples as specified in subdivision B 3 a (6) (e) (i) or (ii) of this section. The use of multiple sources during monitoring shall be consistent with routine operational practice.

(i) If a sampling tap is available where the sources are combined prior to treatment, waterworks shall collect samples from the tap.

(ii) If a sampling tap where the sources are combined prior to treatment is not available, owners shall collect samples at each source near the intake on the same day and shall follow either subdivision B 3 a (6) (e) (ii) ((a)) or ((b)) of this section for sample analysis.

((a)) Owners may composite samples from each source into one sample prior to analysis. The volume of sample from each source shall be weighted according to the proportion of the source in the total plant flow at the time the sample is collected.

((b)) Owners may analyze samples from each source separately and calculate a weighted average of the analysis results for each sampling date. The weighted average shall be calculated by multiplying the analysis result for each source by the fraction the source contributed to total plant flow at the time the sample was collected and then summing these values.

(f) Additional Requirements. Owners shall submit a description of their sampling location(s) to the commissioner at the same time as the sampling schedule required in subdivision B 3 a (3) of this section. This description shall address the position of the sampling location in relation to the waterworks water source(s) and treatment processes, including pretreatment, points of chemical treatment, and filter backwash recycle. If the commissioner does not respond to an owner regarding sampling location(s), the owner shall sample at the reported location(s).

(7) Analytical methods. All analytical methods shall be conducted in accordance with 12VAC5-590-440.

(8) Approved laboratories.

(a) Cryptosporidium. Owners shall have Cryptosporidium samples analyzed by a laboratory that is approved under EPA's Laboratory Quality Assurance Evaluation Program for Analysis of Cryptosporidium in Water or a laboratory that has been certified for Cryptosporidium analysis by an equivalent state laboratory certification program.

(b) E. coli. Any laboratory certified by the state for total coliform or fecal coliform analysis under 12VAC5-590-440 is approved for E. coli analysis when the laboratory uses the same technique for E. coli that the laboratory uses under 12VAC5-590-440. Laboratories shall use methods for enumeration of E. coli in source water approved in 12VAC5-590-440.

(c) Turbidity. Measurements of turbidity shall be made by a party approved by the commissioner.

(9) Reporting of the source water results shall be in accordance with 12VAC5-590-530.

(10) Plants operating only part of the year. Owners of waterworks treating surface water or groundwater under the direct influence of surface water that operates for only part of the year shall conduct source water monitoring in accordance with this section, but with the following modifications:

(a) Owners shall sample their source water only during the months that the plant operates unless the commissioner specifies another monitoring period based on plant operating practices.

(b) Owners of waterworks with plants that operate less than six months per year and that monitor for Cryptosporidium shall collect at least six Cryptosporidium samples per year during each of two years of monitoring. Samples shall be evenly spaced throughout the period the plant operates.

(11) New sources;

(a) Owners of waterworks that begin using a new source of surface water or groundwater under the direct influence of surface water after the waterworks is required to begin monitoring under subdivision B 3 a (3) of this section shall monitor the new source on a schedule the commissioner approves. Source water monitoring shall meet the requirements of this section. The owner shall also meet the bin classification and Cryptosporidium treatment requirements of subdivision B 3 c (1) and (2) of this section, for the new source on a schedule the commissioner approves.

(b) The requirements of this section apply to waterworks using surface water or groundwater under the direct influence of surface water that begin operation after the monitoring start date applicable to the waterworks size under subdivision B 3 a (3) of this section.

(c) The owner shall begin a second round of source water monitoring no later than six years following initial bin classification under in subdivision B 3 c (1) of this section.

(12) Failure to collect any source water sample required under this section in accordance with the sampling schedule, sampling location, analytical method, approved laboratory, and reporting requirements of subdivision B 3 a (5), (6), (7), (8), or (9) of this section is a monitoring violation.

(13) Grandfathering monitoring data. Owners may use (grandfather) monitoring data collected prior to the applicable monitoring start date in subdivision B 3 a (3) of this section to meet the initial source water monitoring requirements in subdivision B 3 a (1) of this section. Grandfathered data may substitute for an equivalent number of months at the end of the monitoring period. All data submitted under this paragraph shall meet the requirements in (13) (a) through (h) listed below and be approved by the commissioner:

(a) An owner may grandfather Cryptosporidium samples to meet the requirements of this section when the owner does not have corresponding E. coli and turbidity samples. A waterworks that grandfathers Cryptosporidium samples without E. coli and turbidity samples is not required to collect E. coli and turbidity samples when the system completes the requirements for Cryptosporidium monitoring under this section.

(b) E. coli sample analysis. The analysis of E. coli samples shall meet the analytical method and approved laboratory requirements of subdivision B 3 a (7) and (8) of this section.

(c) Cryptosporidium sample analysis. The analysis of Cryptosporidium samples shall meet the requirements of subdivision B 3 a (8) of this section.

(d) Sampling location. The sampling location shall meet the conditions in subdivision B 3 a (6) of this section.

(e) Sampling frequency. Cryptosporidium samples were collected no less frequently than each calendar month on a regular schedule, beginning no earlier than January 1999. Sample collection intervals may vary for the conditions specified in subdivision B 3 a (5) (b) (i) and (ii) of this section, if the owner provides documentation of the condition when reporting monitoring results.

(i) The commissioner may approve grandfathering of previously collected data where there are time gaps in the sampling frequency if the owner conducts additional monitoring the commissioner specifies to ensure that the data used to comply with the initial source water monitoring requirements of subdivision B 3 a of this section are seasonally representative and unbiased.

(ii) Owners may grandfather previously collected data where the sampling frequency within each month varied. If the Cryptosporidium sampling frequency varied, owners shall follow the monthly averaging procedure in subdivision B 3 c (1) (a) (v) of this section, when calculating the bin classification for filtered systems.

(f) Reporting monitoring results for grandfathering. Owners that request to grandfather previously collected monitoring results shall report the following information by the applicable dates listed in the following paragraphs. Owners shall report this information to the commissioner.

(i) Owners shall report that they intend to submit previously collected monitoring results for grandfathering. This report shall specify the number of previously collected results the owner shall submit, the dates of the first and last sample, and whether an owner shall conduct additional source water monitoring to meet the requirements in subdivision B 3 a of this section. Owners shall report this information no later than the date the sampling schedule listed in subdivision B 3 a (3) of this section is required.

(ii) Owners shall report previously collected monitoring results for grandfathering, along with the associated documentation listed in paragraphs ((a)) through ((d)) listed below, no later than two months after the applicable date listed in subdivision B 3 a (3) of this section.

((a)) For each sample result, owners shall report the applicable data elements in 12VAC5-590-530 E 1 c.

((b)) Owners shall certify that the reported monitoring results include all results the waterworks generated during the time period beginning with the first reported result and ending with the final reported result. This applies to samples that were collected from the sampling location specified for source water monitoring under subdivision B 3 a (13) (f) of this section, not spiked, and analyzed using the laboratory's routine process for the analytical methods listed in this section.

((c)) Owners shall certify that the samples were representative of a plant's source water(s) and the source water(s) have not changed. Owners shall report a description of the sampling location(s), which shall address the position of the sampling location in relation to the waterworks' water source(s) and treatment processes, including points of chemical addition and filter backwash recycle.

((d)) For Cryptosporidium samples, the laboratory or laboratories that analyzed the samples shall provide a letter certifying that the quality control criteria specified in the methods listed in subdivision B 3 a (8) of this section were met for each sample batch associated with the reported results. Alternatively, the laboratory may provide bench sheets and sample examination report forms for each field, matrix spike, IPR, OPR, and method blank sample associated with the reported results.

(g) If the commissioner determines that a previously collected data set submitted for grandfathering was generated during source water conditions that were not normal for the waterworks, such as a drought, the commissioner may disapprove the data. Alternatively, the commissioner may approve the previously collected data if the owner reports additional source water monitoring data, as determined by the commissioner, to ensure that the data set used under subdivision B 3 c (1) of this section represents average source water conditions for the waterworks.

(h) If an owner submits previously collected data that fully meets the number of samples required for initial source water monitoring under subdivision B 3 a (1) of this section and some of the data are rejected due to not meeting the requirements of this section, the owner shall conduct additional monitoring to replace rejected data on a schedule the commissioner approves. Owners are not required to begin this additional monitoring until two months after notification that data have been rejected and additional monitoring is necessary.

b. Owners of waterworks that plan to make a significant change to their disinfection practice shall develop disinfection profiles and calculate disinfection benchmarks, as described in subdivision B 3 a (1) and (2) below.

(1) Requirements when making a significant change in disinfection practice.

(a) Following the completion of initial source water monitoring under subdivision B 3 a (1) of this section, owners of waterworks that plan to make a significant change to its disinfection practice, as defined in subdivision B 3 b (1) (b) of this section, shall develop disinfection profiles and calculate disinfection benchmarks for Giardia lamblia and viruses as described in subdivision B 3 b (2) of this section. Prior to changing the disinfection practice, the owner shall notify the commissioner and shall include in this notice the information in subdivision B 3 b (1) a) (i) through (iii) of this section.

(i) A completed disinfection profile and disinfection benchmark for Giardia lamblia and viruses as described in subdivision B 3 b (2) of this section.

(ii) A description of the proposed change in disinfection practice.

(iii) An analysis of how the proposed change will affect the current level of disinfection.

(b) Significant changes to disinfection practice are defined as follows:

(i) Changes to the point of disinfection;

(ii) Changes to the disinfectant(s) used in the treatment plant;

(iii) Changes to the disinfection process; or

(iv) Any other modification identified by the commissioner as a significant change to disinfection practice.

(2) Developing the disinfection profile and benchmark.

(a) Owners of waterworks required to develop disinfection profiles in accordance with subdivision B 3 b (1) of this section shall follow the requirements of this section. Owners shall monitor at least weekly for a period of 12 consecutive months to determine the total log inactivation for Giardia lamblia and viruses. If owners monitor more frequently, the monitoring frequency shall be evenly spaced. Owners of waterworks that operate for fewer than 12 months per year shall monitor weekly during the period of operation. Owners shall determine log inactivation for Giardia lamblia through the entire plant, based on CT99.9 values in Appendix L. Owners shall determine log inactivation for viruses through the entire treatment plant based on a protocol approved by the commissioner.

(b) Owners of waterworks with a single point of disinfectant application prior to the entrance to the distribution system shall conduct the monitoring in subdivision B 3 b (2) (b) (i) through (iv) of this section. Owners of waterworks with more than one point of disinfectant application shall conduct the monitoring in subdivision B 3 b (2) (b) (i) through (iv) of this section for each disinfection segment. Owners shall monitor the parameters necessary to determine the total inactivation ratio, using analytical methods in Appendix L.

(i) For waterworks using a disinfectant other than UV, the temperature of the disinfected water shall be measured at each residual disinfectant concentration sampling point during peak hourly flow or at an alternative location approved by the commissioner.

(ii) For waterworks using chlorine, the pH of the disinfected water shall be measured at each chlorine residual disinfectant concentration sampling point during peak hourly flow or at an alternative location approved by the commissioner.

(iii) The disinfectant contact time(s) (t) shall be determined during peak hourly flow.

(iv) The residual disinfectant concentration(s) (C) of the water before or at the first customer and prior to each additional point of disinfectant application shall be measured during peak hourly flow.

(c) In lieu of conducting new monitoring under subdivision B 3 b (2) (b) of this section, owners may elect to meet the requirements of subdivision B 3 b (2) (c) (i) or (ii) of this section.

(i) Owners of waterworks that have at least one year of existing data that are substantially equivalent to data collected under the provisions of subdivision B 3 b (2) (b) of this section may use these data to develop disinfection profiles as specified in this section if the owner has neither made a significant change to its treatment practice nor changed sources since the data were collected. Owners may develop disinfection profiles using up to three years of existing data.

(ii) Owners may use disinfection profile(s) developed under 12VAC5-590-500 E 2 in lieu of developing a new profile if the owner has neither made a significant change to its treatment practice nor changed sources since the profile was developed. Owners that have not developed a virus profile under 12VAC5-590-500 E 2 shall develop a virus profile using the same monitoring data on which the Giardia lamblia profile is based.

(d) Owners of waterworks shall calculate the total inactivation ratio for Giardia lamblia as specified in subdivision B 3 b (2) (d) (i) through (iii) of this section.

(i) Owners of waterworks using only one point of disinfectant application may determine the total inactivation ratio for the disinfection segment based on either of the methods in subdivision B 3 b (2) (d) (i) ((a)) or ((b)) of this section.

((a)) Determine one inactivation ratio (CTcalc/CT99.9) before or at the first customer during peak hourly flow.

((b)) Determine successive CTcalc/CT99.9 values, representing sequential inactivation ratios, between the point of disinfectant application and a point before or at the first customer during peak hourly flow. The owner shall calculate the total inactivation ratio by determining (CTcalc/CT99.9) for each sequence and then adding the (CTcalc/CT99.9) values together to determine (Σ (CTcalc/CT99.9)).

(ii) Owners of waterworks using more than one point of disinfectant application before the first customer shall determine the CT value of each disinfection segment immediately prior to the next point of disinfectant application, or for the final segment, before or at the first customer, during peak hourly flow. The (CTcalc/CT99.9) value of each segment and (Σ (CTcalc/CT99.9)) shall be calculated using the method in paragraph (i) ((b)) of this section.

(iii) The owner shall determine the total logs of inactivation by multiplying the value calculated in subdivision B 3 b (2) (d) (i) or (ii) of this section by 3.0.

(iv) Owners shall calculate the log of inactivation for viruses using a protocol approved by the commissioner.

(e) Owners shall use the procedures specified in (i) and (ii) listed below to calculate a disinfection benchmark.

(i) For each year of profiling data collected and calculated under subdivision B 3 b (2) (a) through (d) of this section, owners shall determine the lowest mean monthly level of both Giardia lamblia and virus inactivation. Owners shall determine the mean Giardia lamblia and virus inactivation for each calendar month

for each year of profiling data by dividing the sum of daily or weekly Giardia lamblia and virus log inactivation by the number of values calculated for that month.

(ii) The disinfection benchmark is the lowest monthly mean value (for waterworks with one year of profiling data) or the mean of the lowest monthly mean values (for waterworks with more than one year of profiling data) of Giardia lamblia and virus log inactivation in each year of profiling data.

c. Owners shall determine their Cryptosporidium treatment bin classification as described in subdivision B 3 c (1) and provide additional treatment for Cryptosporidium, if required, as described in subdivision B 3 c (2). Owners shall implement Cryptosporidium treatment according to the schedule in subdivision B 3 c (3).

(1) Bin classification for waterworks.

(a) Following completion of the initial round of source water monitoring required under subdivision B 3 a (1), owners shall calculate an initial Cryptosporidium bin concentration for each plant for which monitoring was required. Calculation of the bin concentration shall use the Cryptosporidium results reported under subdivision B 3 a (1) and shall follow these procedures:

(i) For waterworks that collect a total of at least 48 samples, the bin concentration is equal to the arithmetic mean of all sample concentrations.

(ii) For waterworks that collect a total of at least 24 samples, but not more than 47 samples, the bin concentration is equal to the highest arithmetic mean of all sample concentrations in any 12 consecutive months during which Cryptosporidium samples were collected.

(iii) For waterworks that serve fewer than 10,000 people and monitor for Cryptosporidium for only one year (i.e., collect 24 samples in 12 months), the bin concentration is equal to the arithmetic mean of all sample concentrations.

(iv) For waterworks with plants operating only part of the year that monitor fewer than 12 months per year under subdivision B 3 a (1), the bin concentration is equal to the highest arithmetic mean of all sample concentrations during any year of Cryptosporidium monitoring.

(v) If the monthly Cryptosporidium sampling frequency varies, owners shall first calculate a monthly average for each month of monitoring. Owners shall then use these monthly average concentrations, rather than individual sample concentrations, in the applicable calculation for bin classification in subdivision B 3 c (1) (a) (i) through (iv) of this section.

(b) Owners shall determine their initial bin classification from the following table and using the Cryptosporidium bin concentration calculated under subdivision B 3 c (1) (a) of this section:

Bin Classification Table for Filtered Systems

For owners of waterworks that are:	with a Cryptosporidium bin concentration of[1]...	The bin classification is...
...required to monitor for Cryptosporidium under subdivision B 3 a (1)	Cryptosporidium less than 0.075 oocysts/L	Bin 1
	Cryptosporidium equal to or greater than 0.075 oocysts/L but less than 1.0 oocysts/L	Bin 2
	Cryptosporidium equal to or greater than 1.0 oocysts/L but less than 3.0 oocysts/L	Bin 3
	Cryptosporidium equal to or greater than 3.0 oocysts/L	Bin 4
...serving fewer than 10,000 people and NOT required to monitor for Cryptosporidium under B 3 a (1)(c)	NA	Bin 1

[1]Based on calculations in subdivision B 3 c (1) (a) or (c) of this section, as applicable

(c) Following completion of the second round of source water monitoring required under subdivision B 3 a (2), owners shall recalculate their Cryptosporidium bin concentration using the Cryptosporidium results reported under subdivision B 3 a (2) and following the procedures in subdivision B 3 c (1) (a)(i) through (iv) of this section. Owners shall then redetermine their bin classification using this bin concentration and the table in subdivision B 3 c (1) (b) of this section.

(d) Reporting of bin classifications

(i) Owners shall report their initial bin classification under subdivision B 3 c (1) (b) of this section to the commissioner for approval no later than six months after the waterworks is required to complete initial source water monitoring based on the schedule in subdivision B 3 a (3).

(ii) Owners shall report their bin classification under subdivision B 3 c (1) (c) of this section to the

commissioner for approval no later than six months after the owner is required to complete the second round of source water monitoring based on the schedule in subdivision B 3 c (1) 3 a (3) of this section.

(iii) The bin classification report to the commissioner shall include a summary of source water monitoring data and the calculation procedure used to determine bin classification.

(e) Failure to comply with the conditions of subdivision B 3 c (1) (d) of this section is a violation of the treatment technique requirement.

(2) Waterworks additional Cryptosporidium treatment requirements.

(a) Waterworks shall provide the level of additional treatment for Cryptosporidium specified in this paragraph based on their bin classification as determined under subdivision B 3 c (1) of this section and according to the schedule in subdivision B 3 c (3) (b) of this section.

If the waterworks bin classification is...	And the waterworks uses the following filtration treatment in full compliance with 12VAC5-590-420 A and B, then the additional Cryptosporidium treatment requirements are...			
	Conventional filtration treatment (including softening)	Direct filtration	Slow sand or diatomaceous earth filtration	Alternative filtration technologies
Bin 1	No additional treatment	No additional treatment	No additional treatment	No additional treatment
Bin 2	1-log treatment	1.5-log treatment	1-log treatment	(1)
Bin 3	2-log treatment	2.5-log treatment	2-log treatment	(2)
Bin 4	2.5-log treatment	3-log treatment	2.5-log treatment	(3)
[1]As determined by the commissioner such that the total Cryptosporidium removal and inactivation is at least 4.0-log				
[2]As determined by the commissioner such that the total Cryptosporidium removal and inactivation is at least 5.0-log				
[3]As determined by the commissioner such that the total Cryptosporidium removal and inactivation is at least 5.5-log				

(b) Additional treatment

(i) Owners shall use one or more of the treatment and management options listed in subdivision B 3 d, termed the microbial toolbox, to comply with the additional Cryptosporidium treatment required in subdivision B 3 c (2) (a) of this section.

(ii) Waterworks classified in Bin 3 and Bin 4 shall achieve at least 1 log of the additional Cryptosporidium treatment required under subdivision B 3 c (2) (a) of this section using either one or a combination of the following: bag filters, bank filtration, cartridge filters, chlorine dioxide, membranes, ozone, or UV, as described in subdivision B 3 d (3) through (7) of this section.

(c) Failure by a waterworks in any month to achieve treatment credit by meeting criteria in subdivision B 3 d (3) through (7) of this section for microbial toolbox options that is at least equal to the level of treatment required in subdivision B 3 c (2) (a) of this section is a violation of the treatment technique requirement.

(d) If the commissioner determines during a sanitary survey or an equivalent source water assessment that after a waterworks completed the monitoring conducted under subdivision B 3 a (1) or (2) of this section, significant changes occurred in the waterworks' watershed that could lead to increased contamination of the source water by Cryptosporidium, the owner shall take actions specified by the commissioner to address the contamination. These actions may include additional source water monitoring and/or implementing microbial toolbox options listed in subdivision B 3 d (2) of this section.

(3) Schedule for compliance with Cryptosporidium treatment requirements.

(a) Following initial bin classification in accordance with subdivision B 3 c (1) (b) of this section, waterworks shall provide the level of treatment for Cryptosporidium required under subdivision B 3 c (2) of this section according to the schedule in subdivision B 3 c (3) (b) of this section.

(b) Cryptosporidium treatment compliance dates.

Cryptosporidium Treatment Compliance Dates Table

Waterworks that serve....	Shall comply with Cryptosporidium treatment requirements no later than[1]...
At least 100,000 people	April 1, 2012
From 50,000 to 99,999 people	October 1, 2012
From 10,000 to 49,999 people	October 1, 2013
Fewer than 10,000 people	October 1, 2014

[1]The commissioner may allow up to an additional two years for complying with the treatment requirement for waterworks making capital improvements.

(c) If the bin classification for a filtered system changes following the second round of source water monitoring, as determined under subdivision B 3 c (1) (c) of this section, the waterworks shall provide the level of treatment for Cryptosporidium required under subdivision B 3 c (2) of this section on a schedule the commissioner approves.

d. Owners of waterworks required to provide additional treatment for Cryptosporidium shall implement microbial toolbox options that are designed and operated as described in subdivision B 3 d (1) through (7) of this section.

(1) Waterworks receive the treatment credits listed in the table in subdivision B 3 d (2) of this section by meeting the conditions for microbial toolbox options described in subdivision B 3 d (3) through (7) of this section. Waterworks apply these treatment credits to meet the treatment requirements in subdivision B 3 c (2) of this section.

(2) Microbial Toolbox Summary Table: Options, Treatment Credits and Criteria

Microbial Toolbox Summary Table: Options, Treatment Credits and Criteria

Toolbox Option	Cryptosporidium treatment credit with design and implementation criteria
Source Protection and Management Toolbox Options	
Alternative source/ intake management	No prescribed credit. Owners may conduct simultaneous monitoring for treatment bin classification at alternative intake locations or under alternative intake management strategies. Specific criteria are in subdivision B 3 d (3) (b).
Pre Filtration Toolbox Options	
Presedimentation basin with coagulation	0.5 log credit during any month that presedimentation basins achieve a monthly mean reduction of 0.5 log or greater in turbidity or alternative performance criteria approved by the commissioner. To be eligible, basins shall be operated continuously with coagulant addition and all plant flow shall pass through basins. Specific criteria are in subdivision B 3 d (4) (a)
Two-stage lime softening	0.5 log credit for two-stage softening where chemical addition and hardness precipitation occur in both stages. All plant flow shall pass through both stages. Single-stage softening is credited as equivalent to conventional treatment. Specific criteria are in subdivision B 3 d (4) (b).
Bank filtration	0.5 log credit for 25-foot setback; 1.0 log credit for 50-foot setback; aquifer shall be unconsolidated sand containing at least 10% fines; average turbidity in wells shall be less than 1 NTU. Waterworks using wells followed by filtration when conducting source water monitoring shall sample the well to determine bin classification and are not eligible for additional credit. Specific criteria are in subdivision B 3 d (4) (c).
Treatment Performance Toolbox Options	
Combined filter performance	0.5 log credit for combined filter effluent turbidity less than or equal to 0.15 NTU in at least 95% of measurements each month. Specific criteria are in subdivision B 3 d (5) (a).
Individual filter performance	0.5 log credit (in addition to 0.5 log combined filter performance credit) if individual filter effluent turbidity is less than or equal to 0.15 NTU in at least 95% of samples each month in each filter and is never greater than 0.3 NTU in two consecutive measurements in any filter. Specific criteria are in subdivision B 3 d (5) (b).
Additional Filtration Toolbox Options	
Bag or cartridge filters (individual filters)	Up to 2 log credit based on the removal efficiency demonstrated during challenge testing with a 1.0 log factor of safety. Specific criteria are in subdivision B 3 d (6) (a).
Bag or cartridge filters (in series)	Up to 2.5 log credit based on the removal efficiency demonstrated during challenge testing with a 0.5 log factor of safety. Specific criteria are in subdivision B 3 d (6) (a).
Membrane filtration	Log credit equivalent to removal efficiency demonstrated in challenge test for device if supported by direct integrity testing. Specific criteria are in subdivision B 3 d (6) (b).
Second stage filtration	0.5 log credit for second separate granular media filtration stage if treatment train includes coagulation prior to first filter. Specific criteria are in subdivision B 3 d (6) (c).
Slow sand filters	2.5 log credit as a secondary filtration step; 3.0 log credit as a primary filtration process. No prior chlorination for either option. Specific criteria are in subdivision B 3 d (6) (d).
Inactivation Toolbox Options	
Chlorine dioxide	Log credit based on measured CT in relation to CT table. Specific criteria in subdivision B 3 d (7) (b).
Ozone	Log credit based on measured CT in relation to CT table. Specific criteria in subdivision B 3 d (7) (b).
UV	Log credit based on validated UV dose in relation to UV dose table; reactor validation testing required to establish UV dose and associated operating conditions. Specific criteria in subdivision B 3 d (7) (d).

~~(3) Source toolbox components.~~

~~(a) Reserved~~

~~(b) Alternative source.~~

~~(i) An owner may conduct source water monitoring that reflects a different intake location (either in the same source or for an alternate source) or a different procedure for the timing or level of withdrawal from the source (alternative source monitoring). If the commissioner approves, an owner may determine the bin classification under subdivision B 3 c (1) of this section based on the alternative source monitoring results.~~

~~(ii) If an owner conducts alternative source monitoring under subdivision B 3 d (3) (b) (i) of this section, the owner shall also monitor their current plant intake concurrently as described in subdivision B 3 a of this section.~~

~~(iii) Alternative source monitoring under subdivision B 3 d (3) (b) (i) of this section shall meet the requirements for source monitoring to determine bin classification, as described in subdivision B 3 a (1) through (13) of this section. Owners shall report the alternative source monitoring results to the commissioner, along with supporting information documenting the operating conditions under which the samples were collected.~~

~~(iv) If an owner determines the bin classification under subdivision B 3 c (1) of this section using alternative source monitoring results that reflect a different intake location or a different procedure for managing the timing or level of withdrawal from the source, the owner shall relocate the intake or permanently adopt the withdrawal procedure, as applicable, no later than the applicable treatment compliance date in subdivision B 3 c (3) of this section.~~

~~(4) Pre-filtration treatment toolbox components.~~

~~(a) Presedimentation. Waterworks receive 0.5 log Cryptosporidium treatment credit for a presedimentation basin during any month the process meets the following criteria:~~

~~(i) The presedimentation basin shall be in continuous operation and shall treat the entire plant flow taken from a surface water or groundwater under the direct influence of surface water source.~~

~~(ii) The waterworks shall continuously add a coagulant to the presedimentation basin.~~

~~(iii) The presedimentation basin shall achieve the performance criteria in either of the following.~~

~~((a)) Demonstrates at least 0.5 log mean reduction of influent turbidity. This reduction shall be determined using daily turbidity measurements in the presedimentation process influent and effluent and shall be calculated as follows: log10(monthly mean of daily influent turbidity) - log10(monthly mean of daily effluent turbidity).~~

~~((b)) Complies with performance criteria approved by the commissioner that demonstrate at least 0.5 log mean removal of micron sized particulate material through the presedimentation process.~~

~~(b) Two-stage lime softening. Waterworks receive an additional 0.5 log Cryptosporidium treatment credit for a two-stage lime softening plant if chemical addition and hardness precipitation occur in two separate and sequential softening stages prior to filtration. Both softening stages shall treat the entire plant flow taken from a surface water or groundwater under the direct influence of surface water source.~~

~~(c) Bank filtration. Waterworks receive Cryptosporidium treatment credit for bank filtration that serves as pretreatment to a filtration plant by meeting the criteria in this paragraph. Waterworks using bank filtration when they begin source water monitoring under subdivision B 3 a (1) of this section shall collect samples as described in subdivision B 3 a (6) (d) of this section and are not eligible for this credit.~~

~~(i) Wells with a ground water flow path of at least 25 feet receive 0.5 log treatment credit; wells with a ground water flow path of at least 50 feet receive 1.0 log treatment credit. The ground water flow path shall be determined as specified in subdivision B 3 d (c) (iv) of this section.~~

~~(ii) Only wells in granular aquifers are eligible for treatment credit. Granular aquifers are those comprised of sand, clay, silt, rock fragments, pebbles or larger particles, and minor cement. A waterworks shall characterize the aquifer at the well site to determine aquifer properties. Owners shall extract a core from the aquifer and demonstrate that in at least 90% of the core length, grains less than 1.0 mm in diameter constitute at least 10% of the core material.~~

~~(iii) Only horizontal and vertical wells are eligible for treatment credit.~~

~~(iv) For vertical wells, the ground water flow path is the measured distance from the edge of the surface water body under high flow conditions (determined by the 100-year floodplain elevation boundary or by the floodway, as defined in Federal Emergency Management Agency flood hazard maps) to the well screen. For horizontal wells, the ground water flow path is the measured distance from the bed of the river under normal flow conditions to the closest horizontal well lateral screen.~~

(v) Owners shall monitor each wellhead for turbidity at least once every four hours while the bank filtration process is in operation. If monthly average turbidity levels, based on daily maximum values in the well, exceed 1 NTU, the owner shall report this result to the commissioner and conduct an assessment within 30 days to determine the cause of the high turbidity levels in the well. If the commissioner determines that microbial removal has been compromised, the commissioner may revoke treatment credit until the owner implements corrective actions approved by the commissioner to remediate the problem.

(vi) Springs and infiltration galleries are not eligible for treatment credit under this section.

(vii) Bank filtration demonstration of performance. The commissioner may approve Cryptosporidium treatment credit for bank filtration based on a demonstration of performance study that meets the criteria in this paragraph. This treatment credit may be greater than 1.0-log and may be awarded to bank filtration that does not meet the criteria in subdivision B 3 d (4) (c) (i) through (v) of this section.

((a)) The study shall follow a protocol approved by the commissioner and shall involve the collection of data on the removal of Cryptosporidium or a surrogate for Cryptosporidium and related hydrogeologic and water quality parameters during the full range of operating conditions.

((b)) The study shall include sampling both from the production well(s) and from monitoring wells that are screened and located along the shortest flow path between the surface water source and the production well(s).

(5) Treatment performance toolbox components.

(a) Combined filter performance. Waterworks using conventional filtration treatment or direct filtration treatment receive an additional 0.5-log Cryptosporidium treatment credit during any month the waterworks meets the criteria in this paragraph. Combined filter effluent (CFE) turbidity shall be less than or equal to 0.15 NTU in at least 95% of the measurements. Turbidity shall be measured as described in 12VAC5-590-370 B 7 b and 12VAC5-590-370 E.

(b) Individual filter performance. Waterworks using conventional filtration treatment or direct filtration treatment receive 0.5-log Cryptosporidium treatment credit, which can be in addition to the 0.5-log credit under subdivision B 3 d (5) (a) of this section, during any month the waterworks meets the criteria in this paragraph. Compliance with these criteria shall be based on individual filter turbidity monitoring as described in 12VAC5-590-370 B 7 b (1).

(i) The filtered water turbidity for each individual filter shall be less than or equal to 0.15 NTU in at least 95% of the measurements recorded each month.

(ii) No individual filter may have a measured turbidity greater than 0.3 NTU in two consecutive measurements taken 15 minutes apart.

(iii) Any waterworks that has received treatment credit for individual filter performance and fails to meet the requirements of subdivision B 3 d (5) (b) (i) or (ii) of this section during any month does not receive a treatment technique violation under subdivision B 3 c (2) (c) if the commissioner determines the following:

((a)) The failure was due to unusual and short-term circumstances that could not reasonably be prevented through optimizing treatment plant design, operation, and maintenance.

((b)) The waterworks has experienced no more than two such failures in any calendar year.

(6) Additional filtration toolbox components.

(a) Bag and cartridge filters. Waterworks receive Cryptosporidium treatment credit of up to 2.0 log for individual bag or cartridge filters and up to 2.5 log for bag or cartridge filters operated in series by meeting the criteria in subdivision B 3 d (6) (a) (i) through (x) of this section. To be eligible for this credit, owners shall report the results of challenge testing that meets the requirements of subdivision B 3 d (6) (a)(ii) through (ix) of this section to the commissioner. The filters shall treat the entire plant flow taken from a surface water or groundwater under the direct influence of surface water source.

(i) The Cryptosporidium treatment credit awarded to bag or cartridge filters shall be based on the removal efficiency demonstrated during challenge testing that is conducted according to the criteria in subdivision B 3 d (6) (a) (ii) through (ix) of this section. A factor of safety equal to 1 log for individual bag or cartridge filters and 0.5 log for bag or cartridge filters in series shall be applied to challenge testing results to determine removal credit. Owners may use results from challenge testing conducted prior to January 5, 2006, if the prior testing was consistent with the criteria specified in subdivision B 3 d (6) (a) (ii) through (ix) of this section.

(ii) Challenge testing shall be performed on full-scale bag or cartridge filters, and the associated filter housing or pressure vessel, that are identical in material and construction to the filters and housings the waterworks will use for removal of Cryptosporidium. Bag or cartridge filters shall be challenge tested in the same configuration that the waterworks will use, either as individual filters or as a series configuration of filters.

(iii) Challenge testing shall be conducted using Cryptosporidium or a surrogate that is removed no more efficiently than Cryptosporidium. The microorganism or surrogate used during challenge testing is referred to as the challenge particulate. The concentration of the challenge particulate shall be determined using a method capable of discreetly quantifying the specific microorganism or surrogate used in the test; gross measurements such as turbidity shall not be used.

(iv) The maximum feed water concentration that can be used during a challenge test shall be based on the detection limit of the challenge particulate in the filtrate (i.e., filtrate detection limit) and shall be calculated using the following equation:

Maximum Feed Concentration = 1 x 10^4 x (Filtrate Detection Limit)

(v) Challenge testing shall be conducted at the maximum design flow rate for the filter as specified by the manufacturer.

(vi) Each filter evaluated shall be tested for a duration sufficient to reach 100% of the terminal pressure drop, which establishes the maximum pressure drop under which the filter may be used to comply with the requirements of subdivision B 3 d (6) (a) of this section.

(vii) Removal efficiency of a filter shall be determined from the results of the challenge test and expressed in terms of log removal values using the following equation:

$LRV = LOG_{10}(C_f) - LOG_{10}(C_p)$

where LRV = log removal value demonstrated during challenge testing; C_f = the feed concentration measured during the challenge test; and C_p = the filtrate concentration measured during the challenge test. In applying this equation, the same units shall be used for the feed and filtrate concentrations. If the challenge particulate is not detected in the filtrate, then the term C_p shall be set equal to the detection limit.

(viii) Each filter tested shall be challenged with the challenge particulate during three periods over the filtration cycle: within two hours of start-up of a new filter; when the pressure drop is between 45 and 55% of the terminal pressure drop; and at the end of the cycle after the pressure drop has reached 100% of the terminal pressure drop. An LRV shall be calculated for each of these challenge periods for each filter tested. The LRV for the filter (LRVfilter) shall be assigned the value of the minimum LRV observed during the three challenge periods for that filter.

(ix) If fewer than 20 filters are tested, the overall removal efficiency for the filter product line shall be set equal to the lowest LRV filter among the filters tested. If 20 or more filters are tested, the overall removal efficiency for the filter product line shall be set equal to the 10th percentile of the set of LRVfilter values for the various filters tested. The percentile is defined by (i/(n+1)) where i is the rank of n individual data points ordered lowest to highest. If necessary, the 10th percentile may be calculated using linear interpolation.

(x) If a previously tested filter is modified in a manner that could change the removal efficiency of the filter product line, challenge testing to demonstrate the removal efficiency of the modified filter shall be conducted and submitted to the commissioner.

(b) Membrane filtration.

(i) Waterworks receive Cryptosporidium treatment credit for membrane filtration that meets the criteria of this paragraph. Membrane cartridge filters that meet the definition of membrane filtration in 12VAC5-590-10 are eligible for this credit. The level of treatment credit a waterworks receives is equal to the lower of the values determined as follows:

((a)) The removal efficiency demonstrated during challenge testing conducted under the conditions in subdivision B 3 d (6) (b) (ii) of this section.

((b)) The maximum removal efficiency that can be verified through direct integrity testing used with the membrane filtration process under the conditions in subdivision B 3 d (6) (b) (iii) of this section.

(ii) Challenge Testing. The membrane used by the waterworks shall undergo challenge testing to evaluate removal efficiency, and the owner shall report the results of challenge testing to the commissioner. Challenge testing shall be conducted according to the criteria in paragraphs ((a)) through ((g)) of this section as follows (owners may use data from challenge testing conducted prior to January 5, 2006, if the prior testing was consistent with the criteria):

((a)) Challenge testing shall be conducted on either a full scale membrane module, identical in material and construction to the membrane modules used in the waterworks' treatment facility, or a smaller scale membrane module, identical in material and similar in construction to the full scale module. A module is defined as the smallest component of a membrane unit in which a specific membrane surface area is housed in a device with a filtrate outlet structure.

((b)) Challenge testing shall be conducted using Cryptosporidium oocysts or a surrogate that is removed no more efficiently than Cryptosporidium oocysts. The organism or surrogate used during challenge testing is referred to as the challenge particulate. The concentration of the challenge particulate, in both the feed and filtrate

water, shall be determined using a method capable of discretely quantifying the specific challenge particulate used in the test; gross measurements such as turbidity shall not be used.

((c)) The maximum feed water concentration that can be used during a challenge test is based on the detection limit of the challenge particulate in the filtrate and shall be determined according to the following equation:

Maximum Feed Concentration = $3.16 \times 10^6 \times$ (Filtrate Detection Limit)

((d)) Challenge testing shall be conducted under representative hydraulic conditions at the maximum design flux and maximum design process recovery specified by the manufacturer for the membrane module. Flux is defined as the throughput of a pressure driven membrane process expressed as flow per unit of membrane area. Recovery is defined as the volumetric percent of feed water that is converted to filtrate over the course of an operating cycle uninterrupted by events such as chemical cleaning or a solids removal process (i.e., backwashing).

((e)) Removal efficiency of a membrane module shall be calculated from the challenge test results and expressed as a log removal value according to the following equation:

$LRV = LOG_{10}(C_f) - LOG_{10}(C_p)$

where LRV = log removal value demonstrated during the challenge test; C_f = the feed concentration measured during the challenge test; and C_p = the filtrate concentration measured during the challenge test. Equivalent units shall be used for the feed and filtrate concentrations. If the challenge particulate is not detected in the filtrate, the term C_p is set equal to the detection limit for the purpose of calculating the LRV. An LRV shall be calculated for each membrane module evaluated during the challenge test.

((f)) The removal efficiency of a membrane filtration process demonstrated during challenge testing shall be expressed as a log removal value ($LRV_{C\text{-}Test}$). If fewer than 20 modules are tested, then $LRV_{C\text{-}Test}$ is equal to the lowest of the representative LRVs among the modules tested. If 20 or more modules are tested, then $LRV_{C\text{-}Test}$ is equal to the 10th percentile of the representative LRVs among the modules tested. The percentile is defined by (i/(n+1)) where i is the rank of n individual data points ordered lowest to highest. If necessary, the 10th percentile may be calculated using linear interpolation.

((g)) The challenge test shall establish a quality control release value (QCRV) for a nondestructive performance test that demonstrates the Cryptosporidium removal capability of the membrane filtration module. This performance test shall be applied to each production membrane module used by the waterworks that was not directly challenge tested in order to verify Cryptosporidium removal capability. Production modules that do not meet the established QCRV are not eligible for the treatment credit demonstrated during the challenge test.

((h)) If a previously tested membrane is modified in a manner that could change the removal efficiency of the membrane or the applicability of the non-destructive performance test and associated QCRV, additional challenge testing to demonstrate the removal efficiency of, and determine a new QCRV for, the modified membrane shall be conducted and submitted to the commissioner.

(iii) Direct integrity testing. Owners shall conduct direct integrity testing in a manner that demonstrates a removal efficiency equal to or greater than the removal credit awarded to the membrane filtration process and meets the requirements described in subdivision B 3 d 6 (b) (iii) ((a)) through ((f)) of this section. A direct integrity test is defined as a physical test applied to a membrane unit in order to identify and isolate integrity breaches (i.e., one or more leaks that could result in contamination of the filtrate).

((a)) The direct integrity test shall be independently applied to each membrane unit in service. A membrane unit is defined as a group of membrane modules that share common valving that allows the unit to be isolated from the rest of the system for the purpose of integrity testing or other maintenance.

((b)) The direct integrity method shall have a resolution of three micrometers or less, where resolution is defined as the size of the smallest integrity breach that contributes to a response from the direct integrity test.

((c)) The direct integrity test shall have a sensitivity sufficient to verify the log treatment credit awarded to the membrane filtration process by the commissioner, where sensitivity is defined as the maximum log removal value that can be reliably verified by a direct integrity test. Sensitivity shall be determined using the approach in either of the following as applicable to the type of direct integrity test the waterworks uses:

((i)) For direct integrity tests that use an applied pressure or vacuum, the direct integrity test sensitivity shall be calculated according to the following equation:

$LRV_{DIT} = LOG_{10}(Q_p / (VCF \times Q_{breach}))$

where LRV_{DIT} = the sensitivity of the direct integrity test;

Q_p = total design filtrate flow from the membrane unit;

~~Q_{breach} = flow of water from an integrity breach associated with the smallest integrity test response that can be reliably measured, and~~

~~VCF = volumetric concentration factor. The volumetric concentration factor is the ratio of the suspended solids concentration on the high pressure side of the membrane relative to that in the feed water.~~

~~((ii)) For direct integrity tests that use a particulate or molecular marker, the direct integrity test sensitivity shall be calculated according to the following equation:~~

~~$LRV_{DIT} = LOG_{10}(C_f) - LOG_{10}(C_p)$~~

~~where LRV_{DIT} = the sensitivity of the direct integrity test;~~

~~C_f = the typical feed concentration of the marker used in the test; and~~

~~C_p = the filtrate concentration of the marker from an integral membrane unit.~~

~~((d)) Owners shall establish a control limit within the sensitivity limits of the direct integrity test that is indicative of an integral membrane unit capable of meeting the removal credit awarded by the commissioner.~~

~~((e)) If the result of a direct integrity test exceeds the control limit established under subdivision B 3 d (6) (b) (iii) ((d)) of this section, the owners shall remove the membrane unit from service. Owners shall conduct a direct integrity test to verify any repairs, and may return the membrane unit to service only if the direct integrity test is within the established control limit.~~

~~((f)) Owners shall conduct direct integrity testing on each membrane unit at a frequency of not less than once each day that the membrane unit is in operation. The commissioner may approve less frequent testing, based on demonstrated process reliability, the use of multiple barriers effective for Cryptosporidium, or reliable process safeguards.~~

~~(iv) Indirect integrity monitoring. Owners shall conduct continuous indirect integrity monitoring on each membrane unit according to the criteria in ((a)) through ((e)). Indirect integrity monitoring is defined as monitoring some aspect of filtrate water quality that is indicative of the removal of particulate matter. A waterworks that implements continuous direct integrity testing of membrane units in accordance with the criteria in B 3 d (6) (b) (iv) (iii) ((a)) through ((f)) of this section is not subject to the requirements for continuous indirect integrity monitoring. Owners shall submit a monthly report to the commissioner summarizing all continuous indirect integrity monitoring results triggering direct integrity testing and the corrective action that was taken in each case.~~

~~((a)) Unless the commissioner approves an alternative parameter, continuous indirect integrity monitoring shall include continuous filtrate turbidity monitoring.~~

~~((b)) Continuous monitoring shall be conducted at a frequency of no less than once every 15 minutes.~~

~~((c)) Continuous monitoring shall be separately conducted on each membrane unit.~~

~~((d)) If indirect integrity monitoring includes turbidity and if the filtrate turbidity readings are above 0.15 NTU for a period greater than 15 minutes (i.e., two consecutive 15 minute readings above 0.15 NTU), direct integrity testing shall immediately be performed on the associated membrane unit as specified in subdivision B 3 d (6) (b) (iii) ((a)) through ((f)) of this section.~~

~~((e)) If indirect integrity monitoring includes an alternative parameter approved by the commissioner and if the alternative parameter exceeds a control limit approved by the commissioner for a period greater than 15 minutes, direct integrity testing shall immediately be performed on the associated membrane units as specified in subdivision B 3 d (6) (b) (iii) ((a)) through ((f)) of this section.~~

~~(c) Second stage filtration. Waterworks receive 0.5 log Cryptosporidium treatment credit for a separate second stage of filtration that consists of sand, dual media, GAC, or other fine grain media following granular media filtration if the commissioner approves. To be eligible for this credit, the first stage of filtration shall be preceded by a coagulation step and both filtration stages shall treat the entire plant flow taken from a surface water or groundwater under the direct influence of surface water source. A cap, such as GAC, on a single stage of filtration is not eligible for this credit. The commissioner shall approve the treatment credit based on an assessment of the design characteristics of the filtration process.~~

~~(d) Slow sand filtration (as secondary filter). Waterworks are eligible to receive 2.5 log Cryptosporidium treatment credit for a slow sand filtration process that follows a separate stage of filtration if both filtration stages treat entire plant flow taken from a surface water or ground water under the direct influence of surface water source and no disinfectant residual is present in the influent water to the slow sand filtration process. The commissioner shall approve the treatment credit based on an assessment of the design characteristics of the filtration process. This paragraph does not apply to treatment credit awarded to slow sand filtration used as a primary filtration process.~~

~~(7) Inactivation toolbox components.~~

~~(a) Calculation of CT values~~

(i) CT is the product of the disinfectant contact time (T, in minutes) and disinfectant concentration (C, in milligrams per liter). Owners of waterworks with treatment credit for chlorine dioxide or ozone under subdivision B 3 d (7) (b) of this section shall calculate CT at least once each day, with both C and T measured during peak hourly flow in accordance with the procedure listed in Appendix L.

(ii) Waterworks with several disinfection segments in sequence may calculate CT for each segment, where a disinfection segment is defined as a treatment unit process with a measurable disinfectant residual level and a liquid volume. Under this approach, owners shall add the Cryptosporidium CT values in each segment to determine the total CT for the treatment plant.

(b) CT values for chlorine dioxide and ozone.

(i) Waterworks receive the Cryptosporidium treatment credit listed in the following table by meeting the corresponding chlorine dioxide CT value for the applicable water temperature, as described in subdivision B 3 d (7) (a) of this section.

CT Values (mg-min/L) for Cryptosporidium Inactivation by Chlorine Dioxide[1]

Log credit	Water Temperature, °C										
	Less than or equal to 0.5	1	2	3	5	7	10	15	20	25	30
0.25	159	153	140	128	107	90	69	45	29	19	12
0.5	319	305	279	256	214	180	138	89	58	38	24
1.0	637	610	558	511	429	360	277	179	116	75	49
1.5	956	915	838	767	643	539	415	268	174	113	73
2.0	1275	1220	1117	1023	858	719	553	357	232	150	98
2.5	1594	1525	1396	1278	1072	899	691	447	289	188	122
3.0	1912	1830	1675	1534	1286	1079	830	536	347	226	147

[1]Waterworks may use this equation to determine log credit between the indicated values:

$$\text{Log credit} = (0.001506 \times (1.09116)^{Temp}) \times CT$$

(ii) Waterworks receive the Cryptosporidium treatment credit listed in the following table by meeting the corresponding ozone CT values for the applicable water temperature, as described in subdivision B 3 d (7) (a) of this section.

CT Values (mg-min/L) for Cryptosporidium Inactivation by Ozone[1]

Log credit	Water Temperature, °C										
	Less than or equal to 0.5	1	2	3	5	7	10	15	20	25	30
0.25	6.0	5.8	5.2	4.8	4.0	3.3	2.5	1.6	1.0	0.6	0.39
0.5	12	12	10	9.5	7.9	6.5	4.9	3.1	2.0	1.2	0.78
1.0	24	23	21	19	16	13	9.9	6.2	3.9	2.5	1.6
1.5	36	35	31	29	24	20	15	9.3	5.9	3.7	2.4
2.0	48	46	42	38	32	26	20	12	7.8	4.9	3.1
2.5	60	58	52	48	40	33	25	16	9.8	6.2	3.9
3.0	72	69	63	57	47	39	30	19	12	7.4	4.7

[1]Waterworks may use this equation to determine log credit between the indicated values:

$$\text{Log credit} = (0.0397 \times (1.09757)^{Temp}) \times CT$$

(c) Ultraviolet light. Waterworks receive Cryptosporidium, Giardia lamblia, and virus treatment credits for ultraviolet (UV) light reactors by achieving the corresponding UV dose values shown in subdivision B 3 d (7) (c) (i) of this section. Waterworks shall validate and monitor UV reactors as described in subdivision B 3 d (7) (c) (ii) and (iii) of this section to demonstrate that they are achieving a particular UV dose value for treatment credit.

(i) UV dose table. The treatment credits listed in this table are for UV light at a wavelength of 254 nm as produced by a low pressure mercury vapor lamp. To receive treatment credit for other lamp types, waterworks shall demonstrate an equivalent germicidal dose through reactor validation testing, as described in subdivision B 3 d (7) (c) (ii) of this section. The UV dose values in this table are applicable only to post-filter applications of UV in filtered systems.

UV dose table for Cryptosporidium, Giardia lamblia, and virus inactivation credit

Log credit	Cryptosporidium UV dose (mJ/cm2)	Giardia lamblia UV dose (mJ/cm2)	Virus UV dose (mJ/cm2)
0.5	1.6	1.5	39
1.0	2.5	2.1	58
1.5	3.9	3.0	79
2.0	5.8	5.2	100
2.5	8.5	7.7	121
3.0	12	11	143
3.5	15	15	163
4.0	22	22	186

(ii) Reactor validation testing. Waterworks shall use UV reactors that have undergone validation testing to determine the operating conditions under which the reactor delivers the UV dose required in subdivision B 3 d (7) (c) (i) of this section (i.e., validated operating conditions). These operating conditions shall include flow rate, UV intensity as measured by a UV sensor, and UV lamp status.

((a)) When determining validated operating conditions, owners shall account for the following factors: UV absorbance of the water; lamp fouling and aging; measurement uncertainty of online sensors; UV dose distributions arising from the velocity profiles through the reactor; failure of UV lamps or other critical waterworks components; and inlet and outlet piping or channel configurations of the UV reactor.

((b)) Validation testing shall include the following: full scale testing of a reactor that conforms uniformly to the UV reactors used by the waterworks and inactivation of a test microorganism whose dose response characteristics have been quantified with a low pressure mercury vapor lamp.

(iii) Reactor monitoring.

((a)) Owners shall monitor their UV reactors to determine if the reactors are operating within validated conditions, as determined under subdivision B 3 d (7) (c) (ii) of this section. This monitoring shall include UV intensity as measured by a UV sensor, flow rate, lamp status, and other parameters the commissioner designates based on UV reactor operation. Owners shall verify the calibration of UV sensors and shall recalibrate sensors in accordance with a protocol the commissioner approves.

((b)) To receive treatment credit for UV light, waterworks shall treat at least 95% of the water delivered to the public during each month by UV reactors operating within validated conditions for the required UV dose, as described in subdivision B 3 d (7) (c) (i) and (ii) of this section. Owners shall demonstrate compliance with this condition by the monitoring required under subdivision B 3 d (7) (c) (iii)((a)) of this section.

e. Owners shall comply with the applicable recordkeeping and reporting requirements described in 12VAC5-590-530 and 12VAC5-590-550.

C. Reserved.

D. Reserved.

E. Reserved.

F. Reserved.

G. Beginning January 1, 1993, each owner shall certify annually in writing to the commissioner (using third party or manufacturer's certification) that, when polymers containing acrylamide or epichlorohydrin are used by the waterworks in drinking water systems, the combination (or product) of dose and monomer level does not exceed the following specified levels: Acrylamide = 0.05% dosed at 1 ppm (or equivalent) of polymer. Epichlorohydrin = 0.01% dosed at 20 ppm (or equivalent) of polymer. Certifications may rely on manufacturers or third parties, as approved by the commissioner.

H. Treatment technique for control of disinfection byproduct (DBPP) precursors.

1. Applicability.

a. Waterworks that use surface water or groundwater under the direct influence of surface water using conventional filtration treatment shall operate with enhanced coagulation or enhanced softening to achieve the TOC percent removal levels specified in subdivision H 2 of this section unless the waterworks meets at least one of the alternative compliance criteria listed in subdivision H 1 b or c of this section.

b. Alternative compliance criteria for enhanced coagulation and enhanced softening waterworks. Owners of waterworks that use surface water or groundwater under the direct influence of surface water provided with conventional filtration treatment may use the alternative compliance criteria in subdivisions H 1 b (1) through (6)

of this section to comply with this section in lieu of complying with subdivision H 2 of this section. Owners shall still comply with monitoring requirements in 12VAC5-590-370 B 3 i.

(1) The waterworks' source water TOC level, measured according to 12VAC5-590-440, is less than 2.0 mg/L, calculated quarterly as a running annual average.

(2) The waterworks' treated water TOC level, measured according to 12VAC5-590-440, is less than 2.0 mg/L, calculated quarterly as a running annual average.

(3) The waterworks' source water TOC level, measured according to 12VAC5-590-440, is less than 4.0 mg/L, calculated quarterly as a running annual average; the source water alkalinity, measured according to 12VAC5-590-440, is greater than 60 mg/L (as $CaCO_3$), calculated quarterly as a running annual average; and either the TTHM and HAA5 running annual averages are no greater than 0.040 mg/L and 0.030 mg/L, respectively; or prior to the effective date for compliance in 12VAC590-370-B-3 a, the owner has made a clear and irrevocable financial commitment not later than the effective date for compliance in 12VAC590-370-B-3 a to use of technologies that will limit the levels of TTHMs and HAA5 to no more than 0.040 mg/L and 0.030 mg/L, respectively. Owners shall submit evidence of a clear and irrevocable financial commitment, in addition to a schedule containing milestones and periodic progress reports for installation and operation of appropriate technologies, to the commissioner for approval not later than the effective date for compliance in 12VAC590-370-B-3 a. These technologies shall be installed and operating not later than June 30, 2005. Failure to install and operate these technologies by the date in the approved schedule will constitute a violation of these regulations.

(4) The TTHM and HAA5 running annual averages are no greater than 0.040 mg/L and 0.030 mg/L, respectively, and the waterworks uses only chlorine for primary disinfection and maintenance of a residual in the distribution system.

(5) The waterworks' source water SUVA, prior to any treatment and measured monthly according to 12VAC5-590-440, is less than or equal to 2.0 L/mg-m, calculated quarterly as a running annual average.

(6) The waterworks' finished water SUVA, measured monthly according to 12VAC5-590-440, is less than or equal to 2.0 L/mg-m, calculated quarterly as a running annual average.

c. Additional alternative compliance criteria for softening waterworks. Waterworks practicing enhanced softening that cannot achieve the TOC removals required by subdivision H 2 b of this section may use the alternative compliance criteria in subdivisions H 1 c (1) and (2) of this section in lieu of complying with subdivision H 2 of this section. Owners shall still comply with monitoring requirements in 12VAC5-590-370 B 3 i.

(1) Softening that results in lowering the treated water alkalinity to less than 60 mg/L (as $CaCO_3$), measured monthly according to 12VAC5-590-440 and calculated quarterly as a running annual average.

(2) Softening that results in removing at least 10 mg/L of magnesium hardness (as $CaCO_3$), measured monthly according to 12VAC5-590-440 and calculated quarterly as a running annual average.

2. Enhanced coagulation and enhanced softening performance requirements.

a. Waterworks shall achieve the percent reduction of TOC specified in subdivision H 2 b of this section between the source water and the combined filter effluent, unless the commissioner approves a waterworks' request for alternate minimum TOC removal (Step 2) requirements under subdivision H 2 c of this section.

b. Required Step 1 TOC reductions, indicated in the following table, are based upon specified source water parameters measured in accordance with 12VAC5-590-440. Waterworks practicing softening are required to meet the Step 1 TOC reductions in the far right column (Source water alkalinity greater than 120 mg/L) for the specified source water TOC:

Step 1 Required Removal of TOC by Enhanced Coagulation and Enhanced Softening for Community or Nontransient Noncommunity Waterworks That Use Surface Water or Groundwater Under the Direct Influence of Surface Water Using Conventional Treatment [1, 2]

Source water TOC mg/L	Source water alkalinity, mg/L as $CaCO_3$		
	0-60	greater than 60-120	greater than 120[3]
greater than 2.0-4.0	35.0%	25.0%	15.0%
greater than 4.0-8.0	45.0%	35.0%	25.0%
greater than 8.0	50.0%	40.0%	30.0%

[1]Waterworks meeting at least one of the conditions in subdivisions H 1 b (1) through (6) of this section are not required to operate with enhanced coagulation.

[2]Softening waterworks meeting one of the alternative compliance criteria in subdivision H 1 c of this section are not required to operate with enhanced softening.

[3]Waterworks practicing softening shall meet the TOC removal requirements in this column.

c. Waterworks that use surface water or groundwater under the direct influence of surface water with conventional treatment systems that cannot achieve the Step 1 TOC removals required by subdivision H 2 b of this section due to water quality parameters or operational constraints shall apply to the commissioner, within three months of failure to achieve the TOC removals required by subdivision H 2 b of this section, for approval of alternative minimum TOC (Step 2) removal requirements submitted by the waterworks. If the commissioner approves the alternative minimum TOC removal (Step 2) requirements, the commissioner may make those requirements retroactive for the purposes of determining compliance. Until the commissioner approves the alternate minimum TOC removal (Step 2) requirements, the owner shall meet the Step 1 TOC removals contained in subdivision H 2 b of this section.

d. Alternate minimum TOC removal (Step 2) requirements. Applications, made to the commissioner by waterworks using enhanced coagulation, for approval of alternative minimum TOC removal (Step 2) requirements under subdivision H 2 c of this section shall include, at a minimum, results of bench or pilot scale testing conducted under subdivision H 2 d (1) of this section. The submitted bench or pilot scale testing shall be used to determine the alternate enhanced coagulation level.

(1) Alternate enhanced coagulation level is defined as coagulation at a coagulant dose and pH as determined by the method described in subdivisions H 2 d (1) through (5) of this section such that an incremental addition of 10 mg/L of alum (or equivalent amount of ferric salt) results in a TOC removal of equal to or less than 0.3 mg/L. The percent removal of TOC at this point on the "TOC removal versus coagulant dose" curve is then defined as the minimum TOC removal required for the waterworks. Once approved by the commissioner, this minimum requirement supersedes the minimum TOC removal required by the table in subdivision H 2 b of this section. This requirement will be effective until such time as the commissioner approves a new value based on the results of a new bench and pilot scale test. Failure to achieve the alternative minimum TOC removal levels set by the commissioner is a violation of these regulations.

(2) Bench or pilot scale testing of enhanced coagulation shall be conducted by using representative water samples and adding 10 mg/L increments of alum (or equivalent amounts of ferric salt) until the pH is reduced to a level less than or equal to the enhanced coagulation Step 2 target pH shown in the following table:

Enhanced Coagulation Step 2 Target pH

Alkalinity (mg/L as $CaCO_3$)	Target pH
0-60	5.5
greater than 60-120	6.3
greater than 120-240	7.0
greater than 240	7.5

(3) For waters with alkalinities of less than 60 mg/L for which addition of small amounts of alum or equivalent addition of iron coagulant drives the pH below 5.5 before significant TOC removal occurs, the owner shall add necessary chemicals to maintain the pH between 5.3 and 5.7 in samples until the TOC removal of 0.3 mg/L per 10 mg/L alum added (or equivalent addition of iron coagulant) is reached.

(4) The owner may operate at any coagulant dose or pH necessary (consistent with other sections of these regulations) to achieve the minimum TOC percent removal approved under subdivision H 2 c of this section.

(5) If the TOC removal is consistently less than 0.3 mg/L of TOC per 10 mg/L of incremental alum dose at all dosages of alum (or equivalent addition of iron coagulant), the water is deemed to contain TOC not amenable to enhanced coagulation. The waterworks may then apply to the commissioner for a waiver of enhanced coagulation requirements.

3. Compliance calculations.

a. Owners of waterworks that use surface water or groundwater under the direct influence of surface water other than those identified in subdivision H 1 b or H 1 c of this section shall comply with requirements contained in subdivision H 2 b or H 2 c of this section. Owners shall calculate compliance quarterly, beginning after the waterworks has collected 12 months of data, by determining an annual average using the following method:

(1) Determine actual monthly TOC percent removal, equal to:

(1 (treated water TOC/source water TOC))X100

(2) Determine the required monthly TOC percent removal (from either the table in subdivision H 2 b of this section or from subdivision H 2 c of this section).

(3) Divide the value in subdivision H 3 a (1) of this section by the value in subdivision H 3 a (2) of this section.

(4) Add together the results of subdivision H 3 a (3) of this section for the last 12 months and divide by 12.

(5) If the value calculated in subdivision H 3 a (4) of this section is less than 1.00, the waterworks is not in compliance with the TOC percent removal requirements.

b. Owners may use the provisions in subdivisions H 3 b (1) through (5) of this section in lieu of the calculations in subdivisions H 3 a (1) through (5) of this section to determine compliance with TOC percent removal requirements.

(1) In any month that the waterworks' treated or source water TOC level, measured according to 12VAC5-590-440, is less than 2.0 mg/L, the owner may assign a monthly value of 1.0 (in lieu of the value calculated in subdivision H 3 a (3) of this section) when calculating compliance under the provisions of subdivision H 3 a of this section.

(2) In any month that a waterworks practicing softening removes at least 10 mg/L of magnesium hardness (as $CaCO_3$), the waterworks may assign a monthly value of 1.0 (in lieu of the value calculated in subdivision H 3 a (3) of this section) when calculating compliance under the provisions of subdivision H 3 a of this section.

(3) In any month that the waterworks' source water SUVA, prior to any treatment and measured according to 12VAC5-590-440, is equal to or less than 2.0 L/mg-m, the owner may assign a monthly value of 1.0 (in lieu of the value calculated in subdivision H 3 a (3) of this section) when calculating compliance under the provisions of subdivision H 3 a of this section.

(4) In any month that the waterworks' finished water SUVA, measured according to 12VAC5-590-440, is equal to or less than 2.0 L/mg-m, the owner may assign a monthly value of 1.0 (in lieu of the value calculated in subdivision H 3 a (3) of this section) when calculating compliance under the provisions of subdivision H 3 a of this section.

(5) In any month that a waterworks practicing enhanced softening lowers alkalinity below 60 mg/L (as $CaCO_3$), the owner may assign a monthly value of 1.0 (in lieu of the value calculated in subdivision H 3 a (3) of this section) when calculating compliance under the provisions of subdivision H 3 a of this section.

c. Waterworks that use surface water or groundwater under the direct influence of surface water and using conventional treatment may also comply with the requirements of this section by meeting the criteria in subdivision H 1 b or c of this section.

4. Enhanced coagulation or enhanced softening is the treatment technique required to control the level of DBP precursors in drinking water treatment and distribution systems for waterworks using surface water or groundwater under the direct influence of surface water and using conventional treatment.

I. The best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for disinfection byproducts show in Table 2.13 are listed below:

1. The best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for bromate and chlorite:

Disinfection byproduct	Best available technology
Bromate	Control of ozone treatment process to reduce production of bromate.
Chlorite	Control of treatment processes to reduce disinfectant demand and control of disinfection treatment processes to reduce disinfectant levels

2. The best technology, treatment techniques, or other means available for achieving compliance with the running annual average maximum contaminant levels for TTHM and HAA5:

Disinfection byproduct	Best available technology
Total trihalomethanes (TTHM) and Haloacetic acids (five) (HAA5)	Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant

3. The best technology, treatment techniques, or other means available for achieving compliance with the locational running annual average maximum contaminant levels for TTHM and HAA5 for all systems that disinfect their source water:

Disinfection byproduct	Best available technology
Total trihalomethanes (TTHM) and Haloacetic acids (five) (HAA5)	Enhanced coagulation or enhanced softening, plus GAC10; or nanofiltration with a molecular weight cutoff less than or equal to 1000 Daltons; or GAC20

4. The best technology, treatment techniques, or other means available for achieving compliance with the locational running annual average maximum contaminant levels for TTHM and HAA5 for consecutive waterworks and applies only to the disinfected water that consecutive waterworks buy or otherwise receive:

Disinfection byproduct	Best available technology
Total trihalomethanes (TTHM) and Haloacetic acids (five) (HAA5)	Waterworks serving equal to or greater than 10,000: Improved distribution system and storage tank management to reduce residence time, plus the use of chloramines for disinfectant residual maintenance Waterworks serving less than 10,000: Improved distribution system and storage tank management to reduce residence time

J. The best technology, treatment techniques, or other means available for achieving compliance with the maximum residual disinfectant levels identified in Table 2.12 is the control of treatment processes to reduce disinfectant demand and control of disinfection treatment processes to reduce disinfectant levels.

K. If spent filter backwash water, thickener supernatant, or liquids from dewatering processes are recycled, in any waterworks supplied by a surface water source and waterworks supplied by a groundwater source under the direct influence of surface water that employ conventional filtration or direct filtration treatment, then they are subject to the recycle treatment technique requirement. Under this requirement recycle flows shall be returned through all the processes of the treatment system, or an alternative location approved by the state, by June 8, 2004.

L. Waterworks with uncovered finished water storage facilities shall comply with the requirements to cover the facility or treat the discharge from the facility as described in this paragraph.

1. Waterworks using uncovered finished water storage facilities shall comply with the conditions of this section.

2. Owners shall notify the commissioner of the use of each uncovered finished water storage facility no later than April 1, 2008.

3. Owners shall meet the conditions of subdivision L 3 a or b of this section for each uncovered finished water storage facility or be in compliance with a State approved schedule to meet these conditions no later than April 1, 2009.

a. All uncovered finished water storage facilities shall be covered.

b. Waterworks shall treat the discharge from the uncovered finished water storage facility to the distribution system to achieve inactivation and/or removal of at least 4-log virus, 3-log Giardia lamblia, and 2-log Cryptosporidium using a protocol approved by the commissioner.

4. Failure to comply with the requirements of this section is a violation of the treatment technique requirement.

12VAC5-590-421. Groundwater system treatment techniques.

A. ~~Owners~~ The owner of a groundwater ~~systems~~ system that (i) ~~have~~ has a confirmed E. coli contamination as described in 12VAC5-590-379 B or (ii) ~~have~~ has been notified in writing of a significant deficiency as described in 12VAC5-590-350 D shall meet the requirements of this section. Failure to meet any requirement of this section after the applicable time period specified is a treatment technique violation.

1. ~~Owners of groundwater systems meeting either one of the conditions in clause (i) or (ii) above~~ The owner shall implement one or more of the following corrective actions:

a. Correct all significant deficiencies;

b. Provide an alternate source of water;

c. Eliminate the source of contamination; or

d. Provide treatment of the groundwater source that reliably achieves at least 4-log treatment of viruses before or at the first ~~consumer~~ customer.

2. Unless the ~~ODW~~ department directs the ~~groundwater system~~ owner to implement a specific corrective action, the ~~groundwater system~~ owner shall consult with the ~~ODW~~ department regarding the appropriate corrective action within 30 days of receiving written notification from the ~~commissioner~~ department or the laboratory. This consultation may take the form of a telephone conversation, ~~electronic mail~~ email, meeting, or other mechanism agreed to by the ~~ODW~~ department.

3. Within 45 days of receiving this notification, the ~~groundwater system~~ owner shall submit a written ~~Corrective Action Plan~~ corrective action plan (CAP) to the ~~commissioner~~ department that satisfactorily addresses the deficiency. The CAP shall include a schedule for completing individual actions, and it shall include one or more of the corrective actions in subdivision A 1 of this section. Approval of the CAP by the ~~commissioner~~ department constitutes an approved CAP.

4. Within 120 days of receiving written notification from the ~~commissioner~~ department or the laboratory, the ~~groundwater system~~ owner shall either:

a. Have ~~a~~ completed corrective ~~action~~ actions in accordance with the ~~commissioner approved~~ department approved CAP including ~~commissioner specified~~ department specified interim measures; or

b. Be in compliance with a ~~commissioner approved~~ department approved CAP and schedule ~~subject to the~~

~~conditions specified in subdivisions 4 b 1 and 2 of this subsection~~.

(1) Any subsequent modifications to a ~~commissioner-approved~~ department approved CAP and schedule shall also be approved by the ~~commissioner~~ department.

(2) If the ~~commissioner~~ department specifies interim measures for protection of the public health pending the ~~commissioner's~~ department's approval of the CAP and schedule or pending completion of the CAP, then the ~~groundwater system~~ owner shall comply with these interim measures as well as with any schedule specified by the ~~commissioner~~ department.

5. When a significant deficiency is identified at awaterworksthat uses both a groundwater and a surface water or a GUDI source, the owner shall comply withthis sectionunless the ~~commissioner~~ department has determined that the significant deficiency is in a portion of the distribution system that is served solely by the surface water or ~~a~~ the GUDI source**.**

B. ~~Owners~~ The owner of a groundwater ~~systems~~ system that ~~provide~~ provides at least 4-log treatment of viruses before or at the first customer shall conduct compliance monitoring to demonstrate treatment effectiveness in accordance with subsection C of this section. The owner shall also conduct source water monitoring in accordance with 12VAC5-590-379 C.

~~1. Existing groundwater sources. A groundwater system that is not required to meet the source water monitoring requirements of 12VAC5-590-379 for any groundwater source(s) because the owner has been notified by the ODW that the groundwater system provides at least 4-log treatment of viruses before or at the first customer for any groundwater source(s) shall comply with the following:~~

~~a. The groundwater system owner shall have written approval from the ODW that the groundwater system provides at least 4-log treatment of viruses before or at the first customer served by the groundwater source.~~

~~b. The groundwater system owner shall conduct compliance monitoring as required by subsection C of this section within 30 days of placing the source in service.~~

~~2. New groundwater sources. A groundwater system owner that places a new groundwater source into service shall meet the requirements of subdivisions 1 a and b of this subsection and conduct raw water monitoring in accordance with 12VAC5-590-425.~~ The ~~groundwater system~~ owner shall provide engineering, operational, or other information as required by the ~~ODW~~ department to complete a determination of virus treatment effectiveness.

C. The owner of a groundwater system ~~subject to the requirements of subsection B of this section~~ that provides at least 4-log treatment of viruses shall monitor the effectiveness and reliability of treatment for that groundwater source before or at the first customer as follows:

1. Chemical disinfection.

a. The owner of a groundwater system that serves greater than 3,300 people shall continuously monitor and record the residual disinfectant concentration using analytical methods specified in ~~40 CFR 141.74 (a)(2)~~ 12VAC5-590-440 at a location approved by the ~~ODW~~ department and shall record the lowest residual disinfectant concentration each day that water from the groundwater source is served to the public. The ~~groundwater system~~ owner shall maintain at least the ~~ODW-determined~~ department-determined residual disinfectant concentration every day the groundwater system serves water from the groundwater source to the public. If there is a failure in the continuous monitoring equipment, the ~~groundwater system~~ owner shall conduct grab sampling every four hours until the continuous monitoring equipment is returned to service. The system shall resume continuous residual disinfectant monitoring within 14 days.

b. The owner of a groundwater system that serves 3,300 or fewer people shall monitor the residual disinfectant concentration using analytical methods specified in ~~40 CFR 141.74 (a)(2)~~ 12VAC5-590-440 at a location approved by the ~~ODW~~ department and record the residual disinfection concentration each day that water from the groundwater source is served to the public. The ~~groundwater system~~ owner shall maintain the ~~ODW-determined~~ department-determined residual disinfectant concentration every day the groundwater system serves water from the groundwater source to the public. The ~~groundwater system~~ owner shall ~~take~~ collect a daily grab sample during the hour of peak flow or at another time specified by the ~~ODW~~ department. If any daily grab sample measurement falls below the ~~ODW-determined~~ department-determined residual disinfectant concentration, the ~~groundwater system~~ owner shall ~~take~~ collect follow-up samples every four hours until the residual disinfectant concentration is restored to the ~~ODW-determined~~ department-determined level. ~~A~~ The owner of a groundwater system that serves 3,300 or fewer people may monitor continuously to meet the requirements of this subsection.

c. When the disinfection treatment is required based on confirmed E. colicontamination in the source water, the requirements in this section apply. When the disinfection treatment is required for any other reason or provided voluntarily by the owner, the department will determine the frequency of residual disinfectant monitoring.

~~c.~~ d. Failure to maintain the ~~ODW-specified~~ department-specified minimum residual disinfectant concentration

for a period of more than four hours is a violation of the treatment technique requirement.

2. ~~A~~ The owner of a groundwater system ~~owner~~ that uses ~~an ODW approved~~ a department-approved alternative treatment to meet the requirements of this section by providing at least 4-log treatment of viruses before or at the first customer shall:

a. Monitor the alternative treatment in accordance with all ~~ODW specified~~ department-specified monitoring requirements; and

b. Operate the alternative treatment in accordance with all ~~ODW specified~~ department-specified compliance requirements necessary to achieve at least 4-log treatment of viruses.

3. Failure to meet the monitoring requirements of subsection C of this section is a violation and requires the ~~groundwater system~~ owner to provide public notification as required in 12VAC5-590-540 A 3.

D. Discontinuing compliance monitoring or treatment.

1. ~~A groundwater system~~ The owner may discontinue compliance monitoring if the ~~ODW~~ department determines and documents in writing that compliance monitoring is no longer necessary for that groundwater source. ~~Owners~~ The owner of a groundwater systems that ~~have ODW~~ has department approval to discontinue compliance monitoring shall be subject to the triggered source water monitoring requirements of 12VAC5-590-379 B 1.

2. ~~A~~ The owner of a groundwater system ~~owner~~ that is discontinuing compliance monitoring is still subject to the requirements of 12VAC5-590-380 G.

3. ~~Owners of waterworks with groundwater sources that have~~ The owner that has been required by the ~~commissioner~~ department to provide at least 4-log treatment of viruses shall not discontinue treatment or monitoring.

12VAC5-590-425. ~~Raw water monitoring requirements for groundwater sources.~~ (Repealed.)

~~A. The owner of any groundwater source utilizing chlorine disinfection or any other treatment or chemical addition that may alter or affect the bacteriological quality of the raw water shall collect source samples for bacteriological analysis in accordance with this section.~~

~~B. All bacteriological samples under this section shall be collected from the raw water prior to any treatment or chemical addition.~~

~~1. The owner shall provide a suitable raw water sample tap at each groundwater source.~~

~~2. If conditions are such that it is not possible to install a raw water sample tap, an alternate sample location acceptable to the commissioner may be utilized for this monitoring.~~

~~C. All samples shall be analyzed in accordance with 12VAC5-590-440 by the DCLS or by a laboratory certified by DCLS for drinking water samples and by a test method that will yield a Most Probable Number (MPN) result for both total coliforms and E. coli.~~

~~D. Number of samples.~~

~~1. The number of routine raw water samples to be collected and the frequency of sampling shall be determined by the district engineer. The district engineer will notify the waterworks owner of the raw water sampling requirements.~~

~~2. As a minimum, the owner shall collect raw water samples in accordance with the following table:~~

~~Source Type~~	~~Minimum Routine Raw Water Monitoring Frequency~~	~~Parameters~~
~~Well located in non-karst geology~~	~~One sample per year~~	~~Total coliforms MPN and E coli MPN~~
~~Well located in karst geology~~	~~One sample per calendar quarter~~	~~Total coliforms MPN and E coliMPN~~
~~Spring~~	~~One sample per month~~	~~Total coliforms MPN and E coliMPN~~

~~3. When a single sample result from any groundwater source that requires a routine raw water monitoring frequency of less than monthly indicates total coliforms in excess of 50 colonies per 100 mL or the presence of E. coli, the owner shall collect one confirmation sample within 10 calendar days of notification of the results. The district engineer may require that additional samples be collected and will establish the specific number of samples and the monitoring frequency.~~

~~E. If the results of the raw water monitoring required by this section indicate total coliforms in excess of 50 colonies per 100 ml in two or more samples collected during any running six month period or the presence of E. coli in two or more samples collected during any running six month period, the waterworks owner shall provide all necessary information required in 12VAC5-590-430 to the district engineer and the commissioner will make a GUDI determination for the groundwater source.~~

~~F. If the results of the raw water monitoring required by this section indicate the presence of E. coli in two or more samples collected during any running six-month period, the waterworks owner shall:~~

~~1. Issue a Tier 1 public notice in accordance with 12VAC5-590-540 A 1.~~

~~2. Provide disinfection treatment to achieve a 4-log virus inactivation as specified in 12VAC5-590-421 A 1 d.~~

~~3. Conduct compliance monitoring as specified in 12VAC5-590-421 C 1.~~

12VAC5-590-430. Determination of surface water influence of groundwater sources.

~~All waterworks'~~ A. A groundwater ~~sources~~ source utilized by a waterworks ~~such as~~, including wells, springs, and infiltration galleries, shall be evaluated by the ~~division to determine surface water influence~~ department and a determination of surface water influence shall be made by the department. The ~~waterworks~~ owner shall provide to the ~~division~~ department all necessary information to make this determination in accordance with the ~~following~~ three-step procedure described in subsection B of this section.

B. The groundwater source shall be evaluated and subjected to ~~all~~ the criteria in a stepwise fashion. Once the department has made a determination with regard to surface water influence ~~has been made~~, it is not necessary to continue to the next step:

1. Step ~~one –~~ 1. Evaluation of source history, construction, and location.

a. ~~The source is not surface influenced if the division has previously determined that disinfection treatment is not required (see 12VAC5-590-380 G). b.~~ The source is ~~surface influenced~~ under the direct influence of surface water if it has been directly associated with a biological waterborne disease outbreak ~~such a Giardiasis, or if it has been directly associated with chemical contamination from the surface~~.

~~c. For all sources consisting of a spring, infiltration gallery, wells located in Karstian geology, or not classified as either 12VAC5-590-430 A 1 or 2 the determination shall proceed to step two.~~

b. The source is under the direct influence of surface water if there are any demonstrated or known direct connections between the source to surface water via surface water bodies, sinkholes, troughs, drainage ways, or other geologic features.

c. The source is under the direct influence of surface water if a sanitary survey reveals, or there is other evidence to indicate, that surface water is directly entering the source.

d. If the department has not determined that the source is influenced by surface water based upon the criteria in subdivisions B 1 a, B 1 b, and B 1 c of this section, then the source evaluation proceeds to Step 2.

2. Step ~~two – source physiology and geology~~ 2. Microbiological water quality.

~~a. The source is not surface influenced if it consists of a properly constructed Class I or Class II well in non-Karstian geologic provinces of the state, with no history of turbidity fluctuations, and that have been determined by the division to be adequately treated by disinfection alone (12VAC5-590-380 G).~~

~~b. The source is surface influenced if a sanitary survey reveals that surface water may directly enter the source either through structural defects or through nearby surface water bodies, sinkholes, troughs, drainage ways, or other suspect geological features.~~

~~c. The determination for sources consisting of a spring, infiltration gallery, wells located in Karstian geology or otherwise not classified under 12VAC5-590-430 B 1 or 2 shall proceed to step three.~~

a. The owner shall collect a series of bacteriological samples directly from the source before any treatment. The specific number of samples to be collected, the sampling frequency, and the duration of sampling shall be determined by the department.

(1) At a minimum, a series of 20 samples collected on a weekly frequency is required. Sample collection may be adjusted within the week to collect samples immediately following rainfall events, whenever possible.

(2) All bacteriological analyses shall be performed in accordance with 12VAC5-590-440 by the DCLS or by a laboratory certified by the DCLS for drinking water samples and by a test method that will yield both total coliform concentration and E. coli concentration.

(3) The department may utilize bacteriological results from source water samples collected in accordance with 12VAC5-590-379 C if the sample results cover at least a 20-week period that includes multiple significant rainfall events for this Step 2 evaluation.

b. The total coliform concentration sample results shall be evaluated as follows:

(1) If the results of the total coliform concentration samples indicate three or more samples with total coliform greater than 100 colonies/100 ml, then the source evaluation proceeds to Step 3.

(2) If the results of the total coliform concentration samples indicate a geometric mean equal to or greater than 100 colonies/100 ml, then the requirements of 12VAC5-590-380 G 2 will apply.

c. The E. coli concentration samples shall be evaluated as follows:

(1) If the results of the E. coli concentration samples indicate greater than or equal to five E. coli per 100 ml in three or more samples, then the source evaluation proceeds to Step 3.

(2) If the results of the E. coli concentration samples indicate the presence of E. coli in five or more samples, then the source evaluation proceeds to Step 3.

3. Step ~~three — water quality~~ 3. Additional water quality monitoring.

~~a. The source is not surface influenced if the total coliform concentrations of the raw water as measured by the multiple portion decimal dilution (MPN) method is less than 100 organisms/100 mL based on a geometric mean of 20 or more samples over a period of six months with no more than 10% of these samples exceeding 100 organisms/100 mL; and having no record or confirmed fecal coliform contamination.~~

~~b. The source is surface influenced if:~~

~~(1) The source turbidity, temperature, pH, or conductivity fluctuate following climatic events or fluctuate relative to nearby surface bodies of water, or~~

~~(2) The source exhibits the presence of diatoms, rotifers, coccidia, plant debris, insect parts, or Giardia cysts as identified by particulate analysis.~~

a. The owner shall prepare and submit a written source water monitoring plan to the department for approval detailing additional water quality samples to be collected directly from the source before any treatment and if applicable from a nearby surface water source. The monitoring plan shall include the following:

(1) The specific parameters to be monitored.

(2) The monitoring frequency for each parameter.

(3) The duration of monitoring.

b. The source water monitoring plan shall include microscopic particulate analysis (MPA).

(1) A minimum of four source water MPA tests is required, two to be conducted during a wet period and two to be conducted during a dry period. All MPA tests shall be collected at least 60 days apart.

(2) All MPA tests shall be performed by a laboratory approved by the department and shall include both Giardia lamblia and Cryptosporidium.

(3) All MPA testing and reporting of results shall be in accordance with EPA "Consensus Method for Determining Groundwaters Under the Direct Influence of Surface Water Using Microscopic Particulate Analysis (MPA)," dated October 1992, Environmental Services Division.

c. The source water monitoring plan shall include monitoring of the physical parameters such as temperature, pH, turbidity, conductivity, and other parameters.

(1) If a surface water source is located near the groundwater source being evaluated, then monitoring of the nearby surface water source is required using the same physical parameters and frequency as the groundwater source.

(2) Records of rainfall and other climatological events shall be maintained and reported with the physical parameter results.

d. The owner shall provide the department with all of the monitoring results required in the approved monitoring plan. Results of all MPA tests shall be reported within 10 days of receipt by the owner. If any MPA result indicates the presence of Giardia lamblia or Cryptosporidium, then the owner shall notify the department within 24 hours of receipt. The results of the physical parameter monitoring shall be provided along with applicable rainfall or climatological data to the department in a summary report.

e. The additional water quality monitoring results shall be evaluated as follows:

(1) The source is under the direct influence of surface water if any single MPA test result indicates a score of equal to or greater than 20.

(2) The source is under the direct influence of surface water if any two MPA test results indicate a score of equal to or greater than 15.

(3) The source is under the direct influence of surface water if the results of physical parameter monitoring indicate a correlation between fluctuations in the groundwater source in direct response to a rainfall or other climatological event.

(4) The source is under the direct influence of surface water if the results of physical parameter monitoring indicate a direct correlation between the groundwater source being evaluated and the physical parameters of a nearby surface water source.

(5) The source is a groundwater source and is not under the direct influence of surface water if (i) all MPA test results indicate a score of equal to or less than 9, (ii) there are no fluctuations in source water monitored physical parameters in direct response to a rainfall or other climatological event, and (iii) there is no direct correlation in the monitored physical parameters between the groundwater source being evaluated and a nearby surface water source.

f. If the department has not determined that the source is under the direct influence of surface water based upon the criteria in subdivisions B 3 e (1) through B 3 e (4) of this section, and if at least one of the MPA test results indicate a score of greater than 9 but less than 15, then the department shall evaluate all available water quality monitoring data, source construction, location, geology, and any other relevant factors, and to determine that either:

(1) The source is a groundwater source and is not under the direct influence of surface water; or

(2) The source is at risk and requires continued source water monitoring as prescribed by the department.

C. If the source is subject to the requirements of subdivision B 3 of this section, then the owner shall perform the following interim measures until the department has made a final GUDI determination:

1. Provide disinfection treatment to achieve a 4-log inactivation of virus in accordance with 12VAC5-590-421 A 1 d;

2. Conduct compliance monitoring in accordance with 12VAC5-590-421 C 1;

3. If the disinfection treatment required in subdivision C 1 of this section has to be installed, then the owner shall issue a public notice in accordance with 12VAC5-590-540 A 1 advising consumers to boil the water before using it for human consumption. The boil water notice shall remain in effect until the disinfection treatment is installed and in operation; and

4. The department may require that the owner perform additional interim measures if deemed necessary to protect public health.

D. If the total coliform concentration criteria in subdivision B 2 b of this section or the E. coli concentration criteria in subdivision B 2 c of this section are exceeded or if the department has declared the source to be GUDI, then the owner may propose mitigation measures, a plan to correct deficiencies, or both.

1. Any proposed mitigation measures or corrective actions must be detailed in a report submitted to the department for approval. The report shall be prepared by a professional engineer licensed in Virginia, a professional geologist licensed in Virginia, or other licensed professional approved by the department. The report shall include:

a. A description of the proposed mitigation or corrective action activities such as the repair of structural defects, elimination of sources of contamination in proximity to the source, implementation of source water protection measures, or other mitigation or corrective action activities.

b. Specific milestones and milestone completion dates.

c. A follow-up source water monitoring plan to be implemented upon completion of the mitigation measures or of the corrective actions.

2. If the source must remain in operation during the period of time that the mitigation or corrective action activities are implemented and evaluated, then the department may require that the owner implement the interim measures described in 12VAC5-590-395 A 3 or subdivisions C 1 through C 4 of this section.

3. A final summary report detailing the mitigation measures, the corrective actions, or both that are completed; the results of the follow-up monitoring; conclusions; recommendations; and all other supporting data shall be submitted to the department for approval.

a. The final summary report shall be prepared by a professional engineer licensed in Virginia, a professional geologist licensed in Virginia, or other licensed professional approved by the department.

b. Upon evaluation of the final report and supporting data, the department will make a GUDI determination.

E. For any source previously determined to be a groundwater source and not under the direct influence of surface water, the department may:

1. Require that the source be reevaluated in accordance with procedures contained in this section; or

2. Waive any additional reevaluation under this section.

12VAC5-590-440. Analytical methods.

A. All drinking water analyses for compliance ~~purposes~~ with PMCLs and SMCLs or ALs shall ~~have been~~ be performed by analytical methods that are consistent with current ~~U.S. Environmental Protection Agency~~ EPA regulations found at 40 CFR Part 141 and 40 CFR Part 143 as well as 40 CFR Part 136, if applicable. ~~Laboratories~~ Standards for laboratories seeking certification to perform drinking water analyses ~~shall comply with all~~ are found in the Regulation for the Certification of Laboratories Analyzing Drinking Water (1VAC30-41) and other applicable regulations promulgated by the Department of General Services~~, Division of Consolidated Laboratory Services~~ and the DCLS.

B. For the purposes of determining compliance, the department will only accept results from samples that have been handled, processed, and documented in accordance with the Regulation for the Certification of Laboratories Analyzing Drinking Water (1VAC30-41).

C. Testing for alkalinity, calcium, conductivity, ~~disinfectant~~ residual disinfectant, orthophosphate, pH, silica, temperature, ~~and~~ turbidity, TOC, DOC, SUVA, and UV254 for compliance ~~purposes~~ may be performed by any person or party acceptable

to the ~~commissioner~~ department in accordance with methods specified in 40 CFR Part 141.

~~Table 2.2 — Inorganic Chemicals.~~

~~Substance~~	~~Primary Maximum Contaminant Level (mg/L)~~
~~Antimony~~	~~0.006~~
~~Arsenic (As)~~	~~0.010***~~
~~Asbestos~~	~~7 Million Fibers/Liter (longer than 10 um)~~
~~Barium (Ba)~~	~~2~~
~~Beryllium~~	~~0.004~~
~~Cadmium (Cd)~~	~~0.005~~
~~Chromium (Cr)~~	~~0.1~~
~~Cyanide (as free Cyanide)~~	~~0.2~~
~~Fluoride (F)~~	~~4.0 #~~
~~Mercury (Hg)~~	~~0.002~~
~~Nickel~~	~~No Limits Designated~~
~~Nitrate (as N)~~	~~10**~~
~~Nitrite (as N)~~	~~1~~
~~Total Nitrate and Nitrite (as N)~~	~~10~~
~~Selenium (Se)~~	~~0.05~~
~~Thallium~~	~~0.002~~
~~Substance~~	~~Secondary Maximum Contaminant Level (mg/L)~~
~~Chloride (Cl)~~	~~250.0~~
~~Copper (Cu)~~	~~1.0~~
~~Corrosivity~~	~~Noncorrosive, See Appendix B~~
~~Fluoride~~	~~2.0~~
~~Foaming Agents~~	~~0.5*~~
~~Iron (Fe)~~	~~0.3~~
~~Manganese (Mn)~~	~~0.05~~
~~Sodium (Na)~~	~~No Limits Designated~~
~~Sulfate (SO_4)~~	~~250.0~~
~~Zinc (Zn)~~	~~5.0~~
~~Substance~~	~~Action Level (mg/L)~~
~~Lead (Pb)~~	~~0.015~~
~~Copper (Cu)~~	~~1.3~~
~~# Note. For artificially fluoridated waterworks the minimum concentration of fluoride should be 0.8 mg/L and the maximum should be 1.0 mg/L. The optimum control limit is 0.9 mg/L. (See Appendix B)~~	
~~*Note. Concentration reported in terms of Methylene Blue Active Substances.~~	
~~**Note. See Appendix B for Exception Regarding Noncommunity Waterworks.~~	
~~***Note. The PMCL for arsenic is 0.010 mg/L for community and nontransient noncommunity waterworks effective January 23, 2006. Arsenic sampling results shall be reported to the nearest 0.001 mg/L.~~	

~~Table 2.3 — Organic Chemicals.~~

~~Substance~~	~~Primary Maximum Contaminant Levels (mg/L)~~
~~VOC~~	
~~1. Vinyl Chloride~~	~~0.002~~
~~2. Benzene~~	~~0.005~~
~~3. Carbon Tetrachloride~~	~~0.005~~
~~4. 1,2 Dichloroethane~~	~~0.005~~
~~5. Trichloroethylene (TCE)~~	~~0.005~~
~~6. 1,1 Dichloroethylene~~	~~0.007~~
~~7. 1,1,1 Trichloroethane~~	~~0.2~~
~~8. para Dichlorobenzene~~	~~0.075~~
~~9. cis 1,2 Dichloroethylene~~	~~0.07~~
~~10. 1,2 Dichloropropane~~	~~0.005~~
~~11. Ethylbenzene~~	~~0.7~~
~~12. Monochlorobenzene~~	~~0.1~~
~~13. o Dichlorobenznen~~	~~0.6~~
~~14. Styrene~~	~~0.1~~
~~15. Tetrachloroethylene~~	~~0.005~~
~~16. Toluene~~	~~1~~
~~17. trans 1,2 Dichloroethylene~~	~~0.1~~

18. Xylene (total)	10
19. Dichloromethane	0.005
20. 1,2,4 Trichlorobenzene	0.07
21. 1,1,2 Trichloroethane	0.05
SOC	
1. Alachlor	0.002
2. Atrazine	0.003
3. Carbofuran	0.04
4. Chlordane	0.002
5. Heptachlor	0.0004
6. Heptachlor epoxide	0.0002
7. Polychlorinated biphenyls (PCBs)	0.0005
8. Dibromochloropropane (DBCP)	0.0002
9. Ethylene dibromide (EDB)	0.00005
10. Lindane	0.0002
11. Methoxychlor	0.04
12. Toxaphene	0.003
13.4 Dichlorophenoxyacetic Acid (2,4 D)	0.07
14. 2,4,5 Trichlorophenoxypropionic Acid (2,4,5 TP or Silvex)	0.05
15. Reserved	
16. Reserved	
17. Reserved	
18. Pentachlorophenol	0.001
19. Benzo(a)pyrene	0.0002
20. Dalapon	0.2
21. Di(2 ethylhexy)adipate	0.4
22. Di(2 ethylhexy)phthalate	0.006
23. Dinoseb	0.007
24. Diquat	0.02
25. Endothall	0.1
26. Endrin	0.002
27. Glyphosate	0.7
28. Hexachlorobenzene	0.001
29. Hexachlorocyclopentadiene	0.05
30. Oxamyl (Vydate)	0.2
31. Picloram	0.5
32. Simazine	0.004
33. 2,3,7,8 TCDD (Dioxin)	3×10^{-8}

Table 2.4 — Physical Quality.

Parameter	Maximum Contaminant Level	Concentration
Color	Secondary	15 Color Units
Odor	Secondary	3 Threshold odor numbers
pH	Secondary	6.5 8.5
Total Dissolved	Secondary	500 mg/L Solids (TDS)
Turbidity	Primary	*1 Turbidity Unit
* See Appendix B for operational requirements.		

Table 2.5 — Radiological Quality.

A. Maximum Contaminant Level Goals for Radionuclides	
Substance	MCLG
1. Combined radium-226 and radium-228	Zero
2. Gross alpha particle activity (excluding Radon and uranium)	Zero
3. Beta particle and photon radioactivity	Zero
4. Uranium	Zero
B. Primary Maximum Contaminant Levels for Radionuclides	
Substance	Primary Maximum Contaminant Level
1. Combined radium-226 and radium-228	5 pCi/L

2. Gross Alpha Activity (excluding Radon and Uranium)	15 pCi/L
3. Uranium	30 µg/L
Primary Maximum Contaminant Levels for Beta Particle and Photon Radioactivity from Man-Made Radionuclides	
1. The average annual concentration of Beta particle and Photon radioactivity from man-made radionuclides in drinking water shall not produce an annual dose equivalent to the total body or any internal organ greater than 4 millirem/year.	
2. Except for the radionuclides listed in Schedule I, the concentration of man-made radionuclides causing 4 MREM total body or organ dose equivalents shall be calculated on the basis of a 2 liter per day drinking water intake using the 168-hour data listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and Water for Occupational Exposure," MBS Handbook 69 as amended August 1963, U.S. Department of Commerce. If two or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any organ exceed 4 millirem/year.	
Schedule 1	
Average annual concentrations assumed to produce a total body organ dose of 4 mrem/year.	

Radionuclide	Critical Organ	pCi/liter
Tritium	Total Body	20,000
Strontium-90	Bone Marrow	8
* See Appendix B		

Table 2.6 — Unregulated Contaminant Organics to be Monitored.

Group A	
1. Chloroform	12. Chloromethane
2. Bromodichloromethane	13. Bromoethane
3. Chlorodibromomethane	14. 1,2,3-Trichloropropane
4. Bromoform	15. 1,1,1,2-Tetrachloroethane
5. Chlorobenzene	16. Chloroethane
6. m-Dichlorobenzene	17. 2,2-Dichloropropane
7. Dibromomethane	18. o-Chlorotoluene
8. 1,1-Dichloropropene	19. p-Chlorotoluene
9. 1,1-Dichloroethane	20. Bromobenzene
10. 1,1,2,2-Tetrachloroethane	21. 1,3-Dichloropropene
11. 1,3-Dichloropropane	
Group B	
1. Aldrin	8. Metoachlor
2. Butachlor	9. Metribuzin
3. Carbaryl	10. Propachlor
4. Dicamba	11. Aldicarb
5. Dieldrin	12. Aldicarb sulfone
6. Methomyl	13. Aldicarb sulfoxide
7. 3-Hyposycarbofuran	

Table 2.7 — Reserved

Table 2.8 — Organic Chemical Monitoring Implementation Schedule.

Number of Persons Served	Monitoring to Begin During the Quarter that Begins
Over 10,000	January 1,1988
3,300 to 10,000	January 1,1989
less than 3,300	January 1,1991

Table 2.9 — PMCL Effective Dates.

Table 2.3, Organics Chemicals, VOC 1 through 8 (Phase I)	January 9, 1989
Total Trihalomethanes and Fluoride	July 1, 1991
Table 2.3, Organics Chemicals, VOC 9 through 18 and SOC 1 through 14 (Phase II VOCs and SOCs)	July 30, 1992
Asbestos, Cadmium, Chromium, Mercury, Nitrate, Nitrite, Total Nitrate+Nitrite, Selenium (Phase II IOCs)	July 30, 1992

Table 2.3, Organics Chemicals, SOC 15 through 18 and Table 2.2, Inorganic Chemicals, Barium (Phase II SOCs and IOCs)	January 1, 1993
Table 2.3, Organics Chemicals, VOC 19 through 21, SOC 19 through 33 and Table 2.2, Inorganic Chemicals; antimony, beryllium, cyanide (as free cyanide), nickel, and thallium	January 17, 1994
Uranium	December 8, 2003
E. coli	April 1, 2016

Table 2.10 — Maximum Contaminant Level Goals for Microbiological Contaminants.

Contaminant	MCLG
Giardia lamblia	Zero
Viruses	Zero
Legionella	Zero
Cryptosporidium	Zero
Escherichia coli (E. coli)	Zero

Table 2.11 — Maximum Contaminant Level Goals for Disinfection Byproducts.

Disinfection byproduct	MCLG (mg/L)
Bromate	Zero
Bromodichloromethane	Zero
Bromoform	Zero
Chlorite	0.8
Chloroform	0.07
Dibromochloromethane	0.06
Dichloroacetic acid	Zero
Monochloroacetic acid	0.07
Trichloroacetic acid	0.02

Table 2.12 — Maximum Residual Disinfectant Level Goals (MRDLG) and Maximum Residual Disinfectant Levels (MRDL) for Disinfectants

Disinfectant residual	MRDLG (mg/L)	MRDL (mg/L)
Chlorine	4 (as Cl_2)	4.0 (as Cl_2)
Chloramines	4 (as Cl_2)	4.0 (as Cl_2)
Chlorine dioxide	0.8 (as ClO_2)	0.8 (as ClO_2)

Notwithstanding the MRDLs in Table 2.12, owners may increase residual disinfectant levels in the distribution system of chlorine or chloramines (but not chlorine dioxide) to a level and for a time necessary to protect public health, to address specific microbiological contamination problems caused by circumstances such as, but not limited to, distribution line breaks, storm run-off events, source water contamination events, or cross-connection events.

Table 2.13 — Primary Maximum Contaminant Levels (PMCL) for Disinfection Byproducts

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

Article 3
Operation of Waterworks

12VAC5-590-450. ~~General.~~ Facility and personnel management.

Waterworks operation comprises the constant ~~operation~~ oversight and management of the facilities and personnel. Consideration ~~must~~ shall be given to such factors as ~~competent~~ the competency of personnel; ~~standards of~~ water quality, including drinking water standards~~,~~; water treatment plant maintenance and cleanliness~~,~~; analytical laboratory control~~,~~; and the operation and maintenance of ~~plant equipment, plant records and safety~~ the facilities, including water treatment plant equipment, distribution system equipment, and piping. As the ~~degree of~~ complexity of ~~water treatment~~ the waterworks increases, so does the expertise and skill required ~~to produce a high quality water also increases~~ of the operating staff.

12VAC5-590-460. ~~Personnel.~~ (Repealed.)

~~The operation of waterworks, both small and large, must rest in the hands of qualified persons. The number of such~~

employees in a waterworks system depends principally upon the size, the quality of the raw water, and the type of treatment processes used.

A. Waterworks operators designated by the waterworks owner to be in responsible charge must possess a valid waterworks operator license issued by the Board for Waterworks and Wastewater Works Operators and Onsite Sewage Professionals, Department of Professional and Occupational Regulation, in accordance with that board's regulations (18VAC160-20-10 et seq.) and Chapters 1, 2, 3, and 23 of Title 54.1 of the Code of Virginia. The license must be of a classification equal to or higher than that of the waterworks. Additional operating personnel at the waterworks must also be licensed as specified below.

B. The number and class of operators in attendance and additional operating personnel are a minimum to meet the requirements of protection of the public health of the consumer and safety of the operating personnel. The classification of operators and additional operating personnel in attendance must conform with Table 2.9.

1. The owner shall designate one or more properly licensed operators to be in responsible charge of the waterworks at all times. When no designated operator is on duty or in communication with the operating personnel in attendance at the waterworks, a substitute operator shall be designated by the owner. The substitute operator shall possess a valid operator license of a classification equal to or greater than that of the waterworks.

2. All waterworks having design capacity of 2.0 mgd or higher and employing filtration must have a minimum of two operating personnel on duty whenever the plant is in operation. All other waterworks employing filtration must have a minimum of one operating person on duty whenever the plant is in operation.

3. Waterworks designed for softening only and utilizing chemical precipitation:

a. Waterworks having a design capacity of 2.0 mgd or higher must have a minimum of two operating personnel in attendance at all times the plant is in operation; and

b. All other waterworks must have a minimum of one operator operating person in attendance at all times the treatment plant is in operation.

4. Waterworks utilizing iron and manganese removal by precipitation and having a design capacity of 0.5 mgd or higher must have a minimum of one operating person on duty at all times the treatment plant is in operation.

5. Waterworks providing treatment or no treatment and serving 400 or more persons and not previously covered will require daily attendance at each treatment facility by an operating person for sufficient time to insure proper operation of the facility and protection of the public health, as determined by the division.

TABLE 2.9
MINIMUM CLASSIFICATION FOR WATERWORKS OPERATIONS
ADDITIONAL OPERATING PERSONNEL

PLANT CLASSIFICATION	PLANT CAPACITY (MGC)	EQUIVALENT POPULATION SERVED	TREATMENT	OPERATOR IN RESPONSIBLE CHARGE (CLASS)	SHIFT SUPERVISOR (CLASS)	OTHERS
CLASS I	15.0 or more	150,000	Conventional filtration or filter rate more than 2 gpm/ft^2	I	I	II,III,IV Trainee*
CLASS I	5.0 but less than 15.0	50,000 but less than 150,000	Conventional filtration filter rate more than 2 gpm/ft^2	I	II	II,III,IV Trainee*
CLASS II	Less than 5.0	Less than 50,000	Filtering rater greater than 2 gpm/ft^2	II	II	III, IV Trainee*
CLASS II	0.5 but less than 5.0	5,000 but less than 50,000	Conventional filtration	II	III	III, IV Trainee*
CLASS III	Less than 0.5	Less than 5,000	Conventional filtration	III	III	IV or Trainee*

~~CLASS III~~	~~5,000 or more~~		~~Approved treatment other than conventional filtration and fluoridation~~	~~III~~	~~IV~~	~~IV or Trainee*~~
~~CLASS III~~	~~Sufficient persons or connections to be classified as a Public Water supply~~		~~Not under higher classifications but using fluoridation~~	~~III~~	~~IV~~	~~Trainee*~~
~~CLASS IV~~	~~Less than 5,000~~		~~Approved treatment other than conventional filtration and fluoridation or no treatment serving 400 or more persons~~	~~IV~~	~~IV~~	~~Trainee*~~

~~* Trainees should meet basic prerequisites for operators with the exception of experience and have potential for licensing wherever listed in these guidelines. Owner must provide a qualified substitute operator when only one operator is normally employed. The substitute must have the same class license as the operator.~~

12VAC5-590-461. Classification of waterworks, operator requirements, and operator attendance.

A. Classification of waterworks. All community and NTNC waterworks, including consecutive waterworks, fitting the classification protocol in this subsection shall be designated as classified waterworks. The commissioner retains the discretion to assign the classification of the waterworks or treatment facility either higher or lower. Those community and NTNC waterworks failing to fall within one of the classifications listed in this subsection shall be designated an unclassified waterworks unless specified otherwise by the commissioner. Normally, a TNC waterworks shall not be classified and shall not be required to have an operator unless the commissioner determines that it is necessary to ensure satisfactory operation of the installed treatment. If a waterworks consists of multiple treatment facilities, then these facilities may be individually classified for the purpose of determining the operator requirements.

1. Class 1 means:

a. A waterworks or a water treatment plant serving 50,000 or more persons, or having a water treatment plant capacity of 5.0 MGD or more and employing conventional filtration or chemical coagulation in combination with membrane filtration; or

b. A waterworks designated by the commissioner to be a Class 1 waterworks.

2. Class 2 means:

a. A waterworks or a water treatment plant serving 5,000 or more persons but fewer than 50,000 persons or having a water treatment plant capacity of 0.5 MGD or more but less than 5.0 MGD, whichever range applies, and employing rapid rate conventional filtration (see 12VAC5-590-874) or chemical coagulation in combination with membrane filtration;

b. A waterworks or a water treatment plant serving fewer than 50,000 persons or having a water treatment plant capacity of less than 5.0 MGD and employing high rate conventional filtration (see 12VAC5-590-874); or

c. A waterworks designated by the commissioner to be a Class 2 waterworks.

3. Class 3 means:

a. A waterworks or a water treatment plant serving fewer than 5,000 persons or having a water treatment plant capacity less than 0.5 MGD, whichever is greater, and employing conventional filtration or chemical coagulation in combination with membrane filtration;

b. A waterworks or a water treatment plant serving 5,000 or more persons or having a water treatment plant capacity of 0.5 MGD or more, whichever is greater, and employing one or more of the following: disinfection other than with hypochlorination, caustic soda feed, iron and manganese removal, ion exchange, slow sand filtration, aeration, rechlorination other than with hypochlorination, activated carbon contactors, membrane or other filtration technologies without chemical coagulation, and fluoridation with a saturator or acid feed;

c. A waterworks or a water treatment plant employing fluoridation with other than a saturator not considered a Class 1 or Class 2 waterworks; or

d. A waterworks designated by the commissioner to be a Class 3 waterworks.

4. Class 4 means:

a. A waterworks or a water treatment plant serving fewer than 5,000 persons or having a water treatment plant capacity of less than 0.5 MGD and employing one or more of the following: disinfection other than with hypochlorination, caustic soda feed, iron and manganese removal, ion exchange, slow sand filtration, aeration, rechlorination other than with hypochlorination, activated carbon contactors, membrane or other filtration technologies without chemical coagulation, and fluoridation with a saturator; or

b. A waterworks designated by the commissioner to be a Class 4 waterworks.

5. Class 5 means:

a. A waterworks serving 400 or more persons that:

(1) Provides no treatment; or

(2) Employs one or more of the following treatment processes:

(a) Hypochlorination for disinfection;

(b) Corrosion control with calcite or magnesium oxide contactors or solution feed except with caustic soda; or

(c) Sequestration by solution feed.

b. A waterworks designated by the commissioner to be a Class 5 waterworks.

6. Class 6 means:

a. A waterworks serving fewer than 400 persons that:

(1) Provides no treatment; or

(2) Employs one or more of the following treatment processes:

(a) Hypochlorination for disinfection;

(b) Corrosion control with calcite or magnesium oxide contactors or solution feed except with caustic soda; or

(c) Sequestration by solution feed.

b. A waterwork is designated by the commissioner to be a Class 6 waterworks.

B. Operator requirements. The operation of all waterworks must rest in the hands of qualified staff. The number and qualifications of persons constituting the operating staff at a waterworks depend principally upon the capacity of the waterworks, the number of persons served by the waterworks, and the complexity of the treatment process or processes. If a classified waterworks or water treatment plant is without a required operator, then the owner shall notify the department as soon as practical but no later than 24 hours of such an occurrence.

1. The operator attendance requirements specified in subsection C of this section are a minimum to protect the health of the consumer and safety of the operating staff. The department may increase the required operating attendance when appropriate to protect human health.

2. A classified waterworks shall be operated by an operator having a valid license issued by the Commonwealth of Virginia (18VAC160-30-90) with a classification equal to or higher than the classification of the waterworks or water treatment plant being operated. (See definition of operator in 12VAC5-590-10).

3. Operators are not required at unclassified waterworks.

C. Minimum operator attendance at classified waterworks. For the purpose of this section and 12VAC5-590-570, all classified waterworks or individual water treatment plants shall maintain the minimum operator attendance as follows:

1. Class 1. The waterworks shall have a minimum of two operating staff in attendance whenever the water treatment plant is in operation; at least one of the operating staff must be an operator.

2. Class 2. The waterworks shall have a minimum of one operator in attendance whenever the water treatment plant is in operation.

3. Class 3. The waterworks employing conventional filtration or chemical coagulation in combination with membrane filtration shall have a minimum of one operator in attendance whenever the water treatment plant is in operation. All other treatment facilities may have operator attendance similar to a Class 4 waterworks.

4. Class 4. The waterworks shall be attended by an operator at least three days per week, except that water treatment plants employing membrane filters treating surface water sources or GUDI sources shall be attended by an operator daily. The attendance shall be for sufficient

time to perform the necessary operations, monitoring, and maintenance.

5. Class 5 and Class 6.

a. Where no treatment is provided, the waterworks shall be attended by an operator at least twice a month.

b. When treatment is provided, the waterworks shall be attended by an operator at least once per week.

c. The attendance shall be for sufficient time to perform the necessary operations, monitoring, and maintenance.

D. Operator attendance alternatives.

1. Increased staffing attendance may be required by the commissioner on a case-by-case basis to protect public health.

2. Reduced operator attendance for Class 3 through Class 6 waterworks may be considered by the commissioner on a case-by-case basis.

3. When requiring increased operator attendance or considering reduced operator attendance the commissioner will consider the following criteria, including:

a. Operational history;

b. Type of treatment;

c. Facility capacity and hours of operation;

d. Population served;

e. Type and reliability of remote monitoring controls, alarms, and communications;

f. Reliable staff communications; and

g. Emergency response plans and procedures.

12VAC5-590-470. Waterworks ~~appearance~~ condition.

~~The general appearance and state of cleanliness of a waterworks can greatly influence the attitude of the public toward a utility and can actually promote public health. A community without confidence in its public water supply with often resort to the use of water from questionable or polluted sources; therefore, the~~ The waterworks ~~must~~ shall be maintained in a clean and orderly condition ~~to achieve this goal~~.

12VAC5-590-475. Removal of wells from service.

A. Temporary inactivation.

1. A water well temporarily inactivated shall be sealed with a watertight cap or wellhead seal.

2. The well shall be maintained so that it will not be a source or channel for contamination during temporary inactivation.

3. The wellhead shall be visually inspected and observations documented to verify adequate sanitary integrity on a quarterly basis.

4. The well lot shall be maintained.

B. Permanent abandonment.

1. Well abandonment shall be supervised by a certified water well systems provider.

2. All well abandonments shall be documented on a Uniform Water Well Completion Report, Form GW-2, and submitted to the department within 30 days of completing the physical abandonment.

3. Groundwater wells that are abandoned shall be sealed by methods that will restore to the fullest extent possible the controlling geological conditions that existed before the wells were constructed.

4. Casing and screen materials may be salvaged.

5. The well shall be checked from land surface to the entire depth of the well before it is sealed to ascertain freedom from obstructions that may interfere with sealing operations. Effort shall be made to remove or clear any obstacles that may prohibit sealing by grouting the complete well depth.

6. The well shall be thoroughly chlorinated before sealing.

7. Bored wells and uncased wells shall be backfilled with clean fill to the water level. A two-foot-thick bentonite grout plug shall be placed immediately above the water level. Clean fill shall be placed on top of the bentonite grout plug and brought up to at least five feet from the ground surface. The top five feet of the well casing, if present, shall be removed from the bore hole. If an open annular space is present around the well casing, then the annular space shall be filled with bentonite grout to the maximum depth possible, but less than or equal to 20 feet. A one-foot-thick cement or bentonite grout plug that completely fills the bore void space shall be placed a minimum of five feet from the ground surface. As an alternative, bored wells and uncased wells may be completely filled with concrete, sand-cement, bentonite-cement, or neat cement grout to within a minimum of five feet from the ground surface by introduction through a pipe initially extending to the bottom of the well. The pipe shall be raised but remain submerged in grout or concrete as the well is filled. The remaining space shall be filled with clean fill that is mounded a minimum of one foot above the surrounding ground surface.

8. Non-bored wells constructed in unconsolidated formations shall be completely filled with concrete, sand-cement, bentonite-cement, or neat cement grout to within a minimum of five feet from the ground surface by introduction through a pipe initially extending to the

bottom of the well. The pipe shall be raised but remain submerged in grout or concrete as the well is filled. The remaining space shall be filled with clean fill that is mounded a minimum of one foot above the surrounding ground surface.

9. Wells constructed in consolidated rock formations or that penetrate zones of consolidated rock may be filled with sand or gravel opposite the zones of consolidated rock. The top of the sand or gravel fill shall be at least five feet below the top of the consolidated rock and at least 20 feet below land surface. The remainder of the well shall be filled with concrete, sand-cement, bentonite-cement, or neat cement grout to within a minimum of five feet from the ground surface by introduction through a pipe initially extending to the bottom of the well. The pipe shall be raised but remain submerged in grout or concrete as the well is filled. The remaining space shall be filled with clean fill that is mounded a minimum of one foot above the surrounding ground surface.

10. The location of the well shall be permanently documented for future reference.

12VAC5-590-476. Reactivation of wells.

A. The owner shall notify the department of the intent to reactivate a well.

B. Before bringing the well into service, the well shall be pumped to waste (purged) for a minimum of five well volumes but for not less than 30 minutes. The purged well water shall be discharged in a manner so that it will not return to the well, directly or indirectly, during the pumping period.

C. After the well is pumped, water quality samples shall be collected. If the well has been inactive for less than one year, then two samples shall be collected at least 30 minutes apart and tested for the presence of E. coli. If the well has been inactive for one or more years, then it shall be tested for total coliform density (MPN), nitrate, and, if determined by the department, inorganics, VOCs, SOCs, and radionuclides. Satisfactory test results shall be obtained before placing the well in service.

D. A well yield and drawdown test may be required by the department before bringing the well into service. The test shall be performed in accordance with 12VAC5-590-840 H, as applicable.

E. A well may be activated for emergency use before receipt of satisfactory monitoring results, even if public health and safety are unknowns and may be at risk, as determined by the department. However, in these circumstances, a special water advisory shall be approved by the department and issued by the waterworks at the same time the well is activated.

12VAC5-590-480. ~~Analytical laboratory control~~ Operational control testing and monitoring.

A. ~~Analyses~~ Water analyses and tests performed at waterworks are ~~made~~ conducted for four main purposes: (i) to ensure compliance; (ii) to control water treatment plant operation~~,~~; (iii) to record water treatment plant performance~~,~~; and (iv) to ~~improve plant performance, and to undertake fundamental research of value to the plant and to the profession in general~~ provide information for improving water treatment plant performance. Tests designed to control operation ~~should~~ shall present evidence that:

1. ~~The water has been properly prepared for each major key step in the treatment process; 2.~~ Each key process, such as mixing, coagulation, sedimentation, filtration, softening, iron and manganese removal, disinfection, and taste and odor control ~~has proceeded according to plan~~, is effective; and

~~3.~~ 2. The finished product is clean, is free from objectionable taste ~~or~~ and odor, is free from undesirable chemical characteristics, and is safe for human consumption.

B. ~~Laboratory analyses shall conform with the most current edition available of Standard Methods for the Examination of Water and Wastewater published by the American Public Health Association, the American Water Works Association, and the Water Pollution Control Federation, or analytical methods approved by the division~~ Testing for regulatory compliance purposes shall use an EPA-approved analytical method found in 40 CFR Parts 141 and 143. Instruments used for operational control purposes must be calibrated in accordance with manufacturer instructions. Calibrations shall be documented in a manner acceptable to the department.

C. Ample laboratory space shall be provided for all required laboratory analyses as specified in 12VAC5-590-760.

~~1. Chemical. The analyses listed below are the minimum required. Additional testing may be required by the division.~~

~~a. Waterworks utilizing treatment for turbidity removal shall provide equipment for the analysis of pH, alkalinity, hardness, turbidity, water temperature and coagulation dosage. An electric pH meter must be provided; however, a color comparator may be used as a back up unit. Turbidities must be determined by the use of a nephelometer. Minimum equipment for coagulation control shall be a multiple jar stirring machine.~~

~~b. Waterworks providing softening only and utilizing chemical precipitation shall provide equipment for analysis of pH utilizing an electric pH meter, alkalinity, hardness, water temperature, and chemical dosage for precipitation utilizing a multiple jar stirring machine.~~

~~c. Waterworks providing iron and manganese removal by chemical precipitation shall provide equipment for analysis of pH, alkalinity, iron, manganese, and water temperature.~~

~~d. Waterworks providing fluoridation shall provide equipment for analysis of the fluoride ion concentration and water temperature.~~

~~e. Waterworks providing chlorination or rechlorination shall provide equipment for the analysis of chlorine residual and temperature.~~

~~f. Waterworks providing iron and manganese removal by ion exchange and or softening by ion exchange shall provide equipment for the analysis of iron and manganese, or hardness.~~

~~2. Bacteriological. Only results of bacteriological analyses performed by the Division of Consolidated Laboratory Services, or by laboratories and laboratory personnel certified by the Division of Consolidated Laboratory Services will be acceptable.~~

~~a. The number and frequency of bacteriological sampling shall comply with Article 1 of Part II. Additional analyses may be necessary when deemed so by the division.~~

~~b. Waterworks having a rated capacity of 3.0 mgd or more or serving an equivalent of 30,000 persons or more shall provide laboratory space and equipment for routine bacteriological analysis.~~

~~c. Bacteriological sampling in accordance with Article 1 of Part II is required by all waterworks.~~

D. Required waterworks onsite laboratory analyses. The analyses listed in this subsection are the minimum required. Additional testing may be required by the department.

1. The owner of a waterworks employing chemical coagulation or lime softening in combination with any filtration treatment for turbidity removal or TOC reduction shall provide equipment for the analysis of pH, alkalinity, hardness, turbidity, water temperature, and coagulant dosage. A calibrated electric pH meter must be provided; however, a color comparator may be used as a backup unit. Turbidities must be determined by the use of a calibrated turbidimeter.

2. The owner of a waterworks employing membrane filtration without chemical coagulation or lime softening shall provide equipment for the analysis of turbidity and temperature. Turbidities shall be determined by the use of a calibrated turbidimeter.

3. The owner of a waterworks employing softening only and utilizing chemical precipitation shall provide equipment for the analysis of pH utilizing a calibrated electric pH meter, alkalinity, hardness, water temperature, and chemical dosage for precipitation utilizing a multiple jar stirring machine.

4. The owner of a waterworks employing iron and manganese removal by chemical precipitation shall provide equipment for the analysis of pH, alkalinity, iron, manganese, and water temperature.

5. The owner of a waterworks employing fluoridation shall provide equipment for the analysis of the fluoride ion concentration and water temperature.

6. The owner of a waterworks employing chlorination, rechlorination, chloramination, or rechloramination shall provide equipment for the analysis of the appropriate chlorine residual measurement and temperature.

7. The owner of a waterworks employing iron and manganese removal by ion exchange or softening by ion exchange shall provide equipment for the analysis of iron and manganese.

E. Process control instruments, monitors, gauges, and controllers, including reading, recording, and alarm features, required in Part III, Manual of Practice (12VAC590-640 et seq.), shall be maintained fully operational and calibrated in accordance with the manufacturer instructions.

1. The owner of a waterworks employing UV for inactivation credit shall perform UV sensor calibration checks. Calibrations and instrument checks shall be documented in a manner acceptable to the department. All UV sensors shall be calibrated with a reference UV sensor at least monthly. It is also recommended that offline and standby sensors be calibrated at the same time. At least one reference sensor for calibration of online sensors shall be provided. The reference UV sensor shall be calibrated at least yearly at a qualified facility, usually the manufacturer. Ultraviolet transmittance (UVT) analyzer calibration is required when used as a control instrument. The UVT analyzer shall be calibrated at least weekly by comparing online measurements to a benchtop spectrophotometer that is calibrated in accordance with manufacturer instructions. Instead of an online UVT analyzer, a benchtop spectrophotometer may be utilized to determine UV transmittance at least every four hours.

2. The owner of a waterworks employing ozone for inactivation credit shall perform calibration checks on continuous, online ozone residual monitors at least weekly, during peak hourly flow. Inactivation credits for a multiple chamber contactor shall be based on only the chambers that have a measured ozone residual greater than 0.02 mg/L or higher, depending on residual analysis instrumentation.

12VAC5-590-490. Adequate treatment.

A. Adequate treatment is any one or any combination of the controlled processes of coagulation, sedimentation,

absorption, filtration, disinfection, or other processes that produce ~~a~~ water consistently meeting the requirements of this chapter. The concept of adequate treatment also includes processes that are appropriate to (i) the source ~~of supply~~ water; (ii) waterworks that are of adequate capacity to meet maximum demands without creating health hazards~~,~~ and that are located, designed, and constructed to eliminate or prevent ~~cross connections~~ cross-connections; and (iii) the conscientious operation by well-trained and competent personnel whose qualifications are commensurate with the responsibilities of the position and acceptable to the ~~division~~ department.

B. ~~All~~ A waterworks shall provide adequate treatment ~~and pure~~ when required and in accordance with 12VAC5-590-680 to ensure the production of potable water.

12VAC5-590-500. Disinfection ~~by chlorination~~ criteria, determination of CT, disinfection profiles, and disinfection benchmarks for Giardia and virus inactivation.

A. ~~All water supplies derived from~~ A waterworks utilizing surface water sources or GUDI sources, in whole or in part, shall be disinfected in accordance with subsection C of this section and 12VAC5-590-1000 ~~until June 29, 1993. It is recommended that a chlorine residual be maintained. Beginning June 29, 1993, every owner of a waterworks shallcomply with the disinfection requirements of 12VAC5-590-420~~.

~~B. Owners of waterworks utilizing surface waters as a water supply shall practice prechlorination. The requirement for prechlorination may be waived by the commissioner when warranted.~~

~~C. Owners of waterworks utilizing groundwater as a water supply that has been determined by the commissioner to be under the direct influence of surface water, as provided in 12VAC5-590-430, will be required to disinfect. If the commissioner determines that the groundwater supply is surface influenced, the owner shall provide disinfection during the interim before filtration is installed in accordance with 12VAC5-590-420 B 2 f. If filtration is installed prior to June 29, 1993, the owner shall comply with the disinfection requirements of 12VAC5-590-1000 until June 29, 1993. By June 29, 1993, all owners of waterworks using a groundwater source determined to be under the direct influence of surface water shall comply with the disinfection requirements of 12VAC5-590-420.~~

~~D. Owners~~ B. The owner of a groundwater ~~systems~~ system subject to the requirements of 12VAC5-590-421 A 1 d shall provide ~~a~~ primary disinfection treatment by means of one of the following:

1. A residual disinfectant ~~residual~~ concentration (C) and contact time (T) to achieve a 4-log removal or inactivation of viruses. CT shall be calculated in accordance with ~~Appendix L~~ subsections C and D of this section, which ~~contains~~ contain information on calculation methods and contact tank baffling factors.

2. UV treatment to achieve a 4-log removal or inactivation of viruses. Log inactivation shall be determined in accordance with 12VAC5-590-401 E 7 c. A secondary disinfection residual in the distribution system may be required by the department.

~~E. Disinfection profile data and disinfection benchmark data.~~

~~1. The owner of any waterworks that has disinfection profile data shall retain this data in graphic form, as a spreadsheet, or in some other format acceptable to the commissioner for review as part of sanitary surveys conducted by the commissioner. Appendix L lists the procedure for developing a disinfection profile.~~

~~2. Disinfection benchmarking.~~

~~a. The owner of any waterworks that has developed a disinfection profile and that decides to make a significant change to its disinfection practice shall consult with the commissioner prior to making such change. Significant changes to disinfection practice are:~~

~~(1) Changes to the point of disinfection;~~

~~(2) Changes to the disinfectants used in the treatment plant;~~

~~(3) Changes to the disinfection process; and~~

~~(4) Any other modification identified by the commissioner.~~

~~b. The owner of any waterworks that is modifying its disinfection practice shall calculate its disinfection benchmark using the following procedure:~~

~~(1) For each year of profiling data collected, the owner shall determine the lowest average monthly Giardia lamblia inactivation in each year of profiling data. The owner shall determine the average Giardia lamblia inactivation for each calendar month for each year of profiling data by dividing the sum of daily (or weekly) Giardia lamblia inactivation by the number of values calculated for that month.~~

~~(2) The disinfection benchmark is the lowest monthly average value (for waterworks with one year of profiling data) or average of lowest monthly average values (for waterworks with more than one year of profiling data) of the monthly logs of Giardia lamblia inactivation in each year of profiling data.~~

~~(3) The owner of a waterworks that uses either chloramines or ozone for primary disinfection shall also calculate the disinfection benchmark for viruses using a method approved by the commissioner.~~

~~c. The owner shall submit the following information to the commissioner as part of the waterworks' consultation process.~~

~~(1) A description of the proposed change;~~

~~(2) The disinfection profile for Giardia lamblia (and, if necessary, viruses) and benchmark listed in subdivision E 2 b of this section;~~

~~(3) An analysis of how the proposed change will affect the current levels of disinfection; and~~

~~(4) Any additional information to justify the change.~~

C. Disinfection criteria.

1. An owner of a waterworks utilizing surface water sources, in whole or in part, or GUDI sources shall provide a minimum 3-log (99.9%) removal of Giardia cysts and a 4-log (99.99%) removal of viruses, respectively.

2. Additional inactivation levels that must be achieved by disinfection shall be in accordance with Table 500.1 for waterworks employing the filtration processes listed.

TABLE 500.1

Maximum Log Removal Credits for Various Filtration Technologies and the Resulting Minimum Required Logs of Inactivation by Disinfection

FILTRATION PROCESS[a]	MAXIMUM LOG REMOVAL CREDITS FOR FILTRATION		ADDITIONAL LOG INACTIVATION REQUIRED BY DISINFECTION	
	Giardia lamblia	Viruses	Giardia lamblia	Viruses
Conventional	2.5	2.0	0.5	2.0
Direct	2.0	1.0	1.0	3.0
Pre-engineered package	2.5	Zero	0.5	4.0
Diatomaceous Earth	2.0	1.0	1.0	3.0
Slow Sand	2.0	2.0	1.0	2.0
Membrane (MF or UF)	3.0	Zero	0.5	4.0
Bag or Cartridge	2.0	Zero	1.0	4.0

[a]Refer to Part III of this chapter for further description of the filtration processes.

D. A disinfection profile shall be developed in accordance with the procedures in subdivisions D 1, D 2, and D 3.

1. The owner shall monitor at least weekly for a period of 12 consecutive months to determine the total log inactivation for Giardia lamblia and viruses. If an owner monitors more frequently, then the monitoring frequency shall be evenly spaced. An owner of a waterworks that operates for fewer than 12 months per year shall monitor weekly during the period of operation.

2. The owner of a waterworks with a single point of disinfectant application before the entrance to the distribution system or with more than one point of disinfectant application shall conduct the monitoring in subdivisions D 2 a through D 2 e of this section.

a. For a waterworks using a disinfectant other than UV, the temperature of the disinfected water shall be measured at each residual disinfectant concentration sampling point during peak hourly flow or at an alternative location approved by the department.

b. For a waterworks using chlorine, the pH of the disinfected water shall be measured at each chlorine residual disinfectant concentration sampling point during peak hourly flow or at an alternative location approved by the department.

c. The residual disinfectant concentration (C) of the water before or at the first customer and before each additional point of disinfectant application shall be measured at peak hourly flow.

d. The disinfectant contact times (T) of the water before or at the first customer and before each additional point of disinfectant application shall be determined during peak hourly flow. The disinfectant contact time to be used for calculating CT is T_{10}, which is the detention time at which 90% of the water passing through a unit is retained within that unit. T_{10} shall be determined either by calculations that involve the theoretical hydraulic detention time and baffling factors that account for the degree of short-circuiting that might be expected through any given unit or by tracer studies. The baffling factors listed in Table 500.15 shall be used in determining contact time if tracer studies are not performed.

e. Inactivation credits for ozone contactors will be based on only the chambers that have a measured ozone residual. A minimum of two dedicated online monitors per ozone contactor shall be installed at locations suited to the CT calculation method used. Ozone residual levels shall be monitored continuously and recorded. Methods for computing log inactivation of Giardia lamblia and virus shall be approved by the department. Tracer studies shall be required to verify T_{10} values before receiving inactivation credit.

3. Instead of conducting new monitoring under subdivision D 2 of this section, an owner may elect to meet the requirements of subdivision D 3 a or D 3 b of this section.

a. The owner who has at least one year of existing data that are substantially equivalent to data collected under the provisions of subdivision D 3 of this section shall use these data to develop disinfection profiles if the owner has neither made a significant change to the treatment practice nor changed sources since the data were collected. The owner may develop a disinfection profile using up to three years of existing data.

b. The owner may use a disinfection profile developed previously in accordance with the procedures in subdivisions D 1, D 2, and D 3 of this section, if the owner has neither made a change to the treatment practice nor changed sources since the profile was developed. An owner that has not developed a virus profile shall develop a virus disinfection profile using the same monitoring data on which the Giardia lamblia profile is based.

E. The owner shall calculate the total inactivation ratio for Giardia lamblia and viruses as specified in subdivisions E 1 through E 4 of this subsection based on $CT_{99.9}$ (3-log)values using the appropriate values in Tables 500.2 through 500.14. Note that the 3-log values in the tables for Giardia lamblia also indicate that a 4-log virus inactivation can be achieved. pH and temperature values between the indicated values in Tables 500.2 through 500.14 shall be determined by linear interpolation, or the CT value at the lower temperature and at the higher pH shall be used. All parameters necessary to determine the total inactivation ratio shall be monitored during peak hourly flow.

1. The owner using only one point of disinfectant application shall determine the total inactivation ratio for the disinfection segment based on either of the following methods:

a. Determine one inactivation ratio ($CT_{calc}/CT_{99.9}$) before or at the first customer during peak hourly flow.

b. Determine successive $CT_{calc}/CT_{99.9}$ values, representing sequential inactivation ratios, between the point of disinfectant application and a point before or at the first customer during peak hourly flow. The owner shall calculate the total inactivation ratio by determining ($CT_{calc}/CT_{99.9}$) for each sequence and then adding the ($CT_{calc}/CT_{99.9}$) values together to determine total inactivation (Σ ($CT_{calc}/CT_{99.9}$)).

2. The owner using more than one point of disinfectant application before the first customer shall determine the CT value of each disinfection segment immediately before the next point of disinfectant application, or for the final segment before or at the first customer, during peak hourly flow. The ($CT_{calc}/CT_{99.9}$) value of each segment and (Σ ($CT_{calc}/CT_{99.9}$)) shall be calculated using the method in subdivision E 1 a or E 1 b of this subsection.

3. The owner shall determine the total logs of inactivation of Giardia lamblia by multiplying the value calculated in subdivision E 1 a or E 1 b of this subsection by 3.0.

4. The owner shall determine the total logs of inactivation of viruses by multiplying the value calculated in subdivision E 1 a or E 1 b of this subsection by 4.0.

F. A disinfection benchmark shall be calculated following the procedures in subdivisions F 1, F 2, and F 3 of this subsection.

1. For each year of profiling data collected and calculated, an owner shall determine the lowest mean monthly level of both Giardia lamblia and virus inactivation. The owner shall determine the mean Giardia lamblia and virus inactivation for each calendar month for each year of profiling data by dividing the sum of daily or weekly Giardia lamblia and virus log inactivation by the number of values calculated for that month.

2. The disinfection benchmark is the lowest monthly mean value (for waterworks with one year of profiling data) or the mean of the lowest monthly mean values (for waterworks with more than one year of profiling data) of Giardia lamblia and virus log inactivation in each year of profiling data.

3. The owner of a waterworks using chloramines, ozone, or chlorine dioxide for primary disinfection shall calculate the disinfection benchmark for viruses from the data collected in the same manner used to calculate the Giardia lamblia disinfection benchmark.

G. The owner shall retain the disinfection profile in graphic form, as a spreadsheet or in some other format acceptable to the department for evaluation as part of sanitary surveys conducted by the department.

H. Before making a significant change to the waterworks disinfection practice, the owner shall review the disinfection benchmark and consult with the department.

1. Significant changes to disinfection practice are (i) changes to the point of disinfectant application, (ii) changes to the disinfectants used in the treatment plant, (iii) changes to the disinfection process, and (iv) any other modification identified by the department.

2. The owner shall submit the following information to the department as part of the consultation process: (i) a description of the proposed change; (ii) the disinfection profile and benchmarks established for Giardia lamblia and, if necessary, viruses; (iii) an analysis of how the proposed change will affect the current levels of disinfection; and (iv) any additional information to justify the change.

TABLE 500.2
CT Values for 3-Log Inactivation of Giardia lamblia by Free Chlorine at Less than 0.5ºC

FREE RESIDUAL (mg/L)	pH						
	≤6.0	6.5	7.0	7.5	8.0	8.5	≤9.0
≤0.4	137	163	195	237	277	329	390
0.6	141	168	200	239	286	342	407
0.8	145	172	205	246	295	354	422
1.0	148	176	210	253	304	365	437
1.2	152	180	215	259	313	376	451
1.4	155	184	221	266	321	387	464
1.6	157	189	226	273	329	397	477
1.8	162	193	231	279	338	407	489
2.0	165	197	236	286	346	417	500
2.2	169	201	242	297	353	426	511
2.4	172	205	247	298	361	435	522
2.6	175	209	252	304	368	444	533
2.8	178	213	257	310	375	452	543
3.0	181	217	261	316	382	460	552

TABLE 500.3
CT Values for 3-Log Inactivation of Giardia lamblia by Free Chlorine at 5ºC

FREE RESIDUAL (mg/L)	pH						
	≤6.0	6.5	7.0	7.5	8.0	8.5	≤9.0
≤0.4	97	117	139	166	198	236	279
0.6	100	120	143	171	204	244	291
0.8	103	122	146	175	210	252	301
1.0	105	125	149	179	216	260	312
1.2	107	127	152	183	221	267	320
1.4	109	130	155	187	227	274	329
1.6	111	132	158	192	232	281	337
1.8	114	135	162	196	238	287	345
2.0	116	138	165	200	243	294	353
2.2	118	140	169	204	248	300	361
2.4	120	143	172	209	253	306	368
2.6	122	146	175	213	258	312	375

2.8	124	148	178	217	263	318	382
3.0	126	151	182	221	268	324	389

TABLE 500.4
CT Values for 3-Log Inactivation of Giardia lamblia by Free Chlorine at 10ºC

FREE RESIDUAL (mg/L)	pH						
	≤6.0	6.5	7.0	7.5	8.0	8.5	≤9.0
≤0.4	73	88	104	125	149	177	209
0.6	75	90	107	128	153	183	218
0.8	78	92	110	131	158	189	226
1.0	79	94	112	134	162	195	234
1.2	80	95	114	137	166	200	240
1.4	82	98	116	140	170	206	247
1.6	83	99	119	144	174	211	253
1.8	86	101	122	147	179	215	259
2.0	87	104	124	150	182	221	265
2.2	89	105	127	153	186	225	271
2.4	90	107	129	157	190	230	276
2.6	92	110	131	160	194	234	281
2.8	93	111	134	163	197	239	287
3.0	95	113	137	166	201	243	292

TABLE 500.5
CT Values for 3-Log Inactivation of Giardia lamblia by Free Chlorine at 15ºC

FREE RESIDUAL (mg/L)	pH						
	≤6.0	6.5	7.0	7.5	8.0	8.5	≤9.0
≤0.4	49	59	70	83	99	118	140
0.6	50	60	72	86	102	122	146
0.8	52	61	73	88	105	126	151
1.0	53	63	75	90	108	130	156
1.2	54	64	76	92	111	134	160
1.4	55	65	78	94	114	137	165
1.6	56	66	79	96	116	141	169
1.8	57	68	81	98	119	144	173
2.0	58	69	83	100	122	147	177

2.2	59	70	85	102	124	150	181
2.4	60	72	86	105	127	153	184
2.6	61	73	88	107	129	156	188
2.8	62	74	89	109	132	159	191
3.0	63	76	91	111	134	162	195

TABLE 500.6
CT Values for 3-Log Inactivation of Giardia lamblia by Free Chlorine at 20ºC

FREE RESIDUAL (mg/L)	pH						
	≤6.0	6.5	7.0	7.5	8.0	8.5	≤9.0
≤0.4	36	44	52	62	74	89	105
0.6	38	45	54	64	77	92	109
0.8	39	46	55	66	79	95	113
1.0	39	47	56	67	81	98	117
1.2	40	48	57	69	83	100	120
1.4	41	49	58	70	85	103	123
1.6	42	50	59	72	87	105	126
1.8	43	51	61	74	89	108	129
2.0	44	52	62	75	91	110	132
2.2	44	53	63	77	93	113	135
2.4	45	54	65	78	95	115	138
2.6	46	55	66	80	97	117	141
2.8	47	56	67	81	99	119	143
3.0	47	57	68	83	101	122	146

TABLE 500.7
CT Values for 3-Log Inactivation of Giardia lamblia by Free Chlorine at 25oC and Higher

FREE RESIDUAL (mg/L)	pH						
	≤6.0	6.5	7.0	7.5	8.0	8.5	≤9.0
≤0.4	24	29	35	42	50	59	70
0.6	25	30	36	43	51	61	73
0.8	26	31	37	44	53	63	75
1.0	26	31	37	45	54	65	78
1.2	27	32	38	46	55	67	80
1.4	27	33	39	47	57	69	82

1.6	28	33	40	48	58	70	84
1.8	29	34	41	49	60	72	86
2.0	29	35	41	50	61	74	88
2.2	30	35	42	51	62	75	90
2.4	30	36	43	52	63	77	92
2.6	31	37	44	53	65	78	94
2.8	31	37	45	54	66	80	96
3.0	32	38	46	55	67	81	97

TABLE 500.8
CT Values for Inactivation of Viruses by Free Chlorine, pH 6.0-9.0

LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	0.5	1	2	3	4	5	6	7	8
2	6.0	5.8	5.3	4.9	4.4	4.0	3.8	3.6	3.4
3	9.0	8.7	8.0	7.3	6.7	6.0	5.6	5.2	4.8
4	12.0	11.6	10.7	9.8	8.9	8.0	7.6	7.2	6.8
LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	9	10	11	12	13	14	15	16	17
2	3.2	3.0	2.8	2.6	2.4	2.2	2.0	1.8	1.6
3	4.4	4.0	3.8	3.6	3.4	3.2	3.0	2.8	2.6
4	6.4	6.0	5.6	5.2	4.8	4.4	4.0	3.8	3.6
LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	18	19	20	21	22	23	24	25	
2	1.4	1.2	1.0	1.0	1.0	1.0	1.0	1.0	
3	2.4	2.2	2.0	1.8	1.6	1.4	1.2	1.0	
4	3.4	3.2	3.0	2.8	2.6	2.4	2.2	2.0	

TABLE 500.9
CT Values for Inactivation of Giardia lamblia by Chlorine Dioxide, pH 6.0-9.0

LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	1	2	3	4	5	6	7	8	9
0.5	10.0	8.6	7.2	5.7	4.3	4.2	4.2	4.1	4.1
1	21.0	17.9	14.9	11.8	8.7	8.5	8.3	8.1	7.9
1.5	32.0	27.3	22.5	17.8	13.0	12.8	12.6	12.4	12.2

2	42.0	35.8	29.5	23.3	17.0	16.6	16.2	15.8	15.4
2.5	52.0	44.5	37.0	29.5	22.0	21.4	20.8	20.2	19.6
3	63.0	53.8	44.5	35.3	26.0	25.4	24.8	24.2	23.6
LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	10	11	12	13	14	15	16	17	18
0.5	4.0	3.8	3.7	3.5	3.4	3.2	3.1	2.9	2.8
1	7.7	7.4	7.1	6.9	6.6	6.3	6.0	5.8	5.5
1.5	12.0	11.6	11.2	10.8	10.4	10.0	9.5	9.0	8.5
2	15.0	14.6	14.2	13.8	13.4	13.0	12.4	11.8	11.2
2.5	19.0	3.8	3.7	3.5	3.4	3.2	3.1	2.9	2.8
3	23.0	7.4	7.1	6.9	6.6	6.3	6.0	5.8	5.5
LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	19	20	21	22	23	24	25		
0.5	2.6	2.5	2.4	2.3	2.2	2.1	2.0		
1	5.3	5.0	4.7	4.5	4.2	4.0	3.7		
1.5	8.0	7.5	7.1	6.7	6.3	5.9	5.5		
2	10.6	10.0	9.5	8.9	8.4	7.8	7.3		
2.5	2.6	2.5	12.2	11.4	10.6	9.8	9.0		
3	5.3	5.0	14.2	13.4	12.6	11.8	11.0		

TABLE 500.10
CT Values for Inactivation of Virus by Chlorine Dioxide, pH 6.0-9.0

LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	1	2	3	4	5	6	7	8	9
2	8.4	7.7	7.0	6.3	5.6	5.3	5.0	4.8	4.5
3	25.6	23.5	21.4	19.2	17.1	16.2	15.4	14.5	13.7
4	50.1	45.9	41.8	37.6	33.4	31.7	30.1	28.4	26.8
LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	10	11	12	13	14	15	16	17	18
2	4.2	3.9	3.6	3.4	3.1	2.8	2.7	2.5	2.4
3	12.8	12.0	11.1	10.3	9.4	8.6	8.2	7.7	7.3
4	25.1	23.4	21.7	20.1	18.4	16.7	15.9	15.0	14.2
LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	19	20	21	22	23	24	25		

2	2.2	2.1	2.0	1.8	1.7	1.5	1.4		
3	6.8	6.4	6.0	5.6	5.1	4.7	4.3		
4	13.3	12.5	11.7	10.9	10.0	9.2	8.4		

TABLE 500.11
CT Values for Inactivation of Giardia lamblia by Chloramines, pH 6.0-9.0

LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	1	2	3	4	5	6	7	8	9
0.5	635	568	500	433	365	354	343	332	321
1	1,270	1,136	1,003	869	735	711	687	663	639
1.5	1,900	1,700	1,500	1,300	1,100	1,066	1,032	998	964
2	2,535	2,269	2,003	1,736	1,470	1,422	1,374	1,326	1,278
2.5	3,170	2,835	2,500	2,165	1,830	1,772	1,714	1,656	1,598
3	3,800	3,400	3,000	2,600	2,200	2,130	2,060	1,990	1,920
LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	10	11	12	13	14	15	16	17	18
0.5	310	298	286	274	262	250	237	224	211
1	615	592	569	546	523	500	474	448	422
1.5	930	894	858	822	786	750	710	670	630
2	1,230	1,184	1,138	1,092	1,046	1,000	947	894	841
2.5	1,540	1,482	1,424	1,366	1,308	1,250	1,183	1,116	1,049
3	1,850	1,780	1,710	1,640	1,570	1,500	1,420	1,340	1,260
LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	19	20	21	22	23	24	25		
0.5	198	185	173	161	149	137	125		
1	396	370	346	322	298	274	250		
1.5	590	550	515	480	445	410	375		
2	788	735	688	641	594	547	500		
2.5	982	915	857	799	741	683	625		
3	1,180	1,100	1,030	960	890	820	750		

TABLE 500.12
CT Values for Inactivation of Virus by Chloramines, pH 6.0-9.0

LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	1	2	3	4	5	6	7	8	9
2	1,243	1,147	1,050	954	857	814	771	729	686
3	2,063	1,903	1,743	1,583	1,423	1,352	1,281	1,209	1,138
4	2,883	2,659	2,436	2,212	1,988	1,889	1,789	1,690	1,590
LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	10	11	12	13	14	15	16	17	18
2	643	600	557	514	471	428	407	385	364
3	1,067	996	925	854	783	712	676	641	605
4	1,491	1392	1292	1193	1,093	994	944	895	845
LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	19	20	21	22	23	24	25		
2	342	321	300	278	257	235	214		
3	570	534	498	463	427	392	356		
4	796	746	696	646	597	547	497		

TABLE 500.13
CT Values for Inactivation of Giardia lamblia by Ozone

LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	1	2	3	4	5	6	7	8	9
0.5	0.48	0.44	0.40	0.36	0.32	0.30	0.28	0.27	0.25
1	0.97	0.89	0.80	0.72	0.63	0.60	0.57	0.54	0.51
1.5	1.50	1.36	1.23	1.09	0.95	0.90	0.86	0.81	0.77
2	1.90	1.75	1.60	1.45	1.30	1.23	1.16	1.09	1.02
2.5	2.40	2.20	2.00	1.80	1.60	1.52	1.44	1.36	1.28
3	2.90	2.65	2.40	2.15	1.90	1.81	1.71	1.62	1.52
LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	10	11	12	13	14	15	16	17	18
0.5	0.23	0.22	0.20	0.19	0.17	0.16	0.15	0.14	0.14
1	0.48	0.45	0.42	0.38	0.35	0.32	0.30	0.29	0.27
1.5	0.72	0.67	0.62	0.58	0.53	0.48	0.46	0.43	0.41

2	0.95	0.89	0.82	0.76	0.69	0.63	0.60	0.57	0.54
2.5	1.20	1.12	1.04	0.95	0.87	0.79	0.75	0.71	0.68
3	1.43	1.33	1.24	1.14	1.05	0.95	0.90	0.86	0.81
LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	19	20	21	22	23	24	25		
0.5	0.13	0.12	0.11	0.10	0.10	0.09	0.08		
1	0.26	0.24	0.22	0.21	0.19	0.18	0.16		
1.5	0.38	0.36	0.34	0.31	0.29	0.26	0.24		
2	0.51	0.48	0.45	0.42	0.38	0.35	0.32		
2.5	0.64	0.60	0.56	0.52	0.48	0.44	0.40		
3	0.13	0.12	0.11	0.10	0.10	0.09	0.08		

TABLE 500.14
CT Values for Inactivation of Virus by Ozone

LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	1	2	3	4	5	6	7	8	9
2	0.90	0.83	0.75	0.68	0.60	0.58	0.56	0.54	0.52
3	1.40	1.28	1.15	1.03	0.90	0.88	0.86	0.84	0.82
4	1.80	1.65	1.50	1.35	1.20	1.16	1.12	1.08	1.04
LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	10	11	12	13	14	15	16	17	18
2	0.50	0.46	0.42	0.38	0.34	0.30	0.29	0.28	0.27
3	0.80	0.74	0.68	0.62	0.56	0.50	0.48	0.46	0.44
4	1.00	0.92	0.84	0.76	0.68	0.60	0.58	0.56	0.54
LOG INACTIVATION CREDIT	WATER TEMPERATURE (°C)								
	19	20	21	22	23	24	25		
2	0.26	0.25	0.23	0.21	0.19	0.17	0.15		
3	0.42	0.40	0.37	0.34	0.31	0.28	0.25		
4	0.52	0.50	0.46	0.42	0.38	0.34	0.30		

TABLE 500.15
Baffling Classifications

BAFFLING CONDITION	T_{10}/T	BAFFLING DESCRIPTION
Unbaffled (mixed flow)	0.1	None, agitated basin, very low length-to-width ratio, high inlet and outlet flow velocities
Poor	0.3	Single or multiple unbaffled inlets and outlets, no intra-basin baffles
Average	0.5	Baffled inlet or outlet with some intra-basin baffles
Superior	0.7	Perforated inlet baffle, serpentine or perforated intra-basin baffles, outlet weir or perforated launders

12VAC5-590-505. Emergency management plan for extended power outages.

A. ~~Each~~ The owner of a community waterworks (including consecutive waterworks) shall develop and maintain an emergency management plan for extended power outages.

B. ~~Each~~ The plan shall be kept current and shall be ~~kept~~ retained at a location that is readily accessible to the owner in the event of an extended power outage.

C. ~~Each~~ The owner of a community waterworks shall certify in writing to the ~~appropriate field office of the Office of Drinking Water in the Department of Health~~ department that the ~~waterworks~~ plan has been completed ~~such plan~~.

D. ~~Each~~ The plan shall address the following where applicable:

1. Identification of the criteria (events, duration of power outage, etc.) that will initiate activation of the plan.

2. How the ~~community waterworks~~ owner will respond to an extended power outage ~~for~~ lasting a minimum of five days.

3. Procedures for obtaining and distributing potable water in the event that the primary ~~source(s) becomes~~ sources become unavailable.

4. Notification procedures and example notices to the public and media (local radio stations, television stations, local newspapers, etc.) including conservation notices and boil water advisories.

5. Emergency disinfection procedures for the distribution ~~system(s)~~ system and storage ~~tank(s)~~ tank.

6. The ~~telephone number of~~ point of contact for the ~~appropriate field office of the Office of Drinking Water in the Virginia Department of Health~~ department.

7. The ~~names and telephone numbers of~~ points of contact for the waterworks personnel who should be notified.

8. The ~~name and telephone number of~~ point of contact for the Local Emergency Coordinator designated by the Virginia Department of Emergency Management.

9. The ~~names and telephone numbers of~~ points of contact for the electric power, natural gas, and propane distributors, or other energy supplier to the waterworks.

12VAC5-590-510. Acceptable operating practices.

A. This section is not intended to be all inclusive but reflects the concern for the public health significance of certain practices related to ~~treatment plant~~ waterworks operation.

~~B. Waterworks designed for bacteria and turbidity removal shall not be operated without adequate chemical coagulation as determined by the division.~~

~~C. Waterworks utilizing filtration in the treatment process shall not vary the rate of filtration through any single filtering unit above its design capacity unless approved by the division.~~

~~D. Filtering units equipped with rewash facilities shall not be returned to service after backwashing until being thoroughly rewashed.~~

B. Filter operation.

1. Gravity flow granular media filters designed for pathogen and turbidity removal shall not be operated without adequate chemical coagulation as determined by the department.

2. A waterworks utilizing gravity flow granular media filtration shall not vary the rate of filtration through any single filter above its design capacity unless approved by the department.

3. Gravity flow granular media filters equipped with filter-to-waste facilities shall not be returned to service after backwashing until a thorough rinsing period has occurred so that the filter-to-waste water has a turbidity less than or equal to 0.3 NTU.

4. All MF and UF technologies employed for pathogen removal shall demonstrate removal efficiency equal to the removal (log inactivation) credit given in Table 500.1. A direct integrity test acceptable to the department shall be conducted and include the following:

a. The direct integrity test capability shall be provided for each filter unit; and

b. The direct integrity test shall be conducted at least daily for each day the filtration unit is in operation.

~~E.~~ C. All waterworks shall provide a minimum working pressure of 20 ~~psi~~ psi-gauge (psig) at all service connections.

D. The board recommends that all community waterworks in the Commonwealth deliver the optimum fluoride ion concentration as determined by the U.S. Department of Health and Human Services.

E. A waterworks owner shall provide the commissioner at least 90 days prior written notice of the intent to initiate or discontinue a program to provide the optimum fluoride ion concentration.

12VAC5-590-515. Use of chemicals.

A. All chemicals used in water treatment shall be compliant with NSF/ANSI Standard 60-2017. These chemicals shall include the following:

1. Corrosion and scale inhibitors;

2. Coagulants and flocculants;

3. Disinfectants and oxidants;

4. pH adjustment chemicals;

5. Regenerating agents; and

6. Membrane cleaning compounds.

B. Chemical containers shall bear the proper certification mark and identification consistent with the Safety Data Sheet for the chemical used.

C. The owner shall maintain documentation verifying that all chemicals meet NSF/ANSI Standard 60-2017 certification requirements.

12VAC5-590-520. Waterworks ~~expansion~~ capacity.

~~A. At such time as the water production of a community waterworks reaches 80% of the rated capacity of the waterworks for any consecutive three-month period, the owner shall cause plans and specifications to be developed for expansion of the waterworks to include a schedule for construction; however, if it can be shown by the owner that growth within the service area is limited and will not exceed the rated capacity of the waterworks or if unusual transient conditions caused production to reach the 80% level, preparation of plans and specifications for expansion will no longer be required.~~

~~B. All waterworks shall provide metering of total water production.~~

A. When the water production of a community waterworks reaches 80% of the permitted capacity for any consecutive three-month period, the owner shall prepare and submit a written plan within 30 days of notification by the department to address capacity needs. This plan shall be evaluated by the department and corrective actions shall be approved by the commissioner.

B. The commissioner may require the owner to reevaluate the source water capacity of a well by conducting a yield and drawdown test in accordance with 12VAC5-590-840 H when the well has demonstrated declining yield.

12VAC5-590-530. Reporting.

A. The results of ~~any~~ all required monitoring activity shall be reported by the owner ~~(~~or ~~their~~ the owner's authorized agent~~)~~ to the ~~ODW~~ department no later than (i) the 10th day of the month following the month during which the test results were received, or (ii) the 10th day following the end of the monitoring period, whichever is shorter, unless stipulated otherwise by the ~~commissioner~~ department. The results of any required monitoring activity shall be reported by the owner or the owner's authorized agent in a format and method prescribed by the ~~commissioner~~ department. For routine compliance samples analyzed for contaminants listed in Tables 340.1 through 340.7, the owner shall request that the certified analytical laboratory performing the analyses provide the data electronically to the department as per the requirements of this section.

B. It shall be the duty and responsibility of an owner to report to the ~~ODW~~ department in the most expeditious manner ~~(usually by telephone) under the following circumstances. If it is done by telephone a confirming report shall be mailed~~ for circumstances identified in subsections C through J of this section. The owner shall contact the department for the acceptable notification method. The official laboratory data report shall be sent to the department as soon as practical.

~~1.~~ C. Bacteriological examination reporting.

~~a.~~ 1. When a bacteriological examination shows that samples are required (see 12VAC5-590-380 D), the owner shall collect the repeat samples within 24 hours of being notified of the positive result and shall report the repeat sample results to the ~~appropriate ODW field office~~ department.

~~b.~~ 2. Microbial contamination, as evidenced by one or more routine distribution system water samples indicating the presence of E. coli or waterborne pathogens, shall be reported by the owner to the ~~appropriate ODW field office~~ department by the end of the day when the owner was notified of the test result, unless ~~ODW's field office~~ the department is closed, in which case ~~ODW~~ the department shall be notified before the end of the next business day.

~~c.~~ 3. An E. coli PMCL violation shall be reported by the owner to the ~~appropriate ODW field office~~ department by

the end of the day when the owner was notified of the test result, unless the ~~ODW field office~~ department is closed, in which case ~~ODW~~ the department shall be notified before the end of the next business day.

~~d. Any~~ 4. The owner who has failed to comply with the monitoring requirements of 12VAC5-590-370 shall report the monitoring violation to the ~~appropriate ODW field office~~ department in writing within 10 days after the owner discovers the violation and shall notify the public in accordance with 12VAC5-590-540 A 3.

~~2. When the daily average of turbidity testing exceeds 5.0 NTU a report shall be made within 48 hours~~

D. Turbidity reporting. For a waterworks required to filter for pathogen and turbidity removal, a report shall be made within 24 hours to the department if the filtered water turbidity measurement exceeds the following concentrations based on the filtration treatment type:

1. Conventional filtration -- one NTU.

2. Diatomaceous earth filtration -- five NTU.

3. Slow sand filtration -- five NTU.

4. Membrane, bag and cartridge filtration -- one NTU.

E. PMCL exceedance.

~~3.~~ 1. When a PMCL of an inorganic or organic chemical is exceeded for a single sample the owner shall report ~~same~~ the exceedance within seven days. If ~~any one~~ a sample result would cause the compliance average to be exceeded, then the owner shall report ~~same in~~ the sample result, in context with the compliance average, to the department within 48 hours.

~~4.~~ 2. When the average value of the samples collected pursuant to ~~12VAC5-590-410~~ 12VAC5-590-382 and 12VAC5-590-383 exceeds the PMCL of ~~any organic~~ an inorganic or ~~inorganic~~ organic chemical, the owner shall report ~~same~~ the exceedance to the department within 48 hours.

~~5.~~ 3. When the ~~maximum contaminant level~~ PMCL for ~~radionuclides~~ a radionuclide has been exceeded as determined by Table ~~2.5~~ 340.4, the results shall be reported to the department within 48 hours.

~~6.~~ F. The owner shall report to the ~~district engineer~~ department within 48 hours of the failure to comply with the monitoring and sanitary survey requirements of this chapter.

~~7.~~ G. The owner shall report to the ~~district engineer~~ department within 48 hours of the failure to comply with the requirements of ~~any~~ the schedule prescribed pursuant to a variance or exemption.

~~8.~~ H. The owner shall report a Tier 1 violation or situation, as described in 12VAC5-590-540 A 1, to the ~~district engineer~~ department as soon as practical, but no later than 24 hours after the owner learns of the Tier 1 violation or situation. At the same time the report is made, the owner shall consult with the ~~field office~~ department to determine the need for any additional actions to address the violation or situation.

~~9. The owner shall report a violation of treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit, as described in 12VAC5-590-420 B 2 a (2), B 2 a (3), B 2 b (2), B 2 c (2), and B 2 d, to the district engineer as soon as practical, but no later than 24 hours after the owner learns of the violation. At the same time the report is made, the owner shall consult with the field office to determine the need for any additional actions to address the violation or situation.~~

~~C.~~ I. Reporting requirements for coliform treatment technique violations.

1. ~~Any~~ The owner ~~who~~ that has violated the treatment technique required in 12VAC5-590-392 B shall report the violation to the ~~appropriate ODW field office~~ department no later than the end of the next business day after learning of the violation and shall notify the public in accordance with 12VAC5-590-540 A 2.

2. ~~Any~~ The owner ~~who~~ that is required to conduct an assessment under 12VAC5-590-392 C shall submit the assessment report within 30 days to the ~~appropriate ODW field office~~ department.

3. The owner shall notify the ~~appropriate ODW field office~~ department in writing after each scheduled corrective action is completed for corrections that were not completed by the time of submission of the assessment form under the requirements of 12VAC5-590-392 C.

~~D.~~ J. The owner of a seasonal waterworks shall submit the certification of completion of the approved start-up procedure ~~to~~ on a form approved by the ~~commissioner prior to~~ department before serving water.

~~E. Reporting requirements for filtration treatment and disinfection treatment.~~

~~1. The owner of a waterworks that provides filtration treatment shall report monthly to the commissioner the following specified information beginning June 29, 1993, or when filtration is installed, whichever is later.~~

~~a. Turbidity measurements as required by 12VAC5-590-370 B 7 a shall be reported within 10 days after the end of each month the waterworks serves water to the public. Information that shall be reported includes:~~

~~(1) The total number of filtered water turbidity measurements taken during the month.~~

~~(2) The number and percentage of filtered water turbidity measurements taken during the month which are less~~

~~than or equal to the turbidity limits specified in 12VAC5-590-420-B-2 for the filtration technology being used.~~

~~(3) The date and value of any turbidity measurements taken during the month which exceed 5.0 NTU.~~

~~b. The owner of a waterworks using surface water or groundwater under the direct influence of surface water that provides conventional filtration treatment or direct filtration shall report monthly to the commissioner the information specified in subdivisions E 1 a (1) and (2) of this section. Also, the owner of a waterworks that provides filtration approved under 12VAC5-590-420-B-2 d shall report monthly to the commissioner the information specified in subdivision E 1 a (1) of this section.~~

~~(1) Turbidity measurements as required by 12VAC5-590-420-B-2 a (3) shall be reported within 10 days after the end of each month the system serves water to the public. Information that shall be reported includes:~~

~~(a) The total number of filtered water turbidity measurements taken during the month.~~

~~(b) The number and percentage of filtered water turbidity measurements taken during the month that are less than or equal to the turbidity limits specified in 12VAC5-590-420-B-2 a (3) or 12VAC5-590-420-B-2 d.~~

~~(c) The date and value of any turbidity measurements taken during the month that exceed 1.0 NTU for systems using conventional filtration treatment or direct filtration, or that exceed the maximum level set by the commissioner under 12VAC590-420-B-2 d.~~

~~(2) The owner shall maintain the results of individual filter monitoring taken under 12VAC5-590-370-B-7 b (1) for at least three years. The owner shall report that he has conducted individual filter turbidity monitoring under 12VAC5-590-370-B-7 b (1) within 10 days after the end of each month the waterworks serves water to the public. Owners shall report individual filter turbidity measurement results taken under 12VAC5-590-370-B-7 b (1) within 10 days after the end of each month the waterworks serves water to the public only if measurements demonstrate one or more of the conditions in subdivisions E 1 b (2) (a) or (b) of this section. The owners of waterworks that use lime softening may apply to the commissioner for alternative exceedance levels for the levels specified in subdivisions E 1 b (2) (a) or (b) of this section if they can demonstrate that higher turbidity levels in individual filters are due to lime carryover only and not due to degraded filter performance.~~

~~(a) For waterworks serving 10,000 or more people:~~

~~(i) For any individual filter that has a measured turbidity level of greater than 1.0 NTU in two consecutive measurements taken 15 minutes apart, the owner shall report the filter number, the turbidity measurement, and the date, or dates, on which the exceedance occurred. In addition, the owner shall either produce a filter profile for the filter within seven days of the exceedance (if the owner is not able to identify an obvious reason for the abnormal filter performance) and report that the profile has been produced or report the obvious reason for the exceedance.~~

~~(ii) For any individual filter that has a measured turbidity level of greater than 0.5 NTU in two consecutive measurements taken 15 minutes apart at the end of the first four hours of continuous filter operation after the filter has been backwashed or otherwise taken offline, the owner shall report the filter number, the turbidity, and the date, or dates, on which the exceedance occurred. In addition, the owner shall either produce a filter profile for the filter within seven days of the exceedance (if the owner is not able to identify an obvious reason for the abnormal filter performance) and report that the profile has been produced or report the obvious reason for the exceedance.~~

~~(iii) For any individual filter that has a measured turbidity level of greater than 1.0 NTU in two consecutive measurements taken 15 minutes apart at any time in each of three consecutive months, the owner shall report the filter number, the turbidity measurement, and the date, or dates, on which the exceedance occurred. In addition, the owner shall conduct a self-assessment of the filter within 14 days of the exceedance and report that the self-assessment was conducted. The self-assessment shall consist of at least the following components: assessment of filter performance; development of a filter profile; identification and prioritization of factors limiting filter performance; assessment of the applicability of corrections; and preparation of a filter self-assessment report.~~

~~(iv) For any individual filter that has a measured turbidity level of greater than 2.0 NTU in two consecutive measurements taken 15 minutes apart at any time in each of two consecutive months, the owner shall report the filter number, the turbidity measurement, and the date, or dates, on which the exceedance occurred. In addition, the owner shall arrange for the conduct of a comprehensive performance evaluation by the commissioner or a third party approved by the commissioner no later than 30 days following the exceedance and have the evaluation completed and submitted to the commissioner no later than 90 days following the exceedance.~~

~~(b) For waterworks serving less than 10,000 people:~~

~~(i) For any individual filter (or the turbidity of combined filter effluent for systems with two filters that monitor combined filter effluent in lieu of individual filters) that has a measured turbidity level of greater than 1.0 NTU in~~

two consecutive measurements taken 15 minutes apart, the owner shall report the filter number(s), the turbidity measurement(s), and the date, or dates, on which the exceedance occurred and the cause (if known) for the exceedance(s).

(ii) For any individual filter (or the turbidity of combined filter effluent for systems with two filters that monitor combined filter effluent in lieu of individual filters) that has a measured turbidity level of greater than 1.0 NTU in two consecutive measurements taken 15 minutes apart at any time in each of three consecutive months, the owner shall conduct a self assessment of the filter(s) within 14 days of the day the filter exceeded 1.0 NTU unless a comprehensive performance evaluation as specified in clause (iii) of this subdivision was required. Owners of waterworks with two filters that monitor the combined filter effluent in lieu of individual filters shall conduct a self assessment on both filters. The self assessment shall be reported to the commissioner and consist of at least the following components: date self assessment was triggered; date the self assessment was completed; assessment of filter performance; development of a filter profile; identification and prioritization of factors limiting filter performance; assessment of the applicability of corrections; and preparation of a filter self assessment report. The self assessment shall be submitted within 10 days after the end of the month or 14 days after the self assessment was triggered only if it was triggered during the last four days of the month.

(iii) For any individual filter (or the turbidity of combined filter effluent for systems with two filters that monitor combined filter effluent in lieu of individual filters) that has a measured turbidity level of greater than 2.0 NTU in two consecutive measurements taken 15 minutes apart at any time in each of two consecutive months, the owner shall arrange for a comprehensive performance evaluation by the commissioner or a third party approved by the commissioner no later than 60 days following the day the filter exceeded 2.0 NTU in two consecutive months. The owner shall report within 10 days after the end of the month that a comprehensive performance evaluation is required and the date that it was triggered. If a comprehensive performance evaluation has been completed by the commissioner or a third party approved by the commissioner within the 12 prior months or the owner and the commissioner are jointly participating in an ongoing Comprehensive Technical Assistance project at the waterworks, a new comprehensive performance evaluation is not required. If conducted, a comprehensive performance evaluation shall be completed and submitted to the commissioner no later than 120 days following the day the filter exceeded 2.0 NTU in two consecutive measurements for the second straight month.

c. Reporting source water monitoring results.

(1) Owners shall report results from the source water monitoring required in 12VAC5-590-420-B-3-a no later than 10 days after the end of the first month following the month when the sample is collected.

(2) Owners shall report the applicable information in subdivisions (a) and (b) as follows for the source water monitoring required in 12VAC5-590-420-B-3-a.

(a) Owners shall report the following data elements for each Cryptosporidium analysis:

Data element
PWS ID
Facility ID
Sample collection date
Sample type (field or matrix spike)
Sample volume filtered (L), to nearest ¼ L
Was 100% of filtered volume examined
Number of oocysts counted

(i) For matrix spike samples, the owner shall also report the sample volume spiked and estimated number of oocysts spiked. These data are not required for field samples.

(ii) For samples in which less than 10 L is filtered or less than 100% of the sample volume is examined, the owner shall also report the number of filters used and the packed pellet volume.

(iii) For samples in which less than 100% of sample volume is examined, the owner shall also report the volume of resuspended concentrate and volume of this resuspension processed through immunomagnetic separation.

(b) Owners shall report the following data elements for each E. coli analysis:

Data element
1. PWS ID
2. Facility ID
3. Sample collection date
4. Analytical method number
5. Method type
6. Source type (flowing stream, lake/reservoir, GUDI)
7. E. coli/100 mL

8. Turbidity[a]
[a]Owners of waterworks serving fewer than 10,000 people that are not required to monitor for turbidity under in 12VAC5-590-420-B-3-a are not required to report turbidity with their E. coli results.

2. Disinfection information specified below shall be reported to the district engineer within 10 days after the end of each month the waterworks serves water to the public. Information that shall be reported includes:

a. For each day, the lowest measurement of residual disinfectant concentration in mg/L in water entering the distribution system.

b. The date and duration of each period when the residual disinfectant concentration in water entering the distribution system fell below 0.2 mg/L and when the district engineer was notified of the occurrence.

c. The following information on the samples taken in the distribution system in conjunction with total coliform monitoring pursuant to 12VAC5-590-420-B.

(1) Number of instances where the residual disinfectant concentration is measured;

(2) Number of instances where the residual disinfectant concentration is not measured but HPC is measured;

(3) Number of instances where the residual disinfectant concentration is measured but not detected and no HPC is measured;

(4) Number of instances where no residual disinfectant concentration is detected and where HPC is greater than 500/mL;

(5) Number of instances where the residual disinfectant concentration is not measured and HPC is greater than 500/mL;

(6) For the current and previous month the system serves water to the public, the value of "V" in percent in the following formula:

$$V = \frac{c + d + e}{a + b} \times 100$$

a = the value in subdivision E 2 c (1) of this section

b = the value in subdivision E 2 c (2) of this section

c = the value in subdivision E 2 c (3) of this section

d = the value in subdivision E 2 c (4) of this section

e = the value in subdivision E 2 c (5) of this section

(7) If the division determines, based on site specific considerations, that a waterworks owner has no means for having a sample transported and analyzed for HPC by a certified laboratory within the requisite time and temperature conditions and that the waterworks is providing adequate disinfection in the distribution system, the requirements of subdivision E 2 c (1) through (6) of this section do not apply.

d. An owner need not report the data listed in subdivision E 2 a of this section if all data listed in subdivisions E 2 a through c of this section remain on file at the waterworks and the commissioner determines that the owner has submitted all of the information required by subdivisions E 2 a through c of this section for the last 12 months.

3. If at any time the chlorine residual falls below 0.2 mg/L in the water entering the distribution system, the owner shall notify the district engineer as soon as possible, but no later than by the end of the next business day. The owner also shall notify the district engineer by the end of the next business day whether or not the residual was restored to at least 0.2 mg/L within four hours.

F. Reporting requirements for lead and copper. All owners shall report all of the following information to the district engineer in accordance with this subsection.

1. Reporting requirements for tap water monitoring for lead and copper and for water quality parameter monitoring.

a. Except as provided in subdivision F 1 a (7) of this section, an owner shall report the information specified below for all tap water samples specified in 12VAC5-590-375-B and for all water quality parameter samples specified in 12VAC5-590-375-C within the first 10 days following the end of each applicable monitoring period specified in 12VAC5-590-375-B and 12VAC5-590-375-C (i.e., every six months, annually, every three years, or every nine years). For monitoring periods with a duration less than six months, the end of the monitoring period is the last date samples can be collected during the period as specified in 12VAC5-590-375-B and C.

(1) The results of all tap samples for lead and copper including location or a location site code and the criteria under 12VAC5-590-375-B-1-c through 12VAC5-590-375-B-1-f or 12VAC5-590-375-C under which the site was selected for the waterworks' sampling pool.

(2) Documentation for each tap water lead or copper sample for which the owner requests invalidation pursuant to 12VAC5-590-375-B-6.

(3) The 90th percentile lead and copper concentrations measured from among all lead and copper tap water samples collected during each monitoring period (calculated in accordance with 12VAC5-590-385-C) unless the district engineer calculates the 90th percentile

~~lead and copper levels under subdivision F 8 of this section.~~

~~(4) With the exception of initial tap sampling conducted pursuant to 12VAC5-590-375-B-4-a, the owner shall designate any site that was not sampled during previous monitoring periods, and include an explanation of why sampling sites have changed.~~

~~(5) The results of all tap samples for pH, and where applicable, alkalinity, calcium, conductivity, temperature, and orthophosphate or silica collected under 12VAC5-590-375-C-2 through 12VAC5-590-375-C-5.~~

~~(6) The results of all samples collected at the entry point(s) to the distribution system for applicable water quality parameters under 12VAC5-590-375-C-2 through 12VAC5-590-375-C-5.~~

~~(7) The owner shall report the results of all water quality parameter samples collected under 12VAC5-590-375-C-3 through 12VAC5-590-375-C-6 during each six month monitoring period specified in 12VAC5-590-375-C-4 within the first ten days following the end of the monitoring period unless the commissioner has specified a more frequent reporting requirement.~~

~~b. The owner of a nontransient noncommunity waterworks, or a community waterworks meeting the criteria of 12VAC5-590-405-D-2-e, that does not have enough taps that can provide first-draw samples, must either:~~

~~(1) Provide written documentation to the commissioner identifying standing times and locations for enough non-first-draw samples to make up the sampling pool under 12VAC5-590-375-B-2-e by the start of the first applicable monitoring period under 12VAC5-590-375-B-4, unless the commissioner has waived prior approval of non-first-draw sample sites selected by the owner pursuant to 12VAC5-590-375-B-2-e; or~~

~~(2) If the commissioner has waived prior approval of non-first-draw sample sites selected by the owner, identify, in writing, each site that did not meet the six-hour minimum standing time and the length of standing time for that particular substitute sample collected pursuant to 12VAC5-590-375-B-2-e and include this information with the lead and copper sample results required to be submitted pursuant to subdivision F 1 a (1) of this section.~~

~~c. At a time specified by the commissioner, or if no specific time is designated by the commissioner, then as early as possible prior to the addition of a new source or any long-term change in water treatment, an owner deemed to have optimized corrosion control under 12VAC5-590-405-A-2-b-(3); an owner subject to reduced monitoring pursuant to 12VAC5-590-375-B-4-d; or an owner subject to a monitoring waiver pursuant to 12VAC5-590-375-B-7, shall submit written documentation to the district engineer describing the change or addition. The district engineer must review and the commissioner must approve the addition of a new source or a long-term change in treatment before it is implemented by the owner. Examples of long-term treatment changes include the addition of a new treatment process or modification of an existing treatment process. Examples of modification include switching secondary disinfectants, switching coagulants (e.g., alum to ferric chloride), switching corrosion inhibitor products (e.g., orthophosphate to blended phosphate). Long-term changes can include dose changes to existing chemicals if the waterworks is planning long-term changes to its finished water pH or residual inhibitor concentration. Long-term treatment changes would not include chemical dose fluctuations associated with daily raw water quality changes.~~

~~d. The owner of any small waterworks applying for a monitoring waiver under 12VAC5-590-375-B-7 or subject to a waiver granted pursuant to 12VAC5-590-375-B-7-c, shall provide the following information to the commissioner in writing by the specified deadline:~~

~~(1) By the start of the first applicable monitoring period in 12VAC5-590-375-B-4, the owner of any small waterworks applying for a monitoring waiver shall provide the documentation required to demonstrate that it meets the waiver criteria of 12VAC5-590-375-B-7-a and 12VAC5-590-375-B-7-b.~~

~~(2) No later than nine years after the monitoring previously conducted pursuant to 12VAC5-590-375-B-7-b or 12VAC5-590-375-B-7-d-(1), the owner of each small waterworks desiring to maintain its monitoring waiver shall provide the information required by 12VAC5-590-375-B-7-d-(1) and 12VAC5-590-375-B-7-d-(2).~~

~~(3) No later than 60 days after becoming aware that it is no longer free of lead-containing or copper-containing material, the owner of each small waterworks with a monitoring waiver shall provide written notification to the district engineer, setting forth the circumstances resulting in the lead-containing or copper-containing materials being introduced into the waterworks and what corrective action, if any, the owner plans to take to remove these materials.~~

~~e. The owner of each groundwater source waterworks that limits water quality parameter monitoring to a subset of entry points under 12VAC5-590-375-C-3-c shall provide, by the commencement of such monitoring, written correspondence to the district engineer that identifies the selected entry points and includes information sufficient to demonstrate that the sites are~~

representative of water quality and treatment conditions throughout the waterworks.

2. Water supply (source water) monitoring reporting requirements.

a. An owner shall report the sampling results for all source water samples collected in accordance with 12VAC5-590-375-D within the first 10 days following the end of each source water monitoring period (i.e., annually, per compliance period, per compliance cycle) specified in 12VAC5-590-375-D.

b. With the exception of the first round of source water sampling conducted pursuant to 12VAC5-590-375-D-2, the owner shall specify any site which was not sampled during previous monitoring periods, and include an explanation of why the sampling point has changed.

3. Corrosion control treatment reporting requirements. By the applicable dates under 12VAC5-590-405-A-2-a, owners shall report the following information:

a. For owners demonstrating that they have already optimized corrosion control, information required in 12VAC5-590-405-A-2-b-(2) or 12VAC5-590-405-A-2-b-(3).

b. For owners required to optimize corrosion control, the owner's recommendation regarding optimal corrosion control treatment under 12VAC5-590-405-A-1-a.

c. For owners required to evaluate the effectiveness of corrosion control treatments under 12VAC5-590-405-A-1-c, the information required by that subdivision.

d. For owners required to install optimal corrosion control designated by the commissioner under 12VAC5-590-405-A-1-d, a letter certifying that the owner has completed installing that treatment.

4. Water supply source water treatment reporting requirements. By the applicable dates in 12VAC5-590-405-B, owners shall provide the following information to the district engineer:

a. If required under 12VAC5-590-405-B-2-a, the owner's recommendation regarding source water treatment;

b. For owners required to install source water treatment under 12VAC5-590-405-B-2-b, a letter certifying that the owner has completed installing the treatment designated by the commissioner within 24 months after the commissioner designated the treatment.

5. Lead service line replacement reporting requirements. Owners shall report the following information to the district engineer to demonstrate compliance with the requirements of 12VAC5-590-405-C:

a. No later than 12 months after the end of a monitoring period in which a waterworks exceeds the lead action level in sampling referred to in 12VAC5-590-405-C-1, the owner shall submit written documentation to the district engineer of the materials evaluation conducted as required in 12VAC5-590-375-B-1, to identify the initial number of lead service lines in the distribution system at the time the waterworks exceeds the lead action level, and provide the owner's schedule for annually replacing at least 7.0% of the initial number of lead service lines in its distribution system.

b. No later than 12 months after the end of a monitoring period in which a waterworks exceeds the lead action level in sampling referred to in 12VAC5-590-405-C-1, and every 12 months thereafter, the owner shall demonstrate to the district engineer in writing that the owner has either:

(1) Replaced in the previous 12 months at least 7.0% of the initial lead service lines (or a greater number of lines specified by the commissioner under 12VAC5-590-405-C-6) in the distribution system, or

(2) Conducted sampling that demonstrates that the lead concentration in all service line samples from an individual line(s), taken pursuant to 12VAC5-590-375-B-2-c, is less than or equal to 0.015 mg/L. In such cases, the total number of lines replaced and/or which meet the criteria in 12VAC5-590-405-C-4 shall equal at least 7.0% of the initial number of lead lines identified under subdivision F 5 a of this section (or the percentage specified by the commissioner under 12VAC5-590-405-C-6).

c. The annual letter submitted to the district engineer under subdivision F 5 b of this section shall contain the following information:

(1) The number of lead service lines scheduled to be replaced during the previous year of the waterworks' replacement schedule;

(2) The number and location of each lead service line replaced during the previous year of the waterworks' replacement schedule;

(3) If measured, the water lead concentration and location of each lead service line sampled, the sampling method, and the date of sampling.

d. The owner of any waterworks that collects lead service line samples following partial lead service line replacement required by 12VAC5-590-405-C shall report the results to the district engineer within the first ten days of the month following the month in which the owner receives the laboratory results, or as specified by the commissioner. Owners shall also report any additional information as specified by the commissioner, and in a time and manner prescribed by the commissioner, to

verify that all partial lead service line replacement activities have taken place.

6. Public education program reporting requirements. Owners shall report the following information to the district engineer to demonstrate compliance with the requirements of 12VAC5-590-405-D.

a. The owner of any waterworks that is subject to the public education requirements in 12VAC5-590-405-D shall, within 10 days after the end of each period in which the owner is required to perform public education tasks in accordance with 12VAC5-590-405-D-2, send written notice to the district engineer that contains:

(1) A demonstration that the owner has delivered the public education materials that meet the content requirements of 12VAC5-590-405-D-1 and the delivery requirements of 12VAC5-590-405-D-2, and

(2) A list of all the newspapers, radio stations, television stations, and facilities and organizations to which the owner delivered public education materials during the period in which the owner was required to perform public education tasks.

b. Unless required by the commissioner, an owner who previously has submitted the information required by subdivision F-6-a-(2) of this section need not resubmit the information required by subdivision F-6-a-(2) of this section, as long as there has been no changes in the distribution list and the owner certifies that the public education materials were distributed to the same list submitted previously.

c. No later than three months following the end of the monitoring period, the owner shall mail a sample copy of the consumer notification of tap results to the district engineer along with a certification that the notification has been distributed in a manner consistent with the requirements of 12VAC5-590-405-D-4.

7. Reporting of additional monitoring data. The owner of any waterworks which collects sampling data in addition to that required by 12VAC5-590-375 shall report the results to the district engineer within the first 10 days following the end of the applicable monitoring period under 12VAC5-590-375-B, 12VAC5-590-375-C, and 12VAC5-590-375-D during which the samples are collected.

8. Reporting of the 90th percentile lead and copper concentrations where the district engineer calculates a waterworks' 90th percentile concentrations. An owner is not required to report the 90th percentile lead and copper concentrations measured from among all lead and copper tap samples collected during each monitoring period, as required by subdivision F-1-a-(4) of this section if:

a. The commissioner has previously notified the owner that the district engineer will calculate the waterworks' 90th percentile lead and copper concentrations, based on the lead and copper tap results submitted pursuant to subdivision F-8-b-(1) of this section, and has specified a date before the end of the applicable monitoring period by which the owner shall provide the results of the lead and copper tap water samples;

b. The owner has provided the following information to the district engineer by the date specified in subdivision F-8-a of this section:

(1) The results of all tap samples for lead and copper including the location of each site and the criteria under 12VAC5-590-375-B-1-c through 12VAC5-590-375-B-1-f or 12VAC5-590-375-B-1-g under which the site was selected for the waterworks sampling pool, pursuant to subdivision F-1-a-(1) of this section;

(2) An identification of sampling sites utilized during the current monitoring period that were not sampled during the previous monitoring periods, and an explanation why sampling sites have changed; and

(3) The district engineer has provided the results of the 90th percentile lead and copper calculations, in writing, to the owner before the end of the monitoring period.

G. Reporting requirements for disinfection byproducts. Owners shall report the following information in accordance with subsection A of this section. (The district engineer may choose to perform calculations and determine whether the PMCL was violated, in lieu of having the owner report that information):

1. Running Annual Average Reporting:

a. The owner of a waterworks monitoring for TTHM and HAA5 under the requirements of 12VAC5-590-370-B-3-e-(1) on a quarterly or more frequent basis shall report:

(1) The number of samples taken during the last quarter.

(2) The location, date, and result of each sample taken during the last quarter.

(3) The arithmetic average of all samples taken in the last quarter.

(4) The annual arithmetic average of the quarterly arithmetic averages of this section for the last four quarters.

(5) Whether, based on 12VAC5-590-410-C-2-b-(1)-(a), the PMCL was violated.

b. The owner of a waterworks monitoring for TTHMs and HAA5 under the requirements of 12VAC5-590-370-B-3-e-(1) less frequently than quarterly (but at least annually) shall report:

(1) The number of samples taken during the last year.

(2) The location, date, and result of each sample taken during the last monitoring period.

(3) The arithmetic average of all samples taken over the last year.

(4) Whether, based on 12VAC5-590-410-C-2-b-(1)-(a) the PMCL was violated.

c. The owner of a waterworks monitoring for TTHMs and HAA5 under the requirements of 12VAC5-590-370-B-3-e-(1) less frequently than annually shall report:

(1) The location, date, and result of the last sample taken.

(2) Whether, based on 12VAC5-590-410-C-2-b-(1)-(a), the PMCL was violated.

2. Locational Running Annual Average (LRAA) Reporting:

a. Owners shall report the following information for each monitoring location to the commissioner:

(1) Number of samples taken during the last quarter.

(2) Date and results of each sample taken during the last quarter.

(3) Arithmetic average of quarterly results for the last four quarters for each LRAA, beginning at the end of the fourth calendar quarter that follows the compliance date and at the end of each subsequent quarter. If the LRAA calculated based on fewer than four quarters of data would cause the PMCL to be exceeded regardless of the monitoring results of subsequent quarters, the owner shall report this information to the commissioner as part of the first report due following the compliance date or anytime thereafter that this determination is made. If the owner is required to conduct monitoring at a frequency that is less than quarterly, the owner shall make compliance calculations beginning with the first compliance sample taken after the compliance date, unless the owner is required to conduct increased monitoring under 12VAC5-590-370-B-3-e-(3)-(g).

(4) Whether, based on Table 2.13, the PMCL was violated at any monitoring location.

(5) Any operational evaluation levels, under 12VAC5-590-410-C-2-b-(1)-(b)-(iv), that were exceeded during the quarter and, if so, the location and date, and the calculated TTHM and HAA5 levels.

b. Owners of waterworks using surface water or GUDI seeking to qualify for or remain on reduced TTHM/HAA5 monitoring shall report the following source water TOC information for each treatment plant that treats surface water or ground water under the direct influence of surface water to the commissioner within 10 days of the end of any quarter in which monitoring is required:

(1) The number of source water TOC samples taken each month during last quarter.

(2) The date and result of each sample taken during last quarter.

(3) The quarterly average of monthly samples taken during last quarter or the result of the quarterly sample.

(4) The running annual average (RAA) of quarterly averages from the past four quarters.

(5) Whether the RAA exceeded 4.0 mg/L.

3. The owner of a waterworks monitoring for chlorite under the requirements of 12VAC5-590-370-B-3-f shall report:

a. The number of entry point samples taken each month for the last three months.

b. The location, date, and result of each sample (both entry point and distribution system) taken during the last quarter.

c. For each month in the reporting period, the arithmetic average of all samples taken in each three sample set taken in the distribution system.

d. Whether, based on 12VAC5-590-410-C-2-b, the PMCL was violated, in which month and how many times it was violated each month.

4. The owner of a waterworks monitoring for bromate under the requirements of 12VAC5-590-370-B-3-g shall report:

a. The number of samples taken during the last quarter.

b. The location, date, and result of each sample taken during the last quarter.

c. The arithmetic average of the monthly arithmetic averages of all samples taken in the last year.

d. Whether, based on 12VAC5-590-410-C-2-b, the PMCL was violated.

H. Reporting requirements for disinfectants. Owners shall report the information specified below in accordance with subsection A of this section. (The district engineer may choose to perform calculations and determine whether the MRDL was violated, in lieu of having the owner report that information):

1. The owner of a waterworks monitoring for chlorine or chloramines under the requirements of 12VAC5-590-370-B-3-h shall report:

a. The number of samples taken during each month of the last quarter.

b. The monthly arithmetic average of all samples taken in each month for the last 12 months.

c. The arithmetic average of all monthly averages for the last 12 months.

d. Whether, based on 12VAC5-590-410-C-2-c, the MRDL was violated.

2. The owner of a waterworks monitoring for chlorine dioxide under the requirements of 12VAC5-590-370-B-3-h shall report:

a. The dates, results, and locations of samples taken during the last quarter.

b. Whether, based on 12VAC5-590-410-C-2-c, the MRDL was violated.

c. Whether the MRDL was exceeded in any two consecutive daily samples and whether the resulting violation was acute or nonacute.

I. Reporting requirements for disinfection byproduct precursors and enhanced coagulation or enhanced softening. Owners shall report the following information in accordance with subsection A of this section. (The district engineer may choose to perform calculations and determine whether the treatment technique was met, in lieu of having the owner report that information):

1. The owner of a waterworks monitoring monthly or quarterly for TOC under the requirements of 12VAC5-590-370-B-3-i and required to meet the enhanced coagulation or enhanced softening requirements in 12VAC5-590-420-H-2-b or c shall report:

a. The number of paired (source water and treated water) samples taken during the last quarter.

b. The location, date, and results of each paired sample and associated alkalinity taken during the last quarter.

c. For each month in the reporting period that paired samples were taken, the arithmetic average of the percent reduction of TOC for each paired sample and the required TOC percent removal.

d. Calculations for determining compliance with the TOC percent removal requirements, as provided in 12VAC5-590-420-H-3-a.

e. Whether the system is in compliance with the enhanced coagulation or enhanced softening percent removal requirements in 12VAC5-590-420-H-2-a for the last four quarters.

2. The owner of a waterworks monitoring monthly or quarterly for TOC under the requirements of 12VAC5-590-370-B-3-i and meeting one or more of the alternative compliance criteria in 12VAC5-590-420-H-1-b or c shall report:

a. The alternative compliance criterion that the system is using.

b. The number of paired samples taken during the last quarter.

c. The location, date, and result of each paired sample and associated alkalinity taken during the last quarter.

d. The running annual arithmetic average based on monthly averages (or quarterly samples) of source water TOC for systems meeting a criterion in 12VAC5-590-420-H-1-b (1) or (3) or of treated water TOC for systems meeting the criterion in 12VAC5-590-420-H-1-b (2).

e. The running annual arithmetic average based on monthly averages (or quarterly samples) of source water SUVA for systems meeting the criterion in 12VAC5-590-420-H-1-b (5) or of treated water SUVA for systems meeting the criterion in 12VAC5-590-420-H-1-b (6).

f. The running annual average of source water alkalinity for systems meeting the criterion in 12VAC5-590-420-H-1-b (3) and of treated water alkalinity for systems meeting the criterion in 12VAC5-590-420-H-1-c (1).

g. The running annual average for both TTHM and HAA5 for systems meeting the criterion in 12VAC5-590-420-H-1-b (3) or (4).

h. The running annual average of the amount of magnesium hardness removal (as $CaCO_3$, in mg/L) for systems meeting the criterion in 12VAC5-590-420-H-1-c (2).

i. Whether the system is in compliance with the particular alternative compliance criterion in 12VAC5-590-420-H-1-b or c.

J. Reporting of analytical results to the district engineer will not be required in instances where the state laboratory performs the analysis and reports same to the district engineer.

K. Recycle flow reporting requirements. The owner of any waterworks supplied by a surface water source and waterworks supplied by a groundwater source under the direct influence of surface water that employs conventional filtration or direct filtration treatment shall notify the commissioner in writing by December 8, 2003, if the system recycles spent filter backwash water, thickener supernatant, or liquids from dewatering processes. This notification shall include, as a minimum:

1. A plant schematic showing the origin of all flows that are recycled, including but not limited to spent filter backwash water, thickener supernatant, and liquids from dewatering processes. The schematic shall also specify the hydraulic conveyance used to transport all recycle flows and the location where recycle flows are reintroduced back into the treatment plant.

2. Typical recycle flow in gallons per minute (gpm), the highest observed plant flow experienced in the previous

year (gpm), design flow for the treatment plant (gpm), and state-approved operating capacity for the plant.

L. Reporting of requirements for enhanced treatment for cryptosporidium.

1. Owners shall report sampling schedules under 12VAC5-590-420-B-3-a-(5) and source water monitoring results under subsection E 1 c of this section unless they notify the commissioner that they will not conduct source water monitoring due to meeting the criteria of 12VAC5-590-420 B 3 a (4).

2. Owners shall report the use of uncovered finished water storage facilities to the commissioner as described in 12VAC5-590-420 L.

3. Owners of waterworks that provide filtration shall report their Cryptosporidium bin classification as described in 12VAC-590-420-B-3-c.

4. Owners shall report disinfection profiles and benchmarks to the commissioner as described in 12VAC5-590-420-B-3-b-(1) through (2) prior to making a significant change in disinfection practice.

5. Owners shall report to the commissioner in accordance with the following table for any microbial toolbox options used to comply with treatment requirements under 12VAC5-590-420 B 3 c (2). Alternatively, the commissioner may approve a waterworks to certify operation within required parameters for treatment credit rather than reporting monthly operational data for toolbox options.

Microbial Toolbox Reporting Requirements

Toolbox option	Owners shall submit the following information	On the following schedule
Alternative source/intake management	Verification that waterworks has relocated the intake or adopted the intake withdrawal procedure reflected in monitoring results	No later than the applicable treatment compliance date in 12VAC5-590-420 B 3 c (3).
Presedimentation	Monthly verification of the following: (i) Continuous basin operation (ii) Treatment of 100% of the flow (iii) Continuous addition of a coagulant (iv) At least 0.5-log mean reduction of influent turbidity or compliance with alternative performance criteria approved by the commissioner	Monthly reporting within 10 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-420 B 3 c (3).
Two-stage lime softening	Monthly verification of the following: (i) Chemical addition and hardness precipitation occurred in two separate and sequential softening stages prior to filtration (ii) Both stages treated 100% of the plant flow	Monthly reporting within 10 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-420 B 3 c (3).
Bank filtration	Initial demonstration of the following: (i) Unconsolidated, predominantly sandy aquifer (ii) Setback distance of at least 25 ft. (0.5-log credit) or 50 ft. (1.0-log credit)	No later than the applicable treatment compliance date in 12VAC5-590-420 B 3 c (3).
	If monthly average of daily max turbidity is greater than 1.0 NTU then system shall report result and submit an assessment of the cause	Report within 30 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-420 B 3 c (3).
Combined filter performance	Monthly verification of combined filter effluent (CFE) turbidity levels less than or equal to 0.15 NTU in at least 95% of the four-hour CFE measurements taken each month	Monthly reporting within 10 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-420 B 3 c (3).

~~Individual filter performance~~	~~Monthly verification of the following:~~ ~~(i) Individual filter effluent (IFE) turbidity levels less than or equal to 0.15 NTU in at least 95% of samples each month in each filter~~ ~~(ii) No individual filter greater than 0.3 NTU in two consecutive readings 15 minutes apart~~	~~Monthly reporting within 10 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-420-B-3-c-(3).~~
~~Demonstration of performance~~	~~Results from testing following a protocol approved by the commissioner~~	~~No later than the applicable treatment compliance date in 12VAC5-590-420-B-3-c-(3).~~
	~~(ii) As required by the commissioner, monthly verification of operation within conditions of commissioner approval for demonstration of performance credit~~	~~Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-420-B-3-c-(3).~~
~~Bag filters and cartridge filters~~	~~Demonstration that the following criteria are met:~~ ~~(i) Process meets the definition of bag or cartridge filtration~~ ~~(ii) Removal efficiency established through challenge testing that meets criteria in 12VAC5-590-420-B-3-d-(6)-(a)~~	~~No later than the applicable treatment compliance date in 12VAC5-590-420-B-3-c-(3).~~
	~~Monthly verification that 100% of plant flow was filtered~~	~~Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-420-B-3-c-(3).~~
~~Membrane filtration~~	~~Results of verification testing demonstrating the following:~~ ~~(i) Removal efficiency established through challenge testing that meets criteria in subsection J of this section~~ ~~(ii) Integrity test method and parameters, including resolution, sensitivity, test frequency, control limits, and associated baseline~~	~~No later than the applicable treatment compliance date in 12VAC5-590-420-B-3-c-(3).~~
	~~Monthly report summarizing the following:~~ ~~(i) All direct integrity tests above the control limit~~ ~~(ii) If applicable, any turbidity or alternative indirect integrity monitoring approved by the commissioner results triggering direct integrity testing and the corrective action that was taken~~	~~Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-420-B-3-c-(3).~~
~~Second stage filtration~~	~~Monthly verification that 100% of flow was filtered through both stages and that first stage was preceded by a coagulation step~~	~~Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-420-B-3-c-(3).~~
~~Slow sand filtration (as secondary filter)~~	~~Monthly verification that both a slow sand filter and a preceding separate stage of filtration treated 100% of flow from surface water or groundwater under the direct influence of surface water sources~~	~~Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-420-B-3-c-(3).~~
~~Chlorine dioxide~~	~~Summary of CT values for each day as described in 12VAC5-590-420-B-3-d-(7)(b)(i)~~	~~Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-420-B-3-c-(3).~~

~~Ozone~~	~~Summary of CT values for each day as described in 12VAC5-590-420 B 3 d (7)(b)(ii)~~	~~Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-420 B 3 c (3).~~
~~UV~~	~~Validation test results demonstrating operating conditions that achieve required UV dose~~	~~No later than the applicable treatment compliance date in 12VAC5-590-420 B 3 c (3).~~
	~~Monthly report summarizing the percentage of water entering the distribution system that was not treated by UV reactors operating within validated conditions for the required dose as specified in 12VAC5-590-420 B 3 d (7) (c)~~	~~Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-420 B 3 c (3).~~

~~M.~~ K. Reporting requirements for groundwater systems. ~~Owners of groundwater systems~~ The owner shall report the following information in accordance with subsection A of this section~~.~~:

1. ~~Owners of groundwater systems~~ The owner conducting compliance monitoring as required by 12VAC5-590-421 C shall notify the ~~ODW~~ department as soon as ~~possible any time~~ practical, but no later than the next business day, whenever the groundwater system fails to meet the ~~ODW specified~~ department-specified minimum residual disinfectant concentration for more than four hours~~, but no later than the next business day~~.

2. ~~Owners of groundwater systems that are~~ The owner required to conduct corrective action as described in 12VAC5-590-421 A shall notify the ~~ODW~~ department within 30 days of completion of corrective action.

3. ~~Owners of groundwater systems~~ The owner subject to the source water monitoring requirements of 12VAC5-590-379 that do not conduct this monitoring under the provision of 12VAC5-590-380 E~~,~~ shall provide documentation to the ~~ODW~~ department within 30 days of the collection that the sample met the criteria defined in 12VAC5-590-380 E.

~~N. Information to be included on the operation monthly report shall be determined by the commissioner for each waterworks on an individual basis. Appendix G contains suggested monthly operation report requirements.~~

12VAC5-590-531. Reporting requirements for filtration treatment and disinfection treatment.

A. The owner of a waterworks using a surface water source, a GUDI source, or both shall report monthly to the department the following specified information.

1. Turbidity measurements as required by 12VAC5-590-376 B shall be reported within 10 days after the end of each month the waterworks serves water to the public. Information that shall be reported includes:

a. The total number of filtered water turbidity measurements collected during the month.

b. The number and percentage of filtered water turbidity measurements collected during the month that are less than or equal to the turbidity limits specified in 12VAC5-590-395 A 2 b for the filtration technology being used.

c. The owner of a waterworks that uses lime softening may apply to the department for alternative exceedance levels for the levels specified in subdivision A 1 b of this section if the owner can demonstrate that higher turbidity levels in individual filters are due to lime carryover only and not due to degraded filter performance.

2. The owner of a waterworks with combined distribution systems serving at least 10,000 persons using a surface water source, a GUDI source, or both that provides conventional filtration treatment or direct filtration shall report monthly to the department the information specified in subdivisions A 2 a and A 2 b of this section. Also, the owner of a waterworks that provides filtration approved under 12VAC5-590-395 A 2 b shall report monthly to the department the information specified in subdivisions A 2 a and A 2 b of this section.

a. Turbidity measurements collected to meet 12VAC5-590-395 A 2 b shall be reported within 10 days after the end of each month the waterworks serves water to the public. Information that shall be reported includes:

(1) The total number of filtered water turbidity measurements collected during the month.

(2) The number and percentage of filtered water turbidity measurements collected during the month that are less than or equal to the turbidity limits specified in 12VAC5-590-395 A 2 b.

(3) The date and value of any turbidity measurements collected during the month that exceed 1.0 NTU for waterworks using conventional filtration treatment or direct filtration or that exceed the maximum level set by the department under 12VAC5-590-395 A 2 b.

b. The owner shall maintain the results of individual filter monitoring collected under 12VAC5-590-376 B for at least three years. The owner shall report the completion of individual filter turbidity monitoring under 12VAC5-590-376 B within 10 days after the end of each month the

waterworks serves water to the public. The owner shall report individual filter turbidity measurement results collected under 12VAC5-590-376 B within 10 days after the end of each month the waterworks serves water to the public only if measurements demonstrate one or more of the conditions in 12VAC5-590-395 A 2 b. The owner of a waterworks that uses lime softening may apply to the department for alternative exceedance levels for the levels specified in 12VAC5-590-395 A 2 b if the owner can demonstrate that higher turbidity levels in individual filters are due to lime carryover only and not due to degraded filter performance.

3. For a waterworks with combined distribution systems serving 10,000 or more persons.

a. For an individual filter that has a measured turbidity level of greater than 1.0 NTU in two consecutive measurements collected 15 minutes apart, the owner shall report the filter number, the turbidity measurement, and the dates on which the exceedances occurred. In addition, the owner shall either produce a filter profile for the filter within seven days of the exceedance if the owner is not able to identify an obvious reason for the abnormal filter performance and report that the profile has been produced or report the obvious reason for the exceedance.

b. For an individual filter that has a measured turbidity level of greater than 0.5 NTU in two consecutive measurements collected 15 minutes apart at the end of the first four hours of continuous filter operation after the filter has been backwashed or otherwise taken offline, the owner shall report the filter number, the turbidity, and the dates on which the exceedances occurred. In addition, the owner shall either produce a filter profile for the filter within seven days of the exceedance if the owner is not able to identify an obvious reason for the abnormal filter performance and report that the profile has been produced or report the obvious reason for the exceedance.

c. For an individual filter that has a measured turbidity level of greater than 1.0 NTU in two consecutive measurements collected 15 minutes apart at any time in each of three consecutive months, the owner shall report the filter number, the turbidity measurement, and the dates on which the exceedances occurred. In addition, the waterworks shall conduct a self-assessment of the filter within 14 days of the exceedances and report that the self-assessment was conducted. The self-assessment shall consist of at least the following components: assessment of filter performance, development of a filter profile, identification and prioritization of factors limiting filter performance, assessment of the applicability of corrections, and preparation of a filter self-assessment report.

d. For an individual filter that has a measured turbidity level of greater than 2.0 NTU in two consecutive measurements collected 15 minutes apart at any time in each of two consecutive months, the owner shall report the filter number, the turbidity measurement, and the dates on which the exceedances occurred. In addition, the owner shall arrange for the conduct of a comprehensive performance evaluation (CPE) by the department or a third party approved by the department no later than 30 days following the exceedance and have the evaluation completed and submitted to the department no later than 90 days following the exceedance. A CPE means a thorough evaluation and analysis of a water treatment plant's performance-based capabilities and associated administrative, operational, and maintenance practices. A CPE is conducted to identify factors that may be adversely impacting a water treatment plant's capability to achieve compliance and emphasizes approaches that can be implemented without significant capital improvements.

4. For a waterworks with combined distribution systems serving fewer than 10,000 persons.

a. For an individual filter or the turbidity of CFE for waterworks with two filters that monitor CFE instead of individual filters that has a measured turbidity level of greater than 1.0 NTU in two consecutive measurements collected 15 minutes apart, the owner shall report the filter numbers, the turbidity measurements, and the dates on which the exceedances occurred and the cause (if known) for the exceedances.

b. For an individual filter or the turbidity of CFE for a waterworks with two filters that monitor CFE instead of individual filters that has a measured turbidity level of greater than 1.0 NTU in two consecutive measurements collected 15 minutes apart at any time in each of three consecutive months, the owner shall conduct a self-assessment of the filters within 14 days of the day the filter exceeded 1.0 NTU unless a CPE as specified in subdivision A 4 c of this section was required. A waterworks with two filters that monitor the CFE instead of individual filters shall conduct a self-assessment on both filters. The self-assessment shall be reported to the department and consist of at least the following components: (i) date the self-assessment was triggered, (ii) date the self-assessment was completed, (iii) an assessment of filter performance, (iv) development of a filter profile, (v) identification and prioritization of factors limiting filter performance, (vi) assessment of the applicability of corrections, and (vii) preparation of a filter self-assessment report. The self-assessment shall be submitted within 10 days after the end of the month or 14 days after the self-assessment was triggered only if it was triggered during the last four days of the month.

c. For an individual filter or the turbidity of CFE for a waterworks with two filters that monitor CFE instead of individual filters that has a measured turbidity level of greater than 2.0 NTU in two consecutive measurements collected 15 minutes apart at any time in each of two consecutive months, the owner shall arrange for a CPE, as defined in subdivision A 3 d of this section, by the department or a third party approved by the department no later than 60 days following the day the filter exceeded 2.0 NTU in two consecutive months. The owner shall report within 10 days after the end of the month that a CPE is required and the date that it was triggered. If a CPE has been completed by the department or a third party approved by the department within the 12 prior months or the owner and the department are jointly participating in an ongoing comprehensive technical assistance project at the waterworks, then a new CPE is not required. If conducted, a CPE shall be completed and submitted to the department no later than 120 days following the day the filter exceeded 2.0 NTU in two consecutive measurements for the second straight month.

5. Reporting Cryptosporidium monitoring results.

a. The owner shall report results from the source water monitoring required in 12VAC5-590-401 B no later than 10 days after the end of the first month following the month when the sample is collected.

b. The owner shall report the following data elements for each Cryptosporidium analysis:

(1) Public water system (PWS) identification number;

(2) Facility identification number;

(3) Sample collection date;

(4) Sample type (field or matrix spike);

(5) Sample volume filtered (L), to nearest 1/4 L;

(6) Was 100% of filtered volume examined; and

(7) Number of oocysts counted.

c. Quality control for Cryptosporidium analysis:

(1) For matrix spike samples, the owner shall also report the sample volume spiked and the estimated number of oocysts spiked. These data are not required for field samples.

(2) For samples in which less than 10 L is filtered or less than 100% of the sample volume is examined, the owner shall also report the number of filters used and the packed pellet volume.

(3) For samples in which less than 100% of the sample volume is examined, the owner shall also report the volume of re-suspended concentrate and volume of this re-suspension processed through immunomagnetic separation.

d. The owner shall report the following data elements for each E. coli analysis:

(1) PWS identification number;

(2) Facility identification number;

(3) Sample collection date;

(4) Analytical method number;

(5) Method type;

(6) Source water type (flowing stream, lake or reservoir, GUDI source);

(7) E. coli/100 mL; and

(8) Turbidity.

e. The owner of a waterworks serving fewer than 10,000 persons and not required to monitor for turbidity under 12VAC5-590-401 B is not required to report turbidity with their E. coli results.

B. Reporting of requirements for enhanced treatment for Cryptosporidium.

1. The owner shall report sampling schedules under 12VAC5-590-401 B and source water monitoring results under 12VAC5-590-531 A 5, unless the owner notifies the department that the owner will not conduct source water monitoring due to meeting the criteria of 12VAC5-590-401 B 4.

2. The owner shall report the use of uncovered finished water storage facilities to the department as described in 12VAC5-590-415.

3. The owner of a waterworks that provide filtration shall report their Cryptosporidium bin classification as described in 12VAC5-590-401 D.

4. The owner shall report disinfection profiles and benchmarks to the department as described in 12VAC5-590-401 C 1 and C 2 before making a significant change in disinfection practice.

5. The owner shall report to the department in accordance with Table 531.1 for any microbial toolbox options used to comply with treatment requirements under 12VAC5-590-401 D 2. Alternatively, the department may approve a waterworks to certify operation within required parameters for treatment credit rather than reporting monthly operational data for toolbox options.

TABLE 531.1

Microbial Toolbox Reporting Requirements

TOOLBOX OPTION	OWNERS SHALL SUBMIT THE FOLLOWING INFORMATION:	ON THE FOLLOWING SCHEDULE:
Alternative source or intake management	Verification that the waterworks has relocated the intake or adopted the intake withdrawal procedure reflected in monitoring results.	No later than the applicable treatment compliance date in 12VAC5-590-401 D 3.
Presedimentation	Monthly verification of the following: (i) Continuous basin operation; (ii) Treatment of 100% of the flow; (iii) Continuous addition of a coagulant; and (iv) At least 0.5-log mean reduction of influent turbidity or compliance with alternative performance criteria approved by the department.	Monthly reporting within 10 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-401 D 3.
Two-stage lime softening	Monthly verification of the following: (i) Chemical addition and hardness precipitation occurred in two separate and sequential softening stages before filtration; and (ii) Both stages treated 100% of the water treatment plant flow.	Monthly reporting within 10 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-401 D 3.
Bank filtration	Initial demonstration of the following: (i) Unconsolidated, predominantly sandy aquifer; and (ii) Setback distance of at least 25 ft. (0.5-log credit) or 50 ft. (1.0-log credit).	No later than the applicable treatment compliance date in 12VAC5-590-401 D 3.
	If monthly average of daily maximum turbidity is greater than 1.0 NTU then the waterworks shall report the result and submit an assessment of the cause.	Report within 30 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-401 D 3.
Combined filter performance	Monthly verification of CFE turbidity levels less than or equal to 0.15 NTU in at least 95% of the four-hour CFE measurements collected each month.	Monthly reporting within 10 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-401 D 3.
Individual filter performance	Monthly verification of the following: (i) Individual filter effluent turbidity levels less than or equal to 0.15 NTU in at least 95% of samples each month in each filter; and (ii) No individual filter greater than 0.3 NTU in two consecutive readings 15 minutes apart.	Monthly reporting within 10 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-401 D 3.
Demonstration of performance	Results from testing following a protocol approved by the department.	No later than the applicable treatment compliance date in 12VAC5-590-401 D 3.
	As required by the department, monthly verification of operation within conditions of the department's approval for demonstration of performance credit.	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-401 D 3.
Bag filters and cartridge filters	Demonstration that the following criteria are met: (i) Process meets the definition of bag or cartridge filtration; and (ii) Removal efficiency established through challenge testing that meets criteria in 12VAC5-590-401 E 6 a.	No later than the applicable treatment compliance date in 12VAC5-590-401 D 3.
	Monthly verification that 100% of the water treatment plant flow was filtered.	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-401 D 3.

Membrane filtration	Results of verification testing demonstrating the following: (i) Removal efficiency established through challenge testing that meets criteria in subdivision B 5 of this section; and (ii) Integrity test method and parameters, including resolution, sensitivity, test frequency, control limits, and associated baseline.	No later than the applicable treatment compliance date in 12VAC5-590-401 D 3.
	Monthly report summarizing the following: (i) All direct integrity tests above the control limit; and (ii) If applicable, any turbidity or alternative indirect integrity monitoring approved by the department that results in triggering direct integrity testing and the corrective action that was taken.	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-401 D 3.
Second stage filtration	Monthly verification that 100% of flow was filtered through both stages and the first stage was preceded by a coagulation step.	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-401 D 3.
Slow sand filtration (as secondary filter)	Monthly verification that both a slow sand filter and a preceding separate stage of filtration treated 100% of flow from surface water or GUDI.	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-401 D 3.
Chlorine dioxide	Summary of CT values for each day as described in 12VAC5-590-401 E 7 b (1).	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-401 D 3.
Ozone	Summary of CT values for each day as described in 12VAC5-590-401 E 7 b (2).	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-401D 3.
UV	Validation test results demonstrating operating conditions that achieve required UV dose.	No later than the applicable treatment compliance date in 12VAC5-590-401 D 3.
	Monthly report summarizing the percentage of water entering the distribution system that was not treated by UV reactors operating within validated conditions for the required dose as specified in 12VAC5-590-401 E 7 c (1).	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in 12VAC5-590-401 D 3.

C. Disinfection information specified in this subsection shall be reported to the department within 10 days after the end of each month the waterworks serves water to the public. Information that shall be reported includes:

1. For each day, the lowest measurement of residual disinfectant concentration in mg/L in water entering the distribution system.

2. The date and duration of each period when the residual disinfectant concentration in water entering the distribution system fell below 0.2 mg/L and when the department was notified of the occurrence.

3. The following information on the samples collected in the distribution system in conjunction with total coliform monitoring pursuant to 12VAC5-590-395 A 2.

a. Number of instances where the residual disinfectant concentration is measured;

b. Number of instances where the residual disinfectant concentration is not measured but HPC is measured;

c. Number of instances where the residual disinfectant concentration is measured but not detected and no HPC is measured;

d. Number of instances where no residual disinfectant concentration is detected and where HPC is greater than 500/mL;

e. Number of instances where the residual disinfectant concentration is not measured and HPC is greater than 500/mL; and

f. For the current and previous month the waterworks serves water to the public, the value of "V," in percent, in the following formula:

$$V = \left[\frac{(c + d + e)}{(a + b)} \right] * 100$$

a = the value in subdivision C 3 a of this section.

b = the value in subdivision C 3 b of this section.

c = the value in subdivision C 3 c of this section.

d = the value in subdivision C 3 d of this section.

e = the value in subdivision C 3 e of this section.

g. The department may determine that based on site-specific considerations if an owner has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature conditions and the waterworks is providing adequate disinfection in the distribution system, the HPC compliance requirements of subdivisions C 3 a through C 3 f of this section do not apply.

4. The owner need not report the data listed in subdivision C 1 of this section if all data listed in subdivisions C 1, C 2, and C 3 of this section remain on file at the waterworks and the department determines that the owner has submitted all of the information required by subdivisions C 1, C 2, and C 3 of this section for the last 12 months.

5. A waterworks using disinfection oxidants other than free chlorine after filtration shall continue to record disinfection profile measurements and incorporate log inactivation computations into their monthly operation reports, as described in 12VAC5-590-570.

D. Reporting requirements for DBPs. The owner shall report the following information to the department in accordance with 12VAC5-590-530. The department may choose to perform calculations and determine whether the PMCL was violated, instead of having the owner report that information.

1. Locational running annual average (LRAA) reporting:

a. The owner shall report the following information for each monitoring location to the department:

(1) Number of samples collected during the last quarter.

(2) Date and results of each sample collected during the last quarter.

(3) Arithmetic average of quarterly results for the last four quarters for each LRAA, beginning at the end of the fourth calendar quarter that follows the compliance date and at the end of each subsequent quarter. If the LRAA calculated based on fewer than four quarters of data would cause the PMCL to be exceeded regardless of the monitoring results of subsequent quarters, the owner shall report this information to the department as part of the first report due following the compliance date or anytime thereafter that this determination is made. If the owner is required to conduct monitoring at a frequency that is less than quarterly, then the owner shall make compliance calculations beginning with the first compliance sample collected after the compliance date, unless the owner is required to conduct increased monitoring under 12VAC5-590-374 F 5.

(4) Whether, based on 12VAC5-590-384 B 1, the PMCL was violated at any monitoring location.

(5) Any operational evaluation levels under 12VAC5-590-384 B 1 d that were exceeded during the quarter, and if so, the location and date and the calculated TTHM and HAA5 levels.

b. The owner of a waterworks using a surface water source, a GUDI source, or both seeking to qualify for or remain on reduced TTHM and HAA5 monitoring shall report the following source water TOC information for each water treatment plant that treats surface water or groundwater under the direct influence of surface water to the department within 10 days of the end of any quarter in which monitoring is required:

(1) The number of source water TOC samples collected each month during last quarter.

(2) The date and result of each sample collected during last quarter.

(3) The quarterly average of monthly samples collected during last quarter or the result of the quarterly sample.

(4) The RAA of quarterly averages from the past four quarters.

(5) Whether the RAA exceeded 4.0 mg/L.

2. The owner of a waterworks monitoring for chlorite under the requirements of 12VAC5-590-374 G shall report:

a. The number of entry point samples collected each month for the last three months.

b. The location, date, and result of each sample (both entry point and distribution system) collected during the last quarter.

c. For each month in the reporting period, the arithmetic average of all samples collected in each three sample set collected in the distribution system.

d. Whether, based on 12VAC5-590-384 B 3, the PMCL was violated, in which month, and how many times it was violated each month.

3. The owner of a waterworks monitoring for bromate under the requirements of 12VAC5-590-374 H shall report:

a. The number of samples collected during the last quarter.

b. The location, date, and result of each sample collected during the last quarter.

c. The arithmetic average of the monthly arithmetic averages of all samples collected in the last year.

d. Whether, based on 12VAC5-590-384 B 2, the PMCL was violated.

E. Reporting requirements for disinfectants. The owner shall report the information specified in this subsection to the department in accordance with 12VAC5-590-530 within 10 days after the end of each monitoring period in which samples were collected. The department may choose to perform calculations and determine whether the MRDL was violated, instead of having the owner report that information:

1. The owner of a waterworks monitoring for chlorine or chloramines under the requirements of 12VAC5-590-374 I 1 shall report:

a. The number of samples collected during each month of the last quarter.

b. The monthly arithmetic average of all samples collected in each month for the last 12 months.

c. The arithmetic average of all monthly averages for the last 12 months.

d. Whether, based on 12VAC5-590-384 C 1, the MRDL was violated.

2. The owner of a waterworks monitoring for chlorine dioxide under the requirements of 12VAC5-590-374 I 2 shall report:

a. The dates, results, and locations of samples collected during the last quarter.

b. Whether, based on 12VAC5-590-384 C 2, the MRDL was violated.

c. Whether the MRDL was exceeded in any two consecutive daily samples and whether the resulting violation was acute or nonacute.

F. Reporting requirements for DBPPs and enhanced coagulation or enhanced softening. The owner shall report the following information to the department within 10 days after the end of each monitoring period in which the samples were collected in accordance with subsection A of this section. The department may choose to perform calculations and determine whether the treatment technique was met, instead of having the owner report that information:

1. The owner of a waterworks monitoring monthly or quarterly for TOC under the requirements of 12VAC5-590-374 J and required to meet the enhanced coagulation or enhanced softening requirements in 12VAC5-590-411 A 2 shall report:

a. The number of paired (source water and treated water) samples collected during the last quarter.

b. The location, date, and results of each paired sample and associated alkalinity collected during the last quarter.

c. For each month in the reporting period that paired samples were collected, the arithmetic average of the percent reduction of TOC for each paired sample and the required TOC percent removal.

d. Calculations for determining compliance with the TOC percentage removal requirements, as provided in 12VAC5-590-411 A 3.

e. Whether the waterworks is in compliance with the enhanced coagulation or enhanced softening percent removal requirements in 12VAC5-590-411 A 2 for the last four quarters.

2. The owner of a waterworks monitoring monthly or quarterly for TOC under the requirements of 12VAC5-590-374 J and meeting one or more of the alternative compliance criteria in 12VAC5-590-411 A 1 b or A 1 c shall report:

a. The alternative compliance criterion that the waterworks is using.

b. The number of paired samples collected during the last quarter.

c. The location, date, and result of each paired sample and associated alkalinity collected during the last quarter.

d. The running annual arithmetic average based on monthly averages (or quarterly samples) of source water TOC for a waterworks meeting a criterion in 12VAC5-590-411 A 1 c (1) or A 1 c (3) or of treated water TOC for waterworks meeting the criterion in 12VAC5-590-411 A 1 c (2).

e. The running annual arithmetic average based on monthly averages (or quarterly samples) of source water SUVA for a waterworks meeting the criterion in 12VAC5-590-411 A 1 c (5) or of treated water SUVA for a waterworks meeting the criterion in 12VAC5-590-411 A 1 c (6).

f. The RAA of source water alkalinity for a waterworks meeting the criterion in 12VAC5-590-411 A 1 c (3) and of treated water alkalinity for a waterworks meeting the criterion in 12VAC5-590-411 A 1 c (1).

g. The RAA for both TTHM and HAA5 for a waterworks meeting the criterion in 12VAC5-590-411 A 1 c (3) or A 1 c (4).

h. The RAA of the amount of magnesium hardness removal (as $CaCO_3$, in mg/L) for a waterworks meeting the criterion in 12VAC5-590-411 A 1 c (2).

i. Whether the waterworks is in compliance with the particular alternative compliance criterion in 12VAC5-590-411 A 1 b or A 1 c.

G. Additional reporting requirements. The owner shall report the following incidents within 24 hours to the department:

1. A waterborne disease outbreak that is potentially attributable to that waterworks.

2. Chlorine residual of below 0.2 mg/L in the water entering the distribution system. The owner also shall notify the department by the end of the next business day whether or not the residual was restored to at least 0.2 mg/L within four hours.

12VAC5-590-532. Reporting requirements for lead and copper.

A. The owner shall report all of the information in this section to the department in accordance with this section.

B. Reporting requirements for tap water monitoring for lead and copper and for water quality parameter monitoring.

1. Except as provided in subdivision B 1 g of this section, the owner shall report the information specified in this subsection for all tap water samples specified in 12VAC5-590-375 B and for all water quality parameter samples specified in 12VAC5-590-375 C within the first 10 days following the end of each applicable monitoring period specified in 12VAC5-590-375 B and C (i.e., every six months, annually, every three years, or every nine years). For monitoring periods with a duration less than six months, the end of the monitoring period is the last date samples can be collected during the period as specified in 12VAC5-590-375 B and C.

a. The results of all tap samples for lead and copper including location or a location site code and the criteria under 12VAC5-590-375 B 1 c through B 1 f or 12VAC5-590-375 C under which the site was selected for the waterworks sampling pool.

b. Documentation for each tap water lead or copper sample for which the owner requests invalidation pursuant to 12VAC5-590-375 B 6.

c. The 90th percentile lead and copper concentrations measured from among all lead and copper tap water samples collected during each monitoring period (calculated in accordance with 12VAC5-590-385 C) unless the department calculates the 90th percentile lead and copper levels under subsection I of this section.

d. With the exception of initial tap sampling conducted pursuant to 12VAC5-590-375 B 4 a, the owner shall designate any site that was not sampled during previous monitoring periods and include an explanation of why sampling sites have changed.

e. The results of all tap samples for pH, and where applicable, alkalinity, calcium, conductivity, temperature, and orthophosphate or silica collected under 12VAC5-590-375 C 2 through C 5.

f. The results of all samples collected at the entry point to the distribution system for applicable water quality parameters under 12VAC5-590-375 C 2 through C 5.

g. The owner shall report the results of all water quality parameter samples collected under 12VAC5-590-375 C 3 through 12VAC5-590-375 C 6 during each six month monitoring period specified in 12VAC5-590-375 C 4 within the first 10 days following the end of the monitoring period unless the department has specified a more frequent reporting requirement.

2. The owner of a NTNC, or a community waterworks meeting the criteria of 12VAC5-590-405 D 2 e, that does not have enough taps that can provide first-draw samples must either:

a. Provide written documentation to the department identifying standing times and locations for enough non-first-draw samples to make up the sampling pool under 12VAC5-590-375 B 2 e by the start of the first applicable monitoring period under 12VAC5-590-375 B 4, unless the department has waived prior approval of non-first-draw sample sites selected by the owner pursuant to 12VAC5-590-375 B 2 e; or

b. If the department has waived prior approval of non-first-draw sample sites selected by the owner, then the owner shall identify in writing each site that did not meet the six-hour minimum standing time and the length of standing time for that particular substitute sample collected pursuant to 12VAC5-590-375 B 2 e and include this information with the lead and copper sample results required to be submitted pursuant to subsection B of this section.

3. At a time specified by the department, or if no specific time is designated by the department, then as early as practical before the addition of a new source or any long-term change in water treatment, an owner (i) deemed to have optimized corrosion control under 12VAC5-590-405 A 2 b (3), (ii) subject to reduced monitoring pursuant to 12VAC5-590-375 B 4 d, or (iii) subject to a monitoring waiver pursuant to 12VAC5-590-375 B 7 shall submit written documentation to the department describing the change or addition. The department must approve the addition of a new source or a long-term change in treatment before it is implemented by the owner. Examples

of long-term treatment changes include the addition of a new treatment process or modification of an existing treatment process. Examples of modification include switching secondary disinfectants, switching coagulants (e.g., alum to ferric chloride), or switching corrosion inhibitor products (e.g., orthophosphate to blended phosphate). Long-term changes can include dose changes to existing chemicals if the waterworks is planning long-term changes to its finished water pH or residual inhibitor concentration. Long-term treatment changes would not include chemical dose fluctuations associated with daily source water quality changes.

4. The owner of a small waterworks applying for a monitoring waiver under 12VAC5-590-375 B 7 or subject to a waiver granted pursuant to 12VAC5-590-375 B 7 c shall provide the following information to the department in writing by the specified deadline:

a. By the start of the first applicable monitoring period in 12VAC5-590-375 B 4, the owner of a small waterworks applying for a monitoring waiver shall provide the documentation required to demonstrate that the waiver criteria of 12VAC5-590-375 B 7 a and 12VAC5-590-375 B 7 b have been met.

b. No later than nine years after the monitoring previously conducted pursuant to 12VAC5-590-375 B 7 b or 12VAC5-590-375 B 7 d (1), the owner of a small waterworks desiring to maintain its monitoring waiver shall provide the information required by 12VAC5-590-375 B 7 d (1) and 12VAC5-590-375 B 7 d (2).

c. No later than 60 days after becoming aware that it is no longer free of lead-containing or copper-containing material, the owner of a small waterworks with a monitoring waiver shall provide written notification to the department setting forth the circumstances resulting in the lead-containing or copper-containing materials being introduced into the waterworks and what corrective action, if any, the owner plans to take to remove these materials.

5. The owner of a groundwater system that limits water quality parameter monitoring to a subset of entry points under 12VAC5-590-375 C 3 c shall provide by the commencement of the monitoring written correspondence to the department that identifies the selected entry points and includes information sufficient to demonstrate that the sites are representative of water quality and treatment conditions throughout the waterworks.

C. Source water monitoring reporting requirements.

1. The owner shall report the sampling results for all source water samples collected in accordance with 12VAC5-590-375 D within the first 10 days following the end of each source water monitoring period (i.e., annually, per compliance period, per compliance cycle) specified in 12VAC5-590-375 D.

2. With the exception of the first round of source water sampling conducted pursuant to 12VAC5-590-375 D 2, the owner shall specify any site that was not sampled during previous monitoring periods and include an explanation of why the sampling point has changed.

D. Corrosion control treatment reporting requirements. By the applicable dates under 12VAC5-590-405 A 2 a, an owner shall report the following information:

1. For the owner demonstrating that corrosion control has already been optimized, information required in 12VAC5-590-405 A 2 b (2) or 12VAC5-590-405 A 2 b (3).

2. For the owner required to optimize corrosion control, the owner's recommendation regarding optimal corrosion control treatment under 12VAC5-590-405 A 1 a.

3. For the owner required to evaluate the effectiveness of corrosion control treatments, the information required under 12VAC5-590-405 A 1 c.

4. For the owner required to install optimal corrosion control designated by the department under 12VAC5-590-405 A 1 d, a letter certifying that the owner has completed installing that treatment.

E. Source water treatment reporting requirements. By the applicable dates in 12VAC5-590-405 B, an owner shall provide the following information to the department:

1. If required under 12VAC5-590-405 B 2 a, the owner's recommendation regarding source water treatment; or

2. For an owner required to install source water treatment under 12VAC5-590-405 B 2 b, a letter certifying that the owner has completed installing the treatment designated by the department within 24 months after the department designated the treatment.

F. Lead service line replacement reporting requirements. The owner shall report the following information to the department to demonstrate compliance with the requirements of 12VAC5-590-405 C:

1. No later than 12 months after the end of a monitoring period in which a waterworks exceeds the lead AL in sampling referred to in 12VAC5-590-405 C 1, the owner shall submit written documentation to the department of the materials evaluation conducted as required in 12VAC5-590-375 B 1, to identify the initial number of lead service lines in the distribution system at the time the waterworks exceeds the lead AL, and provide the owner's schedule for annually replacing at least 7.0% of the initial number of lead service lines in its distribution system.

2. No later than 12 months after the end of a monitoring period in which a waterworks exceeds the lead AL in

sampling referred to in 12VAC5-590-405 C 1, and every 12 months thereafter, the owner shall demonstrate to the department in writing that the owner has either:

a. Replaced in the previous 12 months at least 7.0% of the initial lead service lines or a greater number of lines specified by the department under 12VAC5-590-405 C 6 in the distribution system; or

b. Conducted sampling that demonstrates that the lead concentration in all service line samples from an individual line collected pursuant to 12VAC5-590-375 B 2 c is less than or equal to 0.015 mg/L. In these cases, the total number of lines replaced that meet the criteria in 12VAC5-590-405 C 4 shall equal at least 7.0% of the initial number of lead service lines identified under subdivision F 1 of this section or the percentage specified by the department under 12VAC5-590-405 C 6.

3. The annual letter submitted to the department under subdivision F 2 of this section shall contain the following information:

a. The number of lead service lines scheduled to be replaced during the previous year of the waterworks replacement schedule;

b. The number and location of each lead service line replaced during the previous year of the waterworks replacement schedule; and

c. If measured, the water lead concentration and location of each lead service line sampled, the sampling method, and the date of sampling.

4. The owner of a waterworks that collects lead service line samples following partial lead service line replacement required by 12VAC5-590-405 C shall report the results to the department within the first 10 days of the month following the month in which the owner receives the laboratory results or as specified by the department. The owner shall also report any additional information as specified by the department in a time and manner prescribed by the department to verify that all partial lead service line replacement activities have taken place.

G. Public education program reporting requirements. The owner shall report the following information to the department to demonstrate compliance with the requirements of 12VAC5-590-405 D.

1. The owner of a waterworks that is subject to the public education requirements in 12VAC5-590-405 D shall within 10 days after the end of each period in which the owner is required to perform public education tasks in accordance with 12VAC5-590-405 D 2 send written notice to the department that contains:

a. A demonstration that the owner has delivered the public education materials that meet the content requirements of 12VAC5-590-405 D 1 and the delivery requirements of 12VAC5-590-405 D 2; and

b. A list of all the newspapers, radio stations, television stations, and facilities and organizations to which the owner delivered public education materials during the period in which the owner was required to perform public education tasks.

2. Unless required by the department, an owner that previously has submitted the information required by subdivision G 1 b of this section need not resubmit the information required by subdivision G 1 b of this section, as long as there has been no changes in the distribution list and the owner certifies that the public education materials were distributed to the same list submitted previously.

3. No later than three months following the end of the monitoring period, the owner shall mail a sample copy of the consumer notification of tap results to the department along with a certification that the notification has been distributed in a manner consistent with the requirements of 12VAC5-590-405 D 4.

H. Reporting of additional monitoring data. The owner of a waterworks that collects sampling data in addition to that required by 12VAC5-590-375 shall report the results to the department within the first 10 days following the end of the applicable monitoring period under 12VAC5-590-375 B, 12VAC5-590-375 C, and 12VAC5-590-375 D during which the samples are collected.

I. Reporting of the 90th percentile lead and copper concentrations where the department calculates a waterworks' 90th percentile concentrations. The owner is not required to report the 90th percentile lead and copper concentrations measured from among all lead and copper tap samples collected during each monitoring period, as required by subdivision B 1 d of this section if:

1. The department has previously notified the owner that the department will calculate the waterworks' 90th percentile lead and copper concentrations based on the lead and copper tap results submitted pursuant to subdivision I 2 a of this section and has specified a date before the end of the applicable monitoring period by which the owner shall provide the results of the lead and copper tap water samples; and

2. The owner has provided the following information to the department by the date specified in subdivision I 1 of this section:

a. The results of all tap samples for lead and copper including the location of each site and the criteria under 12VAC5-590-375 B 1 c through 12VAC5-590-375 B 1 f or 12VAC5-590-375 B 1 g under which the site was selected for the waterworks sampling pool, pursuant to subdivision B 1 a of this section;

b. An identification of sampling sites utilized during the current monitoring period that were not sampled during the previous monitoring periods and an explanation why sampling sites have changed; and

c. The department has provided the results of the 90th percentile lead and copper calculations in writing to the owner before the end of the monitoring period.

12VAC5-590-540. Public notices.

A. ~~All owners~~ The owner shall give public notice to (i) persons served by the waterworks and (ii) the owner of any consecutive waterworks to which it sells or otherwise provides water under the following circumstances.

1. Tier 1.

a. When E. coli are present in the distribution system, or when the waterworks fails to test for E. coli when any repeat sample tests positive for total coliform;

b. Violation of the PMCL for E. coli;

c. Violation of the PMCL for nitrate, nitrite, or total nitrate and nitrite;

d. Failure to ~~take~~ collect a confirmation sample within 24 hours of the waterworks receipt of the first sample showing an exceedance of the nitrate or nitrite PMCL;

e. Exceedance of the nitrate PMCL by a noncommunity waterworks, where permitted to exceed the PMCL by the ~~commissioner~~ department;

f. Violation of the MRDL for chlorine dioxide when one or more samples ~~taken~~ collected in the distribution system the day following an exceedance of the MRDL at the entry point ~~of~~ to the distribution system exceed the MRDL;

g. Failure to monitor chlorine dioxide residuals in the distribution system the day following an exceedance of the chlorine dioxide MRDL at the entrance to the distribution system;

h. Violation of the treatment technique requirements for filtration and disinfection resulting from a single exceedance of the maximum allowable turbidity limit, where the ~~commissioner~~ department determines after consultation that a Tier 1 notice is required;

i. Failure to consult with the ~~commissioner~~ department within 24 hours after the owner learns of the violation of the treatment technique requirements for filtration and disinfection resulting from a single exceedance of the maximum allowable turbidity limit;

j. Occurrence of a waterborne disease outbreak or other waterborne emergency (such as a failure or significant interruption in key water treatment processes, a natural disaster that disrupts the water supply or distribution system, or a chemical spill or unexpected loading of possible pathogens into the source water that significantly increases the potential for drinking water contamination);

k. Detection of E. coli in groundwater source samples; or

l. 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 ~~commissioner~~ department on a case-by-case basis.

2. Tier 2.

a. All violations of the PMCL, MRDL, and treatment technique requirements, except where a Tier 1 public notice is required or where the ~~commissioner~~ department determines that a Tier 1 notice is required instead per subdivision A 1 l of this ~~subsection~~ section;

b. Violations of the monitoring and testing procedure requirements, where the ~~commissioner~~ department determines that a Tier 2 rather than a Tier 3 public notice is required instead, taking into account potential health impacts and persistence of the violation;

c. Failure to comply with the terms and conditions of any variance or exemption in place; or

d. Failure to take corrective action or failure to maintain at least ~~four-log~~ 4-log treatment of viruses (using inactivation, removal, or an approved combination of ~~four-log~~ 4-log virus inactivation and removal) before or at the first customer under the treatment technique requirements for waterworks with groundwater sources.

3. Tier 3.

a. Monitoring violations, except where a Tier 1 public notice is required per subdivisions A 1 d and A 1 g of this ~~subsection~~ section, or where the ~~commissioner~~ department determines that a Tier 2 public notice is required instead per subdivision A 2 b of this ~~subsection~~ section;

b. Failure to comply with a testing procedure, except where a Tier 1 notice is required per subdivision A 1 b of this ~~subsection~~ section or where the ~~commissioner~~ department determines that a Tier 2 notice is required instead per subdivision A 2 b of this ~~subsection~~ section;

c. Operation under a variance or an exemption to a PMCL or treatment technique requirement;

d. Availability of ~~unregulated contaminant~~ UC monitoring results; or

e. Exceedance of the fluoride ~~secondary maximum contaminant level (SMCL); and~~ SMCL.

~~f. Reporting and recordkeeping violations specified in 12VAC5-590-530 B, C, and D, and 12VAC5-590-550 L.~~

4. The department may require public notice for violations or other situations not listed in this section or may require a higher tier of public notice for specific violations and situations listed in this section.

a. The content and extent of distribution of these public notices shall be determined by the department.

b. The owner shall provide the public notice certification required in subsection N of this section.

c. At least 90 days before initiating or discontinuing a program to provide the optimum fluoride ion concentration, a waterworks owner shall deliver written notice to the waterworks' consumers. Notice to consumers shall be consistent with 12VAC5-590-540 C 2 d.

B. If a waterworks has a violation, failure, exceedance, or situation in a portion of the distribution system that is physically or hydraulically isolated from other parts of the distribution system, the ~~commissioner~~ department may allow the owner to limit distribution of the public notice to only those persons served by ~~that~~ the portion of the waterworks ~~which~~ that is out of compliance. The decision granting limited distribution of the public notice shall be issued in writing.

C. Public notice distribution requirements.

1. For Tier 1 violations, exceedances, or situations, the owner shall:

a. Provide a public notice as soon as practical but no later than 24 hours after the owner learns of the violation, exceedance, or situation;

b. Initiate consultation with the ~~commissioner~~ department as soon as practical, but no later than 24 hours after the owner learns of the violation, exceedance, or situation, to determine additional public notice requirements;

c. Comply with any additional public notice requirements, including any repeat notices or direction on the duration of the posted notices~~,~~ that are established as a result of the consultation with the ~~commissioner~~ department. ~~Such~~ These requirements may include the timing, form, manner, frequency, and content of repeat notices (if any) and other actions designed to reach all persons served; and

d. Provide the public notice in a form and manner reasonably calculated to reach all persons served. The form and manner shall fit the specific situation, and shall be designed to reach residential, transient, and ~~non-transient~~ nontransient users of the waterworks. ~~In order to~~ To reach all persons served, owners shall use, at a minimum, one or more of the following forms of delivery:

(1) Appropriate broadcast media (such as radio and television);

(2) Posting of the public notice in conspicuous locations throughout the area served by the waterworks;

(3) Hand delivery of the public notice to persons served by the ~~water system~~ waterworks; or

(4) Another delivery method approved in writing by the ~~commissioner~~ department.

2. For Tier 2 violations, exceedances, or situations, the owner shall:

a. Provide the public notice as soon as practical, but no later than 30 days after the owner learns of the violation, exceedance, or situation. The ~~commissioner~~ department may allow, on a case-by-case determination, additional time for the initial notice of up to three months from the date the owner learns of the violation, exceedance, or situation; however, the ~~commissioner~~ department shall not grant an extension to the 30-day deadline for any unresolved violation, exceedance, or situation.

b. Repeat the public notice every three months as long as the violation, exceedance, or situation persists, unless the ~~commissioner~~ department determines that appropriate circumstances warrant a different repeat notice frequency. In no circumstance shall the repeat notice be given less frequently than once per year. Repeat notice frequency less than every three months shall not be allowed for (i) a violation as specified in 12VAC5-590-380 B and 12VAC5-590-392 F; (ii) a treatment technique violation for filtration and disinfection; and (iii) other ongoing violations, exceedances, or situations.

c. Consult with the ~~commissioner~~ department as soon as practical but no later than 24 hours after the owner learns of a violation of the treatment technique requirements for filtration and disinfection resulting from a single exceedance of the maximum allowable turbidity limit to determine whether a Tier 1 public notice is required to protect public health. If consultation does not take place within the 24-hour period, then the owner shall distribute a Tier 1 public notice of the violation within the next 24 hours (i.e., no later than 48 hours after the owner learns of the violation).

d. Provide the initial public notice and any repeat notices in a form and manner that is reasonably calculated to reach persons served in the required time period.

(1) For a community waterworks, the owner shall:

(a) Mail or otherwise directly deliver the public notice to each customer receiving a bill and to other service connections to which water is delivered by the waterworks; and

(b) Use any other distribution method reasonably calculated to reach other persons regularly served by the waterworks, if they would not normally be reached by

the notice required in subdivision C 2 d (1) (a) of this ~~subsection~~ section. ~~Such~~ These persons may include those who do not pay water bills or do not have service connection addresses (e.g., house renters, apartment dwellers, university students, nursing home patients, prison inmates, etc.). Other methods may include~~:~~ ~~Publication~~ (i) publication in a local newspaper; (ii) delivery of multiple copies for distribution by customers that provide their drinking water to others (e.g., apartment building owners or large private employers); (iii) posting in public places served by the ~~system~~ waterworks or on the Internet; or (iv) delivery to community organizations.

(2) For a noncommunity waterworks, the owner shall:

(a) Post the public notice in conspicuous locations throughout the distribution system frequented by persons served by the waterworks, or by mail or direct delivery to each customer and service connection (where known); and

(b) Use any other method reasonably calculated to reach other persons served by the system if they would not normally be reached by the notice required in subdivision C 2 d (2) (a) of this ~~subsection~~ section. ~~Such~~ These persons may include those served who may not see a posted notice because the posted notice is not in a location they routinely pass by. Other methods may include (i) publication in a local newspaper or newsletter distributed to customers~~,~~; (ii) use of ~~e-mail~~ email to notify employees or students~~,~~; or (iii) delivery of multiple copies in central locations (e.g., community centers).

e. Maintain a posted public notice in place for as long as the violation, exceedance, or situation persists, but in no case for less than seven days, even if the violation, exceedance, or situation is resolved.

3. For Tier 3 violations, exceedances, or situations the owner shall:

a. Provide the public notice not later than one year after the owner learns of the violation, exceedance, or situation or begins operating under a variance or exemption.

b. Repeat the public notice annually for as long as the violation, exceedance, variance, exemption, or other situation persists.

c. Maintain a posted public notice in place for as long as the violation, exceedance, variance, exemption, or other situation persists, but in no case less than seven days even if the violation, exceedance, or situation is resolved.

d. Instead of individual Tier 3 public notices, the owner may use an annual report detailing all violations, exceedances, and situations that occurred during the previous ~~twelve~~ 12 months, as long as the timing requirements of subdivision C 3 a of this ~~subsection~~ section are met. For a community waterworks, the ~~Consumer Confidence Report (CCR)~~ CCR may be used as a vehicle for the initial Tier 3 public notice and all required repeat notices, provided that:

(1) The CCR is provided to persons served by the waterworks no later than 12 months after the owner learns of the violation, exceedance, or other situation.

(2) The Tier 3 public notice contained in the CCR meets the content requirements in subsection ~~E~~ D of this section.

(3)The CCR is distributed in a manner meeting the delivery requirements in subdivision ~~D 3 e~~ C 3 e (1) of this section.

e. For a community waterworks, the owner shall:

(1) Mail or otherwise directly deliver the public notice to each customer receiving a bill and to other service connections to which water is delivered by the waterworks; and

(2) Use any other method reasonably calculated to reach other persons regularly served by the ~~system,~~ waterworks if they would not normally be reached by the notice required in subdivision C 3 e (1) of this ~~subsection~~ section. ~~Such~~ These persons may include those who do not pay water bills or do not have service connection addresses (e.g., house renters, apartment dwellers, university students, nursing home patients, prison inmates, etc.). Other methods may include (i) publication in a local newspaper, (ii) delivery of multiple copies for distribution by customers that provide their drinking water to others (e.g., apartment building owners or large private employers), (iii) posting in public places or on the Internet, or (iv) delivery to community organizations.

f. For a noncommunity waterworks the owner shall:

(1) Post the public notice in conspicuous locations throughout the distribution system frequented by persons served by the waterworks, or by mail or direct delivery to each customer and service connection (where known); and

(2) Use any other method reasonably calculated to reach other persons served by the ~~system~~ waterworks, if they would not normally be reached by the notice required in subdivision C 3 f (1) of this ~~subsection~~ section. ~~Such~~ These persons may include those who may not see a posted notice because the notice is not in a location they routinely pass by. Other methods may include~~:~~ ~~Publication~~ (i) publication in a local newspaper or newsletter distributed to customers~~;~~, (ii) use of ~~E-mail~~ email to notify employees or students~~;~~, or~~,~~ (iii) delivery of multiple copies in central locations (e.g., community centers).

D. Public notice contents.

1. Each public notice for PMCL, MRDL, and TT violations and other situations requiring a public notice shall include the following elements:

a. A description of the violation, exceedance, or situation, including the ~~contaminant(s)~~ contaminants of concern, and (as applicable) the contaminant ~~level(s)~~ levels;

b. When the violation, exceedance, or situation occurred;

c. Any potential adverse health effects from the violation, exceedance, or situation, including the standard language under subdivision 5 a or 5 b of this subsection, whichever is applicable;

d. The population at risk, including subpopulations particularly vulnerable if exposed to the contaminant in their drinking water;

e. Whether alternative water supplies should be used;

f. What actions consumers should take, including when they should seek medical help, if known;

g. What the owner is doing to correct the violation, exceedance, or situation;

h. When the owner expects the waterworks to return to compliance or resolve the situation;

i. The name, business address, and phone number of the owner, operator, or designee as a source of additional information concerning the notice; and

j. A statement to encourage the notice recipient to distribute the public notice to other persons served, using the standard language under subdivision 5 c of this subsection, where applicable.

2. Each public notice for a waterworks that has been granted a variance or exemption shall include the following elements:

a. An explanation of the reasons for the variance or exemption;

b. The date on which the variance or exemption was issued;

c. A brief status report on the steps the owner is taking to install treatment, find alternative sources of source water, or otherwise comply with the terms and schedules of the variance or exemption; and

d. A notice of any opportunity for public input in the ~~review~~ evaluation of the variance or exemption.

3. Each public notice for a waterworks that violates the conditions of a variance or an exemption shall contain the ~~ten~~ 10 elements listed in subdivision D 1 of this ~~subsection~~ section.

4. Each public notice shall:

a. Be displayed in a conspicuous way when printed or posted;

b. Not contain overly technical language or very small print;

c. Not be formatted in a way that defeats the purpose of the notice;

d. Not contain language ~~which~~ that nullifies the purpose of the notice; and

e. Contain information in the appropriate ~~language(s)~~ languages, for waterworks serving a large proportion of ~~non-English-speaking~~ non-English-speaking consumers, regarding the importance of the notice or contain a telephone number or address where persons served may contact the owner to obtain a translated copy of the notice or to request assistance in the appropriate language.

5. The public notice shall include the following standard language:

a. For PMCL or MRDL violations, treatment technique violations, and violations of the condition of a variance or ~~exemption standard~~ an exemption, use standard health effects language as specified in ~~Appendix O~~ 12VAC5-590-546 corresponding to each PMCL, MRDL, and treatment technique violation and for each violation of a condition of a variance or an exemption. For violation of the treatment technique requirement, the public notice shall also include one or both of the following statements, as appropriate:

(1) "We failed to conduct the required assessment."

(2) "We failed to correct all sanitary defects that were identified during the assessment."

b. For monitoring and testing procedure violations including failure to monitor for total coliform bacteria or E. coli ~~prior to~~ before serving water from a seasonal ~~waterworks standard~~ waterworks, use standard language as specified below, including the language necessary to fill in the blanks:

"We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During (compliance period), we (did not monitor or test or did not complete all monitoring or testing) for ~~(contaminant(s)),~~ (contaminants) and therefore cannot be sure of the quality of your drinking water during that time."

c. For all public ~~notices--standard~~ notices, use standard language (where applicable), as specified ~~below~~ in this subdivision c:

"Please share this information with all the other people who drink this water, especially those who may not have received this notice directly ~~(for example,~~ (e.g., people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail."

d. For total coliform bacteria treatment technique violations the public notice shall include the following statement: "We found coliforms indicating the need to look for potential problems in our waterworks. When this occurs, we are required to conduct assessments to identify problems and correct any problems that are found." The public notice shall also include the following statements, as appropriate:

(1) "We failed to conduct the required assessment."

(2) "We failed to correct all sanitary defects that were identified during the assessment."

e. For E. coli treatment technique violations the public notice shall include the following statement: "We violated the standard for E. coli, indicating the need to look for potential problems in our waterworks. When this occurs, we are required to conduct a detailed assessment to identify problems and to correct any problems that are found." The public notice shall also include the following statements, as appropriate:

(1) "We failed to conduct the required assessment."

(2) "We failed to correct all sanitary defects that were identified during the assessment."

E. Public notice to new billing units or customers.

1. For a community waterworks, the owner shall give a copy of the most recent public notice for any continuing violation, exceedance, variance, ~~or~~ exemption, or other ongoing ~~situations~~ situation requiring a public notice to all new billing units or new customers ~~prior to~~ before or at the time service begins.

2. For a noncommunity waterworks, the owner shall continuously post the public notice in conspicuous locations ~~in order~~ to inform new consumers of any continuing violation, exceedance, variance, ~~or~~ exemption, or other situation requiring a public notice for as long as the violation, exceedance, variance, exemption, or other situation persists.

F. Special notice of the availability of ~~unregulated contaminant~~ UC monitoring results.

1. The owner of a community waterworks or ~~non-transient, noncommunity waterworks~~ a NTNC shall notify persons served by the ~~system~~ waterworks of the availability of the results of ~~such~~ the sampling no later than 12 months after the monitoring results are known.

2. The special notice shall meet the requirements ~~for~~ of a Tier 3 public notice and shall identify a person and telephone number to contact for information on the monitoring results.

G. Special notice for exceedance of the SMCL for fluoride.

1. ~~Community~~ A community waterworks that ~~exceed~~ exceeds the SMCL of 2 mg/L~~,~~ but ~~do~~ does not exceed the PMCL of 4 mg/L for fluoride~~,~~ shall provide public notice to persons served as soon as practical but no later than 12 months from the day the owner learns of the exceedance.

2. A copy of the notice shall be sent to all new billing units and new customers at the time service begins and to the ~~district engineer~~ department.

3. The owner shall repeat the notice at least annually for as long as the SMCL is exceeded.

4. If the public notice is posted, then the notice shall remain in place for as long as the SMCL is exceeded, but in no case less than seven days even if the exceedance is eliminated.

5. On a case-by-case basis, the ~~commissioner~~ department may require an initial notice sooner than 12 months and repeat notices more frequently than annually.

6. The form and manner of the public notice (including repeat notices) shall meet the requirements ~~for~~ of a Tier 3 public notice.

7. The public notice shall contain the following language, including the language necessary to fill in the blanks:

"This is an alert about your drinking water and a cosmetic dental problem that might affect children under nine years of age. At low levels, fluoride can help prevent cavities, but children drinking water containing more than 2 milligrams per liter (mg/L) of fluoride may develop cosmetic discoloration of their permanent teeth (dental fluorosis). The drinking water provided by your community waterworks (name) has a fluoride concentration of (insert value) mg/L. Dental fluorosis, in its moderate or severe forms, may result in a brown staining and/or pitting of the permanent teeth. This problem occurs only in developing teeth, before they erupt from the gums. Children under nine should be provided with alternative sources of drinking water or water that has been treated to remove the excess fluoride to avoid the possibility of staining and pitting of their permanent teeth. You may also want to contact your dentist about proper use by young children of fluoride-containing products by young children. Older children and adults may safely drink the water. Drinking water containing more than 4 mg/L of

fluoride (the U.S. Environmental Protection Agency's drinking water standard) can increase your risk of developing bone disease. Your drinking water does not contain more than 4 mg/L of fluoride, but we are required to notify you when we discover that the fluoride levels in your drinking water exceed 2 mg/L because of this cosmetic dental problem. For more information, please call (name of water system contact) of (name of community waterworks) at (phone number). Some home water treatment units are also available to remove fluoride from drinking water. To learn more about available home water treatment units, you may call NSF International at ~~1-877-NSF-HELP~~ 1-877-867-3435 or email info@nsf.org."

H. Special notice for nitrate exceedances above PMCL by a noncommunity waterworks.

1. The owner of a noncommunity waterworks granted permission by the ~~commissioner~~ department to exceed the nitrate PMCL shall provide public notice to persons served meeting the requirements ~~for~~ of a Tier 1 notice.

2. The public notice shall be posted continuously and shall indicate the fact that nitrate levels exceed 10 mg/L and the potential health effects of exposure, meeting the requirements ~~for~~ of Tier 1 public notice delivery and content.

I. Special notice for repeated failure to conduct sampling of the source water for Cryptosporidium.

1. ~~An~~ The owner who is required to sample source water shall provide public notice to persons served when ~~he~~ the owner has failed to collect any three months of required samples. The form and manner of the public notice shall satisfy the requirements of a Tier 2 notice, and the notice shall be repeated in accordance with the requirements of a Tier 2 notice.

2. The notice shall contain the following language, including the language to fill in the blanks:

"We are required to monitor the source of your drinking water for Cryptosporidium. Results of the monitoring are to be used to determine whether water treatment at the [blank – fill in treatment plant name] is sufficient to adequately remove Cryptosporidium from your drinking water. We are required to complete this monitoring and make this determination by [blank – fill in required bin determination date]. We "did not monitor" or "did not complete all monitoring or testing" on schedule and, therefore, we may not be able to determine by the required date what treatment modifications, if any, shall be made to ensure adequate Cryptosporidium removal. Missing this deadline may, in turn, jeopardize our ability to have the required treatment modifications, if any, completed by the deadline required, [blank – fill in date]. For more information, please call [blank – fill in name of waterworks contact] of [blank – fill in name of waterworks] at [blank – fill in phone number]."

3. The notice shall contain a description of what the owner is doing to correct the violation and when the owner expects the waterworks to return to compliance or resolve the situation.

J. Special notice for failure to determine bin classification or mean Cryptosporidium level.

1. ~~An~~ The owner ~~who~~ that is required to determine a bin classification or to determine mean Cryptosporidium level shall provide public notice to persons served when the determination has not been made as required. The form and manner of the public notice shall satisfy the requirements of a Tier 2 notice, and the notice shall be repeated in accordance with the requirements of a Tier 2 notice. However, a public notice is not required if the owner is complying with a schedule to address the violation approved by the ~~ODW~~ department.

2. The notice shall contain the following language, including the language to fill in the blanks:

"We are required to monitor the source of your drinking water for Cryptosporidium in order to determine by [blank – fill in date] whether water treatment at the [blank – fill in treatment plant name] is sufficient to adequately remove Cryptosporidium from you drinking water. We have not made this determination by the required date. Our failure to do this may jeopardize our ability to have the required treatment modifications, if any, completed by the required deadline of [blank – fill in date]. For more information, please call [blank – fill in name of waterworks contact] of [blank – fill in name of waterworks] at [blank – fill in telephone number]."

3. The notice shall contain a description of what the owner is doing to correct the violation and when the owner expects the waterworks to return to compliance or resolve the situation.

K. Special notice for significant deficiencies by a noncommunity groundwater ~~systems~~ system.

1. ~~Any~~ An owner of a noncommunity groundwater system ~~who~~ that has not corrected a significant deficiency within one year of being notified by the ~~ODW~~ department shall provide public notice to the consumers.

2. The form and manner of the public notice shall satisfy the requirements of a Tier 2 notice.

3. The owner shall continue to notify the public annually until the requirements of 12VAC5-590-421 have been satisfied. The notice shall include:

a. The nature of the significant deficiency and the date it was identified by the ~~ODW~~ department; and

b. The ~~ODW~~ department approved plan and schedule for correcting the significant deficiency including interim measures, progress to date, and which of the interim measures have been completed.

4. For a noncommunity groundwater ~~systems~~ system with a large proportion of ~~non-English-speaking~~ non-English-speaking consumers, the notice shall contain information in the appropriate ~~language or~~ languages regarding the importance of the notice or contain a telephone number or address where the consumers may contact the owner to obtain a translated copy of the notice or assistance with the appropriate language.

5. If directed by the ~~ODW~~ department, the owner of a noncommunity groundwater system with significant deficiencies that have been corrected shall inform the consumers of the significant deficiencies, how the deficiencies were corrected, and the date ~~or dates~~ of correction.

L. The ~~district engineer~~ department may give notice to the public required by this section on behalf of the owner ~~if the district engineer~~ as long as the notice complies with the requirements of this section. However, the owner remains legally responsible for ensuring that the requirements of this section are met.

M. The department may require an owner to provide public notice for significant changes in water quality.

N. Within 10 days of completion of each initial and repeat public notice, the owner shall provide the ~~district engineer~~ department with the following:

1. A certification that ~~he~~ the owner has fully complied with the public notice requirements; and

2. A representative copy of each type of notice that was distributed, published, posted, and made available to the persons served by the waterworks and to the media.

~~N.~~ O. The owner shall maintain copies of each public notice and certification for at least three years after issuance.

12VAC5-590-545. Consumer confidence reports.

A. Purpose and applicability.

1. ~~Each~~ The owner of a community waterworks ~~owner~~ shall deliver to ~~his~~ the owner's customers an annual report that contains information on the quality of the water delivered by the waterworks and characterizes the risks, if any, from exposure to contaminants detected in the drinking water.

2. For the purpose of this section, customers are defined as billing units or service connections to which water is delivered by a community waterworks.

3. For the purpose of this section, a contaminant is detected when the laboratory reports the contaminant level as a measured level and not as ~~nondetected (ND)~~ ND or less than ~~(<)~~ a certain level. The owner shall utilize a laboratory that complies with ~~12VAC5-590-340, and the laboratory's analytical and reporting procedures shall have been in accordance with 12VAC5-590-440; laboratory certification requirements of the Commonwealth of Virginia, Department of General Services, Division of Consolidated Laboratory Services; and consistent with current U. S. Environmental Protection Agency regulations found at 40 CFR Part 141~~ 12VAC5-590-440.

B. Effective dates.

1. ~~Each~~ The owner of an existing community waterworks ~~owner~~ shall deliver ~~his~~ the report by July 1 annually.

2. The owner of a new community waterworks shall deliver ~~his~~ the first report by July 1 of the year after its first full calendar year in operation and annually thereafter.

3. The owner of a community waterworks that sells water to a consecutive waterworks shall deliver the applicable information necessary to comply with the requirements contained in this section to the consecutive waterworks by April 1 annually, or on a date mutually agreed upon by the seller and the purchaser and specifically included in a contract between the parties.

C. Content.

1. ~~Each~~ The owner of a community waterworks ~~owner~~ shall provide ~~his~~ the owner's customers an annual report that contains the information on the source of the water delivered as follows:

a. ~~Each~~ The report shall identify the source ~~or sources~~ of the water delivered by the community waterworks by providing information on:

(1) The type of the source water (e.g., surface water, ground water); and

(2) The commonly used name, if any, and location of the body ~~or bodies~~ of the source water.

b. Where a source water assessment has been completed, the report shall:

(1) Notify consumers of the availability of the assessment;

(2) Describe the means to obtain the assessment; and

(3) Include a brief summary of the waterworks' susceptibility to potential sources of contamination.

c. The owner ~~should~~ is encouraged to highlight in the report significant sources of contamination in the source water area if ~~such~~ the information is readily available.

2. For the purpose of compliance with this section, ~~each~~ the report shall include the following definitions:

a. "Maximum contaminant level goal" or "MCLG" means the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

b. "Maximum contaminant level" or "MCL" means the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

c. ~~A~~ The report for a community waterworks operating under a variance or an exemption issued by the ~~commissioner~~ department under 12VAC5-590-140 and 12VAC5-590-150 shall include the following definition: "Variances and exemptions" means state or EPA permission not to meet an MCL or a treatment technique under certain conditions.

d. ~~A~~ The report that contains data on contaminants that EPA regulates using any of the following terms shall include the applicable definitions:

(1) "Treatment technique" means a required process intended to reduce the level of a contaminant in drinking water.

(2) "Action level" means the concentration of a contaminant that, if exceeded, triggers treatment or other requirements that an owner shall follow.

(3) "Maximum residual disinfectant level goal" or "MRDLG" means the level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

(4) "Maximum residual disinfectant level" or "MRDL" means the highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for the control of microbial contaminants.

(5) "Level 1 assessment" means a study of the waterworks to identify potential problems and determine, if possible, why total coliform bacteria have been found in ~~our~~ waterworks.

(6) "Level 2 assessment" means a very detailed study of the waterworks to identify potential problems and determine, if possible, why an E. coli PMCL violation has occurred and why total coliform bacteria have been found in ~~our~~ waterworks on multiple occasions.

3. Information on detected contaminants.

a. This section specifies the requirements for information to be included in ~~each~~ the report for ~~the following contaminants:~~

~~(1) Contaminants subject to a PMCL, action level, maximum residual disinfectant level MRDL, or treatment technique as specified in 12VAC5-590-370;~~

~~(2) Unregulated contaminants subject to monitoring as specified in 12VAC5-590-370; and~~

~~(3) Disinfection byproducts or microbial contaminants,, except as provided under subdivision 5 a of this subsection, and which are detected in the finished water~~ contaminants subject to a PMCL, AL, MRDL, or treatment technique as specified in 12VAC5-590-340.

b. The data relating to these contaminants shall be displayed in one table or in several adjacent tables. Any additional monitoring results that an owner of a community waterworks ~~owner~~ chooses to include in the report shall be displayed separately.

c. The data shall be derived from data collected to comply with EPA and state monitoring and analytical requirements during the calendar year preceding the year the report is due, except that where an owner is allowed to monitor for contaminants specified in subdivision C 3 a ~~(1) and 3 a (3)~~ of this ~~subsection~~ section less often than once a year, the table ~~or tables~~ shall include the date and results of the most recent sampling, and the report shall include a brief statement indicating that the data presented in the report are from the most recent testing done in accordance with the regulations. No data older than five years need be included.

d. For detected contaminants subject to a PMCL, ~~action level~~ AL, MRDL, or treatment technique as ~~specified in 12VAC5-590-370 and listed in Tables 2.1, 2.2 (Primary Maximum Contaminant Levels only), 2.3, 2.4 (Primary Maximum Contaminant Levels only), and 2.5~~ listed in Tables 340.1 through 340.7, the ~~table or~~ tables shall contain:

(1) The PMCL for that contaminant expressed as a number equal to or greater than 1.0 as provided in ~~Appendix O, with an exception for beta/photon emitters. When the detected level of beta/photon emitters has been reported in the units of pCi/L and does not exceed 50 pCi/L, the report may list the PMCL as 50 pCi/L. In this case, the owner shall include in the report the following footnote: The PMCL for beta particles is 4 mrem/year. EPA considers 50 pCi/L to be the level of concern for beta particles~~ 12VAC5-590-546;

(2) The MCLG for that contaminant expressed in the same units as the PMCL as provided in ~~Appendix O~~ 12VAC5-590-546;

(3) If there is no PMCL for a detected contaminant, then the ~~table~~ tables shall indicate that there is a treatment technique, or specify the ~~action level~~ AL, applicable to that contaminant, and the report shall include the

definitions for treatment technique ~~and/or action level~~, AL, or both, as appropriate, specified in subdivision C 3 d of this ~~subsection~~ section;

(4) For contaminants subject to a PMCL, except turbidity and E. coli, the highest contaminant level used to determine compliance and the range of detected levels is as follows:

(a) When compliance with the PMCL is determined annually or less frequently, the highest detected level at any sampling point and the range of detected levels expressed in the same units as the PMCL.

(b) When compliance with the PMCL is determined by calculating ~~a running annual average~~ an RAA of all samples ~~taken~~ collected at a sampling point, the highest average of any of the sampling points and the range of all sampling points expressed in the same units as the PMCL. For the PMCLs for TTHM and HAA5, the owner shall include the highest ~~locational running annual average~~ LRAA and the range of individual sample results for all sampling points expressed in the same units as the PMCL. If more than one location exceeds the TTHM or HAA5 PMCL, then the owner shall include the ~~locational running annual averages~~ LRAAs for all locations that exceed the PMCL.

(c) When compliance with the PMCL is determined on a ~~systemwide~~ system-wide basis by calculating ~~a running annual average~~ an RAA of all samples at all sampling points, the average and range of detection expressed in the same units as the PMCL. The range of detection for TTHM and HAA5 shall include the individual sample results ~~for the IDSE conducted under 12VAC5-590-370 B 3 e (2) for the calendar year that the IDSE samples were taken~~ for the purpose of establishing the monitoring locations for EPA's "Stage 2 Disinfectants and Disinfection Byproducts Rule" initial distribution system evaluation.

(5) For turbidity, the highest single measurement and the lowest monthly percentage of combined filter samples meeting the turbidity limits specified in ~~12VAC5-590-420~~ 12VAC5-590-395 A 2 b for the filtration technology being used. The report should include an explanation of the reasons for measuring turbidity;

(6) For lead and copper, the 90th percentile value of the most recent round of sampling and the number of sampling sites exceeding the ~~action level~~ AL;

(7) For E. coli, the total number of positive samples; and

(8) The likely source or sources of the detected contaminants. Specific information regarding contaminants may be available in sanitary surveys and source water assessments, and should be used when available to the owner. If the owner lacks specific information on the likely source, then the report shall include one or more of the typical sources for that contaminant listed in ~~Appendix O~~ 12VAC5-590-546 that are most applicable to the system.

e. If the owner of a community waterworks ~~owner~~ distributes water to ~~his~~ the owner's customers from multiple hydraulically independent distribution systems that are fed by different ~~raw water sources~~ source waters, then:

(1) The table shall contain a separate column for each service area and the report shall identify each separate distribution system; or

(2) The owner shall produce a separate report tailored to include data for each service area.

f. The table ~~or tables~~ shall clearly identify any data indicating violations of PMCLs, MRDLs, or treatment techniques and the report shall contain a clear and readily understandable explanation of the violation including:

(1) The length of the violation;

(2) The potential adverse health effects using the relevant language of ~~Appendix O~~ 12VAC5-590-546; and

(3) Actions taken by the ~~waterworks~~ owner to address the violation.

~~g. For detected unregulated contaminants subject to monitoring as specified in 12VAC5-590-370 and listed in Tables 2.6 and 2.7, for which monitoring is required, the table or tables shall contain the average and range at which the contaminant was detected. The report may include a brief explanation of the reasons for monitoring for unregulated contaminants.~~

4. Information on Cryptosporidium, radon, and other contaminants:

a. If the owner has performed any monitoring for Cryptosporidium, which indicates that Cryptosporidium may be present in the source water or the finished water, then the report shall include:

(1) A summary of the results of the monitoring; and

(2) An explanation of the significance of the results.

b. If the owner has performed any monitoring for radon, which indicates that radon may be present in the finished water, then the report shall include:

(1) The results of the monitoring; and

(2) An explanation of the significance of the results.

c. If the owner has performed additional monitoring that indicates the presence of other contaminants in the finished water, then the report should include any results that may indicate a health concern, as determined by the

commissioner. Detections above a proposed MCL or health advisory level may indicate possible health concerns. For ~~such~~ these contaminants, the report should include:

(1) The results of the monitoring; and

(2) An explanation of the significance of the results noting the existence of a health advisory or a proposed regulation.

5. Compliance with other regulations. ~~a.~~ In addition to the requirements of subdivision C 3 f of this ~~subsection~~ section, the report shall note any violation that occurred during the year covered by the report of a requirement listed ~~below.~~ in this subdivision 5:

~~(1)~~ a. Monitoring and reporting of compliance data;

~~(2)~~ b. Filtration and disinfection prescribed by ~~12VAC5-590-420~~ 12VAC5-590-395. For ~~owners~~ an owner who ~~have~~ has failed to install adequate filtration or disinfection equipment or processes~~,~~ or ~~have~~ has had a failure of such equipment or processes ~~which~~ that constitutes a violation, the report shall include the following language as part of the explanation of potential adverse health effects: "Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches";

~~(3)~~ c. Lead and copper control requirements prescribed by ~~12VAC5-590-370~~ 12VAC5-590-375. For ~~owners who fail~~ that fails to take one or more of the prescribed actions, the report shall include the applicable language of ~~Appendix O~~ 12VAC5-590-546 for lead, copper, or both;

~~(4)~~ d. Treatment techniques for ~~Acrylamide~~ acrylamide and ~~Epichlorohydrin~~ epichlorohydrin prescribed by ~~12VAC5-590-420 G~~ 12VAC5-590-395 B. For ~~owners~~ an owner who ~~violate~~ violates the requirements of that section, the report shall include the relevant language from ~~Appendix O;~~ 12VAC5-590-546;

~~(5)~~ e. Recordkeeping of compliance data;

~~(6)~~ f. Special monitoring requirements for ~~unregulated contaminants prescribed by 12VAC5-590-370 B 4 and for~~ sodium; and

~~(7)~~ g. Violation of the terms of a variance, an exemption, or an administrative or judicial order.

~~b. The report shall contain:~~

~~(1) A clear and readily understandable explanation of the violation;~~

~~(2) Any potential adverse health effects; and~~

~~(3) The steps the owner has taken to correct the violation.~~

~~c. For community groundwater systems, the following shall be included:~~

~~(1) A significant deficiency that is uncorrected at the time of the report, or;~~

~~(2) An E. coli positive groundwater source sample that is not invalidated at the time of the report.~~

~~d. The owner of a community groundwater system shall report annually the information in subdivision 5 c of this subsection until the ODW determines that the significant deficiency or the E. coli positive source water sample has been satisfactorily addressed. The report shall include the following information:~~

~~(1) The nature of the significant deficiency or the source of the E. coli contamination and the date the significant deficiency was identified by the ODW or the date or dates of the E. coli positive source samples.~~

~~(2) If the E. coli contamination has been addressed in accordance with 12VAC5-590-421 and the date of such action.~~

~~(3) The ODW approved plan and schedule for correcting the significant deficiency or E. coli contamination including interim measures, progress to date, and which interim measures have been completed.~~

~~(4) In communities with a large portion of non English speaking consumers, the notice shall contain information in the appropriate language or languages regarding the importance of the notice or contain a telephone number or address where the consumers may contact the owner to obtain a translated copy of the notice or assistance with the appropriate language.~~

~~(5) For E. coli contamination, the potential health effects language shall be included.~~

~~e. If directed by the ODW, the owner of a community groundwater system with significant deficiencies that have been corrected at the time of the report shall inform his consumers of the significant deficiencies, how the deficiencies were corrected, and the date or dates of correction under subdivisions 5 d (1) through (4) of this subsection.~~

6. Variances and exemptions. If a ~~system~~ waterworks is operating under the terms of a variance or an exemption issued by the commissioner under 12VAC5-590-140 and 12VAC5-590-150, then the report shall contain:

a. An explanation of the reasons for the variance or exemption;

b. The date on which the variance or exemption was issued;

c. A brief status report on the steps the owner is taking to install treatment, find alternative sources of source water, or otherwise comply with the terms and schedules of the variance or exemption; and

d. A notice of any opportunity for public input in the ~~review~~ evaluation or renewal of the variance or exemption.

7. Additional information.

a. The report shall contain a brief explanation regarding contaminants, which may reasonably be expected to be found in drinking water including bottled water. This explanation shall include the exact language of subdivisions 7 a (1), 7 a (2), and 7 a (3) of this subsection or the owner shall use ~~his own~~ comparable language following approval by the ~~commissioner~~ department. The report also shall include the exact language of subdivision 7 a (4) of this subsection.

(1) The sources of drinking water (both tap water and bottled water) include rivers, lakes or reservoirs, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

(2) Contaminants that may be present in source water include: (i) microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; (ii) inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming; (iii) pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses; (iv) organic chemical contaminants, including ~~synthetic and volatile organic chemicals~~ SOCs and VOCs, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems; and (v) radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

(3) ~~In order to~~ To ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in the water provided by ~~public water systems~~ waterworks. ~~FDA~~ The U.S. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

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

b. The report shall include the telephone number of the owner, operator, or designee of the community waterworks as a source of additional information concerning the report.

c. In communities with a large proportion of ~~non-English speaking~~ non-English-speaking residents, as determined by the ~~commissioner~~ department, the report shall contain information in the appropriate ~~language or~~ languages regarding the importance of the report or contain a telephone number or address where ~~such~~ the residents may contact the ~~system~~ waterworks to obtain a translated copy of the report or assistance in the appropriate language.

d. The report shall include the following information about opportunities for public participation in decisions that may affect the quality of the drinking water. The ~~waterworks~~ owner should consider including the following additional relevant information:

(1) The time and place of regularly scheduled board meetings of the governing body ~~which~~ that has authority over the waterworks~~.~~; and

(2) If regularly scheduled board meetings are not held, then the name and telephone number of a waterworks representative who has operational or managerial authority over the waterworks.

e. The owner may include ~~such~~ additional information as ~~he deems~~ deemed necessary for public education consistent with, and not detracting from, the purpose of the report.

f. For a community groundwater system:

(1) Where there is a significant deficiency that is uncorrected at the time of the report or an E. coli-positive source water sample that is not invalidated in accordance with 12VAC5-590-380 at the time of the report, the owner shall report the following:

(a) The nature of the significant deficiency or the source water, if known, of the E. coli contamination;

(b) The date the significant deficiency was identified by the department or the date or dates of the E. coli-positive source water samples;

(c) Whether the E. coli contamination has been addressed in accordance with 12VAC5-590-421 and the date of the action;

(d) The department-approved plan and schedule, including interim measures, progress to date, and which interim measures have been completed for correcting the significant deficiency or E. coli contamination; and

(e) The potential health effects language in 12VAC5-590-546 for an E. coli-positive source water sample that is not invalidated in accordance with 12VAC5-590-380.

(2) If directed by the department, where there are significant deficiencies that have been corrected at the time of the report, then the owner shall report the significant deficiencies, how the deficiencies were corrected, and the date or dates of correction.

D. Additional health information.

1. All reports shall prominently display the following language: Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer who are undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. ~~EPA/CDC~~ EPA and Centers for Disease Control and Prevention guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

2. ~~Any waterworks~~ The owner ~~who~~ that detects arsenic at levels above 0.005 mg/L, but equal to or below the PMCL of 0.010 mg/L, shall include in ~~his~~ the report the following informational statement about arsenic: "While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the cost of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems."

~~In lieu~~ Instead of the statement required in this subdivision, the ~~waterworks~~ owner may include ~~his own~~ the owner's educational statement after receiving approval from the ~~commissioner~~ department.

3. ~~A waterworks owner who detects arsenic levels above 0.010 mg/L shall include the health effects language contained in Appendix O. 4. An~~ The owner ~~who~~ that detects nitrate at levels above 5 mg/L, but below the PMCL, shall include in ~~his~~ the report the following informational statement about the impacts of nitrate on children: "Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, then you should ask advice from your health care provider."

~~In lieu~~ Instead of the statement required in this subdivision, the ~~waterworks~~ owner may include ~~his~~ the owner's own educational statement after receiving approval from the ~~commissioner~~ department.

~~5.~~ 4. All reports shall prominently display the following language: "If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. (Name of Utility) is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to two minutes before using water for drinking or cooking. If you are concerned about lead in your water, then you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (800-426-4791)."

~~In lieu~~ Instead of the statement required in this subdivision, the owner may include his ~~own~~ the owner's educational statement after receiving approval from the ~~commissioner~~ department.

~~6. Community waterworks owners who detect TTHM above 0.080 mg/L, but below the PMCL, as an annual average shall include health effects language prescribed by paragraph 82 of Appendix O.~~

E. ~~Community~~ The owner of a community waterworks ~~owners~~ required to complete a Level 1 or a Level 2 assessment that is not due to an E. coli PMCL violation shall include in the report the text specified in subdivisions E 1, E 2, and E 3 of this section as appropriate, filling in the blanks accordingly, and shall include in the report the text specified in subdivision E 4 of this section, if appropriate.

1. "Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When

this occurs, we are required to conduct assessments to identify problems and to correct any problems that are found."

2. "During the past year, we were required to conduct (insert the number of Level 1 assessments) Level 1 assessments. (insert the number of Level 1 assessments) Level 1 assessments were completed. In addition, we were required to ~~take~~ collect (insert the number of corrective actions) corrective actions and we completed (insert the number of corrective actions) of these actions."

3. "During the past year (insert the number of Level 2 assessments) Level 2 assessments were required to be completed for our waterworks. (insert the number of Level 2 assessments) Level 2 assessments were completed. In addition, we were required to ~~take~~ collect (insert the number of corrective actions) corrective actions and we completed (insert the number of corrective actions) of these actions."

4. ~~Any~~ An owner ~~who~~ that failed to complete all of the required assessments or correct all identified sanitary defects shall also include one or both of the following statements, as appropriate:

a. "During the past year, we failed to conduct all of the required assessments."

b. "During the past year, we failed to correct all identified sanitary defects that were found during the assessments."

F. ~~Community~~ The owner of a community waterworks ~~owners~~ required to conduct Level 2 assessments due to an E. coli PMCL violation shall include in the report the text specified in subdivisions F 1 and F 2 of this section, filling in the blanks accordingly, and shall include in the report the text specified in subdivision F 3 of this section, if appropriate.

1. "E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune systems. We found E. coli, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessments to identify problems and to correct any problems that are found."

2. "We were required to complete a Level 2 assessment because we found E. coli in our waterworks. In addition, we were required to ~~take~~ collect (insert number of corrective actions) corrective actions and we completed (insert number of corrective actions) of these actions."

3. Any owner ~~who~~ that has failed to complete the required assessment or correct all identified sanitary defects shall also include one or both of the following statements, as appropriate:

a. "We failed to conduct the required assessment."

b. "We failed to correct all sanitary defects that were identified during the assessment that we conducted."

4. If ~~a waterworks detects~~ E. coli is detected in a waterworks and ~~has violated~~ the E. coli PMCL is violated, in addition to completing the table as specified in subdivision C 3 d of this section, the owner shall include one or more of the following statements to describe any noncompliance, as applicable:

a. "We had an E. coli-positive repeat sample following a total coliform-positive routine sample."

b. "We had a total coliform-positive repeat sample following an E. coli-positive routine sample."

c. "We failed to ~~take~~ collect all the required repeat samples following an E. coli-positive routine sample."

d. "We failed to test for E. coli when any repeat sample tested positive for total coliform."

5. If ~~a waterworks detects~~ E. coli is detected in a waterworks and ~~has not violated~~ the E. coli PMCL is not violated, in addition to completing the table as specified in subdivision C 3 d of this section, the owner may include a statement that explains that although ~~they have detected~~ E. coli~~, they are~~ was detected, the owner is not in violation of the E. coli PMCL.

G. Report delivery and recordkeeping.

1. ~~Each~~ The owner of a community waterworks ~~owner~~ shall mail or otherwise directly deliver one copy of the report to each customer, except as follows:

a. ~~Owners of community waterworks~~ The owner serving fewer than 10,000 persons shall have the option to either mail (or otherwise directly deliver) a copy of the report to each customer or publish the report in a local newspaper or newspapers of general circulation serving the area in which the waterworks is located by July 1 of each year; and

b. If the owner chooses to publish the report, then the owner shall inform customers, either in the newspaper in which the report is to be published or by other means approved by the ~~commissioner~~ department, that a copy of the report will not be mailed to them and that a copy of the report will be made available to the public upon request.

2. ~~Community~~ The owner of a community waterworks ~~owners~~ shall make a good faith effort to deliver the report to the consumers who are served by the waterworks but are not ~~bill paying~~ bill-paying customers, such as renters or workers. This good faith effort shall include at least one,

and preferably two or more, of the following methods appropriate to the particular waterworks:

a. Posting the reports on the Internet;

b. Mailing to postal patrons in metropolitan areas;

c. Advertising the availability of the report in the news media;

d. ~~Publication~~ Publishing in a local newspaper;

e. Posting in public places such as libraries, community centers, and public buildings;

f. ~~Delivery of~~ Delivering multiple copies for distribution by single-biller customers such as apartment buildings or large private employers;

g. ~~Delivery~~ Delivering to community organizations; or

h. Other methods as approved by the ~~commissioner~~ department.

3. No later than July 1 of each year, the owner of a community waterworks ~~owners~~ shall deliver a copy of the report to the ~~district engineer~~ department, followed within three months by a certification that the report has been distributed to customers and that the information in the report is correct and consistent with the compliance monitoring data previously submitted to the ~~commissioner~~ department.

4. No later than July 1 of each year, the owner of a community waterworks ~~owners~~ shall deliver the report to any other agency or clearinghouse specified by the ~~commissioner~~ department.

5. ~~Community~~ The owner of a community waterworks ~~owners~~ shall make the report available to the public upon request.

6. The owner of ~~each~~ a community waterworks serving 100,000 or more persons shall post the current year's report to a publicly accessible site on the Internet.

7. ~~Community~~ The owner of a community waterworks ~~owners~~ shall retain copies of the report for no less than three years.

12VAC5-590-546. Regulated contaminants for the consumer confidence reports and public notification.

A. Public notices and CCRs shall contain the appropriate mandatory language and information listed, as required by 12VAC5-590-540 and 12VAC5-590-545.

B. Information on regulated contaminants is presented in Table 546.1.

TABLE 546.1
Content Requirements of Consumer Confidence Reports and Public Notices

CONTAMINANT (UNITS)	TRADITIONAL PMCL IN mg/l	TO CONVERT FOR CCR, MULTIPLY BY	PMCL IN CCR UNITS	MCLG	MAJOR SOURCES IN DRINKING WATER	HEALTH EFFECTS LANGUAGE
Microbiological Contaminants						
(1) Total Coliform Bacteria	TT			n/a	Naturally present in the environment	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the waterworks.
(2) E. coli	PMCL: In compliance unless (i) the waterworks has an E. coli-positive repeat sample following a total coliform-positive routine sample; (ii) the waterworks has a total coliform-positive repeat sample following an E. coli-positive routine sample; (iii) the waterworks owner fails to collect all required repeat samples following an E. coli positive routine sample; or (iv) the			0	Human and animal fecal waste	E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea,

	waterworks owner fails to test for E. coli when any repeat sample tests positive for total coliform.					cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely-compromised immune systems.
(3) E. coli	TT			n/a	Human and animal fecal waste	E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune system.
(4) Source water fecal indicator (E. coli)	TT		TT	0 for E. coli		Fecal indicators are microbes whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune system.
(5) Groundwater rule TT violations other than source water fecal indicator E. coli above[a]	TT			TT		Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps, and associated headaches.
(6)Turbidity	TT		TT	n/a	Soil runoff	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms.

						These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
(7) Giardia lamblia, viruses, Hetrotropic plate count, Legionella, Cryptosporidium[a]	TT[c]		n/a	0	n/a	Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
Radioactive Contaminants						
(8) Beta/photon emitters (mrem/yr)	4 mrem/yr		4	0	Decay of natural and man-made deposits	Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the PMCL over many years may have an increased risk of getting cancer.
(9) Alpha emitters (pCi/L)	15 pCi/L		15	0	Erosion of natural deposits	Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the PMCL over many years may have an increased risk of getting cancer.
(10) Combined radium (pCi/L)	5 pCi/L		5	0	Erosion of natural deposits	Some people who drink water containing radium-226 or radium-228 in excess of the PMCL over many years may have an increased risk of getting cancer.
(11) Uranium (ppb)	30 µg/L		30	0	Erosion of natural deposits	Some people who drink water containing uranium in excess of the PMCL over many years may have an increased risk of getting cancer and kidney toxicity.

Inorganic Contaminants						
(12) Antimony (ppb)	0.006	1000	6	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder	Some people who drink water containing antimony well in excess of the PMCL over many years could experience increases in blood cholesterol and decreases in blood sugar.
(13) Arsenic (ppb)	0.010	1000	10.	0	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes	Some people who drink water containing arsenic in excess of the PMCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.
(14) Asbestos (MFL)	7 MFL		7	7	Decay of asbestos cement water mains; Erosion of natural deposits	Some people who drink water containing asbestos in excess of the PMCL over many years may have an increased risk of developing benign intestinal polyps.
(15) Barium (ppm)	2		2	2	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits	Some people who drink water containing barium in excess of the PMCL over many years could experience an increase in their blood pressure.
(16) Beryllium (ppb)	0.004	1000	4	4	Discharge from metal refineries and coal-burning factories; Discharge from electrical, aerospace, and defense industries	Some people who drink water containing beryllium well in excess of the PMCL over many years could develop intestinal lesions.
(17) Cadmium (ppb)	0.005	1000	5	5	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; Runoff from waste batteries and paints	Some people who drink water containing cadmium in excess of the PMCL over many years could experience kidney damage.

(18) Chromium (ppb)	0.1	1000	100	100	Discharge from steel and pulp mills; Erosion of natural deposits	Some people who drink water containing chromium well in excess of the PMCL over many years could experience allergic dermatitis.
(19) Copper (ppm)	AL=1.3		AL=1.3	1.3	Corrosion of household plumbing systems; Erosion of natural deposits	Copper is an essential nutrient, but some people who drink water containing copper in excess of the AL over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.
(20) Cyanide (ppb)	0.2	1000	200	200	Discharge from steel or metal factories; Discharge from plastic and fertilizer factories	Some people who drink water containing cyanide well in excess of the PMCL over many years could experience nerve damage or problems with their thyroid.
(21) Fluoride (ppm)	4		4	4	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories	Some people who drink water containing fluoride in excess of the PMCL over many years could get bone disease, including pain and tenderness of the bones. Fluoride in drinking water at half the PMCL or more may cause mottling of children's teeth, usually in children less than nine years old. Mottling, also known as dental fluorosis, may include brown staining or pitting of the teeth, and occurs only in developing teeth before they erupt from the gums.
(22) Lead (ppb)	AL=0.015	1000	AL=15	0	Corrosion of household plumbing systems; Erosion of natural deposits	Infants and children who drink water containing lead in excess of the AL could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop

						kidney problems or high blood pressure.
(23) Mercury [inorganic] (ppb)	0.002	1000	2	2	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland	Some people who drink water containing inorganic mercury well in excess of the PMCL over many years could experience kidney damage.
(24) Nitrate (ppm)	10		10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	Infants younger than the age of six months who drink water containing nitrate in excess of the PMCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
(25) Nitrite (ppm)	1		1	1	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	Infants younger than the age of six months who drink water containing nitrite in excess of the PMCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
(26) Total Nitrate and Nitrite	10		n/a	10	n/a	Infants younger than the age of six months who drink water containing nitrate and nitrite in excess of the PMCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
(27) Selenium (ppb)	0.05	1000	50	50	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines	Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the PMCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.
(28) Thallium (ppb)	0.002	1000	2	0.5	Leaching from ore-processing sites; Discharge from electronics,	Some people who drink water containing thallium in excess of the PMCL over many years could experience hair loss,

					glass, and drug factories	changes in their blood, or problems with their kidneys, intestines, or liver.
Synthetic Organic Chemicals including Pesticides and Herbicides						
(29) 2,4-D (ppb)	0.07	1000	70	70	Runoff from herbicides used on row crops	Some people who drink water containing the weed killer 2,4-D well in excess of the PMCL over many years could experience problems with their kidneys, liver, or adrenal glands.
(30) 2,4,5-TP [Silvex] (ppb)	0.05	1000	50	50	Residue of banned herbicide	Some people who drink water containing silvex in excess of the PMCL over many years could experience liver problems.
(31) Acrylamide	TT		TT	0	Added to water during sewage or wastewater treatment	Some people who drink water containing high levels of acrylamide over a long period of time could have problems with their nervous system or blood and may have an increased risk of getting cancer.
(32) Alachlor (ppb)	0.002	1000	2	0	Runoff from herbicide used on row crops	Some people who drink water containing alachlor in excess of the PMCL over many years could have problems with their eyes, liver, kidneys, or spleen, or experience anemia and may have an increased risk of getting cancer.
(33) Atrazine (ppb)	0.003	1000	3	3	Runoff from herbicide used on row crops	Some people who drink water containing atrazine well in excess of the PMCL over many years could experience problems with their cardiovascular system or reproductive difficulties.
(34) Benzo(a)pyrene [PAH]	0.0002	1,000,000	200	0	Leaching from linings of water storage tanks and distribution lines	Some people who drink water containing benzo(a)pyrene in excess of the PMCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
(35) Carbofuran (ppb)	0.04	1000	40	40	Leaching of soil fumigant used on rice and alfalfa	Some people who drink water containing carbofuran in excess of the PMCL over many years could experience problems

						with their blood, or nervous or reproductive systems.
(36) Chlordane (ppb)	0.002	1000	2	0	Residue of banned termiticide	Some people who drink water containing chlordane in excess of the PMCL over many years could experience problems with their liver or nervous system, and may have an increased risk of getting cancer.
(37) Dalapon (ppb)	0.2	1000	200	200	Runoff from herbicide used on rights of way	Some people who drink water containing dalapon well in excess of the PMCL over many years could experience minor kidney changes.
(38) Di(2-ethylhexyl) adipate (ppb)	0.4	1000	400	400	Discharge from chemical factories	Some people who drink water containing di(2-ethyhexyl)adipate well in excess of the PMCL over many years could experience toxic effects, such as weight loss, liver enlargement or possible reproductive difficulties.
(39) Di(2-ethylhexyl) phthalate (ppb)	0.006	1000	6	0	Discharge from rubber and chemical factories	Some people who drink water containing di(2-ethylhexyl)phthalate in excess of the PMCL over many years may have problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer.
(40) Dibromochloropropane (DBCP) (ppt)	0.0002	1,000,000	200	0	Runoff or leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards	Some people who drink water containing DBCP well in excess of the PMCL over many years could experience reproductive problems and may have an increased risk of getting cancer.
(41) Dinoseb (ppb)	0.007	1000	7	7	Runoff from herbicide used on soybeans and vegetables	Some people who drink water containing dinoseb well in excess of the PMCL over many years could experience reproductive difficulties.
(42) Diquat (ppb)	0.02	1000	20	20	Runoff from herbicide use	Some people who drink water containing diquat in excess of the PMCL over many years could get cataracts.

(43) Dioxin [2,3,7,8-TCDD] (ppq)	0.00000003	1,000,000,000	30	0	Emissions from waste incineration and other combustion; Discharge from chemical factories	Some people who drink water containing dioxin in excess of the PMCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
(44) Endothall (ppb)	0.1	1000	100	100	Runoff from herbicide use	Some people who drink water containing endothall in excess of the PMCL over many years could experience problems with their stomach or intestines.
(45) Endrin (ppb)	0.002	1000	2	2	Runoff of banned insecticide	Some people who drink water containing endrin in excess of the PMCL over many years could experience liver problems.
(46) Epichlorohydrin	TT		TT	0	Discharge from industrial chemical factories; An impurity of some water treatment chemicals	Some people who drink water containing high levels of epichlorohydrin over a long period of time could experience stomach problems and may have an increased risk of getting cancer.
(47) Ethylene dibromide (ppt)	0.00005	1,000,000	50	0	Discharge from petroleum refineries	Some people who drink water containing ethylene dibromide in excess of the PMCL over many years could experience problems with their liver, stomach, reproductive system, or kidneys, and may have an increased risk of getting cancer.
(48) Glyphosate (ppb)	0.7	1000	700	700	Runoff from herbicide use	Some people who drink water containing glyphosate in excess of the PMCL over many years could experience problems with their kidneys or reproductive difficulties.
(49) Heptachlor (ppt)	0.0004	1,000,000	400	0	Residue of banned pesticide	Some people who drink water containing heptachlor in excess of the PMCL over many years could experience liver damage and may have an increased risk of getting cancer.
(50) Heptachlor epoxide (ppt)	0.0002	1,000,000	200	0	Breakdown of heptachlor	Some people who drink water containing heptachlor epoxide in excess of the PMCL over many years could

						experience liver damage and may have an increased risk of getting cancer.
(51) Hexachlorobenzene (ppb)	0.001	1000	1	0	Discharge from metal refineries and agricultural chemical factories	Some people who drink water containing hexachlorobenzene in excess of the PMCL over many years could experience problems with their liver or kidneys or adverse reproductive effects and may have an increased risk of getting cancer.
(52) Hexachlorocyclopentadiene (ppb)	0.05	1000	50	50	Discharge from chemical factories	Some people who drink water containing hexachlorocyclopentadiene well in excess of the PMCL over many years could experience problems with their stomach or kidneys.
(53) Lindane (ppt)	0.0002	1,000,000	200	200	Runoff or leaching from insecticide used on cattle, lumber, gardens	Some people who drink water containing lindane in excess of the PMCL over many years could experience problems with their kidneys or liver.
(54) Methoxychlor (ppb)	0.04	1000	40	40	Runoff or leaching from insecticide used on fruits, vegetables, alfalfa, livestock	Some people who drink water containing methoxychlor in excess of the PMCL over many years could experience reproductive difficulties.
(55) Oxamyl [Vydate] (ppb)	0.2	1000	200	200	Runoff or leaching from insecticide used on apples, potatoes, and tomatoes	Some people who drink water containing oxamyl in excess of the PMCL over many years could experience slight nervous system effects.
(56) PCBs [Polychlorinated biphenyls] (ppt)	0.0005	1,000,000	500	0	Runoff from landfills; Discharge of waste chemicals	Some people who drink water containing PCBs in excess of the PMCL over many years could experience changes in their skin, problems with their thymus gland, immune deficiencies, or reproductive or nervous system difficulties and may have an increased risk of getting cancer.

(57) Pentachlorophenol (ppb)	0.001	1000	1	0	Discharge from wood preserving factories	Some people who drink water containing pentachlorophenol in excess of the PMCL over many years could experience problems with their liver or kidneys and may have an increased risk of getting cancer.
(58) Picloram (ppb)	0.5	1000	500	500	Herbicide runoff	Some people who drink water containing picloram in excess of the PMCL over many years could experience problems with their liver.
(59) Simazine (ppb)	0.004	1000	4	4	Herbicide runoff	Some people who drink water containing simazine in excess of the PMCL over many years could experience problems with their blood.
(60) Toxaphene (ppb)	0.003	1000	3	0	Runoff or leaching from insecticide used on cotton and cattle	Some people who drink water containing toxaphene in excess of the PMCL over many years could experience problems with their thyroid, kidneys, or liver and may have an increased risk of getting cancer.
Volatile Organic Chemicals						
(61) Benzene (ppb)	0.005	1000	5	0	Discharge from factories; Leaching from gas storage tanks and landfills	Some people who drink water containing benzene in excess of the PMCL over many years could experience anemia or a decrease in blood platelets and may have an increased risk of getting cancer.
(62) Carbon tetrachloride (ppb)	0.005	1000	5	0	Discharge from chemical plants and other industrial activities	Some people who drink water containing carbon tetrachloride in excess of the PMCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
(63) Chlorobenzene (ppb)	0.1	1000	100	100	Discharge from chemical and agricultural chemical factories	Some people who drink water containing chlorobenzene in excess of the PMCL over many years could experience problems with their liver or kidneys.

(64) o-Dichlorobenzene (ppb)	0.6	1000	600	600	Discharge from industrial chemical factories	Some people who drink water containing o-dichlorobenzene well in excess of the PMCL over many years could experience problems with their liver, kidneys, or spleen or changes in their blood.
(65) p-Dichlorobenzene (ppb)	0.075	1000	75	75	Discharge from industrial chemical factories	Some people who drink water containing p-dichlorobenzene in excess of the PMCL over many years could experience anemia, damage to their liver, kidneys, or circulatory systems.
(66) 1,2-Dichloroethane (ppb)	0.005	1000	5	0	Discharge from industrial chemical factories	Some people who drink water containing 1,2-dichloroethane in excess of the PMCL over many years may have an increased risk of getting cancer.
(67) 1,1-Dichloroethylene (ppb)	0.007	1000	7	7	Discharge from industrial chemical factories	Some people who drink water containing 1,1-dichloroethylene in excess of the PMCL over many years could experience problems with their liver.
(68) cis-1,2-Dichloroethylene (ppb)	0.07	1000	70	70	Discharge from industrial chemical factories	Some people who drink water containing cis-1,2-dichloroethylene in excess of the PMCL over many years could experience problems with their liver.
(69) trans-1,2-Dichloroethylene (ppb)	0.1	1000	100	100	Discharge from industrial chemical factories	Some people who drink water containing trans-1,2-dichloroethylene well in excess of the PMCL over many years could experience problems with their liver.
(70) Dichloromethane (ppb)	0.005	1000	5	0	Discharge from pharmaceutical and chemical factories	Some people who drink water containing dichloromethane in excess of the PMCL over many years could have liver problems and may have an increased risk of getting cancer.
(71) 1,2-Dichloropropane (ppb)	0.005	1000	5	0	Discharge from industrial chemical factories	Some people who drink water containing 1,2-dichloropropane in excess of the PMCL over many years may have an increased risk of getting cancer.

(72) Ethylbenzene (ppb)	0.7	1000	700	700	Discharge from petroleum refineries	Some people who drink water containing ethylbenzene well in excess of the PMCL over many years could experience problems with their liver or kidneys.
(73) Styrene (ppb)	0.1	1000	100	100	Discharge from rubber and plastic factories; Leaching from landfills	Some people who drink water containing styrene well in excess of the PMCL over many years could experience problems with their liver, kidneys, or circulatory system.
(74) Tetrachloroethylene (ppb)	0.005	1000	5	0	Discharge from factories and dry cleaners	Some people who drink water containing tetrachloroethylene in excess of the PMCL over many years could have problems with their liver and may have an increased risk of getting cancer.
(75) 1,2,4-Trichlorobenzene (ppb)	0.07	1000	70	70	Discharge from textile-finishing factories	Some people who drink water containing 1,2,4-trichlorobenzene well in excess of the PMCL over many years could experience changes in their adrenal glands.
(76) 1,1,1,-Trichloroethane (ppb)	0.2	1000	200	200	Discharge from metal degreasing sites and other factories	Some people who drink water containing 1,1,1-trichloroethane in excess of the PMCL over many years could experience problems with their liver, nervous system, or circulatory system.
(77) 1,1,2-Trichloroethane (ppb)	0.005	1000	5	3	Discharge from industrial chemical factories	Some people who drink water containing 1,1,2-trichloroethane well in excess of the PMCL over many years could have problems with their liver, kidneys, or immune systems.
(78) Trichloroethylene (ppb)	0.005	1000	5	0	Discharge from metal degreasing sites and other factories	Some people who drink water containing trichloroethylene in excess of the PMCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
(79) Toluene (ppm)	1		1	1	Discharge from petroleum factories	Some people who drink water containing toluene well in excess of the PMCL over many years

						could have problems with their nervous system, kidneys, or liver.
(80) Vinyl Chloride (ppb)	0.002	1000	2	0	Leaching from PVC piping; Discharge from plastic factories	Some people who drink water containing vinyl chloride in excess of the PMCL over many years may have an increased risk of getting cancer.
(81) Xylenes (ppm)	10		10	10	Discharge from petroleum factories; Discharge from chemical factories	Some people who drink water containing xylenes in excess of the PMCL over many years could experience damage to their nervous system.
Disinfection Byproducts, Precursors, and Residuals						
(82) TTHM [total trihalomethanes] (ppb)	0.080	1000	80	n/a	Byproduct of drinking water disinfection	Some people who drink water containing trihalomethanes (THMs) in excess of the PMCL over many years could experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.
(83) Haloacetic acids (HAA) (ppb)	0.060	1000	60	n/a	Byproduct of drinking water disinfection	Some people who drink water containing haloacetic acids in excess of the PMCL over many years may have an increased risk of getting cancer.
(84) Bromate (ppb)	0.010	1000	10	0	Byproduct of drinking water disinfection	Some people who drink water containing bromate in excess of the PMCL over many years may have an increased risk of getting cancer.
(85) Chloramines (ppm)	MRDL=4.0		MRDL=4.0	MRDLG=4	Water additive used to control microbes	Some people who use water containing chloramines well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.
(86) Chlorine (ppm)	MRDL=4.0		MRDL=4.0	MRDLG=4	Water additive used to control microbes	Some people who use water containing chlorine well in excess of the

						MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.
(87) Chlorine dioxide (ppb)[b]	MRDL=0.8	1000	MRDL=800	MRDLG=800	Water additive used to control microbes	Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia.
(88) Chlorine dioxide, where any two consecutive daily samples collected at the entrance to the distribution system are above the MRDL.[a]	MRDL=0.8			MRDLG=0.8		The chlorine dioxide violations reported today are the result of exceedances at the treatment facility only, not within the distribution system that delivers water to consumers. Continued compliance with chlorine dioxide levels within the distribution system minimizes the potential risk of these violations to consumers.
(89) Chlorine dioxide, where one or more distribution system samples are above the MRDL.[a]	MRDL=0.8			MRDLG=0.8		The chlorine dioxide violations reported today include exceedances of EPA standard within the distribution system that delivers water to consumers. Violations of the chlorine dioxide standard within the distribution system may harm human health based on short-term exposures. Certain groups, including fetuses, infants, and young children, may be especially susceptible to nervous system effects from excessive chlorine dioxide exposure.
(90) Chlorite (ppm)	1.0		1.0	0.8	Byproduct of drinking water disinfection	Some infants and young children who drink water containing chlorite in excess of the PMCL could experience nervous system

						effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the PMCL. Some people may experience anemia.
(91) Total organic carbon (ppm)	TT		TT	n/a	Naturally present in the environment	Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection byproducts. These byproducts include trihalomethanes (THMs) and haloacetic acids (HAAs). Drinking water containing these byproducts in excess of the PMCL may lead to adverse health effects, liver or kidney problems or nervous systems effects and may lead to an increased risk of getting cancer.

[a]This information is for public notification purposes only.

[b]This information is for the CCR purposes only.

[c]Violations of the treatment technique requirements for filtration and disinfection that involve turbidity exceedances may use the health effects language for turbidity instead.

12VAC5-590-550. Recordkeeping.

A. The owner shall maintain all of the waterworks records in accordance with the Records Retention and Disposition Schedule of the Library of Virginia, General Schedule No. 7 for public utility records of county and municipal governments.

~~All owners~~ B. The owner shall retain at ~~their~~ the waterworks or at a convenient location near ~~their~~ the waterworks the following records for ~~the minimum~~ not less than the time periods specified:

~~A. Records of microbiological~~ 1. Microbiological analyses and turbidity analyses, including records of any repeat samples ~~taken~~ collected and meeting the criteria for an extension of the 24-hour period for collecting repeat samples as required under 12VAC5-590-380 -- Five years.

~~B.~~ 2. Chemical Analyses -- 10 years.

3. The following information shall be provided for subdivisions B 1 and B 2 of this section:

a. Date, place, and time of sampling as well as the name of the person who collected the sample;

b. Identification of sample (e.g., routine, repeat, confirmation sample, source water, other);

c. Date of analysis;

d. Laboratory or person responsible for performing analysis;

e. Analytical method or technique used; and

f. Results of the analysis.

~~C.~~ 4. Individual filter monitoring required under ~~12VAC5-590-530 E 1 b (2)~~ 12VAC5-590-531 A 2 b -- Three years.

~~D.~~ 5. Results of ~~Disinfection Profile~~ disinfection profile including raw data and analysis -- Indefinitely.

~~E.~~ 6. Disinfection ~~Benchmarking~~ benchmarking including raw data and analysis -- Indefinitely.

~~F. The following information shall be provided for subsections A and B of this section:~~

~~1. Date, place, and time of sampling as well as the name of the person who collected the sample;~~

~~2. Identification of sample (e.g., routine, check sample, raw water, other);~~

~~3. Date of analysis;~~

~~4. Laboratory and/or person responsible for performing analysis;~~

~~5. Analytical method/technique used; and~~

~~6. Results of the analysis.~~

~~G.~~ 7. Original records of all sampling data and analyses, reports, surveys, letters, evaluations, schedules, ~~commissioner~~ department determinations, and any other information required by 12VAC5-590-405 A 1 and ~~2, B, C, and D; and 12VAC5-590-375 B, C, and D~~ 12VAC5-590-405 A 2, 12VAC5-590-405 B, 12VAC5-590-405 C, and 12VAC5-590-405 D pertaining to lead and copper~~.~~ ~~Each waterworks owner shall retain the records required by this section for no fewer than~~ -- 12 years.

~~H. Owners shall keep results~~ 8. Results from the initial round of source water monitoring under ~~12VAC5-590-420 B 3 a (1)~~ 12VAC5-590-401 B 1 and the second round of source water monitoring under ~~12VAC5-590-420 B 3 a (2)~~ 12VAC5-590-401 B 2 until three years after bin classification under ~~12VAC5-590-420 B 3 c (1)~~ 12VAC5-590-401 D 1 for the particular round of monitoring.

~~I. Owners shall keep any~~ 9. Any notification to the ~~commissioner~~ department that ~~they will not conduct~~ source water monitoring will not be conducted due to meeting the criteria of ~~12VAC5-590-420 B 3 a (4) for three~~ 12VAC5-590-401 B 4 -- Three years.

~~J. Owners shall keep the results~~ 10. Results of treatment monitoring associated with microbial toolbox options under ~~12VAC5-590-420 B 3 d (3) through (7)~~ 12VAC5-590-401 E 3 through 12VAC5-590-401 E 7 and with uncovered finished water reservoirs under ~~12VAC5-590-420 L~~ 12VAC5-590-415, as applicable, ~~for three~~ -- Three years.

~~K.~~ 11. Action taken to correct violations of ~~these regulations -- three~~ this chapter-- Three years after last action with respect to violation involved.

~~L. Owners~~ 12. The owner shall retain completed assessment forms for all Level 1 and Level 2 assessments conducted in accordance with 12VAC5-590-392 C, regardless of who conducts the assessment, and documentation of corrective actions completed as a result of those assessments, or other available summary documentation of the sanitary defects and correction actions taken under 12VAC5-590-392 D for a period not less than five years after completion of the assessment or corrective action, whichever is later.

~~M.~~ 13. Copies of reports, summaries, or communications relating to any sanitary surveys performed -- 10 years following inspection.

~~N.~~ 14. Variance or exemptions granted (and records related thereto) -- ~~five~~ Five years following expiration of the variance or exemption.

~~O. Cross connection~~ 15. Cross-connection control program records -- 10 years.

~~P. Owners of~~ 16. The owner of a waterworks that ~~recycle~~ recycles flow, as stipulated in ~~12VAC5-590-420 K~~ 12VAC5-590-395 C, shall collect and retain on file the recycle flow information for review and evaluation by the ~~district engineer beginning June 8, 2004~~ department. This information shall be retained for a minimum of 10 years. Information shall include, as a minimum:

~~1.~~ a. Copy of the recycle notification submitted to the ~~district engineer under 12VAC5-590-530 K~~ department.

~~2.~~ b. List of all recycle flows and the frequency with which they are returned.

~~3.~~ c. Average and maximum backwash flow rate through the filters and the average and maximum duration of the filter backwash process, in minutes.

~~4.~~ d. Typical filter run length and a written summary of how the filter run length is determined.

~~5.~~ e. The type of treatment provided for the recycle flow.

~~6.~~ f. Data on the physical dimensions of the equalization ~~and/or~~ or treatment units, typical and maximum hydraulic loading rates, type of treatment chemicals used, average dose, frequency of use, and frequency at which solids are removed, if applicable.

~~Q.~~ 17. Copies of monitoring plans developed pursuant to these regulations shall be kept for the same period of time as the records of analyses taken under the plan are required to be kept under subsection A or B of this section, except as specified elsewhere in this chapter.

~~R. All owners~~ 18. The owner shall retain the following additional records:

~~1.~~ a. Plant operational records~~.~~ -- Five years after the end of the calendar year;

~~2. Water well completion reports.~~ b. Current organizational or staffing chart;

~~3.~~ c. Record (As-built) engineering plans and specifications of facilities~~.~~ -- Retain for the life of the facility;

d. Equipment manuals for items in use -- Retain for the life of the equipment or facility;

~~4.~~ e. Shop drawings of major equipment~~.~~ in use -- Retain for the life of the equipment;

f. Current list or chart of required laboratory tests with test frequencies and sampling locations;

g. Current preventive maintenance schedule;

~~5.~~ h. Records of ~~equipment~~ repair or replacement~~.~~ of equipment in use -- Retain for the life of the equipment;

~~6.~~ i. Updated map of water distribution system~~.~~; and

~~7.~~ j. All accident reports~~.~~ -- Three years.

~~S. Additional recordkeeping requirements for groundwater systems~~ C. The owner of a waterworks with groundwater sources shall maintain the following records:

1. ~~Records of corrective~~ Corrective actions – --10 years.

2. ~~Records of public~~ Public notification as required by 12VAC5-590-540 ~~–~~ -- Three years.

3. ~~Records of invalidation~~ Invalidation of groundwater source samples ~~–~~ -- Five years.

4. For consecutive waterworks, ~~records of~~ notification to the wholesale waterworks of coliform-positive samples ~~–~~ -- Five years.

5. For a waterworks required to conduct compliance monitoring:

a. ~~Records of the ODW~~ Department-specified minimum ~~disinfectant~~ residual disinfectant ~~–~~ --10 years.

b. ~~Records of the lowest~~ Lowest daily residual disinfectant concentration ~~–~~ -- Five years.

c. ~~Records of the dates~~ Dates and duration of any failure to maintain the ~~ODW~~ department-specified minimum residual disinfectant concentration for a period of more than four hours ~~–~~ -- Five years.

d. ~~Records of any ODW~~ Department-specified compliance parameters for alternative treatment and records of the date and duration of any failure to meet the alternative treatment operating requirements for more than four hours ~~–~~ -- Five years.

12VAC5-590-560. Safety.

~~Since its trained personnel is the waterworks' most important asset, an important phase of waterworks operation is the protection of personnel through an active safety program; therefore, it is strongly recommended that every waterworks institute a safety program.~~ The owner of a waterworks shall institute a safety program to inform personnel of the known hazards, preventive measures, and emergency procedures pertaining to the operation of the waterworks in accordance with VOSH laws and regulations.

12VAC5-590-565. Source water protection.

A. A waterworks owned by a county, city, or town may exercise the authority pursuant to § 15.2-2109 of the Code of Virginia to protect the waterworks from pollution or injury.

B. The owner of a waterworks with a drinking water reservoir may establish a buffer around the intake to limit such uses as body contact recreation and boats powered by engines, pursuant to a plan acceptable to the department.

C. The owner of a waterworks should develop a source water protection plan for all the sources and report ongoing or completed protection initiatives to the department.

12VAC5-590-570. Operational ~~report forms~~ reporting requirements.

~~All waterworks required to report information to the department shall use the forms approved by the division.~~

A. Monthly operational reports.

1. A classified waterworks is required to report monthly information to the department no later than the 10th of the month following the month during which the monitoring period occurred.

2. A classified waterworks using conventional filtration shall report using the monthly operating report (MOR) form approved by the department. All other classified waterworks shall report the required information specified in Tables 570.1 through 570.13, based on the treatment processes employed. Monitoring data shall be collected for each day the operating staff attend to the operation of the facilities.

3. To determine if a waterworks using UV reactor systems is operating within validated conditions designed in accordance with 12VAC5-590-1005, the following parameters shall be monitored and reported: (i) on/off status for each reactor; (ii) flow rate through reactor train; (iii) UV intensity as measured by a UV sensor; (iv) lamp status; (v) lamp age; and (vi) UV transmittance. The operational set points shall be reported if set point control is used. The calculated UV dose shall be reported if other than a set point control is used.

4. An unclassified waterworks is required to report quarterly the following information specified in Table 570.1, where applicable, to the department no later than the 10th of the month following the calendar quarter during which the monitoring period occurred.

5. An unclassified waterworks that is using any of the treatment processes described in Tables 570.2 through 570.13 is required to report no later than the 10th of the month following the calendar month during which the monitoring occurred. The report shall contain the required information specified in Tables 570.1 through 570.13 based on the treatment processes employed. The monitoring data shall be collected at a minimum frequency as established by the department.

6. The department may vary the reporting requirements on a case-by-case basis.

Table 570.1 Baseline Data -- All Waterworks
Public water system ID no.
System name
Reporting month and year (reporting quarter and year[a])
Location (county)
Number of connections, monthly average (maximum for reporting period[a])
Population served, monthly average (quarterly average and maximum day[a])
Total source water withdrawn, gpd
Total source water treated, gpd
Total finished water produced, gal/month (for each entry point) or Total water purchased, gal/month (at each consecutive connection)
Operator name (printed and signature)
Operator classification (Class 1 to Class 6)
Operator DPOR certification no.
Name and contact information of the emergency contact person (text, voice phone number)
Required for an unclassified waterworks[a]

Table 570.2 Chlorine Disinfection
Chlorine compound used (chlorine gas, calcium hypochlorite or sodium hypochlorite)
Amount of chlorine compound used at each application point, lb/day
Residual disinfectant concentration (measured as total chlorine, free chlorine, combined chlorine, or chlorine dioxide) at entry point, mg/L
Chlorite concentration (if chlorine dioxide is used), daily measurement at entry point, mg/L

Table 570.3 Chlorine Residual in the Distribution System
Chlorine compound used (chlorine gas, calcium hypochlorite or sodium hypochlorite)
Residual disinfectant concentration, measured as total chlorine, free chlorine, combined chlorine, or chlorine dioxide, mg/L (collected with each total coliform bacteria sample, in accordance with approved sampling plan)

Table 570.4 Rechlorination in Distribution System
Chlorine compound used (chlorine gas, calcium hypochlorite or sodium hypochlorite)
Amount of chlorine compound used at each application point, lb/day
Free chlorine residual concentration before rechlorination, mg/L
Free chlorine residual concentration after rechlorination, mg/L
Free chlorine residual, mg/L (measured and reported with each total coliform bacteria sample, in accordance with approved sampling plan)

Table 570.5 Iron and Manganese Treatment by Oxidation, Detention and Filtration
Source water iron and manganese concentrations, mg/L (each source)
Oxidant amount used, lb/day
Finished water iron and manganese concentrations, mg/L (each filter)
Finished water pH (each filter)
Filter hours between backwash (each filter)

Table 570.6 Iron and Manganese Treatment by Ion Exchange
Ion exchange material (type, manufacturer, and product name)
Source water iron and manganese concentrations, mg/L (each source)
Finished water iron and manganese concentrations, mg/L (each unit softener)
Finished water pH (each unit softener)
Head loss, psi (each unit softener)
Regeneration date and method (each unit softener)
Backwash date and duration of washing (each unit softener)
Backwash rate, gpm (each unit softener)

Table 570.7 Sequestration of Iron and Manganese
Chemical used (manufacturer and product name)
Quantity used, lb/day (average)
Source water iron and manganese concentrations, mg/L (each source)
Finished water (entry point) iron and manganese concentrations, mg/L
Finished water (entry point) treatment chemical concentration, mg/L
Treatment chemical residual concentration, mg/L (value at distal end of distribution system, report at same frequency as free chlorine residual testing)

Table 570.8 pH Adjustment or Corrosion Control by Chemical Addition
Chemical used (manufacturer and product name)
Quantity used, lb/day (average)
Source water pH
Finished water (entry point) pH
Finished water (entry point) treatment chemical concentration, mg/L (if required water quality parameter for compliance with lead and copper)

Table 570.9 Cation Exchange Softening
Cation exchange material (type, manufacturer, and product name)
Regeneration date and method (each unit)
Backwashing date and duration of washing (each unit)
Softener influent hardness, mg/L as $CaCO_3$ (each source)
Softener effluent hardness, mg/L as $CaCO_3$ (each unit)
Stabilization chemical type, weight, daily dosage
Finished water (entry point) pH
Finished water (entry point) alkalinity, mg/L
Finished water (entry point) hardness, as $CaCO_3$

Table 570.10 Fluoridation
Chemical used (manufacturer and product name)
Fluoride used, lb/day
Fluoride dosage, mg/L (daily)
Water treated, MGD
Finished water (entry point) fluoride concentration, mg/L (maximum, minimum, and average)

Table 570.11 Microfiltration or Ultrafiltration
Hours unit in operation
Source water flow, gpd
Filtrate volume, gpd
Recirculated during suspension mode (volume or percent of feed flow, per day)
Waste volume, gpd
Maximum stabilized flux, gpd/ft^2
Source water turbidity, NTU bench test (daily)
Source water turbidity, NTU in line (collected at same time as bench test)
Source water turbidity, NTU in-line (maximum daily)
Source water alkalinity, mg/L as $CaCO_3$ (daily)
Source water hardness, mg/L as $CaCO_3$ (daily)
Source water temperature, ^oC (daily)
Source water pH (daily)
Filtered water turbidity, NTU bench test (daily)
Filtered water turbidity, NTU in line (collected at same time as bench test)
Filtered water turbidity, NTU in line (maximum daily)
Pressure loss across pre-filter, psi (daily) (if pre-filters are automatically cleaned, reporting is not required)
Number of membrane modules in use (daily)

Direct integrity test start time (daily)
Direct integrity test starting pressure, psi (each membrane unit, daily)
Direct integrity test final pressure, psi (daily)
Direct integrity test duration, minutes (daily)
Direct integrity test pressure decay rate, psi/minute (daily)
Direct integrity test Log Removal Value (daily)
Trans-membrane pressure, psi (daily)
Trans-membrane pressure before clean-in-place, psi
Trans-membrane pressure after clean-in-place, psi
Cleaning solution used (manufacturer and product name)
pH of rinse water after clean-in-place
Calibrations completed (itemized instruments with dates completed)
Module repairs or replacements (itemized with dates repairs or replacements)
Entry point log inactivation of Giardia by disinfection (daily)

Table 570.12

Reverse Osmosis

Hours unit in operation
Pre-filter inlet pressure, psi (daily)
Pre-filter outlet pressure, psi (daily)
RO Inlet pressure, psi (daily)
RO outlet pressure, psi (daily)
Total permeate flow, gpd
Concentrate flow (bypass), gpd
Finished water flow, gpd
Total finished water (entry point) flow, gpd
Pre RO TDS, mg/L (daily)
Post RO TDS, mg/L (daily)
Pre RO turbidity, NTU (daily)
Post RO turbidity, NTU
Pre RO conductivity, µS/cm (daily)
Post RO conductivity, µS/cm (daily)
Finished water conductivity, µS/cm (daily)
Source water pH (daily)
Permeate pH (daily)
Finished water (entry point) pH (daily)
Module repairs or replacements (itemized with dates of repairs or replacements)

Table 570.13

UV Disinfection

All waterworks using ultraviolet (UV) disinfection must report the following: Total run time, hours (per unit) Lamp status for each reactor train Lamp age for each reactor train Total production, MGD or gpd Flow Rates, minimum, maximum and average, MGD or gpd for each reactor train
To receive disinfection credit, the following shall also be reported: Number of off-specification events Total off-specification volume, gal Percent off-specification volume UV Intensity setpoint, W/m2 (if using intensity setpoint approach, daily) UV Intensity for each reactor, minimum, W/m2 (if using intensity setpoint approach, daily) UV Intensity sensor calibration date for each reactor Required dose, mJ/cm2 (if using calculated dose approach) UV Transmittance (UVT) for each reactor, daily percentage (if using calculated dose approach) Calculated dose for each reactor, daily minimum, mJ/cm2 (if using calculated dose approach)

Validated dose for each reactor, daily minimum, mJ/cm2 (if using calculated dose approach)

UVT analyzer calibration date (if using calculated dose approach)

UV intensity sensor correction factor

B. The owner shall report the following incidents within 24 hours to the department:

1. Water pressure below the 20 psi minimum required in the distribution system, including zero or negative pressure. Examples of these events include treatment plant or pump station shutdowns due to equipment failure, power outages, emptying of storage tanks, and draining of the distribution system during fire flow events.

2. Flooding of clearwells.

3. Flooding of groundwater wells.

4. Any other situation that occurs with the waterworks that presents or may present an imminent and substantial threat to public health.

~~Article 4~~
~~Cross Connection Control and Backflow Prevention in Waterworks~~

12VAC5-590-580. General requirements for cross-connection control and backflow prevention.

A. ~~The purpose of this article is to require as a condition for the issuance and continued use of the operation permit for the waterworks that each owner of a waterworks~~ Every owner shall establish and enforce a ~~program of cross connection control and backflow prevention for each waterworks The cross connection control and backflow prevention program shall be approved by the division prior to issuance of the operation permit (see Appendix I).~~ cross-connection control program (CCCP) in accordance with 12VAC5-590-360. The goal of the CCCP is to prevent the intrusion of contamination into the distribution system via cross-connections and backflow.

B. No owner shall install or allow to be installed a service connection to any premises where cross-connections to a waterworks or a consumer water system exist, unless the cross-connections are adequately safeguarded to the satisfaction of the owner and the department.

C. No owner shall install, maintain, or allow to be installed any connection whereby water from an auxiliary water system may enter a waterworks or consumer water system, unless the auxiliary water system, the method of connection, and use of such system shall have been approved by the owner and the department.

D. The owner, in accordance with 12VAC5-590-510 C, shall maintain acceptable working pressures in the distribution system to reduce the potential for backflow to occur.

12VAC5-590-590. ~~Cross connections.~~ (Repealed.)

~~A. The purveyor shall not install, maintain, or allow to be installed a water service connection to any premises where cross connections to a waterworks or a consumer's water system may exist unless such cross connections are abated or controlled to the satisfaction of the water purveyor or the division.~~

~~B. The purveyor shall not install, maintain, or allow to be installed any connection whereby water from an auxiliary water system may enter a waterworks or consumer's water system unless the auxiliary water system and the method of connection and use of such system shall have been approved by the water purveyor and by the division.~~

12VAC5-590-600. ~~Responsibilities~~ Cross-connection control program responsibilities.

A. ~~General. Effective cross connection control requires the cooperation of the water purveyor, the building official, the consumer, the Virginia Department of Health, and the backflow prevention device tester.~~

~~B. Water purveyor.~~

~~1. The purveyor shall establish or cause to be established and operate a cross connection control and backflow prevention program~~ The owner shall establish and operate a CCCP consistent with the extent of the distribution system and the type of consumer served. This program shall include at least one designated individual ~~who shall be responsible for the inspection of the waterworks for cross connection and backflow prevention control.~~ assigned by the owner. Requirements for this position shall include training and experience in cross-connection control programs. ~~This program shall be carried out in accordance with the Uniform Statewide Building Code and shall be a continuing program.~~

~~2. Suggested elements of this program are contained in Appendix I. The purveyor has full responsibility for water quality and for the construction, maintenance, and operation of the waterworks beginning at the water source and ending at the service connection.~~

~~3. The purveyor shall have thorough inspections and operational tests made at least annually of backflow prevention devices which are required and installed at the service connection~~

~~4. In the event of backflow of pollution or contamination into the waterworks, the purveyor shall promptly take or cause corrective action, to confine and eliminate the pollution or contamination. The purveyor shall immediately notify the division when backflow occurs.~~

~~5. The purveyor shall take positive action to ensure that the waterworks is adequately protected at all times. If a cross~~

~~connection exists or backflow occurs into a consumer's water system or if the pressure in the waterworks is lowered below 10 psi gauge, the purveyor may discontinue the water service to the consumer and water service shall not be restored until the deficiencies have been corrected or eliminated to the satisfaction of the purveyor.~~

B. The owner shall establish appropriate policies to complete assessments of consumer water system and shall determine both the degree of hazard and the appropriateness of existing safeguards.

C. The owner shall establish procedures for completing operational tests or other evaluation procedures as appropriate at least annually and after installation, relocation, or repairs for testable backflow prevention assemblies, devices, and methods that provide containment.

D. Instead of annual operational tests (12VAC5-590-600 C) and the related records and inventory of backflow prevention assemblies, backflow elimination methods, and backflow prevention devices (12VAC5-590-600 G), the owner may provide a public education program to residential and commercial consumers whose premise plumbing is not complex and where there are no known or suspected high hazards as identified in Table 630.1. For all other residential consumers, the department may approve a public education program provided by the owner as part of the CCCP.

1. The public education program shall be designed to prompt consumer self-assessments, increase the awareness of cross-connections, and inform the consumer of the public health hazards of backflow.

2. The public education program shall describe, at a minimum:

a. Causes of backflow;

b. Hazards and health effects of cross-connections and backflow;

c. Resources available to identify actual or potential cross-connections;

d. Safeguards to use to eliminate or reduce the hazards at the point of use; and

e. Sources for additional information.

E. The owner shall discontinue or refuse water service to the consumer to ensure that the waterworks is adequately protected from cross-connections and backflow if any of the following conditions occur:

1. A required backflow prevention assembly or backflow elimination method is not installed, tested, and maintained in accordance with the applicable sections of this chapter;

2. A required backflow prevention assembly or backflow elimination method is inoperable or has been removed or bypassed; or

3. An unprotected or inadequately protected cross-connection is known to exist on the premises and the owner has determined that there is inadequate backflow prevention at the service connection.

F. In the event of backflow of contaminants into the waterworks, the owner shall promptly take or cause corrective action to confine and eliminate the contamination. The owner shall report the event to the department within one business day in the most expeditious manner. The owner shall submit a written report by the 10th day of the month following the month during which backflow occurred addressing the incident, its causes and effects, and safeguards required or other action taken.

G. The owner shall maintain an inventory and records of testing, repairs, and maintenance of all backflow prevention assemblies, backflow elimination methods, and backflow prevention devices required and installed under 12VAC5-590-610.

H. The owner shall maintain records related to the CCCP implementation and other records required by the department in accordance with 12VAC5-590-550.

12VAC5-590-610. Containment ~~policy~~ of backflow.

A. ~~An approved backflow prevention device~~ Backflow prevention assemblies or backflow elimination methods shall be installed (i) at ~~each~~ the service connection ~~to a consumer's water system where, in the judgment of the water purveyor or the division, a health, pollution, or system hazard to the waterworks exists. B. When, as a matter of practicality, the backflow prevention device cannot be installed at the service connection, the device may be~~ or (ii) located downstream of the service connection but ~~prior to~~ before any unprotected takeoffs.

B. Where the consumer water system is not intricate or complex and where actual or potential cross-connection hazards can be eliminated or reduced, point-of-use isolation protection by application of appropriate backflow prevention assemblies, backflow prevention devices, or backflow elimination methods complying with the USBC may be used instead of containment.

C. A backflow prevention ~~device~~ assembly or backflow elimination method shall be installed ~~at each service connection to a consumer's water system serving premises~~ where the following conditions exist:

1. ~~Premises on which any~~ A substance is handled in such a manner as to create an actual or potential hazard to a waterworks (this shall include premises having sources or systems containing process fluids or waters originating from a waterworks which are no longer under the control of the ~~water purveyor)~~ owner);

2. ~~Premises having~~ There exists internal ~~cross connections~~ cross-connections that, in the judgment of the ~~water~~

~~purveyor~~ owner or the ~~division~~ department, may not be easily correctable or have intricate or complex plumbing arrangements ~~which~~ that make it impracticable to determine whether or not ~~cross connections~~ cross-connections exist;

3. ~~Premises where, because of~~ There are security requirements or other prohibitions or restrictions~~, it is impossible or impractical to make a complete cross connection survey~~ that prevent the assessment of all potential cross-connections that may impair the quality of the water delivered;

4. ~~Premises having~~ There is a repeated history of ~~cross connections~~ cross-connections being established or reestablished;

5. ~~Premises having fire protection systems utilizing combinations of sprinklers, fire loops, storage tanks, pumps, antifreeze protection, or auxiliary water sources including siamese connections (fire loops and sprinkler systems with openings not subject to flooding, and containing no antifreeze or other chemicals, no separate fire protection storage, or auxiliary sources, will not normally require backflow prevention); and 6. Other premises specified by the division or the purveyor when cause can be shown that a potential cross connection hazard not enumerated above exists~~ There are fire protection systems, lawn sprinkler systems, or irrigation systems; or

6. Cause can be shown by the department or owner that a potential cross-connection hazard exists.

D. ~~Premises~~ The owner shall ensure that premises having booster pumps or fire pumps connected to the waterworks shall be equipped with ~~a low pressure regulating or cutoff device to shut off the booster pump when the pressure in the waterworks drops to a minimum of 10 psi gauge~~ control devices to prevent a reduction of pump suction line pressure to less than 20 psig.

E. ~~An approved~~ A backflow prevention ~~device~~ assembly or backflow elimination method shall be installed at ~~each service connection to a consumer's water system serving, but not necessarily limited to,~~ the following types of facilities, including:

1. Hospitals, mortuaries, clinics, veterinary establishments, nursing homes, and medical buildings;

2. Laboratories;

3. Piers, docks, and waterfront facilities;

4. Sewage treatment plants, sewage pumping stations, or storm water pumping stations;

5. Food and beverage processing plants;

6. Chemical plants, dyeing plants, and pharmaceutical plants;

7. Metal plating industries;

8. Petroleum or ~~natural gas~~ natural-gas processing or storage plants;

9. Radioactive materials processing plants or nuclear reactors;

10. Car washes and laundries;

11. ~~Lawn sprinkler systems, and irrigation systems; 12. Fire service systems;~~ Buildings with commercial, industrial, or institutional occupants served through a master meter;

12. Water loading facilities;

13. Slaughter houses and poultry processing plants;

14. Farms where the water is used for other than household purposes;

15. Commercial greenhouses and nurseries;

16. Health clubs with swimming pools, therapeutic baths, hot tubs, or saunas;

17. Paper and ~~paper products~~ paper-product plants and printing plants;

18. Pesticide or exterminating companies and their vehicles with storage or mixing tanks;

19. Facilities that blend, store, package, transport, or treat chemicals, and their related vehicles;

20. Schools or colleges with laboratory facilities;

~~20. Highrise buildings (four or more stories) 21. Multiuse commercial, office, or warehouse facilities; and~~ 21. Multistory office and commercial buildings or both with four or more stories, including residential buildings classified by the USBC as commercial; and

22. Others specified by the ~~purveyor~~ owner or the ~~division~~ department when reasonable cause can be shown for a potential backflow or ~~cross connection~~ cross-connection hazard.

F. All temporary or emergency service connections shall be protected where reasonable cause can be shown for a potential backflow or cross-connection hazard. Backflow prevention assemblies or backflow elimination methods used shall be appropriately certified or approved to match the requirements of this section.

12VAC5-590-620. ~~Type of protection required.~~ (Repealed.)

~~The type of protection required shall depend on the degree of hazard which exists or may exist and on the method of~~

~~potential backflow. Backflow occurs either by back pressure or by back siphonage.~~

~~The degree of hazard, either high, moderate, or low, is based on the nature of the contaminant; the potential of the health hazard; the probability of the backflow occurrence; and the effect on waterworks structures, equipment, and appurtenances used in the storage, collection, purification, treatment, and distribution of pure water.~~

~~Table 2.10 shall be used as a guide to determine the degree of hazard for any situation.~~

~~A. Air gaps give the highest degree of protection and shall be used whenever practical to do so in high hazard situations subject to back pressure.~~

~~B. An air gap separation and a reduced pressure principle backflow prevention device will protect against back pressure when operating properly. Vacuum breakers will not protect against back pressure, but will protect against back-siphonage when operating properly.~~

~~C. Backflow prevention devices consisting of dual independent check valves with or without an intermediate atmospheric vent shall only be used in low hazard situations.~~

~~D. Barometric loops are not acceptable.~~

~~E. An interchangeable connection or change over device has limitations which prevent its use where back pressure is present or may occur, the auxiliary supply is not an approved source, or the waterworks line pressure is less than 20 psi. Since this type connection is one of the easiest to bypass, the use of this type device will be approved only as a temporary and continuously supervised arrangement. In most instances, an approved device or method must be included and approved by the purveyor and division.~~

12VAC5-590-630. Backflow prevention assemblies, devices, and backflow elimination methods for containment.

A. Any backflow prevention assembly or device or backflow elimination method shall be of the approved type and shall comply with the ~~Uniform Statewide Building Code~~ USBC.

~~B. Any backflow prevention device shall be installed in a manner approved by the water purveyor and in accordance with the Uniform Statewide Building Code.~~

~~C. Existing backflow prevention devices approved by the purveyor and the division prior to the effective date of this chapter shall, except for inspection, testing, and maintenance requirements, be excluded from the requirements of 12VAC5-590-600 A and B if the water purveyor and the division are assured that the devices will protect the waterworks.~~

~~TABLE 2.10. DETERMINATION OF DEGREE OF HAZARD~~

~~Premises with one or more of the following conditions shall be rated at the corresponding degree of hazard.~~	
~~High Hazard~~	~~The contaminant would be toxic, poisonous, noxious or unhealthy.~~
	~~A health hazard would exist.~~
	~~A high probability exists of a backflow occurrence either by back pressure or by back siphonage.~~
	~~The contaminant would disrupt the service of piped water for human consumption.~~
	~~Examples - sewage, used water, nonpotable water, auxiliary water systems, toxic or hazardous chemicals, etc.~~
~~Moderate Hazard~~	~~The contaminant would only degrade the quality of the water aesthetically or impair the usefulness of the water.~~
	~~A health hazard would not exist.~~
	~~A moderate probability exists of a backflow occurrence either by back pressure or by back siphonage.~~
	~~The contaminant would not seriously disrupt service of piped water for human consumption.~~
	~~Examples - food stuff, nontoxic chemicals, nonhazardous chemicals, etc.~~
~~Low Hazard~~	~~The contaminant would only degrade the quality of the water aesthetically.~~
	~~A health hazard would not exist.~~
	~~A low probability exists of the occurrence of backflow primarily by back siphonage.~~
	~~The contaminant would not disrupt service of piped water.~~
	~~Examples - food stuff, nontoxic chemicals, nonhazardous, chemicals, etc.~~

B. General safeguards

1. The backflow prevention assembly or device or backflow elimination method used shall depend on the degree of hazard that exists or may exist. The safeguard

shall ensure maintenance of the distribution system water quality and its usefulness.

2. The degree of hazard, either high or low, is based on (i) the nature of the contaminant; (ii) the potential of the health hazard; (iii) the potential method of backflow (either by backpressure or by backsiphonage); and (iv) the potential effect on waterworks structures, equipment, and appurtenances used in the storage, collection, purification, treatment, and distribution of potable water. Table 630.1 shall be used as a guide to determine the degree of hazard for any situation.

Table 630.1

Determination of Degree of Hazard

Cross-connections that meet or may meet the following conditions shall be rated at the corresponding degree of hazard.	
High Hazard	Low Hazard
The contaminant would be toxic, poisonous, noxious, unhealthy, or of unknown quality.	The contaminant would only degrade the quality of the water aesthetically or impair the usefulness of the water.
A health hazard would exist.	A health hazard would not exist.
The contaminant would disrupt the service of piped water for human consumption.	The contaminant would not disrupt service of piped water for human consumption.
Backflow would be by either backpressure or backsiphonage.	Backflow would occur by backsiphonage.
Examples: sewage, used water, nonpotable water, auxiliary water systems, and mixtures of water and other liquids, gases, or other toxic or hazardous chemicals.	Examples: food residuals, nontoxic chemicals, and nonhazardous chemicals.

3. The USBC and the manufacturer specifications shall be used to determine the appropriateness of the backflow prevention assembly or device application for containment.

C. Backflow prevention devices or assemblies with openings, outlets, or vents that are designed to operate or open during backflow prevention shall not be installed:

1. In areas subject to flooding or in pits;

2. In areas with atmospheric conditions that represent a contamination threat to the potable water supply; and

3. In such a manner as to be able to be bypassed.

D. Starting January 1, 2022, persons testing and repairing backflow prevention assemblies and devices shall be certified by a Commonwealth of Virginia tradesman certification program (identified by DPOR as backflow prevention device workers). Until January 1, 2022, persons testing and repairing backflow prevention assemblies and devices shall be qualified to perform such work as demonstrated by possessing a certification or license from a local or state agency having legal authority or shall possess a certificate of completion of applicable vocational training acceptable to the owner.

Part III
Manual of Practice for Waterworks Design

~~Article 1~~
~~General~~

12VAC5-590-640. General design considerations.

A. Waterworks shall conform ~~with~~ to the Public Water Supply Law, Article 2 of Chapter 6 of Title 32.1 of the Code of Virginia. ~~The engineer shall confer with the division before proceeding with the detailed designs. The engineering report and preliminary plan shall include plant site selection. Ordinarily,~~ Community waterworks shall be designed to provide for the estimated ~~population~~ water demand for 10 to 30 years hence under predicted growth conditions. All waterworks shall be designed so that they can readily be increased in capacity except where circumstances preclude the probability of expansion. Expansion by modular steps should be considered. ~~Operation and maintenance manuals are required for treatment facilities and pumping facilities.~~

B. Waterworks design shall be based on sound engineering practice substantiated in the engineer's design and approved by the commissioner. Historical data or typical usage figures of waterworks with similar service area characteristics and appropriate peaking factors shall be used to support the design. USBC and design standards may be referenced for noncommunity waterworks, as appropriate.

1. Community waterworks shall be designed to meet or exceed the estimated maximum daily water demand of the service area at the design year. The design shall account for diurnal demand patterns and special demands placed on the waterworks such as firefighting, industrial use, and wholesale customers.

2. Noncommunity waterworks shall be designed to meet or exceed the peak hour demand of the proposed services. Either pump capacity or storage capacity or both may be utilized to meet the peak hour demand.

3. Effective storage.

a. Community waterworks shall provide sufficient finished water effective storage to enable the waterworks to meet the estimated maximum daily water demand at the design year. Compliance with this requirement is normally determined by the use of a hydraulic model. In

the absence of a hydraulic model, effective storage shall be a minimum of one-half of estimated maximum daily water demand of the waterworks at the design year.

b. There is no minimum finished water effective storage requirement for noncommunity waterworks.

c. Effective storage of atmospheric storage tanks shall be the volume available to store finished water in atmospheric reservoirs or tanks, measured as the difference between the overflow elevation, or the normal maximum operating level, and the minimum storage elevation. For atmospheric tanks that use a portion of their volume to generate distribution system pressure, the minimum storage elevation is that elevation of water in the tank that can provide a minimum pressure of 20 psig throughout that tank's service area under distribution system-wide maximum daily water demand.

d. Effective storage of pressure storage tanks shall be one-third of the nominal pressure vessel storage capacity.

C. Waterworks shall be designed to provide a minimum residual pressure of 20 psig at all service connections. Design shall be based on the most restrictive conditions, defaulting to the greater of peak hour demand or maximum daily water demand plus applicable fire flows. Fire flow design values shall be identified by the engineer after coordination among the owner, local and state building officials, and fire officials. Distribution system hydraulic modeling may be used to demonstrate compliance with this requirement.

D. Materials used in the construction of waterworks that are in contact with the product water shall comply with NSF/ANSI Standard 61-2017 or an approved equivalent.

12VAC5-590-650. ~~Objectives of a waterworks.~~ (Repealed.)

~~A. The objectives of a waterworks are:~~

~~1. The production of pure water; and~~

~~2. The production of water appealing to the consumer.~~

~~B. To reach the objectives of a waterworks, finished water quality shall conform with Article 1 of Part II of this chapter.~~

12VAC5-590-660. Site location.

A. Wells and water treatment plants shall be located above the projected ~~100-year flood plain~~ 100-year flood elevation. ~~Lower elevations~~ A lower elevation may be considered if it can be adequately shown that the wells or treatment plants can be protected from flooding. Site grading and adequate drainage shall be provided. Springs subject to flooding shall not be approved. See 12VAC5-590-840 E for additional well location requirements.

B. The waterworks pumping and treatment facilities shall be readily accessible in all seasons. Access roads shall be provided.

C. ~~Consideration should be given to~~ Functional aspects of the site shall be considered in design, including the convenience of transportation facilities to the ~~plant~~ site and ~~also to~~ the availability of electric power from more than one source ~~of outside power~~.

12VAC5-590-670. Site size.

A. The area reserved around a well or spring site shall conform ~~with 12VAC5-590-820, 12VAC5-590-830, and~~ to 12VAC5-590-840 D and 12VAC5-590-840 E.

B. The treatment plant site shall be of ample size to accommodate expansion, and ample space shall be provided at the treatment site for adequate ~~disposal~~ handling of treatment plant ~~wastes~~ residuals.

C. The disposal of water treatment plant ~~wastes~~ residuals shall conform to the State Water Control Law, Chapter 3.1 of Title 62.1 of the Code of Virginia.

12VAC5-590-680. Treatment process selection and BAT.

A. The following shall be considered when selecting treatment processes ~~to achieve treatment goals~~: (i) the quality and variability of the source water and (ii) possible future changes in the quality and quantity of the source water.

~~A. The quality and variability of the source water.~~

~~B. Possible future changes in the quality of the source.~~

~~C. Water quality goals, including the growing desire of the public for better water.~~

~~D. When removal of contaminants for which BAT has been specified is necessary, processes classified as BAT shall be employed.~~

~~E. When treatment technique requirements have been established in lieu of MCLs, processes specified by such requirements shall be employed.~~

~~F. POE or POU devices shall not be utilized for long term compliance with PMCLs. Such devices may be considered for short term, interim use, as a condition of a variance or exemption issued by the commissioner.~~

B. The design shall employ best available technologies (BAT) for achieving compliance with the PMCLs for organic chemicals listed in 40 CFR 141.61 and BAT for achieving compliance with the PMCLs for inorganic chemicals listed in 40 CFR 141.62.

C. The design shall employ BAT for achieving compliance with the PMCLs for radionuclides listed in 40 CFR 141.66, including radium-226, radium-228, uranium, gross alpha particle activity, beta particle, and photon radioactivity. The design shall consider the system size and use limitations for specific technologies listed in 40 CFR 141.66.

D. Alternative technologies may be employed when approved by the commissioner.

E. When treatment technique requirements have been established instead of PMCLs or ALs, the design shall employ processes specified by these requirements.

F. POU devices shall not be used to achieve compliance with the treatment technique for microbial contaminants. POE or POU devices may be considered for short-term interim use when approved as a condition of a variance or exemption issued by the commissioner.

G. For softening, TDS removal, organics removal, and other treatment purposes, the use of RO and NF shall be in accordance with ANSI/AWWA Standard B114-16, or as allowed by the commissioner on a case-by-case basis.

12VAC5-590-690. ~~Capacity of waterworks.~~ (Repealed.)

~~The design capacity of the waterworks shall exceed the maximum daily water demand of the system. Waterworks shall normally be designed on the following basis of water consumption. If deviations are made, they shall be based on sound engineering knowledge substantiated in the designer's report and approved by the division.~~

~~A. Daily water consumption rates (annual daily water demand):~~

~~Dwellings, per person~~	~~100 gpd~~
~~High schools with showers, per person~~	~~16 gpd~~
~~Elementary schools without showers, per person~~	~~10 gpd~~
~~Boarding schools, per person~~	~~75 gpd~~
~~Motels at 65 gallons per person, minimum per room~~	~~130 gpd~~
~~Trailer courts at three persons per trailer, per trailer~~	~~300 gpd~~
~~Restaurants, per seat~~	~~50 gpd~~
~~Interstate or through highway restaurants, per seat~~	~~180 gpd~~
~~Interstate rest areas, per person~~	~~5 gpd~~
~~Service stations, per vehicle served~~	~~10 gpd~~
~~Factories, per person, per eight hour shift~~	~~15 35 gpd~~
~~Shopping centers, per 1,000 sq.ft. of ultimate floor space~~	~~200 300 gpd~~
~~Hospitals, per bed~~	~~300 gpd~~
~~Nursing homes, per bed~~	~~200 gpd~~
~~Home for the aged, per bed~~	~~100 gpd~~
~~Doctor's office in medical center~~	~~500 gpd~~
~~Laundromats, 9 to 12# machines, per machine~~	~~500 gpd~~
~~Community colleges per student and faculty member~~	~~15 gpd~~
~~Swimming pools, per swimmer~~	~~10 gpd~~
~~Theaters, drive in type, per car~~	~~5 gpd~~
~~Theaters, auditorium type, per seat~~	~~5 gpd~~
~~Picnic areas, per person~~	~~5 gpd~~
~~Camps, resort, day and night with limited plumbing, per camp site~~	~~50 gpd~~
~~Picnic areas, per person~~	~~5 gpd~~
~~Luxury Camps with flush toilets, per camp site~~	~~100 gpd~~

~~B. Minimum acceptable effective finished water storage for human consumption shall not be less than 200 gallons per equivalent residential connection at minimum pressure.~~

~~C. All waterworks shall provide at least a minimum working (under flow) pressure of 20 psi at the service connection based on the greater of maximum hour or maximum day plus applicable fire flows. Applicable fire flows shall be selected by coordination between the water supply owner, design consultant, local officials and local fire marshal. When the number of residential units is less than 1,000, the formula $Q=11.4N^{0.544}$; is acceptable for estimating maximum hour domestic demand flow, where Q=total gallons per minute and N=total number of residential units. The division can require a higher design pressure if indicated by site conditions.~~

~~D. A waterworks utilizing wells as the sole source of supply shall provide source capacity of a minimum of 0.5 gallons per minute per equivalent residential connection.~~

~~E. Waterworks serving 50 or more residential connections with wells as the source of supply shall provide at least two water sources that do not hydraulically interfere with another source of public water supply. Consideration shall be given to requiring each source to be of a minimum yield so its reliability is realistic. The secondary well should be rated at 20% of the waterworks capacity as a minimum.~~

~~F. Waterworks serving less than 50 residential connections with wells as the source of supply shall provide or have access to an auxiliary pump stored or stocked locally or they shall provide 48 hours of total effective storage volume based on water usage.~~

12VAC5-590-700. Metering total water production.

A. ~~Waterworks providing chlorination only shall meter the water prior to treatment~~ The design of all community waterworks shall provide metering of total water production.

B. ~~Waterworks providing iron or manganese removal, or both, shall meter the water prior to treatment~~ The design of all NTNCs that provide treatment or have a design capacity of

greater than 300,000 gallons per month shall provide metering of total water production.

C. ~~Waterworks providing softening by ion exchange, shall meter all water treated and total water delivered to the distribution system. D. Waterworks providing turbidity removal or softening by precipitation, or both, shall meter the water prior to and subsequent to treatment.~~ The design of all TNCs that provide treatment or have a design capacity of greater than 300,000 gallons per month shall provide metering of total water production.

D. If the waterworks treatment process results in a waste flow, including filter backwash, ion exchange regenerate, or residual solids, then the design shall provide metering of total source water withdrawn and finished water produced.

E. ~~All waterworks shall provide metering of total water production~~ Metering of total water production at waterworks that do not meet the conditions found in subsections A through D of this section should be provided.

12VAC5-590-710. ~~Site layout.~~ (Repealed.)

~~A. Functional aspects of site layout shall be considered.~~

~~B. Site grading shall be provided.~~

~~C. Adequate site drainage shall be provided.~~

~~D. Walks shall be provided.~~

~~E. Access roads shall be provided.~~

~~F. Driveways shall be provided.~~

12VAC5-590-720. Building ~~layout~~ design and construction.

~~A. Adequate ventilation shall be provided.~~

~~B. Adequate lighting shall be provided.~~

~~C. Adequate heating shall be provided.~~

~~D. Adequate drainage shall be provided.~~

~~E. Adequate dehumidification equipment shall be provided.~~

~~F. Accessibility of equipment for operation, servicing, and removal shall be provided.~~

~~G. Flexibility of operation shall be provided.~~

~~H. Safety precautions shall be considered. Reference the applicable health and safety standards of the Virginia Department of Labor and Industry for the appropriate requirements.~~

~~I. Convenience of operation shall be considered.~~

~~J. Separate rooms for chemical storage and feed equipment to reduce dust problems shall be considered.~~

~~K. Sanitary facilities shall be provided at all waterworks installations requiring an operator in attendance at all times during operation.~~

A. In accordance with the USBC, Chapter 6 (§ 36.97 et seq.) of Title 36 of the Code of Virginia, and the Statewide Fire Prevention Code (§ 27.94 et seq.) of Title 27 of the Code of Virginia, all waterworks building design and construction shall include necessary features that will assure a functional and safe environment, including adequate ventilation, lighting, heating, drainage, dehumidification, and accessibility to equipment for operation and maintenance.

B. Consistent with subdivision A of this section, the waterworks building design and layout shall incorporate safety provisions to protect waterworks operators and other personnel, in accordance with Article 1 (§ 40.1-22) of Chapter 3 of Title 40.1 of the Code of Virginia. These provisions must comply with federal occupational safety and health standards and regulations promulgated under 29 USC § 651 et seq. and shall include separation of incompatible chemicals, confined space entry, handrails and guards, ladders, lighting, warning signs, smoke detectors, chlorine leak detectors, protective equipment, safety showers, eye washes, and fire extinguishers.

~~L.~~ C. Positive identification of the contents of a piping system shall be by lettered legend giving the name of the contents. Arrows ~~should~~ shall be used to indicate the direction of flow. Legends shall be applied close to valves, adjacent to changes in direction and branches, where pipes pass through walls and floors, and at frequent intervals on straight pipe runs. The lettering shall be of such color, size, and location so as to be clearly visible and readable.

~~M. No conduit or basin containing filtered water shall have a common division wall with another conduit or basin~~ D. Common division walls between basins or conduits containing nonpotable water and potable water are prohibited. Vertical double division walls, where separated sufficiently to permit ready access for inspection, are permissible where the division walls are monolithic in construction and are properly keyed into their footings or are cast monolithically with their footings.

E. Shop space and storage requirements shall be provided.

F. Wherever pipes pass through walls of concrete structures, extra wall castings to facilitate expansion and future uses shall be provided.

12VAC5-590-725. Automated monitoring and control systems.

The design of computers, including supervisory control and data acquisition (SCADA) systems if used to monitor and control water treatment and distribution system facilities, shall meet the following general requirements:

1. Data security.

a. Automated systems used to display and record data or control functions that are connected to the internet shall be secure.

b. Backup power supply shall be provided to allow orderly shutdown of the computer system and prevent corruption of data. The protection shall also power associated communications equipment.

c. Adequate hardware shall be in place to allow a high degree of SCADA and computer system reliability and data security.

d. Adequate hardware and associated facilities shall be provided for data archiving.

2. Equipment protection. SCADA and computer systems shall have adequate protection from voltage surges and spikes on the power supply, external data links, and environmental conditions.

3. Data displaying and recording.

a. SCADA and computer systems used to meet the continuous recording requirements of this chapter shall record an observation on a minimum frequency of once per 15 minutes, unless a greater recording frequency is required.

b. SCADA and computer systems used to meet the indicating and recording requirements of this chapter shall provide displays that show a minimum 24-hour trend of results for each parameter. The display panel shall be located in an area where it can be routinely viewed by the waterworks operators.

c. SCADA and computer systems used to meet the indicating and recording requirements of this chapter shall monitor the values and provide alerts for the operator by visual display and audible alarms. Alarm conditions shall be recorded into an alarm log.

4. Waterworks pumps, chemical feeders, and other essential electrical equipment controlled through a SCADA or an automated control system shall have the capability for independent manual operation. Where a high degree of reliability is required, a backup control system shall be provided.

12VAC5-590-730. ~~Standby power capability~~ Alternate power sources.

~~Standby power capability may be required by the division so that water may be treated or pumped, or both, to the distribution system in order to maintain a minimum level of service during an emergency.~~

A. An emergency management plan for extended power outages shall be developed for each community waterworks as specified in 12VAC5-590-505.

B. Alternative power sources at all waterworks shall be considered in the design to maintain a minimum level of service during an electrical power outage.

12VAC5-590-740. ~~Maintenance and servicing of equipment.~~ (Repealed.)

~~Adequate facilities must be provided for the maintenance and servicing of automatic equipment.~~

12VAC5-590-750. ~~Shop space and storage.~~ (Repealed.)

~~Adequate facilities should be included for shop space and storage consistent with the designed facilities.~~

12VAC5-590-760. Laboratory facilities.

~~Laboratory equipment and facilities shall be compatible with the raw water source, intended design of the water treatment plant, and the complexity of the water treatment involved.~~

A. ~~Testing equipment provided shall be adequate for the purpose intended and recognized procedures must be utilized~~ The design of laboratory facilities shall be compatible with the equipment provided, the water supply, and the design and complexity of the water treatment.

B. ~~Sufficient~~ The design of community waterworks and NTNCs shall provide for adequate floor and bench space, adequate ventilation, adequate light, ~~storage room, laboratory sink, and auxiliary facilities shall be provided. Office space is not included in the following specified laboratory sizes:~~ adequate separation of incompatible activities, adequate environmental controls, and auxiliary facilities sufficient to carry out reliable testing.

~~1. Waterworks providing iron or manganese removal, or softening by ion exchange should provide a laboratory with a minimum of 64 square feet of floor area and 20 square feet of bench area.~~

~~2. Waterworks providing turbidity removal or softening by precipitation, or both, should provide a laboratory with a minimum of 200 square feet of floor area and 65 square feet of bench area.~~

~~3. Waterworks providing turbidity removal or softening by precipitation, or both, and in plant bacteriological analysis should provide a laboratory with a minimum of 300 square feet of floor area and 100 square feet of bench area.~~

C. ~~When a bacteriological laboratory is required a separate room of adequate space shall be provided~~. Certified analytical laboratory facilities analyzing drinking water shall comply with 1VAC30-41.

12VAC5-590-770. ~~Sample taps~~ Sampling and monitoring equipment.

A. Sample taps shall be provided so that water samples can be obtained from each ~~water~~ source water and each entry point to the distribution system. At waterworks providing

treatment, sample taps shall be provided ~~from each unit operation of treatment, with the taps being located at the master control sink in the laboratory. Taps shall be consistent with sampling needs and shall not be of the petcock type~~ at the entrance and exit of each unit treatment process and at the entry point to the distribution system.

1. For surface water treatment plants, a master control sink shall monitor source water, chemically treated water, settled water, combined filter water, and at the entry point to the distribution system.

2. All sample taps shall discharge in the downward direction and be provided with a suitable air gap to prevent cross-connection.

B. Continuous monitoring instrumentation shall have electronic sensors that continuously read the parameter and shall display results in real time. Continuous recording equipment shall be provided with the monitoring instrument to store in memory or print one data point at least every 15 minutes. Each result shall be a single result at that time; if signal averaging is applied, the averaging period shall not exceed 30 seconds. The recording equipment shall be capable of producing a paper copy or equivalent electronic file showing daily trends, including maximum, minimum, and average values.

12VAC5-590-780. ~~Wall castings.~~ (Repealed.)

~~Consideration shall be given to providing extra wall castings built into the structure to facilitate expansion and future uses wherever pipes pass through walls of concrete structures.~~

12VAC5-590-790. ~~Water supply service~~ Process water.

~~The water supply service for treatment facilities shall be taken from a point after there has been thorough mixing of all chemicals added to the water~~ Process water shall be taken from the finished water. An approved backflow prevention assembly or device shall be installed on the process water supply pipe before connection to the treatment process or equipment.

12VAC5-590-800. ~~Disinfection.~~ (Repealed.)

~~All pipes, tanks, and equipment which can convey or store potable water shall be disinfected prior to being placed in service. Plans and specifications shall outline the procedures and include the disinfectant dosage, contact time, and method of testing the results of the procedure.~~

~~1. Forms of chlorine for disinfection.~~

~~a. Liquid chlorine. The use of liquid chlorine shall be acceptable only when suitable equipment is available and only under the direction of a person trained to handle liquid chlorine. Emergency handling equipment shall be provided.~~

~~It will normally require 4.2 lbs. of liquid chlorine (supplied under pressure in steel containers) to produce a concentration of 50 mg/L of available chlorine in 10,000 gallons of water.~~

~~b. Calcium hypochlorite. Granular and tablet forms are available (both with 65% available chlorine). It will normally require 6.5 lbs. of calcium hypochlorite to produce a concentration of 50 mg/L of available chlorine in 10,000 gallons of water.~~

~~c. Sodium hypochlorite. This is supplied in strengths of 5.25% to 16% available chlorine. The required amount of sodium hypochlorite to produce a 50 mg/L concentration of available chlorine in 10,000 gallons of water can be calculated from the following formula:~~

$$\frac{50}{\%\ \text{available chlorine}}$$

~~2. Methods of disinfection other than chlorination may be considered by the division on a case-by-case basis.~~

~~3. Testing of water following disinfection:~~

~~a. All chlorine residual determinations shall be made using only those methods approved by the division; and~~

~~b. Two water samples for bacteriological analysis must be collected at least 24 hours apart and analyzed by a certified laboratory. The results of these samples must indicate no coliform contamination before the pipe, tanks, or equipment can be utilized as part of the waterworks. If contamination is indicated, then the disinfection procedure must be repeated.~~

12VAC5-590-810. ~~Paints, coatings, sealers, or liners~~ Components, materials, and products.

~~Paints, coatings, sealers or liners which contact raw, partially treated, or potable water and are used in pipes, tanks, or equipment which can convey or store these waters shall be approved by the division before application~~ All components, materials, and products that will be in contact with source water, partially treated water, finished water, or water treatment chemicals shall comply with NSF/ANSI Standard 61-2017.

~~Article 2~~
~~Source Development~~

12VAC5-590-820. ~~General~~ New source water selection and sampling.

A. Preference shall be given to the best available sources of supply ~~which~~ that present minimal risks of contamination from ~~wastewaters~~ point and ~~which~~ nonpoint pollution sources that contain a minimum of impurities that may be hazardous to health and that give the greatest potential of ensuring a sufficient quantity of potable water.

B. In all cases, sources shall be selected and maintained on a basis ~~which~~ that will assure that the water is continuously amenable to available treatment processes. In selecting the source of water to be developed, the ~~designing engineer must~~ owner shall prove to the satisfaction of the commissioner that the water ~~which is to be delivered to the consumers shall comply with all applicable PMCLs of the board with respect to bacteriological, physical, chemical and radiological qualities~~ to be delivered to the consumers will comply with 12VAC5-590-340.

C. All water samples for bacteriological, chemical, physical, and radiological analyses ~~must~~ shall be submitted to the ~~Commonwealth of Virginia, Department of General Services, Division of Consolidated Laboratory Services~~ DCLS or to a testing laboratory certified by the ~~Division of Consolidated Laboratory Services~~ DCLS. ~~All bacteriological analyses must be performed at laboratories in accordance with analysis 12VAC5-590-370 A and 12VAC5-590-480 B 2~~ Analytical methods shall be in accordance with 12VAC5-590-440.

12VAC5-590-840. Groundwater sources.

A. A groundwater source includes all water obtained from drilled wells and springs. Wells and springs ~~should~~ shall be protected from contamination during construction. All ~~public water supply~~ wells intended to serve a waterworks shall be constructed by ~~registered Virginia contractors~~ a certified water well system provider. All wells shall be constructed in a manner to protect groundwater resources by preventing contaminated water or water having undesirable physical, chemical, or radiological characteristics from entering ~~potable water~~ aquifers.

B. All wells located within the Eastern Virginia or the Eastern Shore Groundwater Management Areas shall be constructed in a manner to protect groundwater resources by preventing blending or cross contamination of the aquifers.

1. Wells shall not be constructed with screens in multiple aquifers.

2. Geophysical logging and formation sampling shall be required for all wells during construction, in addition to submitting a Uniform Water Well Completion Report, Form GW-2.

3. Observation and production wells shall be constructed with gravel packs and grout in a manner that prevents movement between aquifers. Gravel pack shall be terminated close to the top of the well screens and shall not extend above the top of the screened aquifer. The remainder of the annular space shall be filled with grout material.

4. Pump intake setting shall be documented and the pump intake shall not be set below the top of a confined aquifer or the bottom of an unconfined aquifer that supplies water to the well.

C. All groundwater sources must be analyzed for chemical, physical, radiological, and bacteriological quality ~~in order to determine treatment requirements~~ as described in 12VAC5-590-840 K. ~~Groundwater containing total coliform concentrations of less than 100 and more than three organisms per 100 milliliters based on the geometric mean of 20 or more samples shall be disinfected. Groundwater containing total coliform concentrations of 100 or more organisms per 100 milliliters based on the geometric mean of 20 or more samples constitutes unacceptable contamination for disinfection only. Groundwater with widely fluctuating or increasing bacteriological results may be determined by the division to be unsuitable for disinfection treatment alone.~~

~~The class of well to be constructed shall be determined by the division. All well lot, well location, and well construction requirements contained in this section may be varied by the division as specific geologic and site conditions dictate.~~

~~1. Minimum well lot~~ D. Wells intended for use as a community waterworks shall be located on a well lot meeting the following minimum requirements:

~~a.~~ 1. The well lot shall provide a distance of at least 50 feet from the well to all property lines ~~of the well lot. Larger well lots may be required under certain conditions. Fencing of the well lot may be required under certain conditions~~;

2. The owner shall consider the need for a larger well lot for future expansion, the need to provide security measures such as lot fencing, and the need to establish additional well lots for future use;

~~b.~~ 3. If the well lot does not adjoin a public road, then an ~~all weather~~ access road shall be provided and an access easement recorded as part of the well lot;

~~c.~~ 4. The well lot shall be graded to divert surface runoff away from the well and to prevent ponding on the well lot; and

~~d.~~ 5. The well lot ~~or lots must~~ and access to the lot shall be located by a survey, and a final plat plan and dedication document prepared and recorded as described in 12VAC5-590-200. ~~The final plat plan must agree with the preliminary plat plan with respect to size and boundaries of the lot or lots selected for well or wells. One of the following must be submitted:~~

~~(1) A copy of the plat plan showing that it has been duly recorded and signed by the clerk of the circuit court for the jurisdiction where the well is located and giving the deed book and page number and date of recording will be required before a construction permit can be issued or~~

~~(2) If the well lot is identified on a recorded plan of the subdivision as a well lot, then this is acceptable, if recorded as indicated in subdivision A 1 d (1) above; and~~

c. In addition, a dedication document duly recorded with the clerk of the circuit court must be furnished stating that the well lot shall be used only for waterworks appurtenances as long as this lot is utilized as part of a waterworks.

2. E. Minimum well location requirements:

a. 1. The horizontal distance from the well to any septic tank, purification field sanitary drainfield, pit privy, cesspool, barnyard, hog animal feed lot, cemetery, geothermal well or source of similar contamination, as well as and all surface runoff from such actual or potential sources of contamination, shall be at least 50 feet;.

b. 2. The horizontal distances from the well to any pipe carrying sewage or pipe in which sewage can back up shall be at least 50 feet; and.

c. The horizontal distance from the well to any petroleum or chemical storage tank or pipe line or similar source of contamination shall be at least 50 feet, except that where plastic type well casing is used, the separation distance shall be at least 100 feet. This 100 foot separation may be obtained by an enlarged well lot, easements, deed restrictions, or other equivalent legal means.

3. A minimum separation distance of 50 feet shall be maintained between a fuel storage tank and a well; however, a lesser distance may be allowed if the fuel is propane or natural gas, or if it is liquid fuel meeting the following requirements:

a. Liquid fuel tanks shall be located above grade.

b. Liquid fuel tanks shall be double-walled with an inner wall leak-detection alarm or single-walled with a full-capacity containment system constructed of compatible material.

c. Liquid fuel lines shall be located above grade or enclosed in a protective casing if below grade, and liquid fuel tanks shall be provided with a paved and curbed parking pad at the tank filling location.

4. The commissioner shall require a spill response plan if the fuel is stored within 50 ft of the well.

F. The class of well to be constructed shall be determined by the commissioner. A Uniform Water Well Completion Report, Form GW-2, shall be completed and submitted to the department with the project documents, in accordance with procedures in 12VAC5-590-200.

3. 1. Minimum construction requirements for Class I wells:

a. The well shall be drilled and cased to a depth sufficient to exclude undesirable groundwater, but in no case shall the casing this depth be less than 100 feet in depth; below finished grade.

b. The diameter of the drill hole to the depth required above shall be at least three inches greater than the outside diameter of the couplings of the casing to be used; and.

c. For wells constructed in consolidated formations, the lower end of the casing shall terminate in solid rock or other impervious formation when practical to do so.

c. d. The annular space around the casing shall be grouted to a depth of at least 100 feet in a manner satisfactory to the division commissioner. When the outer casing cannot be removed, the annular spacing between the drill hole and the outer casing shall also be sealed in a manner approved by the division commissioner.

4. 2. Minimum construction requirements for Class II wells. This classification includes two types of construction, either of which is acceptable:

a. Type A wells in which the annular space around the casing is grouted a minimum of 20 feet from the surface:

(1) The well shall be drilled and cased to a depth of at least 100 feet; and

(2) The cased drill hole shall pass through at least the first 50 feet of unconsolidated formation such as caving sand, gravel or other material that will collapse against the casing;

b. Type B wells in which the annular space around the casing is grouted:

(1) a. The well shall be drilled and cased to a depth sufficient to exclude undesirable groundwater, but in no case shall the casing be less than 50 feet in length; this depth be less than 50 feet below finished grade.

(2) b. The diameter of the drill hole to the depth required above shall be at least three inches greater than the outside diameter of the couplings of the casing to be used;.

(3) The c. For wells constructed in consolidated formations, the lower end of the enlarged portion of the drill hole should terminate in solid rock or other impervious formation when practical to do so; and.

(4) d. The annular space around the casing shall be grouted to a depth of at least 50 feet in a manner satisfactory to the division commissioner. When the outer casing cannot be removed, the annular spacing between the drill hole and the outer casing shall be sealed in a manner approved by the division commissioner.

B. General well development requirements: G. Well construction materials and development.

1. Water used in well construction shall be from a satisfactory potable water source or from the well under construction.

2. Casing and liner pipe~~:~~.

a. ~~Shall be metallic pipe meeting ASTM, ANSI, AWWA or API~~ Steel casing and liner pipe shall meet ASTM, NSF/ANSI, or AWWA specifications and standards applicable to wells. ~~Dimensions shall conform to the following table:~~ Steel pipe dimensions shall conform to Table 840.1.

TABLE 840.1
Steel Well Casing Pipe

STEEL PIPES					
SIZE (inches)	DIAMETER (inches)		THICKNESS (inches)	WEIGHT PER FOOT (pounds)	
	External	Internal		Plain Ends	With Threads and Couplings
4 ~~id~~	4.5	4.026	0.237	10.79	11.0 ~~:~~
6 ~~id~~	6.625	6.065	0.280	18.97	19.18 ~~:~~
8	8.625	7.981	0.322	28.55	29.35 ~~:~~
10	10.750	10.020	0.365	40.48	41.85
12	12.750	12.000	0.375	49.56	51.15
14 ~~od~~	14.000	13.250	0.375	54.57	57.00
16	16.000	15.250	0.375	62.58	~~65.30~~
18	18.000	17.250	0.375	70.59	~~73.00~~
20	20.000	19.250	0.375	78.60	~~81.00 :~~
22	22.000	21.000	0.500	114.81	
24	24.000	23.000	0.500	125.49	
26	26.000	25.000	0.500	136.17	
28	28.000	27.000	0.500	146.85	
30	30.000	29.000	0.500	157.53	
32	32.000	31.000	0.500	168.21	
34	34.000	33.000	0.500	178.89	
36	36.000	35.000	0.500	189.57	

b. ~~Plastic pipes may be approved following investigation by the division. The casing shall be PVC type 1120 (cell identification 12454), NSF approved for well casings meeting appropriate ASTM, ANSI, AWWA or API specifications and used to depths in conformance with the information contained in the following tables:~~ Plastic well casing shall be PVC meeting ASTM F480-14, NSF/ANSI Standard 61-2017, or AWWA Standard A100-15. Depths shall not exceed the published resistance to hydraulic collapse pressure of the PVC casing, taking into account the installation techniques and grouting methods. Well casing wall thickness shall be sufficient to withstand anticipated formation and hydrostatic pressures and mechanical forces imposed during installation, well development, and use. PVC well casing shall meet the requirements of ASTM, NSF/ANSI, and AWWA, as applicable.

Maximum Allowable Depths of Installation of Polyvinyl Chloride (PVC) Thermoplastic Water Well Casing Type 1120 (12454)									
Schedule Number	Nominal Diameter of PVC 1120								
	2	2.5	3	3.5	4	5	6	8	10
40	560'	740'	485'	265'	291'	19	143'	99'	74'
80	1750'	2040'	1380'	1085'	912'	64	395'	400'	340'

SDR No.	All Diameters of PVC 1120
SDR 41	25
SDR 32.5	50'
SDR 26	108'
SDR 21	212'
SDR 17	413
SDR 13.5	868'

c. Heavy weight Heavyweight casing pipe may be required under certain geologic and hydrostatic conditions: and.

d. Where corrosive conditions exist, materials such as coated casings, stainless steel, bronze, or plastic may be used as casings or linings subject to approval by the division commissioner, and meeting the requirements of NSF/ANSI Standard 61-2017.

3. Packers or other well construction materials shall be of a material that will not impart taste, odors, toxic substances, or bacterial contamination to the water in the well. No lead is to be used in packers, flux, piping, etc.

4. Screens, where required, shall:

a. Be constructed of material which that will not be damaged by chemical action of groundwater or future cleaning operations;

b. Have size of openings to be based on sieve analysis of the formation to be screened, and should shall be adequate to pass flows at a velocity of 0.1 foot per second ft/sec or less; and

c. Be installed so that exposure above the pumping level will not occur.

5. A water well completion report shall:

a. Be submitted to the division, the State Water Control Board and the owner; and

b. Provide all data requested on the most recent well completion form.

6. The yield and drawdown test data over a 48-hour minimum period shall be provided; however, in those areas where geologic conditions warrant, the required test period may be varied by the division.

7. Chemical conditioning shall be included in specifications as to method, equipment, chemicals, testing for residual chemicals, disposal of waste, and inhibitors used.

8. 5. Grouting requirements.

a. Neat cement grout is normally required and shall consist of cement (API Spec. 10, Class G cement or Class B similar to ASTM C150 TYPE II) shall consist of Portland cement and water with not more than six gallons of water per 94-pound sack of cement, and shall be in place within 48 hours of well construction. A maximum of 6.0%, by weight, bentonite and 2.0%, by weight, calcium chloride, may be added. NOTE: When exceptional conditions require the use of a less fluid grout to bridge voids, a mixture of cement (ASTM C150 TYPE II), sand and water in the proportion of not more than two parts by weight of sand to one part of cement with not more than six gallons of clean water per 94 pound sack of cement may be used if approved by the division; Other grout mixes may be approved by the commissioner where special conditions warrant.

b. Application.

(1) Grout shall be installed by means of continuous pressure grouting from the bottom of the annular opening upward in one continuous operation until the annular opening is filled.

(2) Sufficient annular opening shall be provided to permit a minimum of 1 ½ 1-1/2 inches of grout around the protective casing, including couplings, if used.

(3) Prior to Before grouting, bentonite, Aquagel, or similar approved materials may be added to the annular opening, in the manner indicated for grouting; and wells, suitable fill material such as bentonite, low-strength cement and sand mix, or similar materials that have been approved by the commissioner shall be added to the annular opening below the grout zone to seal and

stabilize these areas. Instead of this requirement, the casing may be grouted for its entire depth.

c. ~~Protective casing~~ Casing shall be provided with sufficient centralizers attached to the casing to ~~permit~~ allow unobstructed flow and uniform thickness of the grout.

~~9. Plumbness and alignment:~~

~~a. Every well shall be tested for plumbness and alignment;~~

~~b. The test method shall be clearly stated in specifications; and~~

~~c. Excessive kinks and bends shall not be acceptable.~~

d. Where plastic well casing is used, the heat of hydration of cement mixtures and the hydraulic collapse pressure of the casing shall be taken into consideration when choosing grout composition and placement in accordance with DEQ guidelines.

~~10.~~ 6. To prevent tampering and contamination of the source water, unused wells shall be capped and locked. Watertight welded metal plates, set screw caps, or screw-on caps are acceptable for temporarily capping a well until the pumping equipment is installed.

H. A well yield and drawdown test shall be performed in accordance with requirements of this subsection. The commissioner may require additional pumping wells, observation wells, or longer duration tests where site conditions warrant.

1. The yield and drawdown test duration shall be a minimum of 48 hours. Data to be collected during the yield and drawdown test shall be recorded on the Well Yield and Recovery Report form provided by the department. When the source water requirements for a noncommunity waterworks are determined to be three gpm or less over normal hours of operation, the 48-hour minimum drawdown test may be reduced to no less than 12 hours. Any reduction shall be approved by the commissioner before conducting the test.

2. Discharge from the pumping well shall be conveyed away from the test site to avoid recharge.

3. Where multiple wells are intended to be used, the location and geology of each well in the vicinity shall be evaluated. The commissioner shall require that:

a. The yield and drawdown test be performed simultaneously on the multiple wells, or

b. During the yield and drawdown test of the pumping well, the water levels of the neighboring wells shall be monitored. If the water level of the neighboring wells declines in response to the pumping well, then additional evaluation shall be required by a professional engineer or a professional geologist with experience in groundwater source evaluations.

4. The commissioner may consider alternative testing methods and analyses as proposed by professional engineers or professional geologists with experience in groundwater source evaluations. Where geological conditions exist that prohibit an accurate determination of well yield using methods prescribed in this subsection, additional testing procedures shall be required on an individual basis and approved by the commissioner.

5. When an aquifer test is required by DEQ for a well located in a GWMA, the yield and drawdown test may be incorporated into the aquifer test plan protocol if approved by the commissioner before conducting the test.

I. Well appurtenances.

1. A sanitary seal shall be provided on the top of the well casing, or a watertight well cap shall be provided when a pitless adapter is installed.

2. The well casing shall extend at least 12 inches above the concrete floor or apron.

3. Where aprons are used, they shall be centered on the well and measure at least six feet by six feet by six inches thick.

4. Provisions shall be made for venting the well casing to the atmosphere. Where vertical turbine pumps are used, vents into the side of the casing may be necessary to provide adequate venting.

5. Each well casing shall be provided with equipment and appurtenances for measuring the water level elevation in the well. Corrosion-resistant materials shall be used. Where necessary, the appurtenances shall be attached firmly to the drop pipe or pump column and in a manner as to prevent entrance of foreign materials.

6. All pitless well units, adapters, and watertight caps shall be listed by the Water Systems Council as certified products, or as approved by the commissioner.

J. Every new, modified, or reconditioned groundwater well or spring shall be disinfected after placement of the final pumping equipment. Wells shall be disinfected in accordance with AWWA Standard C654-13.

K. Water quality tests. Water quality sampling and analysis shall be conducted for every new, modified, or reconditioned well or spring to determine what treatment, if any, is required. All samples shall be analyzed by DCLS or a testing laboratory certified by DCLS. Water quality analytical methods shall conform to requirements contained in 12VAC5-590-440.

~~11.~~ 1. Bacteriological quality~~:~~.

~~a. Every new, modified, or reconditioned groundwater source shall be disinfected after placement of the final pumping equipment; and~~

~~b. A series of nine consecutive negative samples for bacteriological examination or a series of 20 or more samples for most probable number (MPN) examination is required.~~

~~12. Samples for chemical, physical and radiological analyses shall be submitted on every new, modified, or reconditioned well. The sample must be collected near the end of the pumping test and after the well water has cleared.~~

a. Bacteriological samples for new or deepened wells shall consist of a series of 20 samples collected at a minimum of 30-minute intervals during the last 10 hours of the yield and drawdown test. These samples shall be analyzed for both total coliform density and E. coli density. See 12VAC5-590-380 G for groundwater disinfection treatment requirements, and see 12VAC5-590-430 for surface water influence determinations.

b. Bacteriological samples for modified or reconditioned wells shall consist of two samples collected at least 30 minutes apart, at a minimum, while the pump is in continuous operation. These samples shall be analyzed for both total coliform density and E. coli density. More samples may be required by the commissioner, depending on the work performed.

2. Samples for new wells shall be collected for chemical, physical, and radiological contaminants listed in Tables 340.1 through 340.4. SOC tests may be waived by the commissioner if supported by the source water assessment of vulnerability to contamination. Chemical sampling analysis for a TNC may be limited to nitrate and nitrite only. Samples shall be collected at the end of the yield and drawdown test and after the well water has shown no further change in the clarity of the water. Chemical, physical, and radiological constituent testing for modified or reconditioned wells shall be determined on an individual basis by the commissioner.

~~13.~~ L. Observation wells:

~~a.~~ 1. Shall be constructed in accordance with the requirements ~~for permanent wells if they are to remain in service after completion of the groundwater study; and~~ of DEQ if they are constructed in a GWMA. Otherwise, they shall be constructed in accordance with 12VAC5-590-630 if they are to remain in service as observation wells after completion of the groundwater study.

~~b.~~ 2. Shall be protected ~~at the upper terminal~~ to preclude the entrance of contamination.

~~14. Well abandonment:~~

~~a. Observation wells and groundwater sources which are not in use shall be sealed by methods which will restore the controlling geological conditions which existed before they were constructed;~~

~~b. Temporary abandonment.~~

~~(1) Any water well temporarily removed from service, or completed but not put into service, shall be sealed with a watertight cap or well head seal.~~

~~(2) Such well shall be so maintained that it will not be a source or channel of contamination during temporary abandonment; and~~

~~c. Permanent abandonment.~~

~~(1) All casing and screen materials may be salvaged.~~

~~(2) The well shall be checked from land surface to the entire depth of the well before it is plugged to ascertain freedom from obstructions that may interfere with plugging (sealing) operations.~~

~~(3) The well shall be thoroughly chlorinated prior to plugging (sealing).~~

~~(4) Bored wells shall be completely filled with cement grout or dry clay compacted in place.~~

~~(5) Wells constructed in unconsolidated formations shall be completely filled with cement grout or clay slurry by introduction through a pipe initially extending to the bottom of the well. Such pipe shall be raised, but remain submerged in grout, as the well is filled.~~

~~(6) Wells constructed in consolidated rock formations or which penetrate zones of consolidated rock may be filled with sand or gravel opposite the zones of consolidated rock. The top of the sand or gravel fill shall be at least five feet below the top of the consolidated rock. The remainder of the well shall be filled with sand cement grout only.~~

~~15.~~ M. Sealing of select zones. All zones containing water of undesirable quality or zones to be protected but excluded from final well completion shall be grouted from a point at least five feet above the zone to a point at least five feet below the zone.

~~C. Special requirements for various groundwater sources:~~

~~1.~~ N. Gravel packed wells:

~~a.~~ 1. The gravel utilized shall be free of foreign material, properly sized, washed, and then disinfected ~~prior to~~ before or during placement~~;~~.

~~b.~~ 2. The gravel refill pipes, when used, shall be incorporated within the pump foundation or concrete apron and terminated with screwed or welded caps at least 12 inches above the ~~pumphouse~~ pump house floor or concrete apron~~;~~.

~~c. Gravel~~ 3. The gravel refill pipes in the grouted annular opening shall be surrounded by a minimum of ~~1 ½~~ 1-1/2 inches of grout.

~~d. Means~~ 4. A means for the prevention of leakage of grout into the gravel pack of the screen shall be provided~~; and~~.

~~e.~~ 5. The minimum protective casing and grouted depth shall be acceptable to the ~~division~~ commissioner.

6. Wells located in a GWMA shall have gravel packing installed in accordance with 12VAC5-590-840 B 3.

~~2.~~ O. Radial water ~~collectors will~~ collector systems shall be considered on an individual basis by the ~~division~~ commissioner.

~~3. Multiple aquifer wells. The annular space between producing aquifers should be grouted to prevent the mixing of waters of different qualities (see subdivision B 15). An approved bentonite material specifically manufactured as a grout may be considered.~~

~~4.~~ P. Flowing artesian wells located outside a GWMA will be considered on ~~an individual basis by the division~~ an individual basis by the commissioner.

~~5. Springs:~~

~~a. Springs may be considered only when it is not possible to develop an acceptable well or other source;~~

~~b. Springs may be approved only after an extensive sanitary survey and bacteriological, turbidity, chemical, and flow data over a time period sufficient to establish year round quality and quantity. The amount of land required for protection of the spring shall be determined by the division on a case by case basis;~~

~~c. Springs shall be considered as surface water sources if they are influenced by surface conditions. Indicators of such influence include turbidity, bacteriological, and chemical quality that varies with surface conditions;~~

~~d. Springs shall be protected from entry of surface water;~~

~~e. Springs shall be housed in a permanent structure; and~~

~~f. Springs shall be continuously chlorinated.~~

1. The well shall be equipped with a pitless adapter specifically designed for pressurized artesian wells.

2. Special well construction, casing, and sealing may need to be considered for flowing artesian wells.

Q. Capacity determination of wells used for community waterworks shall meet the daily water demand.

1. Capacity of wells located in consolidated rock formations shall be determined by the well sustainable yield, and the actual installed (production) well pump capacity, whichever value is less. The sustainable yield shall be calculated as follows:

(A x 1440 min/day) / 1.8 = gpd well sustainable yield, where A = well yield (gpm) determined by the yield and drawdown test conducted in accordance with 12VAC5-590-840 H.

2. Capacity of wells located in unconsolidated formations shall be determined by the well yield and the actual installed (production) well pump capacity, whichever value is less.

R. Waterworks serving 50 or more residential connections employing only wells providing the source water shall include at least two wells. If only two wells are provided, then the second well shall be rated for at least 30% of the waterworks permit capacity.

S. The owner of a waterworks serving fewer than 50 residential connections with a single well providing the source water shall provide or have ready access to a replacement pump and other components and materials needed for pump replacement. Instead of this requirement, the owner may provide 48 hours of total finished water storage volume based on the maximum daily water demand.

T. Springs.

1. The water quality of spring sources shall be established by obtaining samples over a period of time agreeable to the commissioner to assess the bacteriological, physical, chemical, and radiological characteristics.

2. Springs shall be housed in a permanent structure and protected from entry of surface water.

3. The amount of land required for protection of the spring source shall be determined by the owner and approved by the commissioner.

4. The design of spring sources shall provide for continuous disinfection.

5. The capacity of spring sources shall be determined using actual flow data.

a. Sufficient daily flow data shall be collected to conduct a frequency distribution analysis. The capacity of a spring source is defined as the low flow rate for one day with a projected recurrence period of 30 years (i.e., 30-year, one-day low flow).

b. The Log-Pearson Type III method of frequency distribution analysis shall be used to make the determination, with a minimum of 1,000 daily flow measurements.

c. If sufficient data is not available to conduct the analysis specified in this subsection, then the lowest recorded daily flow rate may be considered to be the spring capacity. Sufficient flow records shall be available to capture the spring flow during drought conditions, and shall be acceptable to the commissioner.

~~Article 3~~
~~Processes and Devices~~

12VAC5-590-850. ~~General~~ Appropriate treatment.

A. The design of water treatment ~~processes and devices~~ facilities shall depend upon the evaluation of the nature and quality of the particular source water to be treated and the ~~desired~~ required quality of the finished water ~~as set forth in Article 1 of Part II, Drinking Water Standards, and Article 2 of Part III, Source Development. All surface water shall receive treatment by chemical addition, for coagulation, flocculation, clarification, filtration, and disinfection unless otherwise approved by the division. Some types of treatment processes may require presedimentation. Operation and maintenance manuals are required~~. Treatment process selection shall follow the requirements of 12VAC5-590-680.

B. The design of water treatment facilities shall address safety considerations as required in 12VAC5-590-560.

12VAC5-590-860. Chemical application.

~~Only chemicals authorized in the construction permit or subsequently authorized by the division and in compliance with National Sanitation Foundation Standards 60 and 61 shall be used to treat drinking water or as an additive to drinking water.~~

A. Plans and specifications shall be submitted for ~~review~~ evaluation and approval, as ~~provided for~~ required in Part I (12VAC5-590-10 et seq.), and shall include:

1. Descriptions of feed equipment, including maximum and minimum feed ranges;

2. Location of feeders, piping layout, and points of application;

3. ~~Storage~~ Chemical storage and handling facilities;

4. Specifications for chemicals to be used;

5. Operating and control ~~procedures~~ features; and

6. Descriptions of testing equipment and procedures.

B. Chemicals shall be applied to the water at such points and by such means as to:

1. Assure maximum efficiency of treatment;

2. Provide maximum protection to the consumer;

3. Provide maximum safety to operators;

4. Assure satisfactory mixing of the chemicals with the water;

5. Provide maximum flexibility of operation through various points of application, when appropriate;

6. Prevent backflow or ~~back siphonage~~ backsiphonage between multiple points of feed through common manifolds; and

7. Provide for the application of pH-affecting chemicals to the ~~raw~~ source water ~~prior to~~ before the addition of the coagulant in turbidity removal processes.

C. Feed equipment.

1. Where chemical feed is necessary for the treatment of the ~~supply~~ source water, such as chlorination, coagulation, or other essential processes~~: a. A minimum of two feeders shall be provided; and b. A standby unit or combination of units of sufficient capacity~~, a standby feeder or combination of feeders shall be available to ~~replace~~ provide the required chemical dose with the largest ~~unit during shutdowns~~ feeder out of service.

2. Feeders shall be of such design and capacity to meet the following requirements:

a. Feeders shall be able to supply ~~at all times~~ the necessary amounts of chemical at an accurate rate throughout the range of feed~~;~~ at all times.

b. Proportioning of chemical feed to the rate of flow shall be provided where the water flow is not constant~~;~~ or where specifically required by the commissioner.

c. Positive displacement type solution feed pumps, or gravity feed through ~~rotometers~~ rotameters, shall be used to feed liquid chemicals, but should not normally be used to feed chemical slurries~~; and~~.

~~d. Chemical solutions shall be prevented from being siphoned into the water supply by:~~

~~(1) Providing vacuum relief,~~

~~(2) Providing a suitable air gap, or~~

~~(3) Other approved devices or piping arrangements;~~

~~e. The service water supply shall be protected from contamination by chemical solutions by:~~

~~(1) Equipping the supply line with backflow or back-siphonage prevention devices or~~

~~(2) Providing an air gap between supply line and solution tank;~~

~~f.~~ d. Chemical contact materials and surfaces shall be resistant to the aggressiveness of the chemical solution~~;~~.

~~g.~~ e. Dry chemical feeders shall:

(1) Measure chemicals volumetrically or gravimetrically;

(2) Provide effective solution of the chemical in the solution pot;

(3) ~~Preferably provide~~ Provide gravity feed from solution pots; and

(4) Completely enclose chemicals to prevent emission of dust to the ~~operation~~ room~~;~~.

~~h.~~ f. No direct connection ~~may~~ shall exist between any sewer and a drain or overflow from the feeder or solution chamber or tank~~; and~~.

~~i.~~ g. A separate chemical waste tank should be considered.

3. Chemical feed equipment:

a. Shall be located near points of application to minimize length of feed lines;

b. Shall be readily accessible for servicing and repair, and observation of operation; and

c. Shall be located ~~and~~ within a protective ~~curbings provided~~ curbing so that chemicals resulting from equipment failure, spillage, or accidental drainage shall not enter the water in conduits or treatment or storage basins.

4. Control~~:~~.

a. Feeders ~~may~~ shall be ~~manually or automatically controlled~~ capable of both manual and automatic control with the automatic control reverting to manual control as necessary;

b. ~~The feeders~~ Feeders shall be manually started following shutdown, unless otherwise approved by the ~~division~~ commissioner; and

c. Automatic chemical dose ~~or~~ controls with residual analyzers ~~may be approved for use and~~ shall provide alarms for critical values~~,~~ and shall include indicating and recording ~~charts~~ equipment.

5. Solution tanks. All solution tanks shall be manufactured of materials suitable ~~as a~~ for food contact ~~surface:~~ or that meet the requirements of 12VAC5-590-810.

a. Means shall be provided to maintain uniform strength of solution, consistent with the nature of the chemical solution. Continuous agitation ~~is necessary~~ shall be provided to maintain slurries in suspension~~;~~.

b. ~~Two solution tanks of specific capacity may be required for a chemical to assure continuity of chemical application during servicing;~~ Solution tanks shall be of sufficient number and capacity to assure continuous chemical application during tank servicing, and the access openings shall be curbed and fitted with tight covers.

c. Each tank exceeding 30 gallons in capacity or fixed in place shall be provided with a drain unless other means of dewatering the tank are provided.

(1) ~~No direct~~ Direct connection between any tank or drain and a sewer ~~shall be permitted~~ is prohibited.

(2) All drains shall terminate at least two pipe diameters, but not less than two inches, above the rim of the receiving sump, conduit, or waste receptacle~~;~~.

d. Means shall be provided to indicate the solution level in the tank~~;~~.

e. ~~Make-up~~ Process water shall enter the tank above the rim at a distance of two pipe diameters but not less than two inches~~;~~.

f. Chemical solutions shall be kept covered.

~~(1) Polyphosphate solutions shall be disinfected by carrying a chlorine residual when added to unchlorinated water.~~

~~(2) Large tanks with access openings shall have such openings curbed and fitted with tight covers;~~

g. ~~Subsurface locations for~~ Buried or subsurface chemical storage or solution tanks ~~shall:~~ are prohibited.

~~(1) Be free from sources of possible contamination;~~

~~(2) Assure positive drainage for groundwaters, accumulated water, chemical spills, and overflows; and~~

h. Overflow pipes, when provided, shall:

(1) Be turned downward, ~~with end screened~~ and when located outside, be provided with an appropriately sized screened end to prevent entry of insects and small animals;

(2) Have free discharge;

(3) Be located where noticeable; and

(4) Be directed so as not to contaminate the water or be a hazard to operating personnel.

6. Weighing scales.

a. Shall be provided for weighing cylinders at all water treatment plants utilizing chlorine gas; for large water treatment plants, indicating and recording type are desirable;

b. Shall be ~~required for fluoride solution~~ provided for fluorosilicic acid feed systems in conjunction with a ~~loss of weight~~ loss-of-weight recorder;

c. ~~Should be required~~ Shall be considered for volumetric dry chemical feeders; and

d. Shall be accurate to measure increments of 0.5% of load.

7. Feed lines.

a. Shall be as short as possible in length of run and be:

(1) Of durable, ~~corrosion-resistant~~ corrosion-resistant material;

(2) Easily accessible throughout the entire length;

(3) Protected against freezing; and

(4) Readily cleanable.;

b. Shall slope upward from chemical source to feeder, when conveying gases;.

c. Shall introduce corrosive chemicals in ~~such~~ a manner as to minimize potential for corrosion;.

d. Shall be designed consistent with scale forming solids depositing properties of the water, chemical solution, or mixture conveyed;.

e. Shall not carry chlorine gas beyond the chlorine feeder room unless the chlorine is under vacuum~~; and~~.

f. Shall be designed so that liquid alum does not mix with water ~~prior to~~ before the point of application.

8. ~~Service water supply:~~ Process water.

a. Water used for dissolving dry chemicals, diluting liquid chemicals, or operating chemical feeders shall be:

(1) ~~Only from~~ From a safe, approved source;

(2) Protected from contamination by appropriate means;

(3) Ample in supply and adequate in pressure;

(4) Provided with means for measurement when preparing specific solution concentrations by dilution; and

(5) Properly treated for hardness when necessary.

b. Where a booster pump is required, ~~duplicate equipment~~ a spare pump shall be provided ~~and, when necessary, standby power~~.

c. Backflow prevention shall be achieved by appropriate means such as:

(1) An air gap between the fill pipe and overflow rim of the solution or dissolving tank, and equivalent to two pipe diameters but not less than two inches;

(2) An approved reduced pressure zone backflow preventer, consistent with the degree of hazard, aggressiveness of chemical solution, back pressure sustained, location, and available means for maintaining and testing the device; or

(3) A satisfactory vacuum relief device.

D. Chemicals.

~~1. Quality.a. Chemical containers shall be fully labeled to include:~~

~~(1) Chemical name, purity and concentration;~~

~~(2) Supplier name and address;~~

~~(3) Precautions in handling; and~~

~~(4) Requirements of Virginia Department of Labor and Industry, Virginia Occupational Safety and Health Standards for General Industry, section 1910.1200(f).~~

~~b. Chemicals shall meet American Water Works Association standards, where applicable, and be stamped or certified accordingly.~~

~~c. Provisions may be required for assay of the chemicals delivered where the quality is in doubt.~~

~~d. Chemicals having a distinguishing color may be used, providing the coloring material is not toxic in concentrations used and will not impart taste, odor, or color to the water supply.~~

~~2.~~ 1. Storage.

a. Space shall be provided where at least 30 days of chemical supply can be stored ~~in dry storage conditions~~, based on the average dose and average annual water treatment plant flow rate. Storage shall be at a location that is convenient for efficient handling ~~unless local suppliers~~ and safety. Lesser storage capacity may be approved if the owner can demonstrate that the local suppliers or other conditions ~~indicate lesser storage is adequate~~ will provide an uninterrupted source of chemicals.

b. Cylinders of chlorine gas shall be:

(1) Isolated from operating areas;

(2) Restrained in position to prevent upset; and

(3) Stored in rooms separate from ammonia storage.

c. Liquid chemical storage tanks shall:

(1) Have a liquid level indicator; and

(2) Have an overflow and a receiving basin or drain capable of receiving accidental spills or overflows.

d. Special precautions shall be taken with~~: (1) Sodium~~ sodium chlorite~~,~~ to eliminate any danger of explosion~~; and~~.

~~(2)~~ e. Activated carbon~~, which is a potentially combustible material, requiring isolated, fireproof storage and explosion proof electrical outlets, lights, and motors in areas of dry handling~~. The following special precautions shall be taken in areas where activated carbon is stored, handled, and fed.

(1) Isolated, cool, and dry areas free from sources of ignition shall be provided for activated carbon storage;

(2) Electrical equipment, devices, and materials shall comply with applicable codes;

(3) Ventilation in areas associated with the storage, handling, and feeding of activated carbon shall be localized so as not to cause dust or material to be drawn into other areas; and

(4) Activated carbon shall not be stored with strong oxidants such as ozone, liquid chlorine (i.e., compressed chlorine gas), and permanganate.

~~e.~~ f. Chemicals shall be stored in covered or unopened shipping containers, unless the chemical is transferred into an approved covered storage unit.

~~f.~~ g. Solution storage or day tanks supplying feeders directly should have sufficient capacity for one day of operation.

~~g.~~ h. Acid storage tanks shall be vented to the outside atmosphere, but not through vents in common with day tanks.

~~3.~~ 2. Handling.

a. Provisions shall be made for measuring quantities of chemicals used to prepare feed solutions.

b. Storage tanks and pipelines for liquid chemicals shall be specific to the chemicals and not for alternates.

c. Chemicals that are incompatible shall not be fed, stored, or handled together.

d. Provisions shall be made for the proper transfer of dry chemicals from shipping containers to storage bins or hoppers ~~in such a way as to minimize~~ to mitigate the quantity of dust ~~which~~ that may enter the room in which the equipment is installed. Control shall be provided by use of:

(1) Vacuum pneumatic equipment or closed conveyor systems;

(2) Facilities for emptying shipping containers in special enclosures; or

(3) Exhaust fans and dust filters ~~which~~ that put the hoppers or bins under negative pressure.

e. Precautions shall be taken with electrical equipment to prevent explosions~~, particularly in the use of sodium chlorite and activated carbon~~ and other hazards.

f. Acids shall:

(1) Be kept in closed, ~~acid resistant~~ acid-resistant shipping containers or storage units; and

(2) Not be handled in open vessels, but should be pumped in undiluted form from original containers, through a suitable hose, to the point of treatment or to a covered day tank.

g. Carts, elevators, and other appropriate means shall be provided for lifting chemical containers to ~~minimize~~ mitigate excessive lifting by operators.

h. Provisions shall be made for disposing of empty containers by an approved procedure ~~which~~ that will ~~minimize~~ mitigate exposure to the chemical.

E. Housing.

1. Structures, rooms, and areas accommodating chemical feed equipment shall provide convenient access for servicing, repair, and observation of operation.

2. Floor surfaces shall be smooth and impervious, slip-proof, and well drained ~~with a slope of ⅛ inch per foot, minimum~~.

3. Open basins, tanks, and conduits shall be protected from chemical spills or accidental drainage.

F. Operator safety. Safety provisions shall protect people at the waterworks from chemical exposures in accordance with VOSH laws and regulations.

1. Gases from feeders, storage, and equipment exhausts shall be conveyed to the outside atmosphere, above grade, and remote from air intakes.

2. See 12VAC5-590-1000 and 12VAC5-590-1001 for special provisions for handling and storing chlorine.

3. A plastic bottle of hydrochloric acid (muriatic acid in commercial form) shall be available for ammonia leak detection where ammonia gas is used or stored.

4. At least one pair of rubber gloves with long gauntlets, a dust respirator of a type ~~approved by the Virginia Occupational Safety and Health Standards for General Industry, Section 1910.134~~ that complies with VOSH laws and regulations for toxic dusts, and an apron or other protective clothing shall be provided for each operator in any shift who will handle dry chemicals.

~~5. Rubber gloves, clothing protection, and goggles shall be provided for each operator preparing chemical solutions.~~

~~6.~~ 5. Facilities such as emergency eye wash and showers shall be provided for washing of the face, gloves, and protective equipment.

~~7. See 12VAC5-590-1000 E.~~

12VAC5-590-865. Conventional filtration treatment.

A. Conventional filtration treatment is generally used for surface water sources. It is defined as a series of four processes: coagulation, flocculation, sedimentation, and filtration. The specific design parameters shall consider the water supply characteristics and variability in quality due to seasonal and climatic events.

B. Conventional filtration treatment plants shall provide staged, multiple treatment process units to allow individual units to be taken out of service without disrupting operation.

C. The commissioner may require presedimentation of waters containing high turbidity or organics (as measured by TOC).

1. Presedimentation basins utilizing a coagulant feed shall have hoppered bottoms or shall be provided with continuous sludge removal equipment. The minimum hydraulic detention time shall be three hours. The commissioner may require greater detention times depending on the source water quality and the level of pretreatment required.

2. Presedimentation basins without coagulant feed shall provide a minimum hydraulic detention time of 24 hours. The design shall address future needs for solids removal and handling.

3. Incoming water shall be dispersed across the full width of the line of travel as quickly as possible. Short circuiting shall be minimized. The commissioner may require baffling on large basins.

4. Provisions for bypassing presedimentation basins shall be provided.

5. Surface runoff shall be prevented from entering presedimentation basins or reservoirs.

6. Dikes shall be structurally sound and protected against wind action and erosion.

12VAC5-590-870. ~~Mixing and sedimentation.~~ (Repealed.)

~~A. Plants designed for processing surface waters shall:~~

~~1. Provide multiple units for coagulation, flocculation, and sedimentation at plants having a rated capacity greater than 100 gallons per minute;~~

~~2. Permit operation of flocculation basins in series or parallel;~~

~~3. Be constructed to permit units to be taken out of service without disrupting operation; and~~

~~4. Provide multiple stage treatment facilities when required by the division.~~

~~B. Water containing high turbidity or coliform organisms may require pretreatment, usually sedimentation, either with or without the addition of chemicals. When pretreatment is used, the following requirements must be met:~~

~~1. Presedimentation basins utilizing a coagulant shall have hoppered bottoms or shall be equipped with continuous sludge removal apparatus;~~

~~2. Incoming water shall be dispersed across the full width of the line of travel as quickly as possible; short circuiting must be prevented;~~

~~3. Provisions for bypassing sedimentation basins shall be included; and~~

~~4. Three hours detention is the minimum period required. Greater detention may be required depending on raw water quality.~~

~~C. Flash mixing is the rapid dispersion of chemicals throughout the water to be treated, usually by violent agitation, to enhance coagulation.~~

~~1. Turbidity removal plants other than those of the solids contact type shall provide flash mixing facilities.~~

~~2. Basins shall be equipped with mechanical mixing devices; other arrangements, such as baffling, may be acceptable only under special conditions. Where mechanical mixing devices are utilized, duplicate units or spare mixing equipment shall be provided.~~

~~3. Design parameters:~~

~~a. The detention period shall not be less than 10 seconds;~~

~~b. The design of the flash mixing unit should be based upon the mean temporal velocity gradient G (expressed as units of seconds^{-1}). Typical values for G and T are:~~

~~T (seconds)~~	~~G (seconds^{-1})~~
~~20~~	~~1,000~~
~~30~~	~~900~~
~~40~~	~~700~~
~~Longer time~~	~~790~~

~~For optimization, the engineer should determine the appropriate G value and detention time through experimentation;~~

~~c. The point of application of the coagulant shall be at the point of maximum mixing intensity;~~

~~d. The physical configuration of the mixing basin shall be designed to eliminate vortexing; and~~

~~e. Flash mix units should be designed to allow speed variation throughout at a range of one to three.~~

~~4. Properly designed static mixers may be utilized.~~

~~D. Flocculation mixing is the agitation of treated water at low velocity gradients for sufficient time to agglomerate coagulated particles.~~

~~1. Basin inlet and outlet design shall prevent short circuiting and destruction of floc. A drain and overflow shall be provided. Multiple units shall be provided for continuous operability and each basin shall be designed so~~

that individual basins may be isolated without disrupting plant operation.

2. Design parameters:

a. The minimum detention time shall be 30 minutes;

b. The design of the flocculation units shall be based upon the value of GT (mean temporal velocity gradient in seconds^{-1}) X (detention time in seconds) which is ordinarily in the range of 20,000 to 200,000. The engineer should establish the value of GT through experimentation;

c. Variable speed drive units shall be designed to provide speed variations throughout a range of four to one;

d. To control short circuiting in mechanical flocculators, at least three successive compartments should be provided. In addition, special attention should be given to the ports between compartments to further suppress short circuiting;

e. To accomplish maximum power input and reduce particle shearing, tapered flocculation should be provided;

f. In basins utilizing vertical shaft flocculators, wing walls, or stators shall be provided to prevent vortexing; and

g. The flocculation basins must be so designed that individual basins may be isolated without disrupting plant operation.

3. Flocculation and sedimentation basins shall be as close together as possible. The velocity gradient of the flocculated water through pipes or conduits to settling basins shall not be greater than the velocity gradient utilized in flocculating the water. Where velocity gradient is not used as a design parameter, the linear velocity in pipes and conduits from the flocculators to the settling basin shall not exceed 0.5 feet per second. Allowances must be made to minimize turbulence at bends and changes in direction.

4. Baffling may be used to provide for flocculation in small plants only after consultation with the division. The design should be such that the velocity gradients noted above may be maintained. Turbidity removal plants other than solids contact shall provide flocculation basins.

5. Safety. Guard rails and adequate lighting shall be provided.

E. Sedimentation shall follow flocculation/mixing. The detention time for effective clarification is dependent upon a number of factors relating to basin design and the nature of the raw water. The number of basins required is dependent upon the plant size, turbidity, color, colloidal matter, and taste and odor causing compounds to be removed.

1. Plants utilizing rapid rate gravity filters in conjunction with conventional sedimentation shall provide a minimum of four hours effective settling (detention) time. Effective settling time shall be calculated using the volume of the basins from the stilling wall to the submerged effluent orifice or weir.

2. Inlets shall be designed to distribute the water equally and at uniform velocities. Open ports, submerged ports, stilling walls, and similar entrance arrangements are required. Where stilling walls are not provided, a baffle shall be constructed across the basin close to the inlet and shall project several feet below the water surface to dissipate inlet velocities and provide uniform flows across the basin.

3. Outlet devices shall be designed to maintain velocities suitable for settling in the basin and to minimize short circuiting. The use of submerged orifices or submerged weirs is required. The maximum velocity gradient in pipes and conduits from the settling basins to the filters shall not exceed that used in flocculation. Where velocity gradient is not used as a parameter the linear velocity in pipes and conduits from settling basins shall not exceed 1.0 foot per second.

4. Rectangular sedimentation basins should be designed with a length to width ratio of at least four to one. Surface overflow rates should be within the range of 0.25 to 0.38 gallons per minute per square foot in processes utilizing flocculation, the lower limit being utilized for cold waters and the higher limit being applied to warm waters.

5. The circular clarifiers of the center feed, peripheral feed, and spiral flow type will be considered on an individual basis.

6. Basins shall be provided with a means for dewatering. Basin bottoms shall slope toward the drain not less than one foot in twelve feet unless mechanical sludge collection equipment is provided.

7. Superstructures are acceptable at specific plant locations where necessary. In areas where settling basins are subject to high and frequent cross winds, consideration should be given to the provision of windbreaks.

8. The velocity through settling basins shall not exceed 1.0 foot per minute. The basins shall be designed to minimize short circuiting. Baffles shall be provided as necessary to minimize short circuiting.

9. An overflow weir (or pipe) shall be installed which will establish the maximum water level desired on top of the filters. It shall discharge with a free fall at a location where the discharge will be noted.

10. Permanent ladders or handholds shall be provided for safety on the inside walls of basins above the water level. Guard rails shall be included. Flushing lines or hydrants

shall not include interconnection of the potable water with nonpotable water.

11. For plants having a capacity of 100 gallons per minute or more, multiple basins are required and shall be so designed that individual basins may be isolated without disrupting plant operation.

12. Mechanical sludge collecting equipment shall be considered for all plants with a capacity of 100 gallons per minute or more.

13. Facilities are required by the State Water Control Board for disposal of sludge (see 12VAC5-590-990). Provision shall be made for the operator to observe or sample sludge being withdrawn from unit.

F. Units that combine softening and clarification are acceptable where water characteristics are not variable and flow rates are uniform. Before solids contact units are considered as clarifiers without softening, specific approval of the division shall be obtained. Clarifiers shall be designed for the maximum uniform rate and shall be adjustable to changes in flow which are less than the design rate and for changes in water characteristics. A minimum of two units is required.

1. A representative of the manufacturer shall supervise the installation and initial operation of each unit.

2. The following equipment shall be provided for plant operation.

a. Complete outfit of tools and accessories; and

b. Adequate piping with suitable sampling taps so located as to permit the collection of samples of water from critical portions of the units.

3. Chemical feed requirements are those listed in 12VAC5-590-860.

4. Mixing devices shall be constructed to:

a. Provide good mixing of the raw water with previously formed sludge particles; and

b. Prevent deposition of solids in the mixing zone.

5. Flocculation equipment:

a. Shall be adjustable;

b. Shall insure that coagulation occurs in a separate chamber or baffled zone within the unit; and

c. Shall provide a flocculation and mixing period of at least 30 minutes.

6. The sludge equipment shall provide either internal or external sludge concentrators in order to obtain a concentrated sludge with a minimum of waste water.

7. Sludge removal design shall provide that:

a. Sludge pipes shall be not less than three inches in diameter and so arranged as to facilitate cleaning;

b. Entrance to sludge withdrawal piping will prevent clogging;

c. Valves are located outside the tank for accessibility;

d. The operator may observe or sample sludge being withdrawn from the unit; and

e. A timeclock with proportional timer shall be provided for automatic blowoff.

8. Cross connections:

a. Blowoff outlets and drains shall terminate and discharge at a place satisfactory to the division; and

b. Cross connection control shall be included for the potable water mains used to backflush sludge lines.

9. The detention time shall be established on basis of the raw water characteristics and other local conditions that affect the operation of the unit. Based on design flow rates, the minimum detention time shall be:

a. Two hours for suspended solids contact clarifiers; and

b. One hour for the suspended solids contact softeners.

10. Softening units should be designed so that continuous slurry concentrates of 1.0% or more, by weight, can be satisfactorily maintained.

11. Water losses:

a. Solids contact units shall be provided with suitable controls for sludge withdrawal;

b. Total water losses should not exceed:

(1) Five percent for clarifiers; and

(2) Three percent for softening units; and

c. The solids concentration of sludges bled to waste should be:

(1) Three percent by weight for clarifiers,

(2) Five percent by weight for softeners.

12. Units used as clarifiers should be equipped with orifices. Units used for softening should be equipped with either overflow weirs or orifices. Weirs shall be:

a. Adjustable;

b. At least equivalent in length to the perimeter of the tank; and

c. Constructed so that surface water does not travel over 10 feet horizontally to the collection trough.

13. Weir loading:

~~a. Weir loading shall not exceed 20 gallons per minute per foot of weir length for units used as softeners; and~~

~~b. Orifices shall produce uniform rising rates over the entire area of the tank and shall provide for an exit velocity not to exceed 1.0 foot per second.~~

~~14. Upflow rates shall not:~~

~~a. Exceed 1.75 gpm/ft^2 of area at the slurry separation line for units used as softeners; or~~

~~b. Exceed 1.0 gpm/ft^2 of area at the sludge separation line for units used as clarifiers.~~

~~15. Consideration shall be given to providing a superstructure to enclose the solids contact unit, to enhance the treatment process, and for the protection of piping and associated sampling valves.~~

12VAC5-590-871. Coagulation and flocculation.

A. Rapid mixing is the rapid dispersion of chemicals throughout the water to be treated, usually by violent agitation, to promote coagulation.

1. Rapid mix basins or inline static mixers shall be provided.

2. Basins shall be equipped with mechanical mixing devices. Other arrangements, such as baffling, may be acceptable under special conditions and only when approved by the commissioner. Where mechanical mixing devices are utilized, duplicate units or spare mixing equipment shall be provided.

3. Rapid mix basins with mechanical mixers should be based upon the mean temporal velocity gradient "G" (expressed as units of seconds^{-1}). The owner's engineer shall submit the basis for the selected velocity gradient considering the chemicals to be added and water temperature. Typical values for G and T are:

TABLE 871.1

Rapid Mix Basin GT Values

T (seconds)	G (seconds^{-1})
20	1,000
30	900
40	700
60	600

a. The point of application of the coagulant shall be at the point of maximum mixing intensity;

b. The physical configuration of the mixing basin shall be designed to eliminate vortexing; and

c. Mechanical mixers should be designed to allow speed variation with a highest speed of at least three times the lowest speed.

B. Flocculation mixing is the agitation of treated water at low velocity gradients for sufficient time to agglomerate coagulated particles.

1. Basin inlet and outlet design shall prevent short circuiting and destruction of floc. A drain and overflow shall be provided. Multiple units shall be provided for continuous operability, and each basin shall be designed so that individual basins may be isolated without disrupting plant operation. Basins shall be arranged to allow for either series or parallel operation.

2. Design parameters:

a. The minimum detention time shall be 30 minutes for water treatment plants employing rapid rate gravity filters, and 20 minutes for water treatment plants using high rate gravity filters. Basin flow-through velocity should not be less than 0.5 ft/min or greater than 1.5 ft/min.

b. The design of the flocculation units shall be based upon the value of GT, which is ordinarily in the range of 20,000 to 200,000. The owner's engineer should establish the value of GT through experimentation.

c. Agitators shall be driven by variable speed drive units with peripheral tip speed of the paddles ranging from 0.5 to 3.0 ft/sec.

d. To control short circuiting in mechanical flocculators, at least three successive compartments should be provided. In addition, special attention should be given to the ports between compartments to further suppress short circuiting.

e. To accomplish maximum power input and reduce particle shearing, tapered flocculation should be provided.

f. In basins utilizing vertical shaft flocculators, wing walls, or stators shall be provided to prevent vortexing.

3. Flocculation and sedimentation basins shall be as close together as possible. The velocity gradient of the flocculated water through pipes or conduits to settling basins shall not be greater than the velocity gradient utilized in flocculating the water. Where velocity gradient is not used as a design parameter, the linear velocity in pipes and conduits from the flocculators to the settling basin shall not exceed 0.5 ft/sec unless otherwise approved by the commissioner. Allowances shall be made to minimize turbulence at bends and changes in direction.

4. Baffling may be used for flocculation in small water treatment plants only when approved by the commissioner.

The design should allow the velocity gradients noted in subdivision B 3 of this subsection to be maintained.

12VAC5-590-872. Sedimentation.

A. The water treatment plant capacity, source water quality, and filtration process used shall be considered in determining the number and design of sedimentation basins.

B. The minimum settling time shall be four hours for water treatment plants employing rapid rate gravity filters, and a minimum of three hours for water treatment plants using high rate gravity filters. Reduced settling times may be approved by the commissioner where effective settling is demonstrated. Effective settling time shall be calculated using the volume of the basins from the stilling wall to the submerged effluent orifice or weir, including the volume under launders or finger weirs.

C. Inlets shall be designed to distribute the water equally and at uniform velocities. Open ports, submerged ports, stilling walls, and similar entrance arrangements are required. Port velocities should be in the range of 0.5 to 1.5 ft/sec. Where stilling walls are not provided, a baffle shall be constructed across the basin close to the inlet and shall project several feet below the water surface to dissipate inlet velocities and provide uniform flows across the basin.

D. Outlet weirs or submerged orifices shall be designed to maintain settling velocities in the basin and minimize short circuiting. Outlet weirs and submerged orifices shall be designed as follows:

1. The rate of flow over the outlet weir shall not exceed 20,000 gpd/ft of the outlet launder.

2. Submerged orifices shall not be located lower than three feet below the normal water surface.

3. The entrance velocity through the submerged orifices shall not exceed 0.5 ft/sec.

E. The linear velocity in pipes and conduits from settling basins shall not exceed 1.0 ft/sec.

F. Rectangular sedimentation basins shall be designed with a length-to-width ratio of at least 4:1.

G. Surface overflow rates shall be within the range of 0.25 to 0.38 gpm/ft^2 in water treatment plants using rapid rate filters, and a maximum of 0.5 gpm/ft^2 for water treatment plants using high rate filters. Increased surface overflow rates and reduced settling times may be approved by the commissioner where effective settling is demonstrated. The length and area between launders and finger weirs may be included in determining length-to-width ratio and overflow rates.

H. Basins shall be provided with a means for dewatering. Basin bottoms shall slope toward the drain not less than one foot in 12 feet unless mechanical sludge collection equipment is provided.

I. In areas where settling basins are subject to high and frequent cross winds, windbreaks shall be considered. Covers or enclosures shall be considered in locations subject to freezing.

J. The velocity through settling basins shall not exceed 1.0 ft/min. The basins shall be designed to minimize short circuiting. Baffles shall be provided as necessary to minimize short circuiting.

K. Multiple basins shall be provided for continuous operability, and each basin shall be designed so that individual basins may be isolated without disrupting plant operation.

L. Mechanical sludge collecting equipment shall be considered for all plants.

M. Sedimentation basins with tube or plate settlers shall meet the following design requirements:

1. Inlet and outlets shall be designed to maintain velocities suitable for settling in the basin and minimize short circuiting. Plate units shall be designed to ensure even flow distribution across the units.

2. Drain piping from the settler units shall be sized to facilitate a quick flush of the basin and to prevent flooding other portions of the plant.

3. Where units are located outdoors, adequate freeboard shall be provided above the top of the settlers to prevent freezing.

4. The maximum loading for tube settlers shall be two gpm/ft^2 of cross-sectional area unless higher rates are demonstrated through pilot plant or in-plant demonstration studies.

5. The maximum loading for plate settlers shall be 0.5 gpm/ft^2 based upon 80% of the projected horizontal plate area.

6. Flushing lines shall be provided to facilitate maintenance and shall be properly protected against backflow or backsiphonage.

12VAC5-590-873. Solids contact treatment units.

A. Solids contact units shall be acceptable for combined flocculation and clarification where source water characteristics are not variable and flow rates are uniform. When approved, these units shall be designed for the maximum uniform rate and shall be adjustable to changes in flow that are less than the design rate and for changes in water characteristics.

B. A minimum of two units shall be provided.

C. A rapid mix device designed in accordance with 12VAC5-590-871 A shall be provided. Mixing devices shall be constructed to:

1. Provide good mixing of the source water with previously formed sludge particles; and

2. Prevent deposition of solids in the mixing zone.

D. Flocculation equipment designed in accordance with 12VAC5-590-871 B shall:

1. Be equipped with an adjustable drive mechanism;

2. Ensure that coagulation occurs in a separate chamber or baffled zone within the unit; and

3. Provide a flocculation period of at least 20 minutes.

E. The sludge equipment shall provide either internal or external sludge concentrators in order to obtain a concentrated sludge with a minimum of waste water. Sludge removal systems shall provide:

1. Sludge pipe sizes of not less than three inches in diameter;

2. Piping arrangements to prevent clogging and to facilitate cleaning;

3. Valves that are located outside the tank for accessibility;

4. A means to observe or sample sludge being withdrawn from the unit;

5. A time clock with proportional timer with automatic blowoff; and

6. Suitable controls for sludge withdrawal.

F. Cross-connections.

1. Blowoff outlets and drains shall terminate and discharge at a place satisfactory to the commissioner; and

2. Cross-connection control shall be included for the potable water mains used to flush sludge lines.

G. The detention time shall be established on the basis of the source water characteristics and other local conditions that affect the operation of the unit. The minimum detention time shall be two hours for suspended solids contact clarifiers.

H. Orifices shall produce uniform rising rates over the entire area of the tank and shall provide for an exit velocity not to exceed 1.0 ft/sec.

I. Upflow rates shall not exceed 1.0 gpm/ft² of area at the sludge separation line.

12VAC5-590-874. Gravity filtration.

A. At least two gravity filter units shall be provided in conventional filtration treatment plants and direct filtration treatment plants.

B. Filter loading rates shall not exceed 2.0 gpm/ft^2 of filter area for rapid rate filters and shall not exceed 4.0 gpm/ft^2 for high rate filters, during normal operation. Alternative loading rates may be approved by the commissioner when effective filtration is demonstrated.

C. The filter structure shall be so designed as to comply with the following:

1. The walls within the filter shall be vertical;

2. The filter walls shall not protrude into the filter media;

3. There shall be no common wall between filtered or finished water and any lesser quality water;

4. The filter shall be covered by a superstructure if determined necessary under local climatic conditions;

5. There shall be head room to allow normal inspection and operation;

6. A curb at least four inches high shall surround each filter to prevent floor drainage into the filter;

7. The maximum velocity gradient of treated water in pipes and conduits to the filters shall not exceed that used in flocculation. Where velocity gradient is not used as a design parameter, the linear velocity in pipes and conduits from settling basins to filters shall not exceed 1.0 ft/sec;

8. Influent pipes or conduits, where solids loading is heavy, shall be straight and equipped with cleanouts;

9. Backwash water drain capacity shall be sufficient to carry the maximum flow;

10. Access in the form of walkways not less than 24 inches in width shall be provided to each filter; and

11. The normal operating water surface on a filter shall be at the same hydraulic grade level as the sedimentation basin, if no intermediate treatment process is provided.

D. Backwash water troughs shall be so designed as to provide:

1. Bottom elevation of the trough above the maximum level of expanded media during backwashing;

2. At least a two-inch freeboard inside the trough at the maximum rate of wash;

3. A level top or edge;

4. Spacing so that each trough serves an equal area of each filter; and

5. Maximum horizontal travel of suspended particles to reach the trough not to exceed 3.0 ft.

E. Filter media shall be free from detrimental chemical or bacterial contaminants. Acceptable filter media shall include anthracite coal, silica sand, garnet sand, and GAC. Other natural or synthetic media may be approved by the

commissioner when pilot-scale or full-scale demonstration studies demonstrate that the media is capable of meeting the filter effluent turbidity treatment technique requirements in Part II (12VAC5-590-340 et seq.) of this chapter.

1. Filters may be of single media, dual media, or multimedia design depending upon the water to be treated and the specific filtration process employed. A total media depth of not less than 27 inches shall be provided after cleaning and scraping.

2. Types of filter media:

a. Anthracite coal. A sieve analysis shall be provided. Anthracite media shall have:

(1) An effective size from 0.45 to 0.55 mm with a uniformity coefficient not greater than 1.65 when used alone.

(2) An effective size from 0.8 to 1.2 mm with a uniformity coefficient not greater than 1.85 when used in dual or multimedia filters.

b. Silica sand. A sieve analysis shall be provided. The media shall be clean silica sand having an effective size from 0.35 to 0.55 mm and a uniformity coefficient not greater than 1.65.

c. Garnet sand. A sieve analysis shall be provided. The media shall have an effective size from 0.15 to 0.35 mm.

d. Granular activated carbon (GAC) may be used as a media for filtration. The commissioner may require pilot studies where precursor or organics removal is a treatment objective. The design shall include the following:

(1) GAC media shall meet the basic specifications for filter media contained in this section, except the uniformity coefficient shall not be greater than 2.0. The commissioner may allow larger size media based upon pilot-scale or full-scale demonstration testing. The commissioner may require that a layer of sand media be placed below the GAC.

(2) Provisions shall be made for periodic treatment of GAC filter material for the control of bacteria and other growths.

(3) Provisions shall be made for GAC media replacement or regeneration.

(4) Only materials suitable for use with GAC media filters shall be utilized.

F. Support media.

1. Sand. A sieve analysis shall be provided. A three-inch layer of sand shall be used as a supporting media for the filter media where supporting gravel is used and shall have an effective size from 0.8 to 2.0 mm and a uniformity coefficient not greater than 1.7.

2. Gravel. When used as the supporting media, gravel shall consist of hard, rounded particles and shall not include flat or elongated particles. The coarsest gravel shall be 2-1/2 inches in size when the gravel rests directly on the strainer system and shall extend above the top of the perforated laterals or strainer nozzles. Not less than four layers of gravel shall be provided in accordance with the size and depth distribution specified in Table 874.1.

3. Changes of gravel depths and sizes may be considered by the commissioner where proprietary filter bottoms are proposed.

TABLE 874.1

Gravity Filter Gravel Support Bed

SIZE	DEPTH
2-1/2 - 1-1/2 inches	5 - 8 inches
1-1/2 - 3/4 inches	3 - 5 inches
3/4 - 1/2 inches	3 - 5 inches
1/2 - 3/16 inches	2 - 3 inches
3/16 - 3/32 inches	2 - 3 inches

G. Filter bottoms and strainer systems. The commissioner may allow deviations from requirements of this subdivision for high rate filters and for proprietary filter bottoms. Porous plate bottoms shall not be used where iron, manganese, or hard water may result in clogging. The design of manifold-type collection systems shall:

1. Minimize loss of head in the manifold and laterals;

2. Assure even distribution of backwash water and an even rate of filtration over the entire area of the filter;

3. Provide a ratio of the area of the final openings of the strainer systems to the area of the filter of about 0.003;

4. Provide a total cross-sectional area of the laterals at about twice the total area at the final openings; and

5. Provide a manifold that has a cross-sectional area which is 1-1/2 to two times the total area of the laterals.

H. Surface wash or air scouring of filters shall be provided.

1. All rotary surface wash devices shall be designed with:

a. Provisions for water pressures of at least 45 psig;

b. A vacuum breaker or other device or assembly to prevent backsiphonage; and

c. Adequate surface wash water to provide 0.5 - 1.0 gpm/ft^2 of filter area.

2. Air scouring shall provide for:

a. An air flow rate of three to five scfm/ft^2 of filter area when air is introduced in the underdrain. A lower air flow rate shall be used when the air scour distribution system is placed above the underdrain.

b. A method for avoiding loss of filter media during backwashing.

c. A fluidization backwash following air scour sufficient to restratify the filter media. The backwash water delivery system shall be in accordance with this section except the rate of flow should not exceed 8.0 gpm/ft^2 unless operating experience demonstrates that a higher rate is necessary to remove scoured particles from the filter media.

I. Turbidity monitoring.

1. Indicating and recording turbidimeters meeting the requirements of 12VAC5-590-770 B shall be provided for:

a. The source water;

b. The settled water from each sedimentation basin;

c. The filter effluent from each filter; and

d. The CFE.

2. Finished water indicating and recording turbidimeters shall be considered if chemical pH adjustment occurs following filtration.

3. The location of the turbidity sample tap shall allow turbidity to be monitored for both the filtered water and the filter-to-waste water.

4. The design may incorporate an operator selected filter effluent high turbidity alarm.

J. Appurtenances.

1. A sampling tap shall be placed between each filter and the effluent rate-of-flow controller to sample filtered water and filter-to-waste water. The location of sample taps shall allow turbidity to be monitored of both the filtered water and the filter-to-waste water.

2. Indicating and recording loss-of-head gauges shall be provided on all filters having a capacity of greater than 100 gpm. An indicating loss-of-head gauge shall be provided on all filters having a capacity of 100 gpm or less.

3. Indicating and recording rate-of-flow gauges shall be provided on all filters having a capacity of greater than 100 gpm. An indicating and totalizing water meter may be used instead of an indicating and recording gauge on filters having a capacity of 100 gpm or less.

4. Effluent rate-of-flow controllers of the direct acting, indirect acting, or constant rate types shall be provided on each filter.

a. All control devices used shall incorporate an auxiliary shutoff valve in the filter effluent line. Indirect and direct acting effluent rate-of-flow control devices shall start operation from the closed position. Failure of indirect acting controllers shall not result in any increase in the rate of flow.

b. Filter effluent rate-of-flow control that simply maintains a constant water level on the filter is prohibited.

c. Control devices shall be configured to prevent exceeding the design filter hydraulic loading rate when any filter is taken out of service.

5. Provisions for draining the filter-to-waste (rewash) with appropriate backflow prevention and rate control shall be provided on each filter. The filter-to-waste design flow rate shall be equal to the filtration rate.

6. A high pressure hose and hose rack shall be provided to allow washing down filter walls.

K. Backwash provisions.

1. Filtered or finished water shall be applied uniformly across the filter in an upflow direction to provide at least 50% media expansion during all operating conditions. This will normally require backwash flow rates of up to 20 gpm/ft^2 depending on media size, media specific gravity, uniformity coefficient, and water temperature.

2. The backwash water shall be provided at the required rate by backwash pumps, backwash water tanks, the high service main, or a combination of these methods. Consideration should be given to including provisions to obtain backwash water from the distribution system or other sources and to supply backwash water during plant start-up or during catastrophic events.

3. At least two backwash water pumps shall be installed unless an alternate means of obtaining backwash water is available.

4. The volume of backwash water provided shall be sufficient to backwash one filter at the design backwash flow rate and duration during the warmest water temperature. This backwash water volume shall be in addition to any other water storage requirements.

5. A backwash water controller or valve shall be provided on the main backwash water supply line to obtain the desired rate of filter wash with the backwash water valves on the individual filters open wide.

6. Consideration shall be given to provide for seasonal adjustments of the backwash flow rate to ensure proper backwashing while preventing media loss and to conserve water.

7. The rate-of-flow indicator on the main backwash water supply line shall be located so that it may easily be read by the operator during the backwashing process.

8. Where backwash water pumps are provided, a means for air release shall be installed between the backwash water pump and the backwash water valve.

L. Other design considerations.

1. Roof drains shall not discharge into the filter or basins and conduits preceding the filters.

2. Provision shall be made for continuous operation of all other filtering units while one filtering unit is out of operation.

3. High rate filtration shall be provided with precise coagulation control. A multiple six-gang stirring machine for performing jar tests shall be provided in addition to one or more of the following means of controlling the coagulation process:

a. Zeta potential, as measured by microelectrophoresis.

b. Pilot filters. Where dual pilot filters are used, two units shall be provided. Each pilot filter shall consist of a small filter (about six inches in diameter) containing the same type and depth of media as the plant filters. The pilot filter shall be equipped with recording turbidimeters on the effluent to measure the filterability of the water as reflected by turbidity monitoring.

c. Streaming current monitor, defined as a continuous sampling instrument that measures the electric current generated when water flows past suspended particles contained in the water.

4. High rate filtration shall be provided with indicating and recording pH monitoring equipment for:

a. The source water;

b. The rapid mix effluent; and

c. The finished water leaving the treatment plant.

12VAC5-590-875. Direct filtration.

A. Direct filtration is defined as a series of treatment processes, including coagulation and filtration but excluding sedimentation. Direct filtration shall be considered only for treatment of high quality and seasonally consistent surface water sources or GUDI sources.

B. An in-plant demonstration study or pilot study shall be required to demonstrate acceptable performance of direct filtration. The study shall be conducted over a sufficient time to treat all expected source water conditions throughout the year. The pilot plant filter shall be of a similar type and operated in the same manner as proposed for full-scale operation.

C. The department may require presedimentation meeting the requirements of 12VAC5-590-865 C to be provided prior to direct filtration treatment plants.

D. Rapid mix coagulation and flocculation shall be provided, meeting the requirements of 12VAC5-590-871.

E. Filters shall be dual media or multimedia gravity filters. Design of filtration units shall meet requirements for rapid rate or high rate gravity filters in 12VAC5-590-874, including filter structure, filter media, support gravel, backwash provisions, rate-of-flow control, surface wash, or air scour. Alternative designs may be considered by the department.

F. Turbidity monitoring.

1. Indicating and recording turbidimeters meeting the requirements of 12VAC5-590-770 B shall be provided for:

a. The source water;

b. The filter effluent from each filter; and

c. The CFE.

2. Finished water indicating and recording turbidimeters shall be considered if chemical softening occurs following filtration.

G. Where automatic unit process control is provided, manual override of all automatic features shall be provided.

1. Automatic start-up of treatment plant unit processes is prohibited.

2. Valve actuators shall be provided with manual override capability.

12VAC5-590-880. ~~Filtration~~ Diatomaceous earth filtration.

~~A. Rapid rate gravity filters acceptable for the treatment of water from surface water sources or groundwater sources under the direct influence of surface water.~~

~~1. Pretreatment is required where rapid rate gravity filters are utilized. Pretreatment shall include but not be limited to disinfection, coagulation, flocculation, and sedimentation.~~

~~2. At least two filtering units shall be provided at plants having a rated capacity of more than 100 gpm and less than 2 MGD. The total number of filters necessary at plants having a rated capacity equal to or greater than 2 MGD may be estimated utilizing the following formula:~~

~~$N = 2.7 (Q)^{0.5}$~~

~~(Formula as per Morrell and Wallace from Hardenbergh and Rodie's "WATER SUPPLY AND WASTE DISPOSAL 1960").~~

~~Where N equals number of filter units and Q equals plant capacity in million gallons per day.~~

3. The design rate of filtration shall be two gallons per minute per square foot of filter area.

4. The filter structure shall be so designed as to comply with the following requirements:

a. The walls within the filter shall be vertical;

b. The filter walls shall not protrude into the filter media;

c. The filter shall be covered by a superstructure if determined necessary under local climatic conditions;

d. There shall be head room to permit normal inspection and operation;

e. The filter shall have a minimum depth of 8½ feet as measured from the normal operating water surface to the bottom of the underdrainage system;

f. A minimum water depth of three feet as measured from the normal operating water surface to the surface of the filter sand;

g. There shall be a water seal on the effluent line to prevent backflow of air to the filters;

h. A curb at least four inches high shall surround each filter to prevent floor drainage into the filter;

i. A hand rail shall enclose each filter or filter bank;

j. The maximum velocity gradient of treated water in pipes and conduits to the filters shall not exceed that used in flocculation. Where velocity gradient is not used as a parameter, the linear velocity in pipes and conduits from settling basins to filters shall not exceed 1.0 foot per second;

k. Influent pipes or conduits where solids loading is heavy, or following lime soda softening, shall be straight and equipped with cleanouts.

l. Washwater drain capacity shall be sufficient to carry the maximum flow;

m. Access in the form of walkways not less than 24 inches in width shall be provided to each filter; and

n. The normal operating water surface on a filter shall be at the same hydraulic grade level as the sedimentation basin.

5. Washwater troughs shall be so designed as to provide:

a. Bottom elevation of the trough above the maximum level of expanded media during washing;

b. A top elevation of the trough above the filter surface, not to exceed 30 inches;

c. A two inch freeboard at the maximum rate of wash;

d. A level top or edge;

e. Spacing so that each trough serves the same number of square feet of filter area; and

f. Maximum horizontal travel of suspended particles to reach trough not to exceed three feet.

6. Filter material.

a. Sand. A sieve analysis shall be provided by the design engineer. The media shall be clean silica sand having:

(1) A depth of not less than 27 inches and generally not more than 30 inches after cleaning and scraping; and

(2) An effective size of from 0.35mm to 0.5mm, depending upon the quality of the raw water and a uniformity coefficient not greater than 1.6.

b. Supporting media for the filter sand. A sieve analysis shall be provided by the design engineer. A three inch layer of torpedo sand shall be used as a supporting media for the filter sand; such torpedo sand shall have:

(1) An effective size of 0.8mm to 2.0mm; and

(2) A uniformity coefficient not greater than 1.7.

c. Anthracite. A sieve analysis shall be provided by the design engineer. Clean crushed anthracite or a combination of sand and anthracite may be considered on the basis of data specific to the project; this media shall have:

(1) An effective size from 0.45mm to 0.8mm; and

(2) A uniformity coefficient not greater than 1.7.

d. Gravel, when used as the supporting media, shall consist of hard, rounded particles and shall not include flat or elongated particles. The coarsest gravel shall be 2 ½ inches in size when the gravel rests directly on the strainer system, and must extend above the top of the perforated laterals or strainer nozzles. Not less than four layers of gravel shall be provided in accordance with the following size and depth distribution:

SIZE	DEPTH
2 1/2 to 1 1/2 inches	5 to 8 inches
1 1/2 to 3/4 inches	3 to 5 inches
3/4 to 1/2 inches	3 to 5 inches
1/2 to 3/16 inches	2 to 3 inches
3/16 to 3/32 inches	2 to 3 inches

Reduction of gravel depths may be considered upon application to the division where proprietary filter bottoms are proposed.

e. Granular activated carbon. See 12VAC5-590-960 B 6.

7. Porous plate bottoms shall not be used where iron or manganese may clog them or with waters softened by lime. The design of manifold type collection systems shall be such as to:

a. Minimize loss of head in the manifold and laterals;

b. Assure even distribution of washwater and an even rate of filtration over the entire area of the filter;

c. Provide a ratio of the area of the final openings of the strainer systems to the area of the filter of about 0.003;

d. Provide a total cross sectional area of the laterals at about twice the total area at the final openings; and

e. Provide a manifold which has a cross sectional area which is 1 ½ to two times the total area of the laterals.

8. Surface wash facilities are required. Revolving type surface washers shall be provided; however, other types may be considered. All rotary surface wash devices shall be designed with:

a. Provisions for water pressures of 45 to 100 psi;

b. A vacuum breaker or other device to prevent backsiphonage;

c. Provisions for adequate surface wash water to provide 0.5 to one gallon per minute per square foot of filter area; and

d. Air washing may be considered.

9. The following shall be provided for every filter:

a. A sampling tap shall be placed between the filter and the effluent rate of flow controller and shall be equipped with an auxiliary spigot at the point of connection to the effluent line;

b. Indicating and recording loss of head gauges shall be required on all filters having a capacity of greater than 100 gallons per minute. An indicating loss of head gauge shall be required on all filters having a capacity of 100 gallons per minute or less;

c. Indicating and recording rate of flow gauges shall be required on all filters having a capacity of greater than 100 gallons per minute. An indicating and totalizing water meter may be used in lieu of an indicating and recording gauge on filters having a capacity of 100 gallons per minute or less;

d. Effluent rate of flow controllers of the direct acting, indirect acting, constant rate, or declining rate types shall be required on each filter. All control devices used must incorporate an auxiliary shutoff valve in the filter effluent line. Indirect and direct acting effluent rate of flow control devices shall start operation from the closed position; Failure of indirect acting controllers shall not result in any increase in the rate of flow, at the time of failure;

e. Provisions for draining the filter to waste (rewash) with appropriate measure for backflow prevention are required;

f. Hose bibb, hose, and suitable rack for storage of hoses are required; and

g. Indicating and recording turbidimeters on filter effluent with automatic high turbidity alarm are required at all plants having a capacity of 10 MGD or more.

10. Provisions shall be made for washing filters (backwashing) as follows:

a. A minimum rate of 15 gallons per square foot per minute, consistent with water temperatures and specific gravity of the filter media; a rate of 20 gallons per square foot per minute or more is recommended to provide for adequate expansion of the filter media;

b. Filtered water shall be provided at the required rate by washwater tanks, a washwater pump, from the high service main, or a combination of these;

c. Washwater pumps shall be in duplicate unless an alternate means of obtaining washwater is available;

d. The volume of washwater shall provide for not less than 15 minutes wash of one filter at the design rate of wash;

e. A washwater controller or valve shall be provided on the main washwater line to obtain the desired rate of filter wash with the washwater valves on the individual filters open wide;

f. The rate of flow indicator on the main washwater line shall be located so that it can be easily read by the operator during the washing process; and

g. Where backwash pumps are provided, a means for air release must be provided between the backwash pump and the washwater valve.

11. Miscellaneous:

a. Roof drains shall not discharge into the filter or basins and conduits preceding the filters;

b. Provisions must be made for continuous operation of all other filtering units while one filtering unit is out of operation; and

c. Automatic startup of filtering units is prohibited.

B. High rate gravity filters are acceptable for the treatment of water from surface water sources or groundwater sources under the direct influence of surface water. See 12VAC5-590-890 for design requirements.

~~C. Slow sand gravity filters are acceptable for the treatment of water from certain surface water sources or certain groundwater sources under the direct influence of surface water.~~

~~1. Source restrictions. Raw water quality for application to a slow sand filter without pretreatment shall meet the following requirements:~~

~~a. Not exceed a turbidity level of 5 NTU monthly average or 30 NTU peak day over a one year period;~~

~~b. Not exceed 800 total coliforms in 80% of a minimum of 50 samples taken over a minimum of a 52 week period;~~

~~c. Not exceed an apparent color level of 15 CU monthly average over a one year period; and~~

~~d. Groundwater sources under the direct influence of surface water shall pilot test to determine if the water contains sufficient nutrients for slow sand filtration to be a viable option.~~

~~2. Pretreatment. Raw waters that cannot meet the criteria listed in 12VAC5-590-880-C-1-a through c shall be treated to that quality prior to application to a slow sand gravity filter.~~

~~a. Presedimentation may be an appropriate pretreatment depending on the size and specific gravity of the turbidity particles.~~

~~b. Coarse media filtration of either a horizontal or vertical flow configuration may be appropriate for reducing levels of smaller size particles. Normally such roughing filters would be designed to accommodate periodic media removal, cleaning, and replacement.~~

~~c. Chemical flocculation and coagulation is normally not appropriate pretreatment for slow sand gravity filters.~~

~~d. Preoxidation is normally not appropriate pretreatment for slow sand gravity filters.~~

~~3. Number of filters. At least two filters shall be provided. In all cases the filters shall be capable of meeting the design maximum daily water demand with one filter out of service.~~

~~4. Filter media. Sand shall be clean silica sand that meets the following criteria:~~

~~a. The effective size shall be between 0.15 mm and 0.35 mm.~~

~~b. The uniformity coefficient shall not exceed 2.5.~~

~~c. The sand depth shall not exceed 55 inches. A minimum depth of 30 inches is required for normal operation.~~

~~5. Supporting media. Gravel shall meet the requirements of 12VAC5-590-880-A-6-d.~~

~~6. Structural details.~~

~~a. Sufficient head room shall be provided for normal movement on the filter by operating personnel for periodic sand removal operations.~~

~~b. Adequate manholes and access ports shall be provided for moving sand off and onto the filter.~~

~~c. There shall be no common wall between finished water and any lesser quality water.~~

~~d. Consideration should be given to providing facilities for dirty sand storage and washing, as well as for clean sand storage.~~

~~e. All slow sand filters should be covered.~~

~~7. Hydraulic design.~~

~~a. Filter to waste shall be provided for all slow sand filters.~~

~~b. Water entering the filter shall be distributed in a manner such that the surface of the filter shall not be disturbed in any way.~~

~~c. The nominal rate of filtration may range from 45 to 150 gpd/ft² (0.031 to 0.10gpm/ft²) of sand area.~~

~~d. The minimum depth of water over the filters shall be three feet. The maximum depth of water over the filters shall not exceed five feet. An overflow capable of handling the maximum flow to the filter shall be provided at the maximum filter water level.~~

~~e. Underdrains shall be provided to assure an even rate of filtration across the filter surface. The maximum velocity of water in the lateral underdrains shall be 1.0 ft/sec. The underdrain spacing shall not exceed 12 feet.~~

~~f. Each filter shall be capable of being filled with water from the bottom up.~~

~~g. Each filter shall be equipped with a loss of head guage; a rate of flow control device such as an orifice, weir, or butterfly valve; a weir or effluent pipe designed to assure that the water level over the filter never drops below the sand surface; and filtered water sample taps.~~

~~8. Performance report. At the conclusion of at least 12 months but no more than 18 months operation of the full scale plant an engineering report shall be submitted to the division that summarizes operating conditions and establishes optimum filter curing time, optimum filter run times, raw and finished water bacteriological and turbidity data, and any other pertinent factors.~~

~~D.~~ A. Diatomaceous earth filtration ~~is essentially a straining process. The use of these filters is acceptable for application~~

~~to surface waters or groundwaters under the direct influence of surface water~~ shall be limited to treatment of a surface water source, a GUDI source, or both with low turbidity and low bacterial contamination, and may be used for iron removal ~~for groundwaters~~ from groundwater.

~~1. Source restrictions. Raw water quality for application to a diatomaceous earth filter without pretreatment shall meet the following requirements:~~

~~a. Bacteria shall not exceed 50 total coliforms in any sample.~~

~~b. Color shall not exceed 15 apparent CU units in any sample.~~

~~c. Turbidity shall not exceed 5 NTU in any sample.~~

~~2. Pretreatment. If the raw water can be treated to meet the above source restrictions diatomaceous earth filtration may be utilized.~~

~~3.~~ B. Pilot plant study. Installation of a diatomaceous earth filtration system shall be preceded by a pilot plant study on the water to be treated.

~~a. Conditions of the the study, such as duration, filter rates, head loss accumulation, slurry feed rates, turbidity removal, bacteria removal, and other relative information shall be approved by the division prior to the study.~~

~~b. Satisfactory pilot plant results shall be obtained prior to submission of final construction plans and specifications.~~

~~c. The pilot plant study shall demonstrate the ability of the system to meet applicable drinking water standards at all times.~~

~~4.~~ C. Types of filters. Pressure or vacuum diatomaceous earth filtration units will be considered for approval.

~~5.~~ D. Treated water storage. Treated water storage capacity in excess of normal requirements shall be provided to:

~~a.~~ 1. Allow operation of the filters at a uniform rate during all conditions of system demand at or below the approved filtration rate, and

~~b.~~ 2. Guarantee continuity of service during adverse ~~raw~~ source water conditions without bypassing the system.

~~6.~~ E. Number of units. At least two filtering units shall be provided at plants having a rated capacity of more than 100 gpm.

~~7.~~ F. Precoat.

~~a.~~ 1. Application. A uniform precoat shall be applied hydraulically to each septum by introducing a slurry to the tank influent line and employing a filter-to-waste or recirculation system.

~~b.~~ 2. Quantity. Diatomaceous earth in the amount of 0.2 lb/ft² of filter area ~~or an amount sufficient to apply a minimum of & frac15; inch coating shall be used with recirculation~~.

~~8.~~ G. Body feed. A body feed system to apply additional amounts of diatomaceous earth slurry during the filter run is required.

~~a.~~ 1. Quantity. Rate of body feed is dependent on ~~raw~~ source water quality and characteristics and must be determined in the pilot plant study.

~~b.~~ 2. Adequate accessibility to the feed system and slurry lines is required.

~~c.~~ 3. Continuous mixing of the body feed slurry is required.

~~d.~~ 4. Consideration should be given to providing a coagulant coating (alum or suitable polymer) of the body feed.

~~9. Filtration.~~

~~a.~~ H. Rate of filtration. The ~~recommended nominal rate is 1.0 gpm/ft² of filter area and~~ hydraulic loading rate shall not exceed 1.5 gpm/ft² of filter area. The filtration rate shall be controlled.

~~b.~~ I. Head loss. The head loss shall not exceed 30 psi for pressure diatomaceous earth filters, or a vacuum of 15 inches of mercury for a vacuum system.

~~c.~~ J. Recirculation. A recirculation or holding pump shall be employed to maintain a differential pressure across the filter when the unit is not in operation ~~in order~~ to prevent the filter cake from dropping off the filter elements. A minimum recirculation rate of 0.1 gpm/ft² filter area shall be provided.

~~d.~~ K. Septum or filter element. The filter elements shall be structurally capable of withstanding maximum pressure and velocity variations during filtration and backwash cycles, and shall be spaced ~~such~~ so that no less than one inch is provided between elements or between any element and a wall. Means shall be provided to check the ~~septum(s)~~ septum for cleanliness or damage. Consideration should be given to providing septum assemblies where an individual ~~septums~~ septum can be removed, cleaned, repaired, and replaced.

~~e.~~ L. Inlet design. The filter influent shall be designed to prevent scour of the diatomaceous ~~each~~ earth from the filter element.

~~10.~~ M. Backwash. Provision shall be made for periodic backwashing of the filter. A satisfactory method to thoroughly remove and dispose of spent filter cake shall be provided.

~~11.~~ N. Appurtenances. The following shall be provided for every filter:

~~a.~~ 1. Sampling taps for ~~raw~~ source and filtered water~~,~~;

~~b. Loss of head~~ 2. A loss-of-head or a differential pressure gauge~~,~~;

~~c. Rate-of-flow~~ 3. A rate-of-flow indicator, preferable with totalizer~~,~~; and

~~d.~~ 4. A throttling valve used to reduce rates below normal during adverse ~~raw~~ source water conditions.

~~12. Monitoring. Turbidity monitoring is required for filter effluent. The monitoring may be done by recorder or daily periodic measurements.~~

~~E. Direct filtration.~~

~~1. General. Direct filtration refers to the filtration of high quality and seasonally consistent raw water without prior sedimentation. Design shall be preceded by a pilot study acceptable to the division. An in-plant demonstration study may be appropriate where a conventional treatment plant is to be converted to direct filtration.~~

~~2. Preliminary engineering report. A report shall be prepared and submitted to the division which included the following specific items, in addition to those listed in 12VAC5-590-200 C:~~

~~a. Historical summary of meteorological conditions.~~

~~b. Historical summary of raw water quality covering a period of at least one year with special reference to fluctuation in quality and possible sources of contamination. The following raw water parameters should be evaluated:~~

~~(1) Apparent color~~

~~(2) Turbidity~~

~~(3) Bacterial concentration~~

~~(4) Microscopic biological organisms~~

~~(5) Temperature~~

~~(6) Total solids~~

~~(7) General inorganic and organic chemical characteristics~~

~~(8) Additional parameters as required by the division.~~

~~c. Description of the pilot plant study methods and work to be done.~~

~~3. The pilot plant or in-plant demonstration study shall be conducted over a sufficient time to treat all expected raw water conditions throughout the year. The pilot plant filter shall be of a similar type and operated in the same manner as proposed for full scale operation. The following items, as a minimum, shall be addressed:~~

~~a. Chemical mixing conditions including shear gradients and detention periods.~~

~~b. Chemical feed rates.~~

~~c. Use of various coagulant and filtration aids including polymers.~~

~~d. Flocculation conditions and contact time necessary for optimum filtration for each coagulant proposed.~~

~~e. Filtration rates.~~

~~f. Filter gradation, types of media, and depth of media.~~

~~g. Filter breakthrough conditions and backwash requirements.~~

~~4. Final engineering report. A final report including the engineer's design recommendation shall be prepared and submitted prior to the submission of plans and specifications.~~

~~5. Treatment facilities.~~

~~a. Flash mixing and flocculation. The design shall be based on the results of the pilot plant or in-plant demonstration study and the requirements in 12VAC5-590-870 C and D.~~

~~b. Filtration. Filters shall be dualmedia or multimedia gravity filters. The final design shall be based on the results of the pilot plant or in-plant demonstration study and the requirements in 12VAC5-590-890. Turbidity at the sand-coal interface of each filter shall be monitored by indicating and recording equipment.~~

~~6. Plant siting. The plant design should allow for the future installation of sedimentation basing.~~

~~F. Rapid rate pressure filters.~~

~~The use of these filters may be considered for iron and manganese and other clarification processes. Pressure filters shall not be used in the filtration of polluted water, water from surface water sources, groundwater under the direct influence of surface water, or following lime soda softening.~~

~~1. Minimum criteria relative to number, rate of filtration, structural details and hydraulics, filter media, etc. provided for rapid rate gravity filters also apply to pressure filters where appropriate.~~

~~2. The normal rate of filtration shall be 3 gpm/ft² of filter area.~~

~~3. The filters shall be designed to provide:~~

~~a. Loss of head gauges on the inlet and outlet pipes of each filter;~~

~~b. An easily readable meter or flow indicator on each battery of filters. A flow indicator is recommended for each filtering unit;~~

~~c. Filtration and backwashing of each filter individually with an arrangement of piping as simple as possible to accomplish these purposes;~~

~~d. Minimum sidewall shell height of five feet. A corresponding reduction in sidewall height is acceptable where proprietary bottoms permit reduction of the gravel depth;~~

~~e. The top of the washwater collection trough to be at least 18 inches above the surface of sand;~~

~~f. The underdrain system to collect efficiently the filtered water and to distribute the backwash water at a rate not less than 15 gpm/ft² of filter area;~~

~~g. Location of flow indicators and controls that is easily readable while operating the control valves;~~

~~h. Air release valve on the highest point of each filter;~~

~~i. Accessible manhole to facilitate inspections and repairs;~~

~~j. Means to observe the wastewater during backwashing; and~~

~~k. Construction to prevent cross connection.~~

O. Turbidity monitoring. Indicating and recording turbidimeters meeting requirements of 12VAC5-590-770 B shall be provided for:

1. The source water;

2. The effluent from each filter unit; and

3. The CFE.

P. An operation and maintenance manual shall be provided for all diatomaceous earth filtration units. The manual shall include the following:

1. A detailed description of the treatment units and the control of each unit for optimal performance;

2. A preventative maintenance schedule;

3. The manual adjustment and override procedures for all automatic control features; and

4. A troubleshooting guide for typical problems.

Q. The owner shall require the equipment manufacturer to provide onsite start-up and follow-up training.

12VAC5-590-881. Slow sand filtration.

A. Slow sand filters shall be approved only after a pilot study demonstrates that the water supply contains sufficient nutrients for use of this treatment technology.

B. At least two filters shall be provided. In all cases, the filters shall be capable of meeting the design maximum daily water demand with one filter out of service.

C. Sand shall be clean silica sand that meets the following criteria:

1. The effective size shall be between 0.15 mm and 0.35 mm;

2. The uniformity coefficient shall not exceed 2.5; and

3. The sand depth shall not exceed 55 inches. A minimum depth of 30 inches is required for normal operation.

D. Supporting media gravel shall meet the requirements of 12VAC5-590-874 F.

E. Structural details.

1. All slow sand filters shall be covered.

2. Sufficient head room shall be provided for normal movement on the filter by operating personnel for periodic sand removal operations.

3. Adequate manholes and access ports shall be provided for moving sand off and onto the filter.

4. There shall be no common wall between the finished water and any water of lesser quality.

5. All filters shall be protected from freezing.

F. General design requirements.

1. Filter to waste shall be provided for all slow sand filters.

2. Water entering the filter shall be distributed in a manner so that the surface of the filter shall not be disturbed in any way.

3. The nominal rate of filtration range shall be from 45 to 150 gpd/ft^2 (0.031 to 0.10 gpm/ft^2) of sand area.

4. The minimum depth of water over the filters shall be three feet. The maximum depth of water over the filters shall not exceed five feet. An overflow capable of handling the maximum flow to the filter shall be provided at the maximum filter water level.

5. Underdrains shall be provided to assure an even rate of filtration across the filter surface. The maximum velocity of water in the lateral underdrains shall be 0.75 ft/sec. The underdrain spacing shall not exceed three feet.

6. Each filter shall be capable of being filled with water from the bottom up.

7. Each filter shall be equipped with a loss-of-head gauge; a rate-of-flow control device such as an orifice, weir, or butterfly valve; a weir or effluent pipe designed to assure that the water level over the filter never drops below the sand surface; and filtered water sample taps.

8. Monitoring, indicating, and recording turbidimeters meeting the requirements of 12VAC5-590-770 B shall be provided for:

a. The source water;

b. The filter effluent from each filter unit; and

c. The CFE.

9. The filters shall be designed to operate to waste after scraping or replacement of the sand, until the ripening process is complete and the turbidity meets the requirements of 12VAC5-590-395 A 2 b (3).

12VAC5-590-882. Membrane filtration.

A. Applicability. This section pertains to the use of membrane filtration as follows:

1. For pathogen and turbidity log removal credits in accordance with Table 500.1 in 12VAC5-590-500, the use of MF and UF are allowed.

2. For softening, total dissolved solids (TDS) removal, organics removal, and other treatment purposes, reverse osmosis (RO) and nanofiltration (NF) are allowed in accordance with 12VAC5-590-680 G.

B. Membrane filtration systems shall meet all requirements contained in 12VAC5-590-401 E 6 b to be granted removal credit for Giardia lamblia and Cryptosporidium.

C. A demonstration study shall be conducted on the water to be treated before the installation of a membrane filtration system unless the owner can demonstrate to the satisfaction of the commissioner that the source water quality range over all four seasons of a year will be adequately treated by the proposed design.

D. All membrane treatment units for pathogen and turbidity removal shall employ MF or UF using hollow fiber, positive pressure-driven membrane filtration technology. They may employ either an inside-to-outside or outside-to-inside flow direction.

E. The number of membrane units shall be a function of the overall treatment facility capacity, waterworks capacity, and water demand. Multiple membrane units shall be provided where the treatment facility design capacity exceeds 0.5 MGD.

F. Approved materials and chemicals.

1. All membrane materials, associated piping, and other components in contact with the water shall be in accordance with 12VAC5-590-810.

2. Chemicals used in any membrane cleaning process shall be in accordance with 12VAC5-590-515.

G. Turbidity monitoring. Continuous indicating and recording equipment meeting the requirements of 12VAC5-590-770 B shall be provided for the following locations:

1. Source water;

2.Pretreated water, such as by coagulation, flocculation, and sedimentation (if applicable);

3. Filtrate from each membrane unit; and

4. Combined filter effluent, where more than one membrane unit is installed.

H. Indicating and recording equipment for entry point chlorine residual monitoring shall be provided. Indicating and recording equipment for filtered water temperature monitoring shall be provided.

I. Pressure monitoring:

1. Indicating equipment shall be provided for monitoring the pressure drop across any prefilter.

2. Indicating and recording equipment shall be provided for monitoring the pressure drop across membrane modules, (i.e., transmembrane pressure).

3. Integrity monitoring. Indicating and recording equipment for direct integrity test monitoring shall be provided and shall document the date, time, and results of every test performed on each unit.

J. Flow measurement. Equipment shall be provided for measuring or calculating the following flows:

1. Source water, gpm and totalized;

2. Filtrate from each unit, gpm and totalized;

3. Flux from each unit, gpd/sf;

4. Recirculation to each unit, gpd or percent of feed flow, if applicable;

5. Entry point, gpm and totalized; and

6. Waste.

K. An alarm system shall be provided that will report alarm conditions and shut down the treatment plant and entry point flow as necessary.

1. All alarms shall be reported to a location manned 24 hours per day or to a person on call and shall report alarm conditions audio-visually at the water treatment plant.

2. At a minimum, the following points shall be monitored by the alarm system. Alarm and shut down set point conditions will be determined by the commissioner on an individual basis.

a. Feed water flow;

b. Feed water turbidity, if required by the commissioner;

c. Filtrate turbidity from each unit exceeding operational control criteria;

d. Membrane direct integrity test initiation, failure, and exceeding operational control criteria; and

e. Entry point disinfectant residual.

L. Sample taps shall be provided to monitor the following:

1. Source water;

2. Source water storage tank effluent;

3. Feed water after prefiltration;

4. Filtrate from each membrane unit;

5. Combined filtrate from all units;

6. Entry point; and

7. Additional sample taps to monitor the presence of cleaning solutions used in either the backwash or cleaning operations.

M. Equipment shall be provided, using variable frequency drive or other suitable means to adjust the feed pump output in order not to exceed the design flux in the event modules are taken off line.

N. Pressure gauges.

1. A portable, pocket-type pressure gauge of the correct range and accuracy for the application and with the capability of being calibrated shall be provided to check the pressure readings of the pressure transducers installed on the membrane units.

2. At each location of a pressure transducer, a 1/4-inch diameter pressure gauge with American National Standard Taper Threads **(**NPT) connection shall be provided to facilitate the connection of a portable, pocket-type test gauge.

O. Clean-in-place systems, including tanks, piping, all joints, and valves, shall be compatible with the cleaning solution and shall be corrosion resistant.

P. An operation and maintenance manual shall be provided for all membrane filtration treatment units. The operation and maintenance manual shall include the following:

1. A maintenance schedule for each piece of equipment.

2. Operation procedures, including software user instructions.

3. A troubleshooting guide.

4. Identification of specific proprietary equipment or software not available to the owner or operator.

5. A service call number.

6. DIT requirements.

7. Chemical cleaning instructions.

8. A detailed description of the treatment units and the control of each unit for optimal performance.

Q. A means shall be provided to isolate a compromised module or fiber or both. A means to visually inspect modules while simultaneously conducting the DIT shall be provided. Alternatively, sonic testing equipment that provides a relative accelerometer reading shall be provided where visual inspection cannot be performed.

12VAC5-590-883. Bag and cartridge filtration.

A. Bag or cartridge filtration shall be limited to treating a surface water source, a GUDI source, or both with low turbidity.

B. A pilot plant study shall be conducted on the water to be treated before the installation of a bag or cartridge filter system.

C. Bag and cartridge filtration systems shall be granted removal credit for Giardia lamblia and Cryptosporidium in accordance with 12VAC5-590-401 E 6 a, provided that they meet the requirements of this section.

D. General design requirements.

1. All system components such as housing, bags, cartridges, gaskets, O-rings, and other components in contact with water shall be in accordance with 12VAC5-590-810. All cartridge filter housing shall be certified by the ASME certification program, or equivalent, for pressure vessels and stamped with the appropriate certification mark.

2. Indicating and recording turbidimeters meeting requirements of 12VAC5-590-770 B shall be provided for the source water and the CFE. The commissioner may require indicating and recording effluent turbidimeters for each filter unit.

3. The maximum flux rate across the final filter shall not exceed 0.2 gpm/ft^2.

4. Maximum differential pressure across the cartridge filter shall not exceed 20 psi.

5. Pressure gauges and sampling taps shall be provided before and after each bag or cartridge filter.

6. Provisions to accomplish filter-to-waste shall be provided.

7. Automatic start-up of bag or cartridge filters is prohibited.

8. An alarm system shall be provided that will report alarm conditions and shut down the treatment plant and entry point flow.

a. All alarms shall be reported to a location manned 24 hours per day or to a person on call and shall report alarm conditions audio-visually at the water treatment plant.

b. The following shall be monitored by the alarm system:

(1) Source water turbidity;

(2) Feed water flow;

(3) If applicable, filtrate turbidity from each unit exceeding operational control criteria;

(4) Combined filter effluent turbidity exceeding operational control criteria;

(5) Differential pressure at each unit; and

(6) Entry point disinfectant residual.

9. At least two filtering units shall be provided at plants having a rated capacity of greater than 100 gpm.

E. Operation and maintenance documents shall be provided for all bag or cartridge filter units and shall include:

1. Detailed description of the bag or cartridge treatment units and the control of each unit for optimal performance.

2. Procedural criteria, such as pressure differential, turbidity, and other parameters, and expected frequency of bag or cartridge filter replacement.

3. A preventative maintenance schedule.

4. Manual adjustment and override procedures for any automatic control features.

5. Troubleshooting guide for typical problems.

F. The owner shall require the equipment manufacturer to provide onsite start-up and follow-up training.

12VAC5-590-890. ~~High rate treatment processes.~~ (Repealed.)

~~A. General.~~

~~High rate treatment processes are characterized by:~~

~~1. Precise coagulation control;~~

~~2. Turbidity monitoring throughout the process;~~

~~3. pH monitoring throughout the process;~~

~~4. Reduced flocculation time;~~

~~5. Reduced sedimentation time;~~

~~6. Use of multimedia filters incorporating anthracite and silica or other types of filter materials; and~~

~~7. Filter rates greater than two gallons per minute per square foot of filter area and not exceeding four gallons per minute per square foot of filter area.~~

~~B. Instrumentation.~~

~~1. The coagulation process shall be controlled by:~~

~~a. Zeta potential shall be measured by microelectrophoresis;~~

~~b. Dual pilot filters shall be required. The pilot filter shall consist of a small filter (about six inches in diameter) containing the same type and depth of media as the plant filters, and which is operated in the same manner as the larger plant units except that the plant raw water after the treatment chemicals have been added rather than the coagulated and settled water is applied to the pilot filter. The pilot filter shall be equipped with recording turbidimeters on the effluent to measure the filterability of the water as reflected by turbidity monitoring. Departures from these standards using proprietary pilot filters may be considered;~~

~~c. Streaming current monitor a continuous sampling instrument which measures the electric current generated when water flows past suspended particles contained in the water; and~~

~~d. In addition to one of the above devices, a multiple six-gang stirring machine for performing jar tests shall be provided.~~

~~2. Indicating and recording turbidity monitoring shall be provided for monitoring the turbidity of:~~

~~a. The raw water;~~

~~b. Settled water from each sedimentation basin;~~

~~c. Filter effluent from each filter; and~~

~~d. Finished water leaving the treatment plant.~~

~~3. Indicating and recording pH monitoring equipment shall be provided for monitoring:~~

~~a. The raw water;~~

~~b. The flash mix effluent; and~~

~~c. The finished water leaving the treatment plant.~~

~~C. Unit processes.~~

~~1. Flash mix facilities shall conform with 12VAC5-590-870 C.~~

~~2. Flocculation design shall comply with 12VAC5-590-870 D, except the minimum detention time shall be 20 minutes.~~

~~3. Sedimentation design shall comply with 12VAC5-590-870 E, except the minimum effective detention time shall be three hours.~~

~~4. Filtration.~~

~~a. The maximum rate of filtration shall not exceed four gallons per minute per square foot of filter area.~~

~~b. Number of filter units. At least two units shall be provided at plants having a rated capacity less than two million gallons per day. The total number of filters necessary at plants having a rated capacity equal to or~~

~~greater than two million gallons per day may be estimated using the following formula:~~

~~$N = 1.35 (Q)^{0.5}$~~

~~(Based upon the formula as per Morrell and Wallace from Hardenbergh and Rodie's "WATER SUPPLY AND WASTE DISPOSAL 1960" and modified for the high rate process).~~

~~Where N equals the number of filter units, Q equals the plant capacity in million gallons per day.~~

~~c. Filters incorporated in the high rate treatment process shall be of the dual media or multimedia type. The media shall consist of anthracite, silica sand, or other suitable filter materials. Both dual media and mixed media filters will be considered. Since filters media designs utilized in the high rate treatment process are generally proprietary in nature, no attempt will be made to set standards for the minimum filter media depth, the effective size and uniformity coefficient of the filter media, or the specific gravity. However, beds having a minimum total depth of 27 inches of filter media with a minimum of 10 inches of fine sand will be considered. Other proposals for high rate processes shall be considered individually by the division.~~

~~d. Structural details and hydraulics - see 12VAC5-590-880 A 4.~~

~~e. Washwater trough - see 12VAC5-590-880 A 5.~~

~~f. Filter bottoms and strainers - see 12VAC5-590-880 A 7.~~

~~g. Surface wash - see 12VAC5-590-880 A 8.~~

~~h. Appurtenances - see 12VAC5-590-880 A 9.~~

~~i. Backwash - see 12VAC5-590-880 A 10.~~

~~j. Miscellaneous - see 12VAC5-590-880 A 11.~~

~~5. Chemical application.~~

~~a. Suitable equipment for application of filter aids (polymers) to the influent of the filters shall be provided.~~

~~b. See 12VAC5-590-860.~~

12VAC5-590-895. Pre-engineered package treatment units.

A. Pre-engineered package treatment units are defined as predesigned, factory built, and transported virtually assembled to the operation site. The provisions of 12VAC5-590-290 shall apply.

B. General design considerations.

1. A rapid mix unit process shall be provided. The design shall meet requirements of 12VAC5-590-871 A.

2. Flocculation units shall meet requirements of 12VAC5-590-871 B or as identified and justified in the approved PER.

3. Sedimentation units shall meet requirements of 12VAC5-590-872 or as identified and justified in the approved PER.

4. Filters shall be dual media or multimedia gravity filters. Design of filtration units shall meet the requirements of 12VAC5-590-874 or as identified and justified in the approved PER.

5. Indicating and recording turbidimeters meeting requirements of 12VAC5-590-770 B shall be provided for the:

a. Source water;

b. Applied water to each filter;

c. Filter effluent from each filter; and

d. CFE.

6. Sufficient overflows and drains shall be provided to maintain a maximum water level within the plant, including the depth of water over the filters, and to facilitate complete draining of the package unit.

7. Where automatic unit process control is provided, operator adjustment of chemical feed rates, times, and sequences shall be provided as well as a manual override of all automatic features.

a. Automatic start-up of water treatment unit processes is prohibited.

b. Valve actuators shall be provided with manual override capability.

8. Treatment units installed at ground level shall be provided with stairways, walkways, or other suitable means to allow access for operation and maintenance and observation of all treatment process units. Filters shall be adequately accessible to facilitate evaluation of the entire filter bed for media condition and placement, fluidization during backwashing, and evaluation of compaction during filtration.

C. An operation and maintenance manual shall be provided for all pre-engineered package treatment units. The operation and maintenance manual shall include the following:

1. A detailed description of the treatment units and the control of each unit for optimal performance.

2. A preventative maintenance schedule.

3. Manual adjustment and override procedures for any automatic control features.

4. A troubleshooting guide for typical problems.

12VAC5-590-900. ~~Softening~~ Cation exchange softening.

~~Softening shall not be used as the sole treatment method for surface waters or bacteriologically contaminated groundwater.~~

A. The softening ~~process~~ design selected shall be based upon the mineral qualities of the ~~raw~~ source water and the desired finished water quality in conjunction with requirements for disposal of sludge or brine water, cost of the plant, cost of the chemicals, and the plant location.

~~A. Lime, excess lime, and excess lime soda processes. The applicable design standards for mixing, flocculation, and sedimentation are the same for the lime, excess lime, and excess lime soda processes as for conventional clarification except that the minimum flash mix time is five minutes, flocculation time is 40 minutes, and settling time is two hours. Where softening is included as a treatment process in conjunction with clarification, the greater detention time criteria shall govern. For criteria pertaining to softening with solids contact units, see 12VAC5-590-870 F.~~

~~1. Mechanical sludge removal equipment shall be provided in the sedimentation basin.~~

~~2. Determinations shall be made of the CO_2 content of the raw water. When concentrations exceed 10 milligrams per liter, the economics of removal by aeration as opposed to removal with lime should be considered.~~

~~3. Equipment for stabilization of water softened by the excess lime and excess lime soda processes is required.~~

~~4. Staging shall be considered when the excess lime soda process is employed.~~

~~5. Provision shall be included for proper disposal of softening sludges.~~

~~6. The use of excess lime shall not be considered an acceptable substitution for chlorination.~~

~~B. Cation exchange process.~~

B. Iron, manganese, or a combination of the two, in the oxidized state or unoxidized state, ~~should~~ shall not exceed 0.3 ~~milligrams per liter~~ mg/L in the water ~~as~~ applied to the ~~ion~~ cation exchange material. ~~Pretreatment shall be required when the content of iron, manganese, or a combination of the two, is one milligram per liter or more.~~

~~1.~~ C. The units ~~may~~ shall be of pressure or gravity type~~, or~~ of either an upflow or downflow design, using automatic or manual regeneration. ~~Automatic regeneration is suggested for small plants.~~

~~2.~~ D. The design capacity for hardness removal ~~should~~ shall not exceed 20,000 ~~grains per cubic foot~~ grains/ft^3 when the resin is regenerated with 0.3 pounds of salt per kilograin of hardness removed.

~~3.~~ E. The depth of the cation exchange material ~~should~~ shall not be less than three feet.

~~4.~~ F. The hydraulic loading rate ~~of softening~~ should not exceed ~~seven gallons per square foot per minute~~ seven gpm/ft^2 and the backwash rate should be six to eight ~~gallons per square foot per minute~~ gpm/ft.[2]

~~5.~~ G. The freeboard shall depend upon the specific gravity of the media and the direction of the water flow.

~~6.~~ H. The bottoms, strainer systems, and support for the cation exchange material shall conform to criteria provided for rapid rate gravity filters. See also 12VAC5-590-874.

~~7.~~ I. Facilities shall be included for even distribution of brine over the entire surface of both upflow and downflow units. Backwash, rinse, and air relief discharge pipes shall be installed in ~~such~~ a manner as to prevent any possibility of backsiphonage.

~~8.~~ J. A bypass shall be provided around ~~softening~~ the cation exchange units to produce a blended water of desirable hardness. Meters shall be installed to measure total water delivered to the distribution system and on each softener unit. An automatic proportioning or regulating device and shutoff valve should be provided on the bypass line. In some installations, it may be necessary to treat the bypassed water to obtain acceptable levels of iron and manganese in the finished water.

~~9.~~ K. Waters having turbidity of five ~~units~~ NTUs or more ~~turbidity~~ shall not be applied directly to the cation exchange softener. Silica gel materials should be used for water having a pH above 8.4 and should not be used when iron is present. When the applied water contains a chlorine residual, the cation exchange material shall be a type that is not damaged by the chlorine residual ~~chlorine~~. Phenolic resin shall not be used.

~~10. Smooth nose sampling~~ L. Sampling taps shall be provided for the collection of representative samples for both bacteriological and chemical analyses. The taps shall be located to provide for sampling of the softener influent, softener effluent, and the blended water. The sampling taps for the blended water shall be at least 20 ~~feet~~ ft downstream from the point of blending.

~~11.~~ M. Brine measuring or ~~salt-dissolving~~ salt-dissolving tanks and wet salt storage facilities shall be covered. The makeup water inlet shall have a free fall discharge of two pipe diameters but not less than two inches above the maximum liquid level of the unit or be protected from backsiphonage. Water for filling the tank should be distributed over the entire surface by pipes above the maximum brine level in the tank. The salt shall be supported on graduated layers of gravel under which is a suitable means of collecting the brine. Wet salt storage basins must be equipped with manhole or hatchway openings having raised curbs and watertight covers

~~having~~ with overhanging edges similar to those required for finished water reservoirs. Overflows, where provided, shall be turned down, have a proper free fall discharge and be protected with noncorrodible screens or self-closing flap valves.

~~12.~~ N. Wet salt storage basins shall have sufficient capacity to store at least ~~30 days~~ a 30-day operating supply.

~~13.~~ O. Stabilization of the finished water for corrosion control ~~shall be provided~~ shall be considered.

~~14.~~ P. Suitable disposal must be provided for the brine waste.

~~15.~~ Q. Pipes and contact materials shall be resistant to the aggressiveness of the salt.

~~16. Salt storage tanks and feed equipment should be enclosed and separated from other operating areas in order to prevent damage to equipment.~~

12VAC5-590-910. Aeration. ~~(Also see 12VAC5-590-970.)~~

A. Aeration treatment ~~devices as described herein may be used~~ is acceptable for oxidation, separation of gases, or for taste and odor control. General design requirements include the following:

~~A. Natural draft aeration.~~

~~The design of natural draft aeration shall provide the following:~~

~~1. The water shall be distributed uniformly onto the top tray;~~

~~2. The water shall be discharged through a series of three or more trays with the separation of trays not less than six inches;~~

~~3. The trays shall be loaded at a rate ranging from one gallon per minute to five gallons per minute for each square foot of total tray area;~~

~~4. The trays shall have slotted, woven wire cloth, or perforated bottoms;~~

~~5. The perforations shall be 3/16 to ½ inches in diameter and spaced one to three inches on centers when perforations are used;~~

~~6. Eight to 12 inches of inert media shall be used, such as coke or limestone which shall be two to six inches in size, and will not readily disintegrate due to freezing cycles;~~

~~7. The aerated water shall receive disinfection treatment; and~~

~~8. The trays shall be designed using materials resisting deterioration with consideration being given to corrosion, slime, and algae control.~~

~~B. Forced or induced draft aeration devices shall be designed to:~~

~~1. Provide an adequate liquid distribution and countercurrent of air through the enclosed aeration column;~~

~~2. Be insectproof and lightproof;~~

~~3. Be such that air introduced into column shall be screened through insect proof screen and be as free of dust as possible;~~

~~4. Ensure that water outlet is adequately sealed to prevent unwanted loss of air; and~~

~~5. Ensure that the sections of the aerator can be easily reached and removed for maintenance.~~

~~C. Pressure aeration may be used for oxidation purposes if a pilot plant study indicates the method is applicable; it is not acceptable for removal of dissolved gases. Filters following pressure aeration shall have adequate exhaust devices for release of air. Pressure aeration devices shall be designed to:~~

~~1. Give thorough mixing of compressed air with the water being treated; and~~

~~2. Provide screened and filtered air, free of obnoxious fumes, dust, dirt, and other contaminants.~~

1. The aerated water shall be chlorinated following aeration.

2. The equipment shall incorporate materials resistant to deterioration and corrosion and shall be designed to eliminate the potential for fouling problems from calcium carbonate and iron precipitation and from algae, slime, and bacteriological growth. Disinfection capability shall be provided before the aeration treatment units.

3. The equipment shall be easily accessed and serviced.

4. The air introduced into the treatment units shall be filtered and shall be free of insects, obnoxious fumes, dust, dirt, and other contaminants. If blowers are located inside a building, then the air intakes shall extend to the outside and be furnished with appropriate air filters.

5. Air exhaust outlets shall be located to avoid induced contaminants, particularly at or near occupied areas or blower intakes.

6. Duplicate blowers, motors, or multiple treatment units shall be required for treatment processes designed to meet the drinking water quality standards in 12VAC5-590-340.

B. Natural, forced, or induced draft aeration units shall be designed to provide an adequate liquid distribution and countercurrent of air through the enclosed aeration column, and adequately seal the water outlet to prevent unwanted loss of air.

C. Pressure aeration means the injection of compressed air into the water to be treated, typically for oxidation. Pressure aeration shall not be approved for removal of dissolved gases. Filters following pressure aeration shall have adequate exhaust devices for the release of air. Pressure aeration devices shall be designed to provide thorough mixing of compressed air with the water being treated.

D. Packed tower aeration (air stripping) is suitable for removing VOCs, THMs, carbon dioxide, and radon.

1. Justification shall be provided for the selected design parameters (e.g., height and diameter of the unit, air-to-water ratio, packing depth, surface loading rate, and other features). The design shall consider the effects of temperature change and the resulting impact in contaminant removal efficiency. Pilot plant studies may be required to substantiate the design.

2. The packing material used shall be resistant to the aggressiveness of the water, dissolved gases, and cleaning materials, and shall meet requirements of 12VAC5-590-810.

3. Water shall be evenly distributed at the top of the tower using spray nozzles or orifice-type distributor trays that will prevent short circuiting. A mist eliminator above the water distribution system may be required.

4. A means to allow for discharge and wasting of water or chemicals used to clean the tower shall be provided.

5. Sample taps shall be provided in the influent and effluent piping.

6. The design shall prevent freezing of the influent riser and effluent piping.

7. An overflow pipe discharging 12 to 24 inches above the ground and over a drainage inlet structure or splash pad shall be provided.

8. A sufficient number of access ports with a minimum diameter of 24 inches shall be provided to facilitate inspection, media replacement, media cleaning, and maintenance of the unit interior.

9. A positive air flow sensing device and a pressure gauge shall be installed on the air influent line. If the aeration unit is designed to remove a contaminant with a PMCL, then the positive air flow sensing device shall be an integral part of an automatic control system that will turn off the influent water if positive air flow is not detected.

~~D.~~ E. Other methods of aeration ~~may be used if applicable to the treatment needs. Such methods include, but are not restricted to, spraying, diffused air, and mechanical aeration. The treatment processes~~ shall be designed to meet the particular needs of the water to be treated and are subject to the approval of the ~~division~~ commissioner.

~~E. Aerators that discharge through the atmosphere should be protected from wind by being placed in a louvered enclosure designed to provide easy access to the interior.~~

~~F. Aerators that are used for oxidation or removal of dissolved gases from waters that will be given no further treatment other than chlorination shall be protected from contamination from insects and birds.~~

~~G. Ventilation shall be provided to prevent the accumulation of released gases in the building housing the treatment facilities.~~

~~H. A bypass should be provided for all aeration units.~~

12VAC5-590-920. Iron and manganese control.

A. Iron and manganese control, as used ~~herein~~ in this section, refers solely to treatment processes designed specifically for this purpose. The treatment process used will depend upon the character of the ~~raw~~ source water. The selection of one or more treatment processes shall meet specific local conditions as determined by engineering investigations, including chemical analyses of representative samples of water to be treated, and receive the approval of the ~~division~~ commissioner. The commissioner may require that pilot studies be conducted.

~~It may be necessary to operate a pilot plant in order to gather all information pertinent to the design.~~

~~A. Removal~~ B. Iron and manganese removal by oxidation~~,~~ ~~detention,~~ and filtration.

1. Oxidation ~~may be by aeration or by chemical oxidation with~~ shall be accomplished by aeration or by chemicals, such as chlorine ~~or~~, potassium permanganate, sodium permanganate, or a combination thereof.

~~2. A minimum detention of 30 minutes shall be provided following oxidation by aeration in order to insure that the oxidation reactions are as complete as possible. This minimum detention time shall be reduced only when a pilot plant using the water under study demonstrates a lesser detention time. The detention basin shall be designed as a holding tank with no provision for sludge collection but with sufficient baffling to prevent short circuiting. Sedimentation basins shall be provided when treating water with high iron or manganese content or where chemical coagulation is used to reduce the load on the filters. The detention time shall be in a range of one to four hours where sedimentation is necessary prior to filtration. Pilot studies should be made of the water to determine the necessary detention time.~~

~~3. Filtration see 12VAC5-590-880.~~

~~B. Removal by lime soda process see 12VAC5-590-900 A.~~

~~C. Removal by units using continuous potassium permanganate regeneration.~~

~~This process consists of a continuous feed of potassium permanganate to the influent of a manganese greensand filter. Positive displacement type feeders shall be provided, and the feed rate shall be adequately controlled by using feeders which are paced by water meters or ratio type feeders (which are a combination type feeder and flow meter) to prevent an overdosage of potassium permanganate.~~

~~1. The permanganate shall be applied following pH affecting chemicals.~~

~~2. Other oxidizing agents or processes such as chlorination or aeration may be used prior to the permanganate feed to reduce the cost of the chemical.~~

~~3. The normal filtration rate is three gallons per minute per square foot. Lower filtration rates may be required or higher filtration rates may be permitted if justified by field studies and approved by the division~~

~~4. The normal wash rate is eight to 12 gallons per minute per square foot.~~

~~5. Air washing may be provided.~~

~~6. Sample taps shall be provided.~~

~~a. Prior to application of permanganate;~~

~~b. Immediately ahead of filtration;~~

~~c. At a point between the anthracite coal media and the manganese treated greensand;~~

~~d. Halfway down the manganese treated greensand; and~~

~~e. For filter effluent.~~

~~D. Removal by ion exchange. This process of iron and manganese removal may not be acceptable for waters containing high concentrations (more than 1.0 milligrams per liter) of iron, manganese, or combination thereof. Applications may be limited based on the media used. This process may not be acceptable where either the raw water or wash water contains dissolved oxygen. (See 12VAC5-590-900 B for general cation exchange information.)~~

2. The design shall consider:

a. pH adjustment to promote rapid oxidation;

b. A pre-settling tank located ahead of the filters to remove oxidized iron and increase filter run times;

c. A manganese-oxide coating on the filter media, such as manganese greensand. The total depth of media shall not be less than 30 inches. Media shall have an effective size from 0.3 to 0.35 mm and a uniformity coefficient of no more than 1.6. Following initial placement of the media, care shall be taken to remove fines by backwashing and skimming the surface; and

d. An anthracite cap layer over the manganese-oxide coated media having a depth of six to 18 inches.

3. Aeration shall be designed in accordance with 12VAC5-590-910.

4. Flow proportional chemical feeders shall be provided, and the feed rate shall be adequately controlled by using feeders that are paced by water meters to prevent an over-dosage of chemical. A flow switch in place of a flow proportional feeder may be permissible.

5. Sample taps shall be provided before the application of the oxidant, immediately ahead of filtration, and at the filter effluent.

6. Pressure filters shall include provisions for:

a. Pressure gauges on the inlet and outlet pipes of each filter or a differential pressure gauge on each filter;

b. An easily readable meter or flow indicator on each battery of filters. A flow indicator is recommended for each filtering unit;

c. Filtration, backwashing, and filter-to-waste of each filter individually:

(1) Backwash water shall be evenly distributed in an adequate quantity to achieve at least a 30% media bed expansion during backwashing. The backwash rate shall be based on the media;

(2) The top of the backwash water collection trough shall be at least 18 inches above the media surface;

(3) An underdrain system to efficiently collect the filtered water and to distribute an adequate quantity of backwash water to achieve at least a 30% media bed expansion during backwashing;

d. Flow indicators and controls are located so that they are easily readable while operating the control valves;

e. An air release valve on the highest point of each filter;

f. An accessible manhole to facilitate inspections and repairs for filters greater than 36 inches in diameter;

g. A means to observe the wastewater during backwashing; and

h. Construction to prevent cross-connection.

C. Iron and manganese removal by ion exchange shall only be approved for removing low concentrations (less than 0.5 mg/L) of combined iron and manganese. The commissioner may require pilot studies be conducted to determine post-exchange pH/alkalinity adjustment. See 12VAC5-590-900 for general ion exchange design requirements.

~~E.~~ D. Sequestering ~~— see 12VAC5-590-950 E~~ iron and manganese.

1. Sequestration with polyphosphates shall be considered for polishing filtered water; however, it shall not be used where the residual iron, manganese, or combination thereof exceeds 1.0 mg/L.

2. Phosphate feed rates shall be determined by the product manufacturer and shall not exceed 10 mg/L.

3. Feed equipment shall be in accordance with the requirements of 12VAC5-590-860.

4. Stock phosphate solution shall be disinfected in accordance with manufacturer recommendations unless the phosphate solution is fed directly from the covered shipping container.

5. Sodium silicate or other silicate-based chemicals for the sequestration of iron and manganese shall be approved by the commissioner on an individual basis. Operational data from actual full-scale facilities treating waters of similar quality or pilot tests may be required.

~~F.~~ E. Sampling taps shall be provided for control purposes. Taps shall be located on each ~~raw~~ source water ~~source~~, each treatment unit influent, and each treatment unit effluent.

~~G. Testing equipment shall be provided for all plants~~ F. Iron and manganese testing equipment shall be provided. ~~The~~ Iron testing equipment shall ~~have the capacity to accurately measure the iron content to a minimum of 0.1 milligrams per liter and to indicate manganese removal.~~ be capable of accurately measuring iron concentration as low as 0.1 mg/L. Manganese testing equipment shall be capable of accurately measuring manganese concentration as low as 0.05 mg/L.

G. The commissioner may approve proprietary treatment processes for the removal of iron and manganese on an individual basis. Operational data from actual full-scale facilities treating waters of similar quality or pilot tests may be required. The provisions of 12VAC5-590-290 may apply.

12VAC5-590-930. Fluoridation.

~~Where practicable and feasible, the board may require owners of waterworks to provide artificial fluoridation so as to bring the fluoride ion concentration to the optimum level as set forth in Article 1 of Part II.~~

A. ~~Prior to the issuance of a permit for fluoridation, plans, specifications, operating procedures, and methods of supervision shall be submitted to the division. These shall be in conformity with requirements to be determined for each individual installation by the division.~~ The board recommends that all community waterworks in Virginia be optimally fluoridated. Fluoridation feed systems shall be designed to deliver the optimum fluoride ion concentration as determined by the U.S. Department of Health and Human Services.

B. Fluoride compounds. Commercial sodium fluoride, sodium ~~silicofluoride~~ fluorosilicate (also called sodium silicofluoride), and fluorosilicic acid (also called hydrofluorosilicic acid) shall conform to the applicable AWWA standards or NSF/ANSI Standard 60-2017, as appropriate. ~~Use of other chemicals which may be made available must be approved by the division.~~

C. Fluoride compound storage. Fluoride chemicals shall be isolated from other chemicals to prevent cross contamination. Compounds shall be stored in covered or unopened shipping containers in a separate room (except sodium fluoride saturators) with the chemical feeder. ~~The room must be provided with mechanical ventilation to the outside of the building.~~

D. Chemical feed installations.

~~1. Chemical feed installations shall conform to 12VAC5-590-860.~~

~~2.~~ 1. Scales and ~~loss of weight~~ loss-of-weight recorders for dry chemical feeders and hydrofluorosilicic acid feeders shall be provided.

~~3. Feeders~~ 2. Fluoride metering pumps shall have an accuracy so that the actual feed rate will be within 5.0% of the intended feed rate.

3. The point of application shall be located to provide adequate mixing.

~~4. The point of application of hydrofluorosilicic acid, if into a pipe, shall be so located as to provide adequate mixing.~~

~~5.~~ 4. All fluoride feed lines shall be provided with adequate ~~antisiphon~~ anti-siphon devices.

5. Design of fluoride saturators shall consider:

a. The source water hardness. The water applied to the sodium fluoride saturator feeders shall be softened if the hardness exceeds 50 mg/L.

b. The fluoride source. Use only sodium fluoride in the saturators.

c. A flow restrictor with a maximum flow of 2.0 gpm on all upflow saturators.

~~6. The water applied to sodium fluoride saturator feeders shall be softened if hardness exceeds 75 milligrams per liter.~~

~~7. Unless otherwise approved, fluoride shall be applied to the raw water with the feeder paced by the raw water meter.~~

6. Adequate fluoride feed rate control and mixing shall be provided.

~~8.~~ 7. Provisions shall be made for venting ~~hydrofluorosilicic~~ fluorosilicic acid carboys to the outside of the building when the carboys are in use.

E. Suitable protective equipment shall be provided which includes gloves, aprons, dust mask, and goggles.

F. Suitable equipment shall be provided for ~~wetmopping~~ wet mopping and hosing dust that might accumulate in the plant. Dry feeders shall be equipped with bag loading hoppers.

G. Equipment shall be provided for measuring the quantity of fluoride ion in the water. Testing equipment shall be colorimetric or electrode type as approved by the ~~division~~ commissioner.

12VAC5-590-940. Fluoride removal.

A. Fluoride removal may be accomplished by blending with a different quality water or by removal treatment. Where fluoride removal is required, the treatment units shall be designed to achieve a finished water fluoride concentration that is below the SMCL.

~~A.~~ B. Blending. Blended water ~~must~~ shall result in all water delivered to the distribution system being of the same quality.

~~B.~~ C. Treatment.

~~1. Chemical feed shall conform to 12VAC5-590-860.~~

~~2.~~ 1. Treatment ~~includes use of~~ shall include ion exchange, activated alumina, bone char, ~~reverse osmosis~~ RO, or electrodialysis. ~~Other processes may be utilized if they adequately defluoridate.~~ The selected design ~~is to~~ shall be supported by pilot studies, unless at least two pilot studies, or two prototype plants, have demonstrated that the selected design is feasible. ~~Such~~ These studies or prototypes ~~should~~ shall be for waters having characteristics similar to the water that is to be treated.

~~3. Raw water~~ 2. Water pH shall be adjustable to an optimum level to achieve the best fluoride removal.

~~4.~~ 3. With any one unit out of service, the remaining ~~unit or~~ units ~~must~~ shall be capable of ~~handling peak day flows~~ treating the maximum plant flow rate.

~~5.~~ 4. Filter clogging constituents such as iron having a concentration greater than 1.0 ~~milligrams per liter should~~ mg/L shall be removed ~~prior to defluoridation~~ before fluoride removal. ~~If applicable, chlorination is to be applied after defluoridation.~~

~~6.~~ 5. Test equipment ~~must~~ shall be provided and must be accurate to at least 0.1 ~~milligrams per liter~~ mg/L.

~~7.~~ 6. An operation and maintenance ~~(O & M)~~ manual ~~must~~ shall be provided.

12VAC5-590-950. ~~Stabilization~~ Corrosion control or stabilization.

A. Water that is unstable due either to natural causes or to the treatment ~~given~~ applied to the water ~~should~~ shall be stabilized. ~~Water treated with excess lime for softening or manganese removal shall be treated by carbon dioxide or acid.~~

~~A. Carbon dioxide addition.~~

~~1. The recarbonation chamber design should provide:~~

~~a. A detention time of three to 10 20 minutes;~~

~~b. A depth of about eight feet; and~~

~~c. A reaction tank with a detention time of 20 minutes.~~

~~2. Adequate precautions shall be taken to prevent the possibility of carbon monoxide entering the plant from the recarbonation and reaction chamber.~~

~~B. Sulfuric acid.~~

~~1. Feed equipment for sulfuric acid shall conform to 12VAC5-590-860.~~

~~2. Adequate precautions shall be taken for safety.~~

~~C. Removal of free carbon dioxide. Carbon dioxide may be removed by an alkali, following aeration. The addition of an alkali following aeration may not be necessary when the alkalinity of the aerated water is greater than 80 milligrams per liter.~~

~~D.~~ B. Deposition of calcium carbonate film. The desired calcium carbonate film may be obtained by using either soda ash or caustic soda when the alkalinity of the water exceeds about 35 ~~milligrams per liter~~ mg/L. Soft waters should be treated with lime to provide the required calcium. Soft waters ~~which~~ that also have a low carbon dioxide content may need a mixture of lime and soda ash to provide both calcium and carbonate for the calcium carbonate film.

~~E. Polyphosphates. Polyphosphates are applicable for sequestering dissolved minerals.~~

~~1. Feed equipment shall conform to 12VAC5-590-860.~~

~~2. Phosphate chemicals shall be food grade.~~

~~3. Stock phosphate solution shall be kept covered and disinfected by carrying approximately 10 milligrams per liter chlorine residual.~~

~~4. Satisfactory chlorine residuals should be maintained in the distribution system when phosphates are used.~~

~~F. Under some conditions, softening plants can be designed using split treatment in which raw water is blended with softened water to partially stabilize the water. Treatment plants designed to utilize split treatment should, in most cases, also contain facilities for further stabilization by other means.~~

~~G. Water unstable due to biochemical action in the distribution system. Residual chlorine throughout the distribution systems may be used to prevent corrosion due to decomposition of organic matter (especially in dead ended~~

~~mains), the biochemical action within tubercles and the reduction of sulfates to sulfides.~~

C. Phosphates or other corrosion inhibitors may be used for corrosion control when applied in accordance with manufacturer recommendations and when they meet the requirements of 12VAC5-590-515. Stock phosphate solution shall be disinfected in accordance with manufacturer recommendations unless the phosphate solution is fed directly from the covered shipping container.

~~H.~~ D. Cathodic protection ~~may be used to prevent or minimize~~ shall be acceptable for preventing or reducing corrosion of the inner surfaces of water storage tanks and standpipes and the outer ~~surfaces~~ surface of metal ~~conduits~~ pipe.

~~I.~~ E. Laboratory equipment shall be provided for determining the effectiveness of stabilization treatment and the concentration of chemicals in the treated water.

12VAC5-590-960. Taste and odor control.

~~Tastes and odors found in water are primarily organic in nature. Since the presence of taste and odor problems in a water supply suggests to the consumer that the water may contain potentially toxic agents, expenditures are justified to improve the aesthetic quality of the water and maintain the consumers' confidence in the water utility.~~

~~A. Source treatment. Taste and odor problems in raw water sources are most frequently caused by the presence of plankton, or more specifically, algae. The treatment methods and dosages listed below have been found effective in some applications.~~

~~1.~~ A. The continuous or periodic treatment of ~~raw water~~ source waters with copper sulfate and other copper compounds to kill algae or other growths shall be controlled to prevent a copper concentration in excess of 1.0 ~~milligrams per liter~~ mg/L, as copper, in the finished water leaving the treatment plant ~~finished water~~.

~~2. The periodic treatment of the shallow areas of a reservoir with an activated carbon dosage of 0.2 to 0.5 pounds per 1,000 square feet of water surface has been found effective in some applications.~~

~~3. A potassium permanganate dosage from 0.4 to 4.0 milligrams per liter has been found effective in some applications.~~

~~4. Chlorine dosages that produce 0.2 to 1.0 milligrams per liter of free chlorine in the treated water have been found effective in some applications. Prior to treatment, this treatment method should be evaluated to determine that it will not cause any objectionable tastes or odors in the treated water.~~

~~B. Treatment methods. The waterworks shall be designed to produce high quality water regardless of any changes or emergencies that may arise with the raw water source. Provisions to handle taste and odor problems should be included in all designs regardless of the anticipated raw water quality.~~

~~1. Provisions shall be included in the design of the treatment plant to add chlorine or other approved oxidizing chemicals at the reservoir or at the head of the treatment plant. If breakpoint chlorination is proposed to treat taste and odor problems, extreme caution is warranted to insure that the actual breakpoint of the water is determined accurately. Dechlorination may be required if deemed necessary.~~

~~2. Chlorine dioxide can be utilized to treat any taste and odor problems susceptible to oxidation.~~

~~3. Potassium permanganate has oxidizing capabilities that can be utilized to treat taste and odor problems. It is normally fed to the raw water during the flash mix operation in a dosage such that the pink color formed during its solution travels only 1/2 to 2/3 of the length of the sedimentation basins.~~

~~4.~~ ~~Aeration has been used successfully to treat tastes and odors attributed to volatile organic matter but has shown limited success in treating tastes and odors associated with dissolved and suspended organic matter. Aeration facilities shall be designed in accordance with the provisions of 12VAC5-590-910.~~

~~5. When taste and odor problems are anticipated on an intermittent basis, treatment facilities shall be included in the water treatment plant design for the addition of powdered activated carbon. The dosage of powdered activated carbon required to treat taste and odor problems will vary with each individual raw water, and extensive lab work should be undertaken to ascertain that the carbon feed equipment is properly sized. The carbon feed equipment shall be capable of adding at least 40 milligrams per liter of powdered activated carbon regardless of the anticipated raw water quality. In the water treatment plant design, facilities should be provided to add powdered activated carbon to the flash mixer, to the flocculation basins, at the midpoint of sedimentation basins, and to the conduits leading to the filters.~~

~~The carbon can be added as a premixed slurry, or by means of a dry feed machine as long as it is assured that the carbon is properly wetted. All mechanisms for handling dry carbon should be tightly sealed and dust collection is required on all installations. The feed machine hopper wall should be on at least a 60 degree angle to the horizontal.~~

~~The carbon feed lines to the application points should be sized to handle the carbon suspension and should be equipped with flushing provisions.~~

B. Surface water aerators or diffused aeration systems shall be acceptable for de-stratifying reservoirs, reducing or eliminating seasonal turnover, and releasing compounds in the anaerobic or anoxic zones.

C. Addition of chemical oxidants at the source water intake, in the source water pump station discharge line, at the head of the treatment plant, or within the treatment train shall be acceptable for treating tastes and odors. Effective oxidants include chlorine, chlorine dioxide, potassium permanganate, and ozone. If breakpoint chlorination is proposed, then the actual breakpoint of the water shall be determined accurately. "Breakpoint chlorination" means the addition of chlorine to water until the chlorine demand has been satisfied, chlorine and ammonia nitrogen reactions are near completion, and further additions of chlorine result in a free chlorine residual that is directly proportional to the amount of chlorine added.

~~6. Granular activated carbon units may be used in place of filters described in 12VAC5-590-880 with appropriate pretreatment described in 12VAC5-590-870. Rates of flow shall be consistent with the type and intensity of the problem. The design of the facilities must be supported by the results of pilot plant studies~~

D. Powdered activated carbon (PAC). When taste and odor problems are anticipated on an intermittent basis, the addition of PAC shall be considered, and a pilot study shall be conducted to determine the optimum dosage. Multiple PAC feed locations shall be evaluated to provide maximum contact time, including the rapid mixer, the flocculation basins, and at the midpoint of the sedimentation basins.

1. PAC shall not be applied near the point of chlorine or other oxidant application.

2. Continuous agitation or resuspension equipment shall be required to keep the PAC from depositing in the slurry or storage tank.

3. All mechanisms for handling dry PAC shall be tightly sealed. Dust collection is required at all installations.

4. The PAC feed lines to the application points shall be sized to handle the PAC suspension and should be equipped with flushing provisions.

E. GAC media shall be acceptable in conventional gravity filters or in separate contactors to reduce taste and odor.

F. Ozonation shall be acceptable for taste and odor control.

12VAC5-590-970. ~~Removal of volatile synthetic organic chemicals (VOCs).~~ (Repealed.)

~~Appropriate processes or technologies (either specified as BAT in Appendix N or a division approved alternative, such as other aeration techniques) that treat all the water in the waterworks shall be applied to achieve compliance. The selected design is to be supported by pilot studies unless at least two pilot studies, or two prototype plants, have demonstrated that the selected design is feasible. Such studies or prototypes shall be for waters having characteristics similar to the water that is to be treated.~~

~~A. Granular Activated Carbon (GAC). As in taste and odor control, GAC units may be used with appropriate pretreatment described in 12VAC5-590-870 B. The elements of a GAC system include carbon contactors, a carbon storage and transfer system, a regeneration system and a control system.~~

~~The selected GAC shall meet AWWA Standards. Multiple units shall be provided to process at least the peak day flow rate with one unit out of service. As carbon is corrosive, the use of noncorrosive piping and storage materials is mandatory.~~

~~B. Packed tower aeration. (Also see 12VAC5-590-910.)~~

~~1. Usually more efficient than other types of waterfall (natural) aeration.~~

~~2. With one unit out of service, the remaining unit(s) must be capable of handling peak day flows.~~

12VAC5-590-975. Removal of radionuclides.

A. Processes for the removal of radionuclides specified as BAT are identified in 40 CFR 141.66. The specific process and equipment proposed for removal of radionuclides shall to the satisfaction of the commissioner have a demonstrated history of successful performance with similar water quality characteristics and performance requirements. Otherwise, the procedures of 12VAC5-590-290 shall apply.

B. When manganese greensand filter systems are utilized, the design shall meet the requirements of 12VAC5-590-920 B. In addition, a chemical contact tank with a minimum detention time of 30 minutes shall be provided. Laboratory or pilot studies may be required to demonstrate compliance with the radium standard when using a filtering treatment system for groundwater with total radium greater than 10 pCi/L.

C. Waste handling, disposal, and permitting shall be given special consideration early in the design process.

D. Occupational exposure shall be considered in the project design.

E. Provisions for operational control monitoring of the radionuclides requiring removal or of acceptable surrogates shall be included in the project design.

12VAC5-590-980. ~~Microscreening.~~ (Repealed.)

~~A microscreen is a mechanical supplement to treatment capable of removing suspended matter from water by straining. It shall not be used as a substitute for clarification or filtration.~~

~~A. The design of microscreening facilities shall give due consideration to:~~

~~1. A sanitary survey and chemical and biological evaluation;~~

~~2. The nature of suspended matter to be removed;~~

~~3. The corrosiveness of water;~~

~~4. The effect of chlorination when required as pretreatment; and~~

~~5. Control of the hydraulic capacity of the microscreen.~~

~~B. The design shall provide:~~

~~1. For durable, corrosion resistant screens;~~

~~2. A bypass and cleaning arrangement;~~

~~3. Duplicate units for continuous operation;~~

~~4. Protection against back siphonage when potable water is used for washing; and~~

~~5. Proper disposal of wash water.~~

12VAC5-590-985. GAC contactors.

A. Granular activated carbon (GAC) contactors may be used to adsorb natural organic compounds, taste and odor compounds, and SOCs. The most common applications of GAC contactors in drinking water treatment plants are (i) post-filtration adsorption and (ii) filtration-adsorption, in which some or all of the filter media in a granular media filter is replaced with GAC.

B. General requirements.

1. A demonstration study using bench-scale or pilot-scale tests shall be conducted to determine the GAC media effectiveness, adsorption efficiency, and regeneration frequency.

2. GAC contactors shall be sized for the optimum empty bed contact time.

3. A minimum of two contactor units shall be provided.

4. Bypassing the GAC facility may be permissible under certain circumstances to accommodate seasonal water quality fluctuations and allow for blending water.

C. Hydraulic configuration.

1. Pressure vessel installation may be configured in parallel or in series.

2. For pressure contactors, pre-filter and post-filter pressure gauges shall be installed at each individual contactor unit.

3. The rate of flow through the contactors shall be controlled either manually or automatically to ensure equal flow through each contactor.

D. Design details.

1. For pressure contactors, the maximum pressure loss through the vessels shall be as determined by the product manufacturer.

2. Sample taps, isolation valves, and bypass piping shall be provided before and after each individual contactor unit.

3. Pipes, tanks, and appurtenances shall be corrosion resistant.

4. The GAC facility shall provide the ability to filter-to-waste to prevent carbon fines in the effluent water.

5. Unless otherwise approved by the commissioner, disinfection shall be accomplished following the GAC contactors.

6. If backwashing of GAC specific units is required, then unchlorinated filtered water shall be used.

7. Turbidity monitoring of contactor effluent shall be considered.

8. The facility design shall include provisions for spent carbon disposal, GAC delivery, and storage.

12VAC5-590-990. Waterworks waste.

A. With the exception of sanitary sewage and flows recycled through the water treatment system, the wastes generated during the operation of water filtration plants constitute industrial wastes and are subject to the State Water Control Law (Chapter 3.1 (§ 62.1-44.2 et seq.) of Title 62.1 of the Code of Virginia).

Industrial wastes generated by water treatment facilities include~~, but are not limited to,~~ the following:

1. Filter backwash water;

2. Coagulant ~~sludges~~ residuals;

3. Softening ~~sludges~~ residuals;

~~4. Microscreening sludges;~~

~~5.~~ 4. Iron and manganese ~~sludges~~ residuals;

~~6. Sludges~~ 5. Settled solids from presedimentation units; and

~~7.~~ 6. Brine wastes.

B. After receipt and review of plans and specifications from the consulting engineer for the water treatment facilities, the ~~division~~ commissioner will advise ~~the State Water Control Board~~ DEQ of any proposal to treat and discharge industrial wastes into state waters. The ~~division~~ commissioner will submit ~~to the State Water Control Board~~ a letter or report to ~~include~~ DEQ that includes the following:

1. Capacity of the proposed treatment facilities;

2. Location of the proposed facilities;

3. Proposed final disposition of the treated waste effluent;

4. Name and address of the consulting engineer; and

5. Name and address of the owner.

C. Except for recycle flows as described in ~~12VAC5-590-420-K~~ 12VAC5-590-395 C, the ~~State Water Control Board~~ owner will ~~then deal directly with the consulting engineer in reference to~~ need to satisfy DEQ's requirements for the final disposal of these wastes ~~and~~.

D. The sanitary wastes from water treatment plants must receive treatment. Wastes from these facilities ~~must~~ shall be discharged either directly to a sanitary sewer system or to an ~~approved~~ individual waste disposal facility providing suitable treatment approved by the State Water Control Board.

12VAC5-590-1000. Disinfection.

A. ~~Objective. To~~ The objective of disinfection is to prevent the occurrence of waterborne diseases from the consumption of drinking water.

~~B. Methods. Disinfection shall be accomplished by the application of chlorine. The specific chlorine compound shall be selected on the basis of water flow rates, application rates, pH of the water, cost of equipment and chemicals, availability of disinfectant, and reliability of feed equipment. Alternate chemicals and methods for disinfection are to be handled as unconventional and the procedures of 12VAC5-590-300 apply.~~

~~C. Equipment.~~

~~1. Solution feed vacuum type gas chlorinators are generally preferred. The use of hypochlorite feeders of the positive displacement type may be considered for small installations.~~

~~2. Chlorinator capacities will vary, depending on the use and point of application of the chlorine and the raw water quality. Chlorination capacity shall be such that a minimum dosage of 15 milligrams per liter may be fed at all times.~~

~~3. Standby chlorination equipment shall be provided and chlorination capacities shall comply with 12VAC5-590-1000 C 2 with any unit out of operation for repairs. Spare parts shall be available for all chlorinators to replace parts which are subject to wear and breakage. All chlorinators shall be properly maintained and operated.~~

~~4. An ample supply of potable water shall be available for operating the chlorinator. Where a booster pump is required, duplicate equipment shall be provided, and, when necessary, standby power as well. Equipment for backflow prevention shall be provided. A pressure gauge shall be provided on each chlorinator water supply line.~~

~~5. Scales for weighing cylinders shall be provided at all waterworks using chlorine gas. At large waterworks, scales of the indicating and recording type are recommended. Scales shall be recessed unless they are of the low platform type.~~

~~6. Where manifolding of several cylinders is required to evaporate sufficient chlorine, consideration shall be given to the installation of gas evaporators.~~

~~7. A bottle of ammonia hydroxide solution shall be available for detecting chlorine gas leaks. Consideration shall also be given to the provision of caustic soda solution reaction tanks for absorbing the contents of leaking one-ton cylinders where such cylinders are in use. At large installations, consideration should be given to the installation of automatic gas detection and related alarm equipment. Emergency cylinder repair kits shall be provided.~~

~~8. Piping and connections for chlorine gas.~~

~~a. Piping arrangements should be as simple as possible. Pressure gauges shall be installed on the piping to each chlorinator. The number of screwed or flanged joints should be held to a minimum. Piping systems should be well supported and adequately sloped to allow drainage; low spots should be avoided. Suitable allowance should be provided for pipe expansion due to changes in temperature. Liquid chlorine has a high coefficient of thermal expansion. If liquid chlorine (containing no gas bubbles) is trapped between two valves, high pressure will develop upon increase in the temperature of the chlorine. This pressure may lead to hydrostatic rupture of the line. The effects of possible rupture should be considered in the design of any piping system. Where such rupture would present an undue hazard to personnel or equipment by allowing large quantities of chlorine to escape, protection of the system against hydrostatic pressure should be provided.~~

~~b. Condensation or reliquefaction of chlorine may occur in chlorine gas lines which pass through areas where the temperature is below the temperature pressure equilibrium indicated in the vapor pressure curve. Where adequate superheat is not provided by a vaporizer, condensation can be prevented by reducing the pressure with a pressure reducing valve.~~

~~c. It is recommended that joints in chlorine piping be flanged or welded. If threaded joints are used, extreme care should be taken to obtain clean, sharp threads. A lubricating pipe dope suitable for chlorine should be used. All threading oil must be thoroughly cleaned from the pipe. For permanent joints, linseed oil and graphite, glycerine or Teflon tape may be used. If Teflon tape is used, all remnants must be removed before joints are remade.~~

~~d. Fittings and appurtenances must be suitable for handling dry chlorine.~~

9. Chlorine solution is very corrosive to all of the common construction metals. At low pressures, chlorine solution can be handled in chemical stoneware, glass or porcelain equipment, and by certain alloys. Hard rubber, unplasticized polyvinylchloride, glassfiber reinforced polyester, polyvinylidene chloride, and fully halogenated fluorocarbon resins have been used successfully. Low molecular weight polyethylene, fiber reinforced rubber hose, and wrapped rubber hose have been used successfully for small capacity chlorinators. All of these materials must be selected with great care. For higher pressures, combinations using resistant lining materials (rubber, kynar, saran, Teflon, etc.) with the common metals for strength should be used.

Titanium may be used with chlorine solution, but must not be used with chlorine gas. Tantalum is inert to chlorine solution at temperatures up to 300°F. Hastelloy Alloy C® and Monel Alloy® are widely used. Platinum and silver find special applications. In general, operations involving chlorine solution require individual study.

Chlorine and equipment suppliers shall make recommendations only after careful survey of all factors involved.

10. Chlorine solution and hypochlorite solution piping shall be arranged such that prechlorination or postchlorination may be accomplished by any or all chlorinators.

D. Engineering design.

1. Any building to house chlorine equipment or containers should be designed and constructed to protect all elements of the chlorine system from fire hazards. If flammable materials are stored or processed in the same building, a fire wall should be erected to separate the two areas. Fire resistive construction is recommended.

If gas chlorination equipment and chlorine cylinders are to be in a building used for other purposes, a gas tight partition shall separate this room from any other portion of the building. Doors to this room shall open only to the outside of the building, and shall be equipped with panic hardware. Such rooms shall be at ground level, and should be separated from the feed area.

At least two means of exit should be considered from each separate room or building in which chlorine is stored, handled, or used. All exit doors shall open outward.

A clear glass, gas tight window shall be installed in an interior wall of the chlorinator room to permit the chlorinators to be viewed without entering the room.

Feed lines shall not carry chlorine gas beyond the chlorine feeder room unless the chlorine is under vacuum.

2. Chlorinator rooms shall be provided with a means of heating so that a temperature of at least 60°F can be maintained, but the room should be protected from excess heat. Cylinders shall be kept at essentially room temperature for at least 24 hours prior to use unless an evaporator is employed.

3. Forced, mechanical ventilation which will provide one complete air change per minute shall be installed in all chlorine feed rooms and rooms where chlorine cylinders are stored. The entrance to the air exhaust duct from the room shall be near the floor and the point of discharge shall be located so as not to contaminate the air inlet to any building or inhabited areas. Air inlets shall be located so as to provide cross ventilation with air and at such temperature that will not adversely affect the chlorination equipment. The vent hose shall run without traps from the chlorinator and shall discharge to the outside atmosphere above grade.

4. The electrical controls for the fans and lights shall be such that they will automatically operate when the door is opened and can be manually operated from the outside without opening the door.

E. Respiratory protection. The use of self contained breathing apparatus (SCBA) in compliance with OSHA Respiratory Protection Standard 1910.134, "VIRGINIA OSHA STANDARDS" for General Industry, is required whenever anyone is dealing with an accidental release of chlorine. All waterworks that use chlorine gas at their treatment facility shall maintain a respiratory protection plan including emergency procedures, evacuation plans, designated SCBA personnel and any special site specific requirements. All respiratory protection devices shall be stored to protect against dust, sunlight, heat, extreme cold, excessive moisture or damaging chemicals; and in a location remote from the chlorine area.

F. Application of chlorine.

1. Provisions shall be made to ensure uniform mixing of the chlorine solution or hypochlorite solution with the water near the point of application.

2. Residual and contact time.

a. Waterworks with surface water sources shall provide a minimum residual (C) and contact time (T) as calculated in accordance with Appendix L. Appendix L contains information on CT calculations and methods, as well as information on contact tank baffling arrangements.

b. Waterworks with groundwater sources shall provide a minimum 30 minute hydraulic detention period (based on design flow) for chlorine contact.

G. Evaluation of effectiveness.

1. Sampling - see 12VAC5-590-770.

~~2. Equipment shall be provided for measuring chlorine residual employing any method listed in the most recent edition of "Standard Methods for the Examination of Water and Wastewater."~~

~~The equipment should enable residual chlorine measurement to the nearest 0.1 milligram per liter in the range below 0.5 milligram per liter, and to an accuracy of approximately 25% above 0.5 milligram per liter. The installation of continuous automatic chlorine residual analyzers recording and proportioning systems may be required on large installations.~~

B. Primary disinfection shall be provided for all surface water sources, all spring sources, all GUDI sources, and all well sources determined to be of questionable bacteriological quality as required by the commissioner. Consideration shall be given to minimizing the formation of DBPs when designing a disinfection process. Waterworks with groundwater sources requiring disinfection under this section shall meet the requirement of 12VAC5-590-421 A 1 d.

C. All pipes, tanks, and equipment that convey, store, or treat potable water shall be disinfected with chlorine before being placed in service in accordance with the following AWWA standards where applicable: C651-14, C652-11, and C653-13.

D. All residual disinfectant determinations shall be made using methods identified in 12VAC5-590-440.

1. The project documents shall outline the procedures and include the disinfectant dosage, contact time, and method of testing the results of the procedure.

2. Methods of disinfection other than chlorination may be considered by the commissioner on a individual basis.

12VAC5-590-1001. Chlorination.

A. General design requirements.

1. Chlorine feed capacity shall be capable of meeting the disinfection requirements under all operating conditions.

a. Chlorine feed systems for primary disinfection at a waterworks using a surface water source, a GUDI source, or both shall provide sufficient capacity to achieve the required microbial log inactivation specified in Table 500.1.

b. Chorine feed systems for primary disinfection at a waterworks using groundwater sources shall provide sufficient capacity to achieve 4-log virus inactivation and removal.

c. Chlorine feed systems for secondary disinfection at a waterworks shall provide sufficient capacity to achieve a minimum chlorine residual at the entry point of 0.2 mg/L for more than 4 hours.

2. Chlorine feed systems for disinfection at a waterworks using a surface water source, a GUDI source, or both shall be sized to deliver the required dose with the largest unit out of operation. Small hypochlorination installations for groundwater source waterworks shall have a spare metering pump, unless it can be demonstrated to the satisfaction of the commissioner that spare equipment is readily available from a local supplier. Spare parts shall be available for all chlorinators to replace parts that are subject to wear and breakage.

3. Consideration shall be given to providing multiple chlorine feed points at all waterworks. For conventional filtration treatment plants, chlorine feed points shall be provided for the source water, applied water to the filters, and filter effluent.

4. The piping providing the water for preparing the chlorine solution shall be designed to prevent contamination of the "bulk treated" finished water.

a. At all facilities treating surface water, pre-filtration and post-filtration disinfection systems shall operate independently of each other to prevent possible siphoning of partially treated water into the clearwell.

b. The water piping to each ejector shall have a separate shutoff valve. A master shutoff valve is prohibited.

5. Provisions shall be made to ensure uniform mixing of the chlorine with the water near the point of application.

6. Residual and contact time.

a. The owner of a waterworks using a surface water source, a GUDI source, or both shall provide a minimum residual (C) and contact time (T) as calculated in accordance with 12VAC5-590-500.

b. The owner of a waterworks using a groundwater source that is required to disinfect shall provide a minimum residual (C) and contact time (T) to achieve 4-log virus inactivation and removal based on maximum design flow rate. Provisions shall be made to prevent short circuiting. The contact basin shall be designed utilizing the appropriate baffle factors referenced in Table 500.15 of 12VAC5-590-500.

7. Automatic proportioning chlorinators shall be provided where the rate of flow is not reasonably constant.

8. Equipment shall be provided for measuring the chlorine residual, employing any method specified in 12VAC5-590-440. The equipment shall be capable of a chlorine residual measurement to the nearest 0.1 mg/L.

9. Continuous chlorine residual analyzers shall be provided at all waterworks that are required to filter and that serve 3,300 or more persons or at any waterworks required by the commissioner. Where a continuous chlorine residual analyzer is provided, the commissioner may require that the design incorporate an operator-selected high or low chlorine residual alarm.

B. Gas chlorine feed systems.

1. Equipment.

a. An ample supply of potable water shall be available for operating the chlorinator. Where a booster pump is required, duplicate equipment shall be provided, and when necessary, standby power shall be provided as well. Equipment for backflow prevention shall be provided. A pressure gauge shall be provided on each chlorinator mixing water piping.

b. Scales for weighing cylinders shall be provided at all waterworks using chlorine gas. At large waterworks, scales of the indicating and recording type shall be considered. Scales shall be recessed unless they are of the low-platform type.

c. Where a manifold of several cylinders is required to evaporate sufficient chlorine, consideration shall be given to the installation of gas evaporators.

d. Automatic switch-over of chlorine cylinders shall be provided to assure continuous disinfection.

2. Chlorine gas leak detection.

a. Automatic chlorine gas leak detection with strategically located sensors and related alarm equipment shall be provided for all installations.

b. A bottle of ammonia hydroxide solution shall be provided for detecting chlorine gas leaks.

3. Emergency cylinder repair kits shall be provided.

4. Consideration shall be given to the provision of caustic soda solution reaction tanks for absorbing the contents of leaking one-ton cylinders where the cylinders are in use.

5. Piping and connections for chlorine gas.

a. Pressure gauges shall be installed on the piping to each chlorinator. Piping systems shall be well supported and adequately sloped to allow drainage. Suitable allowance shall be made for pipe expansion due to changes in temperature.

b. Fittings and appurtenances shall be suitable for handling dry chlorine.

6. Building design.

a. Any building to house chlorine equipment or containers shall be designed and constructed to protect all components of the chlorine system from fire hazards. See 12VAC5-590-720.

b. If gas chlorination equipment and chlorine cylinders are to be in a building used for other purposes, a gas-tight partition shall separate this room from any other portion of the building. Doors to this room shall open only to the outside of the building and shall be equipped with panic hardware. These rooms shall be at ground level and should be separated from the feed area.

c. At least two means of exit shall be considered from each separate room or building in which chlorine is stored, handled, or used. All exit doors shall open outward.

d. A clear glass, gas-tight window shall be installed in an interior wall of the chlorinator room to permit the chlorinators to be viewed without entering the room.

e. Feed lines shall not carry chlorine gas beyond the chlorine feeder room unless the chlorine is under vacuum.

f. Chlorinator rooms shall be provided with a means of heating so that a temperature of at least 60°F can be maintained, but the room should be protected from excess heat. Cylinders shall be kept at essentially room temperature for at least 24 hours before use unless an evaporator is employed.

g. Forced, mechanical ventilation that provides one complete air change per minute shall be installed in all chlorine feed rooms and rooms where chlorine cylinders are stored. The inlet to the air exhaust duct from the room shall be near the floor, and the point of discharge shall be located so as not to contaminate the air inlet to any building or inhabited areas. Air inlets shall be located so as to provide cross ventilation with air and at a temperature that will not adversely affect the chlorination equipment. The vent hose shall run without traps from the chlorinator and shall discharge to the outside atmosphere above grade.

h. The electrical controls for the fans and lights shall automatically operate when the door is opened and can be manually operated from the outside without opening the door.

C. Calcium hypochlorite and sodium hypochlorite feed systems.

1. Both calcium hypochlorite and sodium hypochlorite shall be acceptable for disinfection.

2. Hypochlorite solution feeders of the positive displacement type shall be provided.

3. Adequate mixing of the calcium hypochlorite or sodium hypochlorite solutions shall be provided.

4. Special design considerations for bulk delivery systems:

a. Bulk sodium hypochlorite storage tanks shall be constructed of corrosion-proof materials. Pumps, piping, materials, and appurtenances exposed to the sodium hypochlorite shall be suitable for such use.

b. Sodium hypochlorite storage facilities shall be designed to keep ambient temperature and lighting low.

Sodium hypochlorite fumes are corrosive and tanks shall be vented to the outside. Tanks shall be designed for ease of filling, draining, and transfer of contents.

c. Piping, valves, pumps, and pipe accessories shall be designed and configured so as not to allow accumulation of gases that could cause air locking or loss of prime in chemical feed piping or pumps.

d. The design shall provide a system of local or general exhaust features to keep employee exposures below the airborne exposure limits, as described in the Safety Data Sheet for the chemical used, in accordance with federal occupational safety and health standards (29 CFR § 1910.1200 (g)). Local exhaust ventilation is generally preferred because it controls contaminant emissions at the source and thus, preventing dispersion into the general work area which could result in corrosion or exposure. Exhaust equipment and accessories shall be corrosion proof.

e. An eye wash fountain and quick-drench facilities in the immediate work area shall be provided.

12VAC5-590-1002. Chloramination.

A. Chloramines shall be acceptable for secondary disinfection. Chloramines are formed by the reaction of ammonia and chlorine. Multiple chemical species may be created; however, monochloramine is the desired form.

B. The process shall be controlled to minimize formation of dichloramine and nitrogen trichloride, which can create objectionable taste and odors. Control should be sufficient to limit free ammonia leaving the chloramination facility to no more than 0.1 mg/L as nitrogen.

C. pH adjustment facilities shall be provided to maintain pH in the range of 7 to 8.

D. When use of chloramines is proposed, the potential increase of lead leaching within the distribution system shall be considered. Additional distribution system monitoring may be required by the commissioner.

E. The owner shall inform the public before initiating any disinfection process involving chloramines, as directed by the commissioner.

12VAC5-590-1003. Chlorine dioxide addition.

A. Chlorine dioxide may be considered as a pre-oxidant to control tastes and odors, reduce color, oxidize iron and manganese, and reduce DBPPs. Chlorine dioxide may be used for primary disinfection. Where chlorine dioxide is used, consideration shall be given to the formation of the byproducts chlorite and chlorate.

B. Chlorine dioxide is generated onsite from sodium chlorite and either chlorine gas or hypochlorite solution. Chlorine dioxide generation equipment shall be factory assembled, pre-engineered units with a minimum efficiency of 95%. The excess free chlorine shall not exceed 3.0% of the theoretical stoichiometric concentration required.

C. The owner shall inform the public before using chlorine dioxide, as directed by the commissioner.

12VAC5-590-1004. Ozonation.

A. Ozone may be considered as a pre-oxidant to control tastes and odors, reduce color, oxidize iron and manganese, reduce DBPPs, and used for primary disinfection. Where ozone is used, consideration shall be given to the level of bromide and formation of brominated byproducts.

B. Ozone systems are typically comprised of four basic subsystems: ozone generation, feed gas preparation, ozone contactors, and off-gas disposal.

C. The PER shall evaluate water and gas flow rates, oxygen source, generator selection and sizing, contactor design, treatment process location, exhaust gas collection and destruction, and operator requirements.

D. Treatability studies using bench-scale or pilot-scale tests may be required as part of the PER to address the following:

1. Alternate points of ozone application;

2. Ozone demand tests, applied dose, transferred dose, and decay rates; and

3. Ozone byproducts, including bromide and bromate analyses.

E. Ozone systems shall be granted disinfection credit for Giardia lamblia, Cryptosporidium, and viruses, in accordance with 12VAC5-590-401 E 7 and 12VAC5-590-500, provided that they meet the requirements of this section.

1. Ozone residual levels shall be monitored continuously and recorded. For waterworks that claim inactivation credit for ozone, a minimum of two dedicated, online monitors per ozone contactor shall be provided. The location of the monitors shall be acceptable to the commissioner. A portable ozone monitor shall be provided as a backup.

2. Ozone systems using multiple, consecutive contact chambers with gaseous ozone injected in the initial chambers, shall be designed to measure the ozone residual and compute log inactivation of Giardia and virus using the $C_{effluent}T_{10}$ Method or the Log Integration CT_{10} Method, as described in the "Long Term 2 Enhanced Surface Water Treatment Rule Toolbox Guidance Manual," EPA Office of Water (4606), EPA 815-R-09-016, April 2010.

3. Sampling lines shall be designed to minimize the reaction time (typically less than 10 seconds conveyance time).

F. Alarms shall be provided for ozone process control safety. Automatic shutdown features shall be considered.

12VAC5-590-1005. Ultraviolet light (UV) disinfection.

A. All UV reactors shall conform to NSF/ANSI standards.

B. Each reactor train shall be equipped with an individual flow meter or a single flow meter in conjunction with differential pressure sensors in each treatment train. Reactors shall be sized to treat the design flow.

C. Hydraulic design shall ensure that lamps are submerged and that the entrance of air, negative pressure, or pressure surges in the reactors is prevented. Open channel flow reactors are prohibited.

D. A pressure gauge shall be provided upstream of each reactor. The design shall ensure that the reactor's maximum rated pressure cannot be exceeded.

E. Water quality parameters that may affect UV disinfection system performance shall be evaluated, including calcium, iron, manganese, hardness, and alkalinity. Pretreatment shall be considered for water quality parameters that may result in lamp sleeve fouling.

F. A building to enclose and protect all UV equipment shall be provided. Adequate space between control panels, power supply, and the reactor equipment shall be provided to allow for routine operation and maintenance, including removing lamp and wiper assemblies and for off-line chemical cleaning of reactor lamps.

G. An operation and maintenance manual shall be provided for all UV reactors.

H. UV systems may be used for primary disinfection and shall be granted log inactivation credit for Giardia lamblia, Cryptosporidium, and viruses in accordance with Table 401.7, provided that they meet the requirements of 12VAC5-590-401 E 7 c and this subsection.

1. Only UV reactors that have undergone independent, third-party oversight of the validation testing on a fully assembled system to determine the operating conditions under which the reactors deliver the required UV dose shall be considered for log inactivation credit.

2. The dose-monitoring strategy shall be either the UV intensity set point approach or the calculated dose approach as described in the "Ultraviolet Disinfection Guidance Manual For The Final Long Term 2 Enhanced Surface Water Treatment Rule," Office of Water (4601), EPA 815-R-06-007, November 2006. The dose-monitoring strategy shall be demonstrated through the UV reactor validation testing.

3. At least two reactors shall be provided. Reactors shall be sized to treat the design flow with the largest reactor out of service.

4. Continuous monitoring sensors shall be provided to measure UV intensity. A continuous sensor shall also be provided to measure ultraviolet transmittance (UVT) if the calculated dose approach is utilized.

a. The number of sensors provided shall be the same as that used in validation testing of the reactor.

b. Output from a continuous UVT analyzer shall be capable of being input directly into a control loop for each UV reactor, a SCADA system, or both. A bench-top spectrophotometer may be provided instead of a continuous UVT analyzer.

c. All signals from the sensors shall be displayed for operator response and for recordation.

d. At least one reference sensor for calibration of online UV intensity sensors shall be provided. Reference sensors shall be capable of calibration against a traceable standard.

e. Continuous recording equipment shall be provided with the monitoring sensors to store in memory or print one data point at least every four hours.

5. A means of flow distribution and control among multiple reactors shall be provided. The hydraulic flow profiles and piping configuration shall be identical to or more protective than that tested during equipment validation.

a. For onsite validation, the inlet and outlet piping configuration for the UV facility shall be designed according to manufacturer recommendations and to accommodate any site-specific constraints.

b. To avoid jetting flow and swirling flow, consideration shall be given to exclude expansions for at least 10 pipe diameters upstream of the reactor and to exclude out-of-plane 90-degree bends in series.

c. Each UV reactor shall be capable of being isolated and removed from service. Isolation valves upstream and downstream of each reactor, a drain, and sample taps for each reactor treatment train shall be provided. If the isolation valves are also used for flow control, then the flow control valve shall be located downstream of the UV reactor to limit the disturbance of the flow entering the UV reactor. Bypass piping shall not be allowed.

d. The lateral piping for each UV reactor train shall be sized and configured to provide approximately equal head loss through each UV reactor train over the validated range of flow rates.

6. The control system shall be capable of meeting the monitoring and reporting requirements in 12VAC5-590-401 and 12VAC5-590-570.

7. Automatic shutdown capability under critical alarm conditions shall be provided, including lamp or ballast failure, low liquid level, and high temperature. Alarms

shall be provided for low UV validated dose, low UV intensity, low UV transmittance, high flow rate, and mechanical wiper failure.

8. Ground-fault circuit interrupters shall be provided for all lamps. Backup power shall be considered.

9. The owner shall develop a start-up plan and submit the plan to the department for approval. The plan shall include functional testing, determination of validated operating conditions and control settings, performance testing, development of an operation and maintenance manual, and inspection schedules.

I. UV systems not intended for primary disinfection may be used provided that they meet the requirements of this subsection.

1. Continuous sensors to measure UV intensity shall be considered.

2. Each UV reactor shall be capable of being isolated, removed from service, and be provided with bypass piping.

3. Automatic shutdown capabilities shall be provided in the event of lamp or ballast failure.

~~Article 4~~
~~Pumping Facilities~~

12VAC5-590-1010. ~~General~~ Basic pumping facility design criteria.

Pumping facilities shall be designed to maintain the sanitary quality of pumped water. ~~Subsurface pits or pump rooms and inaccessible installations should be avoided.~~ All pumps shall be accessible for servicing and repair.

12VAC5-590-1020. Location.

A. The pumping station shall be located ~~so that the proposed site will meet the requirements of the sanitary protection of the water quality and the hydraulics of the system and be protected against interruption of service by fire, flood, or any other hazard~~ to meet the hydraulic needs of the distribution system, preserve the quality of the water pumped, and shall consider the availability of a power or a fuel supply.

B. The station shall be:

1. Elevated to a minimum of one foot above the 100-year flood elevation or protected to ~~such~~ that elevation;

2. Accessible at all times unless ~~permitted~~ allowed to be out of service ~~for a period of inaccessibility~~ by the commissioner;

3. Graded around the station so as to lead surface drainage away from the station; and

4. Protected to prevent vandalism and entrance by animals or unauthorized persons~~;~~.

~~5. Located with respect to availability of a power or a fuel supply.~~

12VAC5-590-1030. ~~Groundwater facilities.~~ (Repealed.)

~~Where pumping facilities are used, wells and springs shall be vented by properly hooded and screened pipe extending at least 12 inches above the pump floor or ground surface. Where necessary, provisions shall be made for lubricating the pump from a point at least six inches above the top of the well cover by means which will prevent contamination of the water supply.~~

~~A. General well appurtenances.~~

~~The following well appurtenances are required:~~

~~1. A sanitary seal shall be provided on the top of the well casing;~~

~~2. A properly screened vent with the end elbowed downward shall be provided for the well casing;~~

~~3. A sampling tap shall be provided for raw water sampling which discharges in a downward direction and away from the well casing;~~

~~4. Adequate control switches, etc., for the pumping equipment shall be provided;~~

~~5. A water meter is required to determine water production for each well and the meter shall be located upstream of the well blow-off;~~

~~6. The well casing shall extend at least 12 inches above the concrete floor or apron surrounding the well;~~

~~7. Adequate support for the well pump and drop pipe shall be provided; and~~

~~8. Each well casing shall be equipped with a drawdown gauge, airline, and appurtenances for measuring the change in the elevation of the water level in the well.~~

~~B. Drilled wells with the prime mover mounted on the casing shall:~~

~~1. Have the casing extend 12 inches above the floor, and be equipped with a flange or suitable sanitary seal;~~

~~2. Have the casing firmly connected to the pump structure or have the casing inserted into a recess extending at least one inch into the base of the pump if a watertight connection is not provided;~~

~~3. Have the base of the pump not less than 12 inches above the pump room floor or apron; and~~

~~4. Have the pump foundation and base designed to prevent water from coming into contact with the joint between the casing and the prime mover.~~

~~C. Submersible pumps. Where a submersible pump is used, the top of the casing shall be effectively sealed against~~

entrance of water under all conditions of vibration or movement of conductors or cables and shall have a gooseneck vent with a screen covered opening.

D. Discharge piping. The discharge piping shall be provided with separate means to pump (blowoff) water of unsatisfactory quality to a point away from the groundwater source but shall not be directly connected to a sewer. The discharge line shall:

1. Have control valves located above the pump floor;

2. Be protected against freezing;

3. Be valved to permit testing and control of each well;

4. Have watertight joints;

5. Have all exposed valves protected; and

6. Have erosion protection at the point of waste discharge.

E. General well pump house construction requirements.

1. The well pump house floor or apron surrounding the well shall:

a. Be of good quality concrete with adequate reinforcement;

b. Be a minimum of six inches in thickness;

c. Extend a minimum of three feet in all directions from the well; and

d. Slope at least ¼ inch per foot towards a screened four inch floor drain to atmosphere.

2. Well houses or well pump stations in pits are prohibited.

3. Well pump stations housing chlorination equipment shall meet the requirements of 12VAC5-590-1000.

12VAC5-590-1040. Pump stations.

A. Pump stations associated with surface water sources, treatment facilities, and finished water shall:

1. Have adequate space for the installation of additional units if needed and for the safe servicing of all equipment;

2. Be of durable construction, fire and weather resistant, and furnished with outward opening doors;

3. Have the floor elevation at least six inches above the finished grade, if possible;

4. Have the underground structure waterproofed;

5. Have all floors drained without impairing the quality of water being handled, and, if equipment is contained on the floor, the floor shall slope at least ⅛ inch in every foot to the point of discharge; and

6. Provide suitable outlet for drainage from pump glands without discharging onto the floor.

B. Suction wells. Suction wells shall:

1. Be watertight;

2. Have floors sloped to permit removal of water and entrained solids; and

3. Be covered or otherwise protected against contamination, including contamination by pump lubricants.

C. Equipment servicing in pump stations.

1. Craneways, hoist beams, eyebolts, or other adequate facilities for servicing or removal of pumps, motors, or other heavy equipment shall be provided.

2. Walkways shall be provided to lubrication points of equipment if these are located at intermediate points between floors.

3. Openings in floors, roofs, or wherever else needed for removal of heavy or bulky equipment shall be provided.

4. A convenient tool board or other facilities shall be provided as needed for proper maintenance of the equipment.

D. Stairways and ladders. Stairs are preferred in areas where there is frequent traffic or where supplies are transported by hand. They shall have risers not exceeding nine inches and treads wide enough for safety. Where ladders are used, intermediate landings should be provided if the vertical distance exceeds 10 feet. Stairways and ladders shall:

1. Be provided between all floors and in pits or compartments which must be entered and;

2. Have handrails on both sides and treads of nonslip material.

E. Heating. In pump houses not occupied by personnel, only enough heat need be provided to prevent freezing of equipment or treatment process. Provision shall be made for adequate heating for the comfort of the operator and the safe and efficient operation of the equipment.

F. Ventilation. Adequate ventilation shall be provided for all pumping stations. Forced draft ventiliation of at least six changes of air per hour (continuous operation) shall be provided for:

1. All rooms, compartments, pits and other enclosures below the grade floor; and

2. Any area where an unsafe atmosphere may develop or where excessive heat may build up.

G. Dehumidification. In areas where excess moisture could cause hazards to safety or damage to equipment, means for dehumidification shall be provided.

~~H. Lighting. Pump stations shall be adequately lighted throughout. All electrical work shall conform to the requirements of the state codes.~~

~~I. Pumps. At least two pumping units shall be provided. If only two units are provided, each shall be capable of delivering the peak demand. If more than two units are installed, they shall have sufficient capacity so that if any one pump is out of service, the remaining pumps are capable of carrying the peak demand. The pumping units shall:~~

~~1. Have ample capacity to supply the peak demand without overloading;~~

~~2. Be driven by a prime mover able to operate against the maximum head and air temperature which may be encountered; and~~

~~3. Have maintenance parts and tools readily available.~~

~~J. Suction lift. If suction lift is necessary, provision shall be made for priming the pumps. Suction lift should be less than 15 feet.~~

~~K. Priming. Prime water must not be of lesser sanitary quality than that of the water being pumped. Means shall be provided to prevent back siphonage. When an air operated ejector is used, the screened intake shall draw clean air from a point at least 10 feet above the ground or other source of contamination, unless the air is filtered by an apparatus approved by the Division. Vacuum priming may be used.~~

A. Enclosures.

1. The structure that houses a pump shall be of durable construction, fire and weather resistant, and furnished with lockable, outward opening doors. Underground structures shall be waterproofed.

2. Floors.

a. Pump house floors shall be of good quality concrete with adequate reinforcement and have a minimum thickness of six inches.

b. Pump house floors shall slope at least 1/8 inch per foot toward a screened four-inch-diameter floor drain to the atmosphere or other provisions for gravity drainage.

c. The pump house finished floor elevation should be at least six inches above the finished grade.

3. Openings in floors or roofs or elsewhere for removal of heavy or bulky equipment shall be provided.

a. Craneways, hoist beams, eyebolts, or other adequate facilities for servicing or removal of pumps, motors, or other heavy equipment shall be provided.

b. Adequate means of access shall be provided to lubrication points of equipment if these are located at intermediate points between floors.

4. Heat shall be provided for the safe and efficient operation of the equipment.

5. Adequate ventilation shall be provided for all pumping stations. Forced draft ventilation of at least six changes of air per hour (continuous operation) shall be provided for:

a. All rooms, compartments, pits, and other enclosures below grade; and

b. Any area where an unsafe atmosphere may develop or where excessive heat may build up.

6. In areas where excess moisture could cause hazards to safety or damage to equipment, means for dehumidification shall be provided.

7. Pump stations shall be adequately lighted throughout. All electrical work shall conform to the requirements of the applicable codes.

8. Stair design shall be in accordance with the USBC.

9. Pump stations shall have adequate space for the installation of additional units if needed and for the safe servicing of all equipment.

10. Pump stations shall be designed so that each pump has an individual suction line or the lines shall be so manifolded to ensure similar hydraulic and operational conditions.

B. Suction wells shall:

1. Be watertight;

2. Have floors sloped to allow removal of water and entrained solids;

3. Be covered or otherwise protected against contamination, including contamination by pump lubricants; and

4. Have two pumping compartments or other means to allow the suction well to be taken out of service for inspection, maintenance, or repair.

C. Groundwater well enclosures and aprons.

1. The floor at the well pump house shall meet the requirements of subdivision A 2 of this section.

2. Well pump aprons surrounding the well shall (i) be of quality reinforced concrete, (ii) extend a minimum of three feet in all directions from the well casing, (iii) be at least six inches thick, and (iv) be sloped 1/8 inch per foot away from the well.

3. Well houses or well pump stations in pits are prohibited.

D. Spring enclosures shall be vented by properly hooded and screened pipe extending at least 12 inches above the pump floor or ground surface.

12VAC5-590-1050. ~~Booster pumps~~ Pumps and controls.

A. General.

1. Pumps, pump motors, and all accessories shall be controlled in a manner that they will operate at their rated capacity. Where two or more pumps are installed, provision shall be made for proper alternation of the pumps. Alternation may be automatic or manual. Provision shall be made to prevent operation of the pump in the event of a backspin cycle.

2. All pumps shall be driven by motors designed to operate over the full range of operating conditions.

3. All pumps shall be served by control equipment that has overload protection for the air temperature encountered.

4. Electrical controls shall be protected to the 100-year flood elevation and should be located above grade.

5. If standby power is provided by onsite generators or engines, then the provisions for filling the fuel storage tank, the fuel tank itself, and the fuel line shall be designed to protect the waterworks and source water from contamination.

6. Pumps shall be lubricated with water of equal or better quality than the water being pumped or with food grade oil. Water seals shall not be supplied with water of a lesser sanitary quality than that of the water being pumped. Where pumps are sealed with potable water and are pumping water of lesser sanitary quality, the seal shall:

a. Have an air gap of at least two inches or two pipe diameters, whichever is greater, where a break-tank is provided; or

b. Be provided with an approved RPZ assembly.

7. When automatic pre-lubrication of pump bearings is necessary and an auxiliary power supply is provided, the pre-lubrication line shall be provided with a valved bypass around the automatic control.

8. A suitable outlet for drainage from pump glands shall be provided without discharging onto the floor.

~~A.~~ B. Booster pumps~~,~~.

1. Booster pumps, except those connected to supply mains not containing service connections and except those taking suction directly from storage facilities, shall be located or controlled so that:

~~1.~~ a. They will not produce negative gauge pressure in their suction line; and

~~2.~~ b. The intake pressure shall be at least 20 psi when the pump is in normal operation~~;~~.

~~3.~~ 2. An automatic pressure cutoff or a ~~pressure-regulating~~ pressure-regulating valve shall be provided to prevent the suction line pressure from dropping to below 10 psi~~; and~~.

~~4.~~ 3. Automatic or remote control devices shall have ~~a~~ sufficient range between the start and cutoff pressure, or another mechanism ~~which~~ that will prevent excessive cycling of the pumps.

~~B. Inline booster pumps. In addition to the other requirements of this section, inline booster pumps shall be accessible for servicing and repairs.~~

4. At least two pumping units shall be provided.

a. If only two units are provided, then each shall be capable of delivering the peak hour demand, taking into account storage contributions.

b. If more than two units are installed, then they shall have sufficient capacity so that if any one pump is out of service, the remaining pumps are capable of meeting the peak hour demand, taking into account storage contributions.

c. When using booster pumps to transfer water from atmospheric storage tanks to hydropneumatic tanks located upstream of an entry point into the distribution system, the combined capacity of the two pumps shall equal or exceed the peak hour demand. If fire flow is provided, then a pump separate from the transfer pumps shall be provided to deliver the required fire flow.

d. When booster pumping is required for small noncommunity systems, the reserve capacity requirements may be reduced in accordance with the type and size of system served.

5. Controls shall be provided to shut off pumps in the event that suction conditions may result in cavitation.

12VAC5-590-1060. ~~Automatic and remote controlled stations.~~ (Repealed.)

~~All automatic stations should be provided with an automatic signaling apparatus which will report to a facility manned 24 hours per day when the station is out of service. All remote controlled stations shall be electrically operated and controlled and shall have a signaling apparatus of proven performance. Installation of electrical equipment shall conform with the appropriate state codes.~~

12VAC5-590-1065. Piping, valves, and meters.

A. Piping shall:

1. Be adequately sized to minimize energy losses;

2. Not be subject to contamination;

3. Have watertight joints;

4. Be properly anchored to prevent movement;

5. Be protected against surge or water hammer;

6. Have proper labels to identify the contents of the pipes (12VAC5-590-720 C); and

7. Have all exposed piping, valves, and appurtenances protected against physical damage and freezing.

B. Pumps shall be adequately valved to allow satisfactory operation, maintenance, and repair.

1. If foot valves are necessary, then they shall have a net valve area of at least 2-1/2 times the area of the suction pipe and they shall be screened.

2. Each pump shall have shutoff valves on both suction and discharge sides of the pump.

3. Each pump shall have a positive-acting check valve on the discharge side between the pump and shutoff valve or suitable control features to prevent flow reversal.

4. Surge relief valves or slow-acting check valves shall be designed to minimize hydraulic transients.

5. Discharge control valves and appurtenances shall be located above the pump floor when an above-ground discharge is provided.

6. Pumps shall be equipped with an air release or vacuum relief valve located upstream from the check valve, with exhaust or relief piping terminating in a down-turned position at least 18 inches above the floor and covered with a corrosion-resistant screen.

C. Gauges. Each pump shall have a standard pressure gauge on its discharge line capable of displaying the maximum allowable pressure of the pump and shall have a standard pressure gauge or a compound gauge when appropriate on its suction line.

D. Meters.

1. All booster pump stations located within the distribution system should be fitted with a flow rate indicating and totalizing meter with recording capabilities.

2. A totalizing water meter to measure water production shall be provided for each well and shall be located upstream of the well blowoff.

E. Additional requirements for well discharge piping.

1. Valves shall be provided to allow testing and control of each well.

2. A nonthreaded sampling tap shall be provided for water sampling that discharges in a downward direction and away from the well casing.

3. A standard pressure gauge shall be provided to indicate well discharge pressure. The gauge shall be capable of displaying pressure under all operating conditions.

4. Blowoff.

a. A separate means to pump (i.e., blowoff) water of unsatisfactory quality to a point away from the groundwater source shall be provided. Blowoff discharge shall not create a cross-connection.

b. Systems shall be equipped with a watertight cap or a screened discharge.

c. Erosion protection at the point of waste discharge shall be provided.

12VAC5-590-1070. ~~Appurtenances.~~ (Repealed.)

~~A. Valves.~~

~~Pumps shall be adequately valved to permit satisfactory operation, maintenance, and repair of the equipment. If foot valves are necessary, they shall have a net valve area of at least two and one half times the area of the suction pipe and they shall be screened. Each pump shall have a positive acting check valve on the discharge side between the pump and shutoff valve.~~

~~B. Piping, in general, shall:~~

~~1. Be designed so that the friction head will be low;~~

~~2. Not be subject to contamination;~~

~~3. Be sloped in one direction to drains;~~

~~4. Have adequate cleanouts;~~

~~5. Have watertight joints;~~

~~6. Be protected against surge or water hammer;~~

~~7. Be such that each pump has an individual suction line or the lines shall be so manifolded that they will insure similar hydraulic and operational conditions; and~~

~~8. Have proper legends to identify the contents of the pipes (see 12VAC5-590-720 L).~~

~~C. Gauges and meters.~~

~~The station should have indicating, totalizing, and recording metering of the total water pumped. Each pump shall:~~

~~1. Have a standard pressure gauge on its discharge line;~~

~~2. Have a compound gauge on its suction line; and~~

~~3. Have recording gauges in the larger stations as required by the division.~~

~~D. Water seals.~~

~~Water seals shall not be supplied with water of a lesser sanitary quality than that of the water being pumped. Where pumps are sealed with potable water and are pumping water of lesser sanitary quality, the seal shall:~~

~~1. Be provided with a break tank open to atmospheric pressure; and~~

2. Have an air gap between feeder line and spill line of the tank, at least two inches or two pipe diameters, whichever is greater.

E. Controls.

Pumps, their prime movers, and all accessories shall be controlled in such a manner that they will operate at their rated capacity without overloading. Where two or more pumps are installed, provision shall be made for proper alternation. Alternation may be automatic or manual. Provision shall be made to prevent operation of the pump during the backspin cycle. Electrical controls should be located above grade.

F. Power.

When power failure would result in cessation of the minimum essential service, the power supply shall be provided from at least two independent sources or an auxiliary source shall be provided.

G. Auxiliary power supply.

When automatic prelubrication of pump bearings is necessary and an auxiliary power supply is provided, the prelubrication line shall be provided with a valved by pass around the automatic control.

Article 5
Finished Water Storage Structures

12VAC5-590-1080. ~~General~~ Basic finished water storage structure design criteria.

A. The materials and designs used for finished water storage structures, including associated pipe and valves, shall provide stability and durability as well as protect the quality of the stored water. ~~Steel structures shall follow the current available American Water Works Association standards concerning steel tanks, standpipes, reservoirs, and elevated tanks wherever they are applicable. Other materials of construction are acceptable when properly designed to meet the requirements of this section.~~ Steel, concrete, composite, and plastic storage structures shall be designed, constructed, cleaned, disinfected, and tested in accordance with the following AWWA standards, where applicable: D100-11, D103-09, D107-16, D108-10, D110-13, D115-06, D120-09, D121-12, and C652-11.

B. Safety cages, rest platforms, roof-ladder handrails, and other safety devices shall be provided as required by VOSH laws and regulations.

~~A.~~ C. Location of finished water storage structures ~~facilities~~.

1. The bottom of ~~ground level~~ ground-level reservoirs, storage tanks, and standpipes should be placed ~~at the normal ground surface~~ above finished grade to ensure positive drainage away from the structure.

2. Where the bottom must be below normal ground surface, it shall be placed above the groundwater table. Sewers, drains, standing water, and similar sources of contamination shall be kept at least 50 feet from the ~~reservoir~~ finished water storage structure. ~~AWWA approved water pipe~~ Pipe conforming to water distribution pipe standards of 12VAC5-590-1110, pressure tested in place without leakage, shall be used for gravity sewers at lesser separations.

3. The top of all storage facilities shall not be less than two feet above the normal ground surface and shall be above the 100-year flood ~~level~~ elevation. ~~Clearwells~~ Any clearwell constructed under filters may be ~~excepted~~ exempted from this requirement when the total design gives the same protection.

~~B. All new finished water storage structures shall have suitable watertight roofs or covers which exclude birds, animals, insects, and dust.~~

~~C. No drain on a water storage structure shall have a direct connection to a sewer or storm drain.~~

~~All finished water storage structures shall be equipped with separate drains discharging to the atmosphere. Drainage of finished water storage structures to the distribution system through inlet and outlet piping shall not be allowed.~~

~~D. The overflow pipe of a finished water storage structure shall be brought down near the ground surface where any discharge will be visible and into a drainage inlet structure or a splash plate which will divert the overflow away from the storage structure. No overflow may be connected directly to a sewer or storm drain.~~

~~1. When an internal overflow pipe is used it shall be located in the access tube.~~

~~2. The overflow of a ground level finished water storage structure shall be high enough above normal or graded ground surface to prevent the entrance of surface water.~~

~~3. All nonpressure type finished water storage structures shall be provided with a downward discharging screened overflow.~~

~~E. Finished water storage structures shall be designed with convenient access to the interior for cleaning and maintenance. Manholes or scuttles above the waterline shall be:~~

~~1. Framed at least four inches, preferably six inches, above the surface of the roof at the opening; on ground level structures, manholes should be elevated 24 to 36 inches above the top or covering sod;~~

~~2. Fitted with a solid watertight cover which overlaps the framed opening and extends vertically down around the frame at leas two inches (shoebox type);~~

3. Hinged at one side; and

4. Fitted with a locking device.

F. Finished water storage structures shall be vented by separate vent structures. Open construction between the side wall and roof is not permissable.

1. Vents shall prevent the entrance of surface water.

2. Vents shall exclude birds and animals.

3. Vents shall exclude insects and dust, as much as this function can be compatible with effective venting, for elevated tanks and standpipes, four mesh noncorrodible screen may be used.

4. Vents on ground level structures shall terminate in an inverted U construction the opening of which is 24 to 36 inches above the roof or sod and is covered with noncorrodible screen cloth to exclude insects.

G. The roof and sidewalls of all structures must be watertight with no openings except properly constructed vents, manholes, overflows, risers, drains, pump mountings, control ports, or piping for inflow and outflow.

1. Any pipes running through the roof or sidewall of a finished water storage structure must be welded or properly gasketed in metal tanks or should be connected to standard wall castings which were poured in place during the forming of a concrete structure; these wall castings shall have flanges imbedded in the concrete.

2. Openings in a storage structure roof or top designed to accommodate control apparatus or pump columns shall be curbed and sleeved with proper additional shielding and shoebox type cover to prevent the access of surface water into the structure.

3. Valves and controls shall be located outside the storage structure so that valve stems and similar projections will not pass through the roof or top of the structure.

H. The roof or cover of the storage structure should be well drained, but downspout pipes shall not enter or pass through the reservoir.

I. The safety of employees shall be considered in the design of the storage structure. As a minimum, such matters shall conform to pertinent building codes, laws, and regulations of the area where the reservoir is constructed.

1. Ladders, ladder guards, balcony railings, and safe location of entrance hatches shall be provided.

2. Elevated tanks with riser pipes over eight inches in diameter shall have protective bars over the riser opening inside the tank.

J. All finished water storage structures and their appurtenances, especially the riser pipes, overflows, and vents, shall be designed to prevent freezing which will interfere with proper functioning.

K. Every catwalk over finished water in a storage structure shall have a solid floor with raised edges so designed that shoe scrapings and dirt will not fall into the water.

L. The area surrounding a ground level structure should be graded in a manner that will prevent surface water from standing within 50 feet of the structure.

M. Proper protection should be given to metal surfaces by paints or other protective coatings, by cathodic protective devices, or both. Paint systems consistent with the most current available American Water Works Association standards and otherwise acceptable to the division shall be used. Cathodic protection should be designed and installed by competent technical personnel.

N. All finished water storage facilities shall be cleaned to remove all dirt and loose materials prior to disinfection of the structure. Only potable water shall be used to clean and rinse the water storage facilities. All equipment including brooms, brushes, spray equipment and workmen's boots shall be disinfected before they are used to clean the storage facilities.

O. All finished water storage facilities shall be satisfactorily disinfected prior to being placed in operation. The disinfection of the storage facilities shall be repeated until it is determined, by bacteriological testing, that the water is free of coliform bacteria.

1. One of the following disinfection methods shall be used. Other methods of disinfection may be approved on a case-by-case basis by the division.

a. The tank shall be filled to the overflow level with potable water to which enough chlorine has been added to produce an initial chlorine concentration of 50 mg/L in the full tank. The full tank should stand for 24 hours; however, in no case shall it stand less than six hours. At the end of the holding period, the chlorinated water shall be drained to waste, the tank refilled with potable water, and tested for satisfactory bacteriological quality before placing the tank in service.

b. All interior surfaces of the tank shall have applied a chlorine solution containing at least 200 mg/L of free available chlorine. The chlorine solution shall be applied with either spray equipment or brushes. Any equipment used to apply the chlorine solution shall either be new or previously used only for disinfection purposes. The chlorine solution shall remain in contact with the tank surfaces for at least 30 minutes. The tank shall then be filled with potable water to the overflow level and tested for satisfactory bacteriological quality before placing the tank in service; or

c. Potable water containing a free chlorine residual of 50 mg/L shall be placed in the tank to such a depth that

~~when the tank is filled, the resulting chlorine concentration in the water will be at least two mg/L. The water containing 50 mg/L of chlorine shall stand in the tank for 24 hours. The tank shall then be filled with potable water and allowed to stand for 24 additional hours. At the end of the second 24 hour period, the chlorine residual shall be at least two mg/L. After analyses of the water for satisfactory bacteriological quality, the tank may be placed in service without draining the water used to disinfect it.~~

~~2. Testing of the water following disinfection shall be in accordance with 12VAC5-590-800 C.~~

D. Pressure variation. The maximum variation between normal operational high and low water levels in finished water storage structures which float on a distribution system shall not exceed 30 feet.

E. Level controls.

1. Adequate controls shall be provided to enable sufficient tank turnover, water quality maintenance, avoidance of overflows, and efficient operations.

2. A telemetery system with recording capability shall be considered to transmit the operating levels in distribution system storage facilities to a location where qualified personnel may access the data at all times.

3. Altitude valves or equivalent controls shall be provided.

4. For tanks with a monitoring system, warnings or alarms indicating overflow, low level, and pump malfunction shall be provided.

12VAC5-590-1081. Atmospheric tank storage.

A. Protection.

1. All finished water storage structures shall have suitable watertight roofs or covers that exclude birds, animals, and insects.

2. All finished water storage structures shall be designed to prevent vandalism and entrance by animals or unauthorized persons.

B. Finished water storage structures shall be designed to facilitate turnover of water. Consideration shall be given to locating inlet and outlet pipes at different elevations and locations, tank mixers, and other acceptable means to avoid stagnation. Excessive storage capacity shall be avoided to prevent water quality deterioration. See 12VAC5-590-640 B 3.

C. Drains.

1. No drain on a finished water storage structure shall create a cross-connection hazard.

2. All finished water storage structures shall be equipped with separate drains discharging to the atmosphere. Drainage of finished water storage structures to the distribution system through inlet and outlet piping is prohibited.

D. Overflows.

1. Finished water storage structures shall be provided with a downward-discharging, screened overflow pipe. The discharge pipe shall be brought down near the ground surface and into a drainage inlet structure or a splash plate that will divert the overflow away from the storage structure. The overflow pipe discharge shall be high enough above normal or graded ground surface to prevent the entrance of surface water.

2. Overflow pipe screens shall be installed so as to withstand the force of overflows. Properly designed flapper valves or rubber flex-type valves may be used instead of screens if approved by the commissioner.

E. Inlet and discharge pipes.

1. Elevated tanks with riser pipes over eight inches in diameter shall have protective bars over the riser opening inside the tank.

2. Inlet and outlet pipes from water storage facilities shall be located in a manner that will prevent the flow of sediment into the distribution system.

F. Finished water storage structures shall be designed with convenient access to the interior for cleaning and maintenance. Ladders, ladder guards, balcony railings, and safely located entrance hatches shall be provided where applicable. Hatches, manholes, or scuttles above the waterline shall be:

1. Framed at least four inches, preferably six inches, above the surface of the roof at the opening; on ground-level structures, manholes should be elevated 24 to 36 inches above finished grade;

2. Fitted with a solid watertight cover that overlaps the framed opening and extends vertically down around the frame at least two inches (shoebox type);

3. Hinged at one side; and

4. Fitted with a locking device.

G. Finished water storage structures shall be vented by separate vent structures. Open construction between the side wall and roof is prohibited.

1. Vents shall prevent the entrance of surface water.

2. Vents shall exclude birds, animals, and insects and be constructed of noncorrodible material. Screens shall be designed to be frost-free or capable of relieving pressure or vacuum in the event of frosting or clogging.

3. Vents on ground-level structures shall terminate in an inverted U construction, with the vent terminating 24 to 36 inches above roof or finished grade.

H. Penetrations. The roof and sidewalls of all structures shall be watertight with no openings except properly constructed vents, manholes, overflows, risers, drains, pump mountings, control ports, or piping for inflow and outflow.

1. All pipes running through the roof or sidewall of a finished water storage structure shall be welded or properly gasketed in metal tanks or should be connected to standard wall castings that were placed during the forming of a concrete structure; these wall castings shall have flanges imbedded in the concrete.

2. Valves and controls shall be located outside the finished water storage structure so that valve stems and similar projections will not pass through the roof or top of the structure.

3. Downspout pipes for roof drainage shall not enter or pass through the structure.

I. All finished water storage structures and their appurtenances, especially the riser pipes, overflows, and vents shall be designed to prevent freezing that will interfere with proper functioning.

J. Every catwalk over finished water in a storage structure shall have a solid floor with raised edges designed so that shoe scrapings and dirt will not fall into the water.

K. The area surrounding a ground-level structure shall be graded in a manner that will prevent surface water from standing within 50 feet of the structure.

L. Proper protection shall be given to metal surfaces by paints or other protective coatings, by cathodic protective devices, or both, in accordance with the NSF/ANSI Standard 61-2016, AWWA Standards D102-14, D104-11, and D106-16, or an approved equivalent, where applicable.

M. All finished water storage facilities shall be cleaned to remove all dirt and loose materials before disinfection of the structure. Only potable water shall be used to clean and rinse the water storage facilities. All equipment including brooms, brushes, spray equipment, and worker's boots shall be disinfected before they are used to clean the storage facilities.

N. Disinfection. All finished water storage facilities shall be satisfactorily disinfected in accordance with AWWA Standard C652-11 before being placed in operation. The disinfection of the storage facilities shall be repeated until it is determined, by bacteriological testing, that the water is free of coliform bacteria.

12VAC5-590-1082. Pressure tank storage.

When hydropneumatic tanks are used, they shall comply with the requirements of state and local laws and regulations for the construction and installation of unfired pressure vessels.

1. Pressure tanks shall be located above the normal ground surface with the operating end of the tank containing the inlet pipe, the pressure gauge, and other appurtenances projecting into a building with climate controls to prevent freezing. Alternatively, it may be completely housed, if adequate access is provided for inspection, removal, and replacement.

2. Pressure tanks shall have bypass piping to permit operation of the system while the tank is being cleaned, repaired, or painted.

3. Pressure tanks shall have an access manway, a drain, and control equipment consisting of a pressure gauge, water sight glass, automatic or manual air blowoff, pressure and vacuum relief valves, and mechanical means for adding air. Pressure tanks smaller than than 120 gallons and bladder tanks are not required to have an access manway, sight glass, or vacuum relief valve.

4. Pressure tanks and pumps shall be designed to minimize pump cycling and to operate within manufacturer recommendations.

12VAC5-590-1090. Plant storage.

~~The applicable design standards of 12VAC5-590-1080 shall be followed for plant storage.~~

A. ~~Washwater~~ Backwash water storage tanks shall be sized in conjunction with available pump units and finished water storage to ~~give~~ provide the filter backwash water required. Consideration ~~must~~ shall be given to the possibility of having to wash more than one filter at a time or several filters in succession.

B. Clearwell storage ~~should~~ shall be sized, in conjunction with distribution system storage, to relieve the filters from having to follow fluctuations in water use or meet peak demands, including filter backwash water. When finished water storage is used to provide proper contact time for ~~chlorine~~ disinfection, special attention ~~must~~ shall be given to size, drawdown, and baffling. Plant clearwells shall be equipped with a raised viewing port having a clear glass or plastic viewing window and a submerged ~~waterproof~~, waterproofed electric light.

C. Finished water shall not be stored or conveyed in a compartment adjacent to ~~unsafe~~ nonpotable water when the two compartments are separated by a single wall.

D. Receiving basins and pump wet wells for finished water shall be designed as finished water storage structures.

~~E. Hydropneumatic (pressure) tanks may be acceptable in small water systems. When used, they shall comply with the requirements of state and local laws and regulations for the construction and installation of unfired pressure vessels.~~

1. The tank shall be located above the normal ground surface with the tank end containing the inlet pipe, the pressure gauge and other appurtenances projecting into an operating house to prevent freezing or be completely housed.

2. The tank shall have bypass piping to permit operation of the system while the tank is being cleaned, repaired, or painted.

3. Pressure or level pressure operated start stop controls shall be installed on the discharge piping to permit operation of the water supply system.

4. Each tank shall have an access manhole, a drain, and control equipment consisting of pressure gauge, water sight glass, automatic or manual air blowoff, pressure and vacuum relief valves and mechanical means for adding air. Appurtenances to small capacity tanks shall be determined by the division on a case-by-case basis.

5. Tanks and pumps shall be designed to minimize pump cycling and shall have at least the following capacity:

a. When the hydropneumatic tank is fed directly by a well or wells, the effective storage volume is one-third of the hydropneumatic tank's gross volume;

b. When the hydropneumatic tank is fed directly from ground storage, the effective storage volume is the effective volume of the ground storage tank plus the effective volume of the hydropneumatic tank; and

c. At least two booster or transfer pumps are required which have a combined capacity to meet the requirements of 12VAC5-590-690 C.

12VAC5-590-1100. ~~Distribution storage.~~ (Repealed.)

The applicable design standards of 12VAC5-590-1080 shall be followed for distribution storage.

A. The maximum variation between high and low water levels in finished water storage structures which float on a distribution system should not exceed 30 feet. Large diameter, shallow depth reservoirs are preferable over small diameter, deep depth reservoirs.

B. Adequate controls shall be provided to maintain levels in distribution system storage structures at all times.

C. Pressure tanks. (Also see 12VAC5-590-1090 E.)

1. A telemetering system and recording equipment should be provided, to a location where qualified personnel are available at all times, for the transmission and recording of storage levels in the distribution system.

2. Altitude valves or equivalent controls may be required for subsequent structures on the system.

3. Overflow, low level, and pump malfunction warnings or alarms should be transmitted to a location where qualified personnel are available for surveillance on a 24-hour basis.

~~Article 6~~
~~Water Distribution Systems~~

12VAC5-590-1110. ~~Materials~~ Distribution system materials.

A. The pipe selected shall have been manufactured in conformity with the current available standards issued by the American Water Works Association if such standards exist or be approved by the National Sanitation Foundation for water distribution piping.

B. In the absence of such standards, pipe meeting applicable commercial standards and acceptable to the division may be considered.

C. Used water mains that meet these standards may be used again after the pipe has been thoroughly cleaned and restored.

D. Packing and joint materials used in the joints of pipe shall meet the standards of the American Water Works Association or the National Sanitation Foundation.

E. Mechanical joints or slip joints with resilient gaskets are preferred.

Pipe, fittings, joints, valves, hydrants, and coatings shall conform to AWWA standards.

12VAC5-590-1120. Minimum pipe size.

A. The minimum size pipe for water distribution ~~systems~~ mains shall be four inches in diameter. Pipes of lesser diameter may be used in the following instances:

1. When the run is less than 300 feet, two-inch diameter pipe may be used~~; and~~.

2. When the run is less than 600 feet but more than 300 feet, three-inch diameter pipe may be used.

3. Any departure in sizing shall be justified by hydraulic analysis and future water demands.

B. ~~The minimum size of pipe where fire protection is to be provided or required shall be six inches in diameter.~~ Fire hydrants shall not be connected to water mains that are not designed to carry fire flows. Connection of a fire hydrant to a pipe of less than six inches in diameter is prohibited.

C. ~~The standard grading schedule of the Insurance Services Office and other related organizations shall be followed in other cases.~~

D. ~~Any departure in sizing shall be justified by hydraulic analysis and future water use and can be considered only in special circumstances.~~

E. ~~Water mains not sized to carry fire flows shall not be connected to fire hydrants.~~ C. Where a noncommunity

waterworks serves a single building, the plumbing shall be in accordance with the USBC. Where a noncommunity waterworks serves two or more buildings, the pipe shall be of sufficient size to provide adequate flow and pressure in order to meet the system demands.

12VAC5-590-1130. ~~System~~ Distribution system design.

A. Dead-ends should be minimized by the looping of ~~all~~ water mains.

B. Where dead-end ~~lines~~ water mains occur, ~~they shall be provided with a fire hydrant, flushing hydrant, or blowoff for flushing purposes~~ a means of effective flushing shall be provided.

C. No flushing device shall be directly connected to any sewer.

12VAC5-590-1140. Installation and testing of water mains.

A. Adequate supports and restraints shall be provided for all pipes.

B. A continuous and uniform bedding shall be provided in the trench for all buried pipe.

C. Stones and rocks found in the trench shall be removed ~~for~~ to a depth of at least six inches below the bottom of the pipe and selected fill bedding provided.

~~D. The specifications for installation shall include:~~

~~1. Pressure testing on installed pipe;~~

~~2. Allowable leakage of installed pipe; and~~

~~3. Reference to applicable American Water Works Association standards or manufacturers' recommended installation procedures~~ D. Installed pipe shall be pressure-tested and meet allowable leakage as specified in accordance with AWWA Standards C600-10, C604-11, and C605-13, where applicable.

E. Any plastic or other nonmetallic pressurized ~~conduit~~ pipe installed underground shall ~~have affixed thereto~~ be provided with a material conductive of electricity or some other means of locating the ~~conduit while it is underground~~ buried pipe.

12VAC5-590-1150. Separation of water mains and sanitary sewers.

A. The following factors shall be considered in providing adequate separation of water mains and sanitary sewers:

1. Materials and types of joints for water and sanitary sewer mains;

2. Soil conditions;

3. Service branch connections into the water main and sanitary sewer mains;

4. Compensating variations in the horizontal and vertical separations;

5. Space for repairs and alterations of water and sanitary sewer mains;

6. Offsetting of pipes around manholes; and

7. Identification of the physical restraints preventing normal separation.

B. Parallel installation of water mains and sanitary sewers.

1. Under normal conditions, water mains shall be laid at least 10 feet horizontally from a sanitary sewer or sewer manhole. The distance shall be measured edge-to-edge.

2. Under unusual ~~conditions~~ situations when local conditions prevent a horizontal separation of 10 feet, the water main may be laid closer to a sanitary sewer or sewer manhole provided that:

a. The bottom (invert) of the water main shall be at least 18 inches above the top (crown) of the sanitary sewer;

b. Where this vertical separation cannot be obtained, the sanitary sewer shall be constructed of~~, AWWA approved water pipe~~ water distribution pipe and pressure tested in place ~~without leakage prior to backfilling; and~~ in accordance with 12VAC5-590-1110 and 12VAC5-590-1140;

c. The commissioner may approve concrete encasement of the water main or other physical barrier;

d. The sewer manhole shall be of watertight construction and tested in place; and

e. No water pipes shall pass through or come into contact with any part of a sewer manhole.

C. Crossing of water mains and sanitary sewers.

1. Under normal conditions, water ~~lines~~ mains crossing sanitary sewers shall be laid to provide a separation of at least 18 inches between the bottom of the water ~~line~~ main and the top of the sanitary sewer whenever possible.

2. Under unusual ~~conditions~~ situations when local conditions prevent a vertical separation described in subdivision C 1 of this section, the following construction shall be used:

a. ~~Sewers~~ Sanitary sewers passing over or under water mains shall be constructed of the materials described in ~~subdivision B 2 b~~ subsection B of this section and shall be constructed to a point 10 feet beyond and on each side of the crossing; and

b. Water ~~lines~~ mains passing under sanitary sewers shall, in addition, be protected by providing:

(1) A vertical separation of at least 18 inches between the bottom of the sanitary sewer and the top of the water ~~line~~ main;

(2) Adequate structural support for the sanitary sewers to prevent excessive deflection of the joints and the settling on and breaking of the ~~waterline~~ water main; and

(3) That the length of the water ~~line~~ main be centered at the point of the crossing so that joints shall be equidistant and as far as possible from the sanitary sewer.

D. ~~No water pipes shall pass through or come in contact with any part of a sewer manhole.~~ The minimum horizontal separation distance between water mains and septic tanks and drainfields, measured edge-to-edge, shall be 10 feet. Greater separation distances shall be provided wherever practical.

E. Water mains shall be located a safe horizontal distance from sources of contamination not already mentioned in this section, such as sewage treatment works and industrial complexes. The owner's engineer shall contact the department to determine the safe separation distances.

12VAC5-590-1160. Valve, air relief, meter, and blowoff chambers.

A. ~~Air and sediment accumulations may be removed through a standard fire hydrant; compressed air and pumping may be used for dewatering mains through hydrants.~~ Standard fire hydrants or blowoffs shall be considered to enable removal of sediment and air accumulations.

B. ~~Chambers~~ Drains in chambers or pits ~~containing~~ that contain valves, blowoffs, meters, or other ~~such~~ appurtenances to a distribution system shall not be connected directly to any storm drain or sanitary sewer, nor shall blowoffs or air relief valves be connected directly to any sanitary sewer.

C. ~~Such chambers~~ Chambers or pits shall be drained to the surface of the ground where they are not subject to flooding by surface water or to absorption pits located above the seasonal groundwater table elevation. The backfill material for the water main may serve as an absorption pit if granular embedment material is laid from the pipe bedding up through the final backfill layer for the entire length of pipe in the chamber. Sump pumps may be used where other means are not practicable.

D. Chambers or pits shall be designed to facilitate air-valve inspection and servicing.

E. Air relief and blowoff piping.

~~D.~~ 1. The open end of an air relief pipe shall be extended from the manhole or enclosing chamber to a point at least one foot above ground and provided with a screened, downward facing elbow. The exposed pipe and appurtenances shall be protected from vandalism and other damage.

2. When an aboveground extension is not practical or desired, the open end of the air relief pipe or blowoff shall be extended.

a. Where the pit or chamber is provided with proper drainage and is not otherwise subject to high groundwater levels, surface flooding, ponding, and contaminant or pollutant spills, the open end may be provided with a screened, downward facing elbow. The valve chamber or pit shall be vented to provide sufficient air flow to allow proper operation of the air valve. Air valves fitted with a smooth vent port and screened hood are allowable under these conditions.

b. Where the pit or chamber is not properly drained or is otherwise subject to high groundwater levels, surface flooding, ponding, and contaminant or pollutant spills, a manually operated valve or blowoff shall be used and the open end shall be fitted with a watertight cap or other means to prevent contamination from entering the pipe and valve.

c. The installation and testing specifications shall require field verification by the owner's engineer of the groundwater elevation and surface water drainage prior to placement of the pit or chamber.

12VAC5-590-1170. Hydrants.

A. Where hydrant drains are not plugged, they shall be drained to the ground surface or to dry wells provided exclusively for this purpose in a manner that will avoid contamination of the hydrant or water main from high groundwater, surface flooding and ponding, and contaminant or pollutant spills.

B. Hydrant drains shall not be connected to sanitary sewers or storm drains.

C. Fire hydrants shall be connected only to water ~~systems~~ mains adequately designed for fire flows ~~in addition to domestic flow~~ in accordance with the requirements of 12VAC5-590-1120 B.

12VAC5-590-1180. Surface water crossings.

A. Surface water crossings, both over and under water, present special ~~problems and should~~ challenges and shall be discussed with the ~~division~~ department before ~~final plans~~ project documents are prepared.

~~A. Above~~ B. Aerial water crossings. The pipe above water crossings shall be:

1. Adequately supported;

2. Protected from freeze damage;

3. Accessible for repair or replacement; and

4. Above the 100-year flood ~~level~~ elevation.

~~B.~~ C. Under water crossings.

1. The pipe shall be of special construction, suitable to the method of installation and having flexible watertight joints.

2. ~~Valves~~ Where rigid pipe is used, valves and taps shall be provided at both ends of the water crossing so that the section can be isolated for tests or repair; the valves and taps shall be easily accessible and not subject to flooding.

~~3. Sample taps shall be available at each end of the crossing and at a reasonable distance from each side of the crossing and not subject to flooding.~~

~~4. Permanent taps shall be made for testing and locating leaks.~~

12VAC5-590-1190. ~~Water services and plumbing.~~ (Repealed.)

~~Water services and plumbing shall conform to the Uniform Statewide Building Code.~~

12VAC5-590-1200. ~~Water pressure in systems.~~ (Repealed.)

~~The system shall be designed to maintain a minimum pressure of 20 psi in the distribution system at the design flow (see 12VAC5-590-690 C). Where the pressure at the service tap exceeds 80 psi, the provisions of the Uniform Statewide Building Code shall apply.~~

12VAC5-590-1210. Disinfection and testing of water mains.

A. All water mains shall be disinfected ~~prior to~~ in accordance with AWWA Standard C651-14 before being placed in operation. The disinfection of the mains shall be repeated until it is determined by bacteriological testing that the water is free of coliform bacteria.

~~B. Prior to disinfection all water mains shall be flushed unless the tablet method of disinfection is used. All valves and hydrants shall be operated during this operation. Flushing velocities should not be less than 2.5 feet per second.~~

~~C. Methods of chlorine application.~~

~~1. Continuous feed method - Potable water shall be introduced into the pipe main at a constant flow rate. Chlorine shall be added at a constant rate to this flow so that the chlorine concentration in the water in the pipe is at least 50 mg/L. The chlorinated water shall remain in the main at least 24 hours, after which, the chlorine concentration in the water shall be at least 10 mg/L. All valves and appurtenances shall be operated while the chlorinated water remains in the main;~~

~~2. Slug method - Potable water shall be introduced into the main at a constant flow rate. This water shall receive a chlorine dosage which will result in a chlorine concentration of 100 mg/L in a "slug" of the water. The chlorine shall be added long enough to insure that all portions of the main are exposed to the 100 mg/L chlorine solution for at least three hours. The chlorine residual shall be checked at regular intervals not to exceed 2,000 feet to insure that adequate residual is maintained. As the chlorinated water passes valves and appurtenances, they shall be operated to insure disinfection of these appurtenances; or~~

~~3. Tablet method - Tablets shall be placed in each section and in all appurtenances. Enough tablets shall be used to insure that a chlorine concentration of 25 mg/L is provided in the water. They shall be attached by an adhesive to the top of the pipe sections and crushed or rubbed in all appurtenances. The adhesive shall be acceptable to the division. The velocity of the potable water in the main shall be less than 1 foot per second. The water shall then remain in contact with the pipe for 24 hours. All valves and appurtenances shall be operated while the chlorinated water is in the main.~~

~~This method shall not be used if nonpotable water or foreign materials have entered the mains or if the water temperature is below 5°C (41°F).~~

~~D. Final flushing. After the required retention period, the chlorinated water shall be flushed from the main using potable water.~~

~~E. Testing. After the mains have been flushed, the water mains shall be tested in accordance with 12VAC5-590-800 C. Samples shall be collected at regular intervals, not exceeding 2,000 feet, throughout the length of main.~~

~~F. Repairs. Cleaning, disinfecting, flushing, testing, or similar operational actions shall be in accordance with the current standard issued by AWWA (AWWA C 601).~~ B. Project documents shall provide the details of the procedure and include the disinfectant application technique, dosage, contact time, method of testing the results of the procedure, and use or disposal of the disinfecting water.

12VAC5-590-1220. ~~Cover~~ Pipe cover.

All ~~distribution mains~~ buried distribution pipe shall be provided with sufficient earth or other suitable cover or encasement to prevent from freezing and provide protection from damage by external forces.

12VAC5-590-1230. ~~Metering.~~ Service connection metering.

~~Each service connection should~~ A. All new service connections in community waterworks shall be metered.

B. Water pipe and appurtenances between the water main and the service connection shall conform to all applicable codes.

12VAC5-590-1235. Water loading stations.

A. The station and its piping and valving arrangement shall be designed to prevent unauthorized use, tampering, and vandalism.

B. An air gap or RPZ assembly shall be provided on the potable water fill connection to prevent backflow into the waterworks.

C. The piping and valving arrangement shall prevent contaminants from being transferred from a hauling tank or vessel to others subsequently using the water loading station.

D. Hoses used to fill potable water tanks and vessels shall be approved for potable water contact.

E. Hoses shall not come into contact with the ground or other contaminated surface and shall otherwise be handled, maintained, and stored in a manner to prevent contamination.

~~Part IV. Exceptions for Noncommunity Waterworks to Specific Sections of the Manual of Practice (Part III)~~

12VAC5-590-1240. ~~General.~~ (Repealed.)

~~Noncommunity waterworks design shall conform to Part III of this chapter. Due to the types of service provided and size of some noncommunity waterworks, certain exceptions to the design requirement specified in Part III may be allowed. Each of the following subsections will refer to exceptions in corresponding sections of Part III.~~

12VAC5-590-1250. ~~Exceptions to Article 1 of Part III.~~ (Repealed.)

~~A. The evaluation of source requirements shall consider the type and use of the noncommunity system. Minimum storage for noncommunity waterworks, in conjunction with the source, must provide system peak hour demand.~~

~~B. A minimum laboratory facility of a sink and workbench shall be provided.~~

12VAC5-590-1260. ~~Exceptions to Article 2 of Part III.~~ (Repealed.)

~~A. Exceptions to the minimum size well lot may be made for noncommunity waterworks, based upon site availability and other factors.~~

~~B. When the source requirements for a noncommunity system are determined to be three gallons per minute or less the 48 hour minimum drawdown test may be reduced to no less than eight hours. The drawdown test, approved by the division and based upon system demands and geological conditions, shall be performed to determine well yield.~~

12VAC5-590-1270. ~~Exceptions to Article 5 of Part III.~~ (Repealed.)

~~When booster pumping is required for small noncommunity systems, the duplicity and capacity requirements may be reduced in accordance with the type and size of system served.~~

12VAC5-590-1280. ~~Exceptions to Article 6 of Part III.~~ (Repealed.)

~~In the instance where a noncommunity water system serves a single building, the water line plumbing (including size) shall be in accordance with the most recent edition of the Uniform Statewide Building Code.~~

~~When a noncommunity water system serves two or more buildings, the water line shall be of sufficient size to provide adequate flow and pressure in order to meet the system demands.~~

APPENDIX A. ~~[RESERVED]~~ (Repealed.)

APPENDIX B. ~~BACKGROUND USED IN DEVELOPING THE CHEMICAL, PHYSICAL AND RADIOLOGICAL LIMITS OF THE DRINKING WATER STANDARDS.~~ (Repealed.)

~~COPPER~~

~~ACTION LEVEL – 1.3 mg/L~~

~~Copper is an essential and beneficial element in human metabolism. The daily copper requirement for adults has been estimated to be 2.0 mg. Preschool age children require about 0.1 mg daily for normal growth. Copper at high doses has, however, been shown to cause stomach and intestinal distress, liver and kidney damage, and anemia.~~

~~A primary source of high concentrations of copper in drinking water is from the internal corrosion of copper plumbing within the home. The EPA has established an action level of 1.3 mg/L of copper in first draw tap sample which may result in public waterworks installing measures to control corrosion.~~

~~CORROSION~~

~~Corrosion is responsible for many problems in the water distribution system including tuberculation with loss of carrying capacity and increased pumping costs, leaks, main ruptures, discoloration and loss of chlorine residual. The corrosivity of drinking water is a parameter which has not only esthetic and economic significance, but is health significant as well. The products of corrosion having the greatest health significance at the present time, cadmium and lead, are addressed as primary maximum contaminants, but there is also a sufficient basis to include corrosivity as a secondary maximum contaminant level.~~

~~Corrosivity is controlled by pH adjustment, the use of chemical stabilizers, or other means which are dependent upon the specific conditions of the water. The two major corrosion indicators utilized in Virginia are the Langelier Index (L.I.) and the Aggressive Index (A.I.). Other indicators~~

also exist. The L.I. and A.I. are determined by utilizing some or all of the following parameters:

- pH
- Calcium Hardness
- Alkalinity
- Temperature
- TDS

All waterworks owners will be notified periodically of the corrosivity of their drinking water by the commissioner, either as L.I., A.I. or other appropriate index. Noncorrosive water should be the goal of each waterworks owner.

Furthermore, EPA requires each owner to be aware of type of materials used in the distribution system (including service connections and household plumbing) such as:

LEAD	COPPER
Pipe	Piping
Solder	Service Lines
Caulking	Household Plumbing
Lining of Distribution Mains	
Household Plumbing	
GALVANIZED	Ferrous Piping (cast iron and steel)
Service Lines	Asbestos Cement Pipe
Household Plumbing	Vinyl Lined Asbestos Cement Pipe
	Coal Tar Lined Pipes
	Plastic Pipe
	Piping
	Service Line
	Household Plumbing

FLUORIDE

When the fluoride concentration in drinking water is maintained within the recommended ranges of 0.8 mg/L minimum and 1.0 mg/L maximum with the optimum being 0.9 mg/L, the consumer will realize a reduction in dental caries. When supplemental fluoridation is practiced, it is particularly advantageous to maintain a fluoride concentration at or near the optimum. The reduction in dental caries experienced at optimal fluoride concentrations will be diminished by as much as 50% when the concentration is 0.2 mg/L below the optimum. An approval limit slightly higher than the optimum can be tolerated without any mottling of teeth, so where fluorides are native to the water supply, these concentrations are acceptable. Higher levels should be reduced by treatment or blending with other sources lower in fluoride content. The U.S. Environmental Protection Agency has determined that the PMCL for fluoride is 4.0 mg/L based on long term toxicity data. The EPA has also determined that the SMCL for fluoride is 2.0 mg/L based on the potential formation of cosmetically objectionable dental fluorosis as a result of long term exposure. The level of the SMCL was based on a balancing of the beneficial and undesirable effects of fluoride.

FOAMING AGENTS

Foaming is an undesirable property of drinking water because it is esthetically displeasing and therefore should be absent. Because no convenient standardized formability test exists, and because surfactants are one major class of substances that cause foaming, this property is determined indirectly by measuring the anionic surfactant concentration of substances measured by the methylene blue method and should not exceed 0.5 mg/L as methylene blue active substances (MBAS).

LEAD

ACTION LEVEL – 0.015 mg/L

Lead is a toxic metal that tends to accumulate in the bone of man and animals. Signs of lead intoxication include gastrointestinal disturbances, fatigue, anemia, muscular paralysis, and encephalopathy. Irreversible damage to the brain is the frequent result of lead intoxication in children because of their eating lead containing paint still found in older homes. The most serious effects on the nervous system are seldom seen in the adult population however.

Household plumbing has been identified as a significant contributor of lead to our drinking water; therefore; any notice to the public concerning lead should advise persons served by the system to use only the cold water faucet for drinking and for use in cooking or preparing baby formula, and to run the water until it gets as cold as it is going to get before each use. If there has recently been major water use in the household, such as showering or bathing, flushing toilets, or doing laundry with cold water, flushing the pipes should take 5 to 30 seconds, if not, flushing the pipes could take as long as several minutes. Each notice (see 12VAC5-590-520 A 8) should also advise persons served by the system to check to see if lead pipes, solder, or flux have been used in plumbing that provides tap water and to ensure that new plumbing and plumbing repairs use lead free materials.

The EPA's national primary drinking water regulation requires all public water systems to optimize corrosion control to minimize lead contamination resulting from the corrosion of plumbing materials. Public water systems serving 50,000 people or fewer that have lead concentrations

below 15 parts per billion (ppb) in more than 90% of tap water samples (the EPA "action level") have optimized their corrosion control treatment. Any water system that exceeds the action level must also monitor their source water to determine whether treatment to remove lead in source water is needed. Any water system that continues to exceed the action level after installation of corrosion control and/or source water treatment must eventually replace all lead service lines contributing in excess of 15 ppb of lead to drinking water. Any water system that exceeds the action level must also undertake a public education program to inform consumers of ways they can reduce their exposure to potentially high levels of lead in drinking water.

NITRATE

Nitrate nitrogen (NO_3-N) levels not exceeding 20 mg/L may be allowed in a noncommunity waterworks if the owner demonstrates:

1. Such water will not be available to children under 6 months of age; and

2. There will be continuous posting of the fact that NO_3-N levels exceed 10 mg/L and the potential health effects of exposure; and

3. Health officials will be notified annually of NO_3-N levels that exceed 10 mg/L; and

4. No adverse health effects will result.

NOTE: Nitrite in water poses a greater health hazard but fortunately it seldom occurs in high concentrations. Waters with nitrite nitrogen concentrations over 1 mg/L should not be used for infant feedings.

MANMADE RADIONUCLIDES

To determine compliance with subsection B of Table 2.5, the detection limits shall not exceed the concentrations listed in the following table:

DETECTION LIMITS FOR MAN-MADE BETA PARTICLE PHOTON EMITTERS

RADIONUCLIDE	DETECTION LIMIT
Tritium	1,000 pCi/L
Strontium-89	10 pCi/L
Strontium-90	2 pCi/L
Iodine-131	1 pCi/L
Cesium-134	10 pCi/L
Gross Beta	4 pCi/L
Other radionuclides	1/10 of the applicable limit

RADIONUCLIDES

To determine compliance with subsection B of Table 2.5, the detection limits shall not exceed the concentrations listed in the following table:

DETECTION LIMITS FOR GROSS ALPHA PARTICLE ACTIVITY, RADIUM-226, RADIUM-228, AND URANIUM

Contaminant	Detection Limit
Gross alpha particle activity	3 pCi/L
Radium-226	1 pCi/L
Radium-228	1 pCi/L
Uranium	1 µg/L

TURBIDITY

Operational requirement: Conventional water filtration plants utilizing surface waters as a source of supply are capable of producing filtered water with a turbidity consistently less than 0.1 NTU. Therefore, for water filtration plants the filter effluent turbidity for each filter, before any post filtration chemical addition, operational limit is 0.1 NTU.

APPENDIX C. FIELD OFFICE COUNTIES AND CITIES SERVED. (Repealed.)

Regional Office	Counties and Cities Served
ABINGDON 454 E. Main Street P.O. Box 1985 Abingdon, VA 24210 703-628-5161	Planning Districts 1, 2, 3, and 4
CULPEPER 102 N. Main Street 3rd Floor Culpeper, VA 22701 703-825-6772	Planning Districts 8, 9, & 16
DANVILLE 1347 Piney Forest Road Danville, VA 24540 804-791-5222	Planning Districts 11, 12, 13, & 14

~~LEXINGTON~~ ~~129 S. Randolph Street~~ ~~Lexington, VA 24450~~ ~~703-463-7136~~	~~Planning Districts 5, 6, 7, and 10~~
~~RICHMOND~~ ~~1500 E.Main Street,~~ ~~Room 109,~~ ~~P.O. Box 2448,~~ ~~Richmond, VA 23218~~ ~~804-662-9530~~	
~~SOUTHEAST VIRGINIA~~ ~~5700 Thurston Avenue~~ ~~Suite 203~~ ~~Virginia Beach, VA 23455~~ ~~804-363-3876~~	~~Planning Districts 19, 20, 21, and 22~~

APPENDIX D. ~~[RESERVED]~~ (Repealed.)

APPENDIX E. ~~[RESERVED]~~ (Repealed.)

APPENDIX G. ~~MONITORING AND REPORTING.~~ (Repealed.)

~~Analytical laboratory control testing, monitoring, and analyses at waterworks are made to control plant operation, to record plant performance, and to monitor conditions in the distribution system. Test results properly recorded, compiled and reported can be invaluable in improving plant performance, efficiency and cost effectiveness. Operational control testing should present evidence that the water has been properly prepared for each step in the treatment process. Testing should provide evidence that each process has proceeded according to its intended purpose and that finished water is clean, free from taste and odor, free from undesirable chemicals and considered safe.~~

~~Analytical equipment used to determine compliance with 12VAC5-590-510 D shall be of the laboratory type (continuous monitoring equipment may be acceptable if demonstrated to be accurate by correlation with a laboratory type instrument each shift) approved for use at the waterworks per 12VAC5-590-760.~~

~~These suggested monitoring and reporting requirements should be used as a guide in preparing, modifying, and reviewing operation monthly reports.~~

~~The field office of the Office of Water Programs will notify in writing each individual waterworks of the operation monthly report requirements and supply the waterworks with a standard example report form or will assist in the development of system specific report forms.~~

~~The following are suggested operation monthly report requirements that should be reported to the appropriate field office:~~

~~ALL SURFACE WATER SYSTEMS:~~

~~Number of hours in operation~~

~~- hours per day in operation~~

~~Raw water treated~~

~~- gpd and monthly total at each entry point~~

~~Finished water produced~~

~~- gpd and monthly total~~

~~Finished water used for treatment process~~

~~- monthly total~~

~~Finished water delivered to consumers~~

~~- monthly total~~

~~accountability (water lost) in distribution system~~

~~- percentage~~

~~Raw water temperature~~

~~- average °C or °F~~

~~Number of connections~~

~~- monthly average~~

~~Population served~~

~~- monthly average~~

~~Treatment plant maintenance activities~~

~~- brief summary of major activities~~

~~Chemical feeder laboratory and instrument calibration as appropriate~~

~~- quarterly for each chemical feeder or instrument unless specified elsewhere, i.e., fluoride feeders or manufacturer recommended~~

~~Waterworks not requiring operators in attendance whenever the plant is in operation may reduce some of the daily requirements.~~

~~WATERWORKS THAT PROVIDE DISINFECTION BY CHLORINATION:~~

~~Water plant monitoring:~~

~~Chlorine compound used~~

- liquid, dry, calcium hypochlorite or sodium hypochlorite

Amount of chlorine compound used at each application point

daily gallons or pounds

Date chlorine compound replenished

- for each application point

Free chlorine residual testing after the chlorine contact period

- every two hours of plant operation for waterworks requiring operators in attendance whenever the plant is in operation (see 12VAC5-590-440-B). Records must be kept of each residual determination. The daily lowest/highest residuals measured and the number of measurements taken should be reported.

- once per day for waterworks providing treatment or only disinfection and serving 400 or more persons and not requiring operators in attendance whenever the plant is in operation.

- frequency for waterworks providing only disinfection and serving less than 400 persons shall be set by the division on an individual basis.

- daily or at the same time as chlorine residual testing if less than daily.

Distribution system monitoring:

Free chlorine testing

- seven days per week for waterworks serving 400 or more persons

- five days per week for waterworks serving less than 400 persons

- number of tests per test day and test locations shall be set by the division on an individual basis. Records must be kept of each residual determination. The lowest, highest and average residuals measured and the number of measurements taken should be reported.

Total chlorine residual testing

- once per week at locations reflecting the maximum residence time of the water in the system

- number of tests per test day and test locations shall be set by the division on an individual basis. Records must be kept of each residual determination. The average residual measured and the number of measurements should be reported.

pH

- daily or at the same time of chlorine residual testing if less than daily.

NOTE: If the system performs disinfection utilizing the combined chlorine residual process, total residual testing should be substituted for free residual testing.

WATERWORKS EMPLOYING TURBIDITY REMOVAL:

Raw water monitoring:

pH

- electrometrically, every two hours

Alkalinity

- total, once per shift

Hardness

- total, once per shift

Turbidity

- NTU, every two hours

Raw water chemical treatment:

Coagulant

- type, weight applied, dosage

Coagulant aids

- type, weight applied, dosage

Stabilizing chemicals

- type, weight applied, dosage

Taste and odor control chemicals

- type, weight applied, dosage

Treated water (postflash mix) monitoring:

pH

- electrometrically, twice per shift

Coagulation control

- set on an individual basis

Alkalinity

- total, once per shift

Settled water (applied water) monitoring:

Turbidity

- NTU, must be from each sedimentation basin for high rate, may be from top of filter for rapid rate, every two hours

Chlorine residual

- type and daily average, every two hours

Settled water (applied water) chemical treatment:

Chemical

- type, weight applied and dosage

Filter aids

- type, weight applied and dosage

Filtered water monitoring:

Turbidity

- NTU, from each filter, every two hours, report maximum for the day

Filter operation:

Filters in operation

- number

Filter run time

- number hours between backwashes

Head loss

- each filter, end of each day or prior to backwash

Backwash time

- average, minutes

Backwash rate

- maximum, gpm

Backwash water

- gallons used

Rewash time

- if provided, average, minutes

Filter drop test results

- each filter tested quarterly

Filter rise rate test results

- each filter tested semiannually

Filtered water chemical treatment:

Stabilizing chemical

- type, weight applied per day, average dosage

Finished water monitoring:

pH

- electrometrically, every two hours

Alkalinity

- total, once per shift

Hardness

- total and calcium, once per shift

Turbidity

- NTU, every two hours

Chlorine residual

- every two hours low/high average

NOTES:

1. Daily averages and highest daily reading of the results of the required number of tests or measurements should be reported except for filtered water turbidity. Records of each test should be kept.

2. Frequency of testing is on a per shift basis unless otherwise indicated.

3. Number of tests per shift shall be set by the division on an individual basis.

4. Exact location of sample collection or testing shall be set by the division on an individual basis.

5. Where multiple sources are available, raw water data must be reported for each source.

WATERWORKS PRACTICING RECYCLE:

Recycle flow monitoring:

- total flows recycled, gallons

- average and maximum return rate of combined recycle flows

WATERWORKS FLUORIDATING:

Type of compound used

- chemical name

Amount of compound used at each application point

- pounds, daily

Feeder calibration date

- monthly

Hardness of water applied to sodium fluoride saturate feeders (where softners is required)

- weekly

Fluoride ion concentration in finished water

- one test per shift, minimum of one daily (monthly split sample with DCLS)

Fluoride ion concentration in the distribution system where two or more entry points contain fluoride

- frequency and location of tests shall be set by the division on an individual basis, both the minimum and maximum values must be reported

WATERWORKS EMPLOYING SOFTENING:

Lime, excess lime, and excess lime-soda processes:

- type, frequency and location of tests shall be set by the division on an individual basis

Cation exchange process:

Ion exchange material

- type, trade name

Regeneration

- date and method, each unit

Backwashing

- date and duration of washing, each unit

Softener influent hardness

- daily, each source

Softener effluent hardness

- daily, each unit

Blended water hardness

- daily, where appropriate

Stabilization chemical

- type, weight, applied daily dosage, stablized pH, alkalinity, hardness

WATERWORKS EMPLOYING IRON AND MANGANESE CONTROL:

Removal by oxidation using continuous potassium permanganate regeneration, detention, and filtration:

Raw water iron and manganese concentrations

- daily, each source

Pre-oxidation chemical (usually chlorine prior to application of permanganate)

- type, amount applied daily at each source and average dosage

Iron and manganese concentration prior to application of permanganate

- daily

Potassium permanganate

- amount applied daily and average dosage

Filter influent iron and manganese concentrations

- daily, each filter

Filter effluent iron and manganese concentrations

- daily, each filter

Removal by ion exchange:

Ion exchange material

- type, trade name

Regeneration

- date, each unit and method

Backwashing

- date and duration of washing each unit

Raw water iron and manganese concentrations

- daily, each source

Exchange unit iron and manganese influent concentrations

- daily, each unit

Exchange unit iron and manganese effluent concentrations

- daily, each unit

NOTES:

1. Ion exchange process may also remove barium and radium which should be included or substituted in reporting.

2. Testing for other removal processes will be set by the division on an individual basis.

WATERWORKS EMPLOYING STABILIZATION BY:

The addition of carbon dioxide or acid to waters treated with excess lime for softening or manganese removal;

The addition of an alkali to reduce free carbon dioxide;

The addition of either soda ash or caustic soda to produce the desired calcium carbonate film where the alkalinity exceeds 35 mg/L;

The addition of lime to produce the desired calcium carbonate film where the water is soft;

The addition of a mixture of lime and soda ash to produce the desired calcium carbonate film where the water is soft and has a low carbon dioxide content;

The addition of polyphosphates for sequestering dissolved minerals.

Each chemical addition process should be monitored to determine the effectiveness of stabilization treatment and concentration of chemicals in the treated water. The type, frequency, and location of tests shall be set by the division on an individual basis.

WATERWORKS EMPLOYING TASTE AND ODOR CONTROL BY:

The addition of copper sulfate or other copper compounds to the reservoir;

The addition of activated carbon to the shallow areas of the reservoir;

The addition of potassium permanganate, chlorine, chlorine dioxide, or oxygen through aeration to the raw water;

The addition of powdered activated carbon to the treatment process at various locations; or

The use of granular activated carbon absorption units.

Each process should be monitored to ensure the threshold odor number does not exceed three. The dosage or application rates should be monitored to ensure correct control. The type, frequency, and location of tests and the reporting of usage shall be set by the division on an individual basis.

WATERWORKS EMPLOYING COLOR REMOVAL:	
Raw water color -	platinum - cobalt method
Settled water color -	platinum - cobalt method
Finished water color -	platinum - cobalt method

Monitoring, reporting, and frequencies shall be set by the division on an individual basis.

CONSECUTIVE WATERWORKS:

Finished water purchased

- gallons per month per source

Finished water delivered to consumers

- gallons per month

Accountability

- percentage

Number of connections

- monthly average

Population served

- monthly average

Free chlorine residual testing in the distribution system

- same as for waterworks that provide disinfection by chlorination

Total chlorine residual testing in the distribution system

- same as for waterworks that provide disinfection by chlorination

APPENDIX I. SUGGESTED OUTLINE OF CONTENTS OF A CROSS CONNECTION CONTROL PROGRAM. (Repealed.)

Adopted ordinance (municipalities) - Make part of the program

Administration - name of individual responsible to carry out requirements of the program.

Procedures:

1. New facilities.

2. Existing facilities.

Records:

1. Locations of devices and types.

2. Inspections/questionnaires.

3. Testing and maintenance.

Notification:

1. Inspections of new and existing facilities.

2. Testing due.

3. Test results.

4. Device or means required.

5. Violations.

6. Termination or denial of service.

Reporting - procedures to follow in the event of or suspicion of contamination through a cross connection.

Backflow prevention device tester list.

Approved devices list.

Consumer education literature.

SUGGESTED OUTLINE OF CONTENTS OF AN ORDINANCE FOR A CROSS CONNECTION CONTROL PROGRAM

Purpose of the ordinance - to eliminate cross connections and protect the public health.

Authority for ordinance - required by waterworks regulations.

Administration of the ordinance:

1. Who is responsible to carry out the requirements of the ordinance, by position?

2. Reference to an established program or policy procedures.

3. Responsibility to carry out the program or policy.

Enforcement of the ordinance:

1. Right of entry for inspection or testing.

2. Right to terminate or deny service.

3. Notice of violations.

4. Penalties.

Definitions - those in 12VAC5-590-20 of Article 1 of Part I which apply.

General requirements of purveyor and consumer - applicable provisions of Article 3 of Part II should be adopted and

~~included as part of the ordinance. Modifications should be made to identify specific responsibilities.~~

APPENDIX L. ~~DETERMINATION OF CT.~~ (Repealed.)

~~Disinfection Criteria~~

~~A treatment system must provide a minimum 3 log (99.9%) reduction of Giardia cysts and a 4 log (99.99%) reduction of viruses, respectively. Table L 1 lists the log removal credits associated with four filtration processes and the inactivation levels that must be achieved by disinfection.~~

~~Determination of Compliance With Inactivation~~

~~To determine compliance with the inactivation requirements, a system must comply with the CT value(s) that is (are) based on disinfection conditions in the system during peak hourly flow. The "T" is the time in minutes it takes for the water during peak hourly flow to move between the point of disinfectant application and a point where "C", the residual concentration in mg/L, is measured before the water reaches the first customer. Contact time may be determined either by calculations, tracer studies, or an equivalent method as approved by the office. The contact time to be used for calculating CT is T_{10}, which is defined as the detention time at which 90 percent of the water passing through a unit is retained within that unit (e.g. mixing basins, sedimentation basins, clearwells, storage reservoirs, etc.)~~

~~Systems with only one point of disinfectant application may determine the total inactivation on the basis of residual measurements at a single point prior to the first customer or at several points within the treatment train after the point of disinfectant application. In the latter instance, the residual profile is determined and the total inactivation is calculated as follows: (1) Determine the disinfectant residual, C, in mg/L at any number of points within the treatment train; (2) Determine the travel time, T, in minutes between the point of disinfectant application and the point where C is measured within the first section. For subsequent measurements of C, T is the time required for water to move from the previous residual measurement point to the next; (3) Calculate CT corresponding to each residual measurement point (CT_{calc}); (4) Determine the log inactivation for each section; and (5) Sum the log inactivations for each section to determine the total log inactivation. Tables L 2 through L 7 give CT values required for 99.9 percent inactivation (3 logs) of Giardia cysts at various pHs and temperatures. Tables L 9 through L 15 give CT values required for Giardia cysts and viruses at various temperatures using free chlorine, chlorine dioxide, chloramines and ozone. The minimum expected temperature and the maximum expected pH should be used for the calculations. Generally, if the CT required for 3 logs inactivation of Giardia cycts is achieved, the CT required for 4 logs inactivation of viruses is also achieved.~~

~~Determination of Disinfectant Contact Time~~

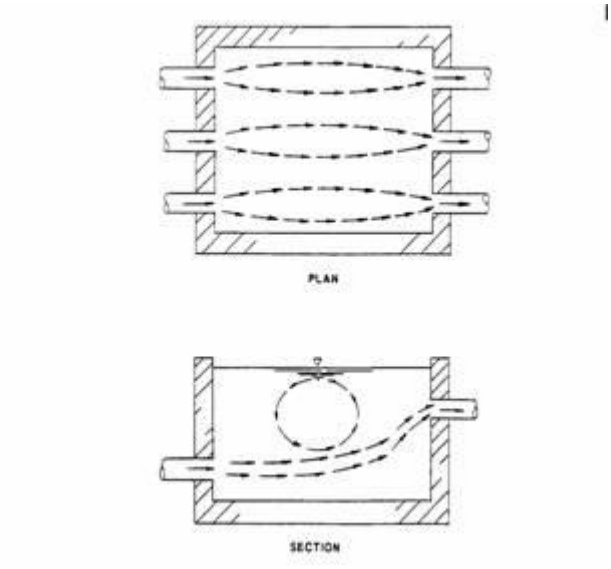
~~The time within contact units (including mixing basins and storage reservoirs) that is to be used in calculations of CT should be the T_{10} value, as defined earlier. This value can be determined either by calculations that involve the theoretical hydraulic detention time (volume divided by flow rate) and factors that account for the degree of short circuiting that might be expected through any given unit or by tracer studies.~~

~~When T_{10} values are calculated, the theoretical, hydraulic detention time in a particular unit is reduced by some fraction, the magnitude of which is dictated by the degree of short circuiting that is possible within that unit. The significant design characteristics that determine the degree of short circuiting include the length to width ratio, the degree of baffling within the basins, and the effect of inlet baffling and outlet weir configurations. The use of these factors to obtain a T_{10} value effectively reduces the magnitude of T for use in CT calculations so that achieving a required CT requires the application of more disinfectant (i.e. a higher concentration).~~

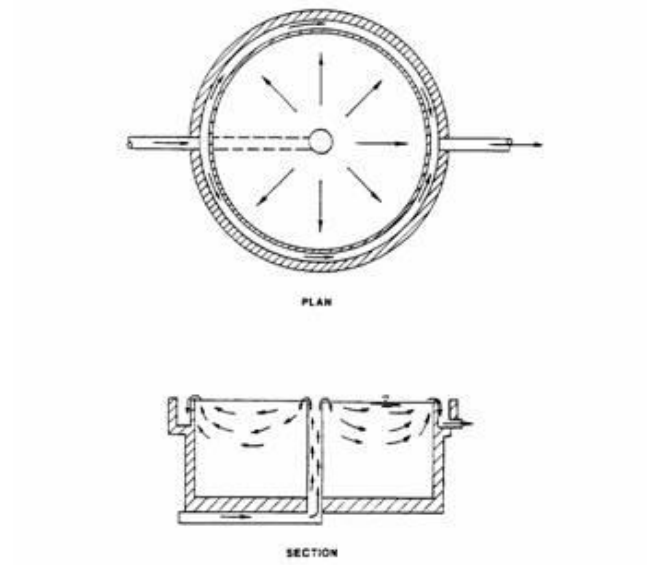
~~The purposes of baffling are to (1) maximize utilization of basin volume, (2) increase the plug flow zone in the basin, and (3) minimize short circuiting. Three general classifications of baffling conditions (poor, average, and superior) have been developed to categorize the results of tracer studies for use in T_{10} determinations. The T_{10}/T ratios associated with each degree of baffling are summarized in Table L 8.~~

~~The three types of basin inlet baffling configurations are: a target baffle pipe inlet, an overflow weir entrance, and a baffled, submerged orifice or port inlet. Typical intra basin baffling structures include: diffuser (perforated) walls; launders; cross , longitudinal , or maze baffling to cause either horizontal or vertical serpentine flow; and longitudinal divider walls, which prevent mixing by increasing the length to width ratio of the basins. Commonly used baffled outlet structures include free discharging weirs, such as sharp crested and V notch, and submerged ports or weirs. Weirs that do not span the width of the basin, such as Cipolleti weirs, should not be used, as they may substantially increase weir overflow rates and the dead space zone within the basin. Figures L I through L VI give examples of poor, average, and superior baffling conditions for rectangular and circular tanks.~~

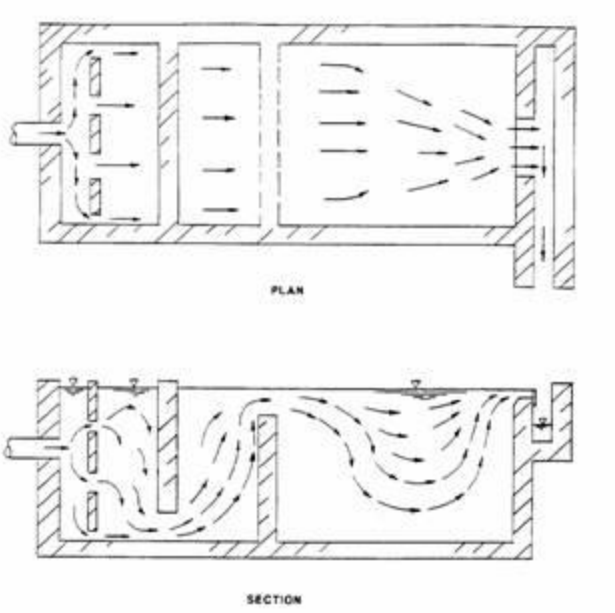
EDITOR'S NOTE: Figures L-1 through L-7 shown below are being stricken as the figures are repealed in this proposed action.



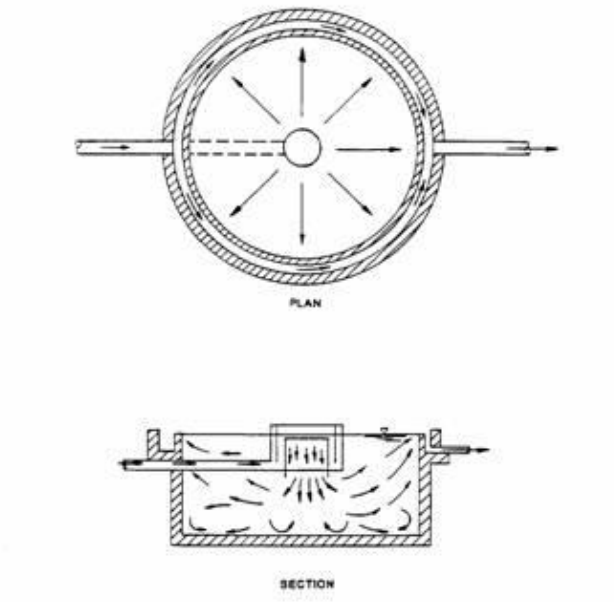
~~Figure L-1 Poor Baffling Condition - Rectangular Contact Basin~~



~~Figure L-2 Poor Baffling Condition - Circular Contact Basin~~



~~Figure L-3 Average Baffling Condition - Rectangular Contact Basin~~



~~Figure L-4 Average Baffling Condition - Circular Contact Basin~~

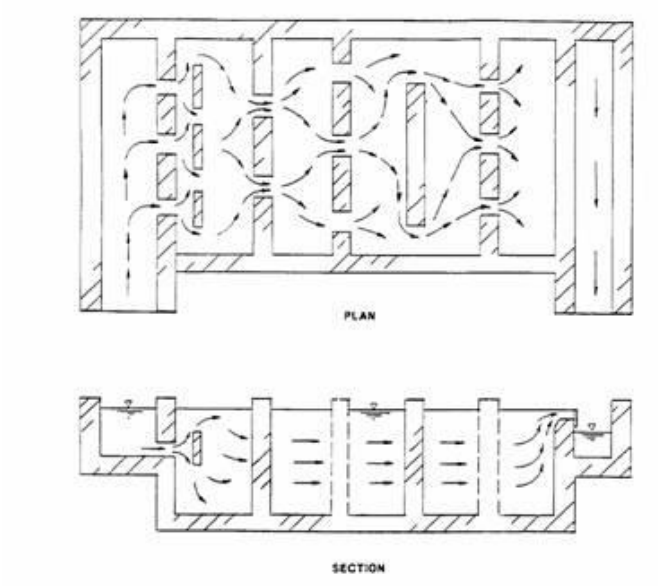


Figure L-5 Superior Baffling Conditions – Rectangular Contact Basin

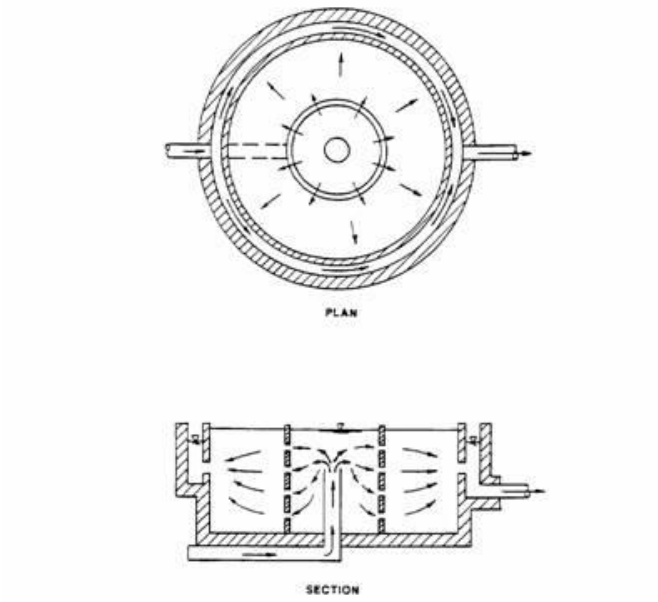


Figure L-6 Superior Baffling Conditions – Circular Contact Basin

The following is a sample problem based on the inactivation tables and T_{10} values calculated from information regarding the design features of the contact unit and the theoretical detention time. The disinfectant in this example is chlorine which is added just prior to the contact unit and the flow rate, pH, chlorine residual, and water temperature are assumed to be 1.5 MGD, 7.5, 1.0 mg/L, and 5 degrees C, respectively. The contact unit has a baffled inlet, intra-basin baffles, and a theoretical detention time of 90 minutes.

$T_{10}/T = 0.5$ (see Table L-8)

$T_{10} = 0.5 \times 90$ minutes = 45 minutes

$CT_{calc} = 1.0$ mg/L x 45 minutes = 45 mg-min/L

Note: Required inactivation is 0.5 logs since this particular disinfection process follows a conventional water treatment plant.

From Table L-3, 5°C

At pH = 7.5, C = 1.0 mg/L and $CT_{calc} = 45$ mg-min/L, interpolate the log inactivation.

CT_{calc} of 45 mg-min/L falls between CTs of 30 (0.5 log) and 60 (1.0 log) mg-min/L. The corresponding log inactivation would be as follows:

$0.5 + [(45-30)/(60-30) \times (1.0-0.5)] = 0.75$ logs

Therefore, the log inactivation requirement of 0.5 logs has been satisfied.

Although the detention time is proportional to flow, the relationship generally is not linear. Therefore, tracer studies may be used to establish detention times for the range of flow rates experienced within each disinfectant section.

Ideally, tracer tests should be conducted at a minimum of four flow rates that span the entire range of flows for the section being tested. The flow rates should be separated by approximately equal intervals to span the range of operation, with one near average flow, two greater than average, and one less than average. The flows should also be selected so that the highest is at least 91 percent of the highest flow rate expected to ever occur in that section. Four data points will ensure a good definition of the section's hydraulic profile.

Systems can perform just one tracer test for each disinfectant residual at a flow rate of not less that 91 percent of the highest flow rate experienced in that section. If only one tracer test is performed, the detention time determined by the test may be used to provide a conservative estimate in CT calculations for that section for all flow rates less than or equal to the flow rate during the tracer test. Since T_{10} is inversely proportional to flow rate, the T_{10} at a flow rate other than that occurring during the tracer study can be determined by multiplying the T_{10} determined from the tracer study by the ratio of the tracer study flow rate to the desired flow rate. That is:

$T_{10S} = T_{10T} \times O_T/O_S$

Where:

T_{10S} = T_{10} at system flow rate

T_{10T} = T_{10} at tracer flow rate

O_T = tracer study flow rate

O_S = system flow rate

When tracer studies are performed, several variables other than flow rate will affect the detention time, including

varying water levels in tanks, seasonal fluctuations in flow, and differences in water temperature, which may cause thermal stratification. If these variables are significant, additional tracer studies to determine the appropriate T_{10} values may be warranted.

Two methods of tracer addition are commonly used in water treatment evaluations: the step dose method and the slug dose method. In general, tracer studies involve the application of a chemical to a system and tracking the effluent concentrations over time. The effluent concentration profile is evaluated to determine the detention time T_{10}.

Step dose tracer studies are frequently employed in drinking water applications because the necessary chemical feed equipment is available and the resulting profile of normalized concentrations versus time is used directly to determine the detention time (T_{10}) required for calculating CT. The T_{10} value obtained from the studies is actually the time at which the effluent concentration of the tracer chemical is 10 percent of the added concentration.

The slug dose method requires the addition of a large, initial dose of tracer to the incoming water. Samples are collected at the exit end of the unit for a period of time until the tracer passes through the unit. Disadvantages of this method include: (1) extremely concentrated solutions of chemicals are required; (2) intensive mixing is required to minimize potential density currents and to obtain uniform distribution; (3) the concentration and volume of the initial tracer dose must be calculated carefully to provide an adequate tracer profile; (4) the resulting profile of concentration versus time cannot be used directly to determine T_{10}; and (5) a mass balance on the treatment section is required to determine whether the tracer was completely recovered. One advantage of this method is that it may be applied where chemical feed equipment is not available at the desired point of application or where the equipment that is available does not have adequate capacity.

Disinfection Profile and Benchmark

1. A disinfection profile is prepared by calculating the log inactivation for each disinfection segment of the treatment plant, from initial point of disinfectant addition to the entrance to the distribution system. The log inactivations for each segment are summed to yield the total plant log inactivation.

2. The procedure for computing the log inactivation is as follows:

a. Collect data daily (plants serving 10,000 or more people), or weekly on the same calendar day (plants serving less than 10,000 people), at each disinfectant residual sampling point during peak hourly flow, for:

(1) Water temperature (°C)

(2) Water pH (required for free chlorine calculation)

(3) Disinfectant residual concentration ("C," in mg/L)

b. Calculate contact time ("T," in minutes) for each disinfectant segment based on baffling factors or tracer studies.

c. Calculate CT_{actual} for each disinfection segment under actual operating conditions.

d. Determine the $CT_{required}$ for 3-log Giardia inactivation ($CT_{3\text{-log Giardia}}$) and/or 4-log virus ($CT_{4\text{-log virus}}$) inactivation from the CT Tables.

e. Calculate the log inactivation for Giardia and/or viruses for each segment using:

(1) Log Inactivation of Giardia = $3.0 * CT_{actual} / CT_{3\text{-log Giardia}}$

(2) Log inactivation of viruses = $4.0 * CT_{actual} / CT_{4\text{-log viruses}}$

f. Sum the segment log inactivations to determine the plant log inactivation.

3. The disinfection profile is charted over the year and the benchmark is determined based on 12VAC5-590-500.

TABLE L-1 MAXIMUM LOG REMOVAL CREDITS ALLOWED FOR FILTRATION AND MINIMUM REQUIRED LEVELS OF INACTIVATION BY DISINFECTION

Minimum Required Disinfection				
Type of Filtration	Maximum Log Removal Credits		(Log Inactivations)	
	Giardia	Viruses	Giardia	Viruses
Conventional	2.5	2.0	0.5	2.0
Direct	2.0	1.0	1.0	3.0
Slow Sand	2.0	2.0	1.0	2.0
Diatomaceous Earth	2.0	1.0	1.0	3.0

NOTE: The sum of the log removals for filtration plus disinfection must equal 3.0 for Giardia and 4.0 for viruses.

~~TABLE L-2~~
~~CT VALUES FOR INACTIVATION OF GIARDIA CYSTS BY FREE CHLORINE AT 0.5 C OR LOWER~~

~~CHLORINE CONCENTRATION~~	~~LOG INACTIVATIONS~~						~~LOG INACTIVATIONS~~					
	~~pH ≤ 6~~						~~pH = 6.5~~					
~~(mg/L)~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~
~~≤ 0.4~~	~~23~~	~~46~~	~~69~~	~~91~~	~~114~~	~~137~~	~~27~~	~~54~~	~~82~~	~~109~~	~~136~~	~~163~~
~~0.6~~	~~24~~	~~47~~	~~71~~	~~94~~	~~118~~	~~141~~	~~28~~	~~56~~	~~84~~	~~112~~	~~140~~	~~168~~
~~0.8~~	~~24~~	~~48~~	~~73~~	~~97~~	~~121~~	~~145~~	~~29~~	~~57~~	~~86~~	~~115~~	~~143~~	~~172~~
~~1.0~~	~~25~~	~~49~~	~~74~~	~~99~~	~~123~~	~~148~~	~~29~~	~~59~~	~~88~~	~~117~~	~~147~~	~~176~~
~~1.2~~	~~25~~	~~51~~	~~76~~	~~101~~	~~127~~	~~152~~	~~30~~	~~60~~	~~90~~	~~120~~	~~150~~	~~180~~
~~1.4~~	~~26~~	~~52~~	~~78~~	~~103~~	~~129~~	~~155~~	~~31~~	~~61~~	~~92~~	~~123~~	~~153~~	~~184~~
~~1.6~~	~~26~~	~~52~~	~~79~~	~~105~~	~~131~~	~~157~~	~~32~~	~~63~~	~~95~~	~~126~~	~~158~~	~~189~~
~~1.8~~	~~27~~	~~54~~	~~81~~	~~108~~	~~135~~	~~162~~	~~32~~	~~64~~	~~97~~	~~129~~	~~161~~	~~193~~
~~2.0~~	~~28~~	~~55~~	~~83~~	~~110~~	~~138~~	~~165~~	~~33~~	~~66~~	~~99~~	~~131~~	~~164~~	~~197~~
~~2.2~~	~~28~~	~~56~~	~~85~~	~~113~~	~~141~~	~~169~~	~~34~~	~~67~~	~~101~~	~~134~~	~~168~~	~~201~~
~~2.4~~	~~29~~	~~57~~	~~86~~	~~115~~	~~143~~	~~172~~	~~34~~	~~68~~	~~103~~	~~137~~	~~171~~	~~205~~
~~2.6~~	~~29~~	~~58~~	~~88~~	~~117~~	~~146~~	~~175~~	~~35~~	~~70~~	~~105~~	~~139~~	~~174~~	~~209~~
~~2.8~~	~~30~~	~~59~~	~~89~~	~~119~~	~~148~~	~~178~~	~~36~~	~~71~~	~~107~~	~~142~~	~~178~~	~~213~~
~~3.0~~	~~30~~	~~60~~	~~91~~	~~121~~	~~151~~	~~181~~	~~36~~	~~72~~	~~109~~	~~145~~	~~181~~	~~217~~
	~~pH = 7.0~~						~~pH = 7.5~~					
~~(mg/L)~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~
~~≤ 0.4~~	~~33~~	~~65~~	~~98~~	~~130~~	~~163~~	~~195~~	~~40~~	~~79~~	~~119~~	~~158~~	~~198~~	~~237~~
~~0.6~~	~~33~~	~~67~~	~~100~~	~~133~~	~~167~~	~~200~~	~~40~~	~~80~~	~~120~~	~~159~~	~~199~~	~~239~~
~~0.8~~	~~34~~	~~68~~	~~103~~	~~137~~	~~171~~	~~205~~	~~41~~	~~82~~	~~123~~	~~164~~	~~205~~	~~246~~
~~1.0~~	~~35~~	~~70~~	~~105~~	~~140~~	~~175~~	~~210~~	~~42~~	~~84~~	~~127~~	~~169~~	~~211~~	~~253~~
~~1.2~~	~~36~~	~~72~~	~~108~~	~~143~~	~~179~~	~~215~~	~~43~~	~~86~~	~~130~~	~~173~~	~~216~~	~~259~~
~~1.4~~	~~37~~	~~74~~	~~111~~	~~147~~	~~184~~	~~221~~	~~44~~	~~89~~	~~133~~	~~177~~	~~222~~	~~266~~
~~1.6~~	~~38~~	~~75~~	~~113~~	~~151~~	~~188~~	~~226~~	~~46~~	~~91~~	~~137~~	~~182~~	~~228~~	~~273~~
~~1.8~~	~~39~~	~~77~~	~~116~~	~~154~~	~~193~~	~~231~~	~~47~~	~~93~~	~~140~~	~~186~~	~~233~~	~~279~~
~~2.0~~	~~39~~	~~79~~	~~118~~	~~157~~	~~197~~	~~236~~	~~48~~	~~95~~	~~143~~	~~191~~	~~238~~	~~286~~
~~2.2~~	~~40~~	~~81~~	~~121~~	~~161~~	~~202~~	~~242~~	~~50~~	~~99~~	~~149~~	~~198~~	~~248~~	~~297~~
~~2.4~~	~~41~~	~~82~~	~~124~~	~~165~~	~~206~~	~~247~~	~~50~~	~~99~~	~~149~~	~~199~~	~~248~~	~~298~~
~~2.6~~	~~42~~	~~84~~	~~126~~	~~168~~	~~210~~	~~252~~	~~51~~	~~101~~	~~152~~	~~203~~	~~253~~	~~304~~
~~2.8~~	~~43~~	~~86~~	~~129~~	~~171~~	~~214~~	~~257~~	~~52~~	~~103~~	~~155~~	~~207~~	~~258~~	~~310~~
~~3.0~~	~~44~~	~~87~~	~~131~~	~~174~~	~~218~~	~~261~~	~~53~~	~~105~~	~~158~~	~~211~~	~~263~~	~~316~~

	pH = 8.0						pH = 8.5					
(mg/L)	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0
≤ 0.4	46	92	139	185	231	277	55	110	165	219	274	329
0.6	48	95	143	191	238	286	57	114	171	228	285	342
0.8	49	98	148	197	246	295	59	118	177	236	295	354
1.0	51	101	152	203	253	304	61	122	183	243	304	365
1.2	52	104	157	209	261	313	63	125	188	251	313	376
1.4	54	107	161	214	268	321	65	129	194	258	323	387
1.6	55	110	165	219	274	329	66	132	199	265	331	397
1.8	56	113	169	225	282	338	68	136	204	271	339	407
2.0	58	115	173	231	288	346	70	139	209	278	348	417
2.2	59	118	177	235	294	353	71	142	213	284	355	426
2.4	60	120	181	241	301	361	73	145	218	290	363	435
2.6	61	123	184	245	307	368	74	148	222	296	370	444
2.8	63	125	188	250	313	375	75	151	226	301	377	452
3.0	64	127	191	255	318	382	77	153	230	307	383	460

	pH = 9.0					
(mg/L)	0.5	1.0	1.5	2.0	2.5	3.0
≤ 0.4	65	130	195	260	325	390
0.6	68	136	204	271	339	407
0.8	70	141	211	281	352	422
1.0	73	146	219	291	364	437
1.2	75	15	226	301	376	451
1.4	77	155	232	309	387	464
1.6	80	159	239	318	398	477
1.8	82	163	245	326	408	489
2.0	83	167	250	333	417	500
2.2	85	170	256	341	426	511
2.4	87	174	261	348	435	522
2.6	89	178	267	355	444	533
2.8	91	181	272	362	453	543
3.0	92	184	276	368	460	552

~~TABLE L-3~~
~~CT VALUES FOR INACTIVATION OF GIARDIA CYSTS BY FREE CHLORINE AT 5 C~~

~~CHLORINE CONCENTRATION~~	~~LOG INACTIVATIONS~~						~~LOG INACTIVATIONS~~					
	~~pH ≤ 6~~						~~pH = 6.5~~					
~~(mg/L)~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~
~~≤ 0.4~~	~~16~~	~~32~~	~~49~~	~~65~~	~~81~~	~~97~~	~~20~~	~~39~~	~~59~~	~~78~~	~~98~~	~~117~~
~~0.6~~	~~17~~	~~33~~	~~50~~	~~67~~	~~83~~	~~100~~	~~20~~	~~40~~	~~60~~	~~80~~	~~100~~	~~120~~
~~0.8~~	~~17~~	~~34~~	~~52~~	~~69~~	~~86~~	~~103~~	~~20~~	~~41~~	~~61~~	~~81~~	~~102~~	~~122~~
~~1.0~~	~~18~~	~~35~~	~~53~~	~~70~~	~~88~~	~~105~~	~~21~~	~~42~~	~~63~~	~~83~~	~~104~~	~~125~~
~~1.2~~	~~18~~	~~36~~	~~54~~	~~71~~	~~89~~	~~107~~	~~21~~	~~42~~	~~64~~	~~85~~	~~106~~	~~127~~
~~1.4~~	~~18~~	~~36~~	~~55~~	~~73~~	~~91~~	~~109~~	~~22~~	~~43~~	~~65~~	~~87~~	~~108~~	~~130~~
~~1.6~~	~~19~~	~~37~~	~~56~~	~~74~~	~~93~~	~~111~~	~~22~~	~~44~~	~~66~~	~~88~~	~~110~~	~~132~~
~~1.8~~	~~19~~	~~38~~	~~57~~	~~76~~	~~95~~	~~114~~	~~23~~	~~45~~	~~68~~	~~90~~	~~113~~	~~135~~
~~2.0~~	~~19~~	~~39~~	~~58~~	~~77~~	~~97~~	~~116~~	~~23~~	~~46~~	~~69~~	~~92~~	~~115~~	~~138~~
~~2.2~~	~~20~~	~~39~~	~~59~~	~~79~~	~~98~~	~~118~~	~~23~~	~~47~~	~~70~~	~~93~~	~~117~~	~~140~~
~~2.4~~	~~20~~	~~40~~	~~60~~	~~80~~	~~100~~	~~120~~	~~24~~	~~48~~	~~72~~	~~95~~	~~119~~	~~143~~
~~2.6~~	~~20~~	~~41~~	~~61~~	~~81~~	~~102~~	~~122~~	~~24~~	~~49~~	~~73~~	~~97~~	~~122~~	~~146~~
~~2.8~~	~~21~~	~~41~~	~~62~~	~~83~~	~~103~~	~~124~~	~~25~~	~~49~~	~~74~~	~~99~~	~~123~~	~~148~~
~~3.0~~	~~21~~	~~42~~	~~63~~	~~84~~	~~105~~	~~126~~	~~25~~	~~50~~	~~76~~	~~101~~	~~126~~	~~151~~
	~~pH = 7.0~~						~~pH = 7.5~~					
~~mg/L)~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~
~~≤ 0.4~~	~~23~~	~~46~~	~~70~~	~~93~~	~~116~~	~~139~~	~~28~~	~~55~~	~~83~~	~~111~~	~~138~~	~~166~~
~~0.6~~	~~24~~	~~48~~	~~72~~	~~95~~	~~119~~	~~143~~	~~29~~	~~57~~	~~86~~	~~114~~	~~143~~	~~171~~
~~0.8~~	~~24~~	~~49~~	~~73~~	~~97~~	~~122~~	~~146~~	~~29~~	~~58~~	~~88~~	~~117~~	~~146~~	~~175~~
~~1.0~~	~~25~~	~~50~~	~~75~~	~~99~~	~~124~~	~~149~~	~~30~~	~~60~~	~~90~~	~~119~~	~~149~~	~~179~~
~~1.2~~	~~25~~	~~51~~	~~76~~	~~101~~	~~127~~	~~152~~	~~31~~	~~61~~	~~92~~	~~122~~	~~153~~	~~183~~
~~1.4~~	~~26~~	~~52~~	~~78~~	~~103~~	~~129~~	~~155~~	~~31~~	~~62~~	~~94~~	~~125~~	~~156~~	~~187~~
~~1.6~~	~~26~~	~~53~~	~~79~~	~~105~~	~~132~~	~~158~~	~~32~~	~~64~~	~~96~~	~~128~~	~~160~~	~~192~~
~~1.8~~	~~27~~	~~54~~	~~81~~	~~108~~	~~135~~	~~162~~	~~33~~	~~65~~	~~98~~	~~131~~	~~163~~	~~196~~
~~2.0~~	~~28~~	~~55~~	~~83~~	~~110~~	~~138~~	~~165~~	~~33~~	~~67~~	~~100~~	~~133~~	~~167~~	~~200~~
~~2.2~~	~~28~~	~~56~~	~~85~~	~~113~~	~~141~~	~~169~~	~~34~~	~~68~~	~~102~~	~~136~~	~~170~~	~~204~~
~~2.4~~	~~29~~	~~57~~	~~86~~	~~115~~	~~143~~	~~172~~	~~35~~	~~70~~	~~105~~	~~139~~	~~174~~	~~209~~
~~2.6~~	~~29~~	~~58~~	~~88~~	~~117~~	~~146~~	~~175~~	~~36~~	~~71~~	~~107~~	~~142~~	~~178~~	~~213~~
~~2.8~~	~~30~~	~~59~~	~~89~~	~~119~~	~~148~~	~~178~~	~~36~~	~~72~~	~~109~~	~~145~~	~~181~~	~~217~~
~~3.0~~	~~30~~	~~61~~	~~91~~	~~121~~	~~152~~	~~182~~	~~37~~	~~74~~	~~111~~	~~147~~	~~184~~	~~221~~
	~~pH = 8.0~~						~~pH = 8.5~~					

mg/L)	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0
≤ 0.4	33	66	99	132	165	198	39	79	118	157	197	236
0.6	34	68	102	136	170	204	41	81	122	163	203	244
0.8	35	70	105	140	175	210	42	84	126	168	210	252
1.0	36	72	108	144	180	216	43	87	130	173	217	260
1.2	37	74	111	147	184	221	45	89	134	178	223	267
1.4	38	76	114	151	189	227	46	91	137	183	228	274
1.6	39	77	116	155	193	232	47	94	141	187	234	281
1.8	40	79	119	159	198	238	48	96	144	191	239	287
2.0	41	81	122	162	203	243	49	98	147	196	245	294
2.2	41	83	124	165	207	248	50	100	150	200	250	300
2.4	42	84	127	169	211	253	51	102	153	204	255	306
2.6	43	86	129	172	215	258	52	104	156	208	260	312
2.8	44	88	132	175	219	263	53	106	159	212	265	318
3.0	45	89	134	179	223	268	54	108	162	216	270	324

pH = 9.0

(mg/L)	0.5	1.0	1.5	2.0	2.5	3.0
≤ 0.4	47	93	140	186	233	279
0.6	49	97	146	194	243	291
0.8	50	100	151	201	251	301
1.0	52	104	156	208	260	312
1.2	53	107	160	213	267	320
1.4	55	110	165	219	274	329
1.6	56	112	169	225	281	337
1.8	58	115	173	230	288	345
2.0	59	118	177	235	294	353
2.2	60	120	181	241	301	361
2.4	61	123	184	245	307	368
2.6	63	125	188	250	313	375
2.8	64	127	191	255	318	382
3.0	65	130	195	259	324	389

~~TABLE L-4~~
~~CT VALUES FOR INACTIVATION OF GIARDIA CYSTS BY FREE CHLORINE AT 10 C~~

~~CHLORINE CONCENTRATION~~	~~LOG INACTIVATIONS~~						~~LOG INACTIVATIONS~~					
	~~pH ≤ 6~~						~~pH = 6.5~~					
~~(mg/L)~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~
~~≤ 0.4~~	~~12~~	~~24~~	~~37~~	~~49~~	~~61~~	~~73~~	~~15~~	~~29~~	~~44~~	~~59~~	~~73~~	~~88~~
~~0.6~~	~~13~~	~~25~~	~~38~~	~~50~~	~~63~~	~~75~~	~~15~~	~~30~~	~~45~~	~~60~~	~~75~~	~~90~~
~~0.8~~	~~13~~	~~26~~	~~39~~	~~52~~	~~65~~	~~78~~	~~15~~	~~31~~	~~46~~	~~61~~	~~77~~	~~92~~
~~1.0~~	~~13~~	~~26~~	~~40~~	~~53~~	~~66~~	~~79~~	~~16~~	~~31~~	~~47~~	~~63~~	~~78~~	~~94~~
~~1.2~~	~~13~~	~~27~~	~~40~~	~~53~~	~~67~~	~~80~~	~~16~~	~~32~~	~~48~~	~~63~~	~~79~~	~~95~~
~~1.4~~	~~14~~	~~27~~	~~41~~	~~55~~	~~68~~	~~82~~	~~16~~	~~33~~	~~49~~	~~65~~	~~82~~	~~98~~
~~1.6~~	~~14~~	~~28~~	~~42~~	~~55~~	~~69~~	~~83~~	~~17~~	~~33~~	~~50~~	~~66~~	~~83~~	~~99~~
~~1.8~~	~~14~~	~~29~~	~~43~~	~~57~~	~~72~~	~~86~~	~~17~~	~~34~~	~~51~~	~~67~~	~~84~~	~~101~~
~~2.0~~	~~15~~	~~29~~	~~44~~	~~58~~	~~73~~	~~87~~	~~17~~	~~35~~	~~52~~	~~69~~	~~87~~	~~104~~
~~2.2~~	~~15~~	~~30~~	~~45~~	~~59~~	~~74~~	~~89~~	~~18~~	~~35~~	~~53~~	~~70~~	~~88~~	~~105~~
~~2.4~~	~~15~~	~~30~~	~~45~~	~~60~~	~~75~~	~~90~~	~~18~~	~~36~~	~~54~~	~~71~~	~~89~~	~~107~~
~~2.6~~	~~15~~	~~31~~	~~46~~	~~61~~	~~77~~	~~92~~	~~18~~	~~37~~	~~55~~	~~73~~	~~92~~	~~110~~
~~2.8~~	~~16~~	~~31~~	~~47~~	~~62~~	~~78~~	~~93~~	~~19~~	~~37~~	~~56~~	~~74~~	~~93~~	~~110~~
~~3.0~~	~~16~~	~~32~~	~~48~~	~~63~~	~~79~~	~~95~~	~~19~~	~~38~~	~~57~~	~~75~~	~~94~~	~~113~~
	~~pH = 7.0~~						~~pH = 7.5~~					
~~(mg/L)~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~
~~≤ 0.4~~	~~17~~	~~35~~	~~52~~	~~69~~	~~87~~	~~104~~	~~21~~	~~42~~	~~63~~	~~83~~	~~104~~	~~125~~
~~0.6~~	~~18~~	~~36~~	~~54~~	~~71~~	~~89~~	~~107~~	~~21~~	~~43~~	~~64~~	~~85~~	~~107~~	~~128~~
~~0.8~~	~~18~~	~~37~~	~~55~~	~~73~~	~~92~~	~~110~~	~~22~~	~~44~~	~~66~~	~~87~~	~~109~~	~~131~~
~~1.0~~	~~19~~	~~37~~	~~56~~	~~75~~	~~93~~	~~112~~	~~22~~	~~45~~	~~67~~	~~89~~	~~112~~	~~134~~
~~1.2~~	~~19~~	~~38~~	~~57~~	~~76~~	~~95~~	~~114~~	~~23~~	~~46~~	~~69~~	~~91~~	~~114~~	~~137~~
~~1.4~~	~~19~~	~~39~~	~~58~~	~~77~~	~~97~~	~~116~~	~~23~~	~~47~~	~~70~~	~~93~~	~~117~~	~~140~~
~~1.6~~	~~20~~	~~40~~	~~60~~	~~79~~	~~99~~	~~119~~	~~24~~	~~48~~	~~72~~	~~96~~	~~120~~	~~144~~
~~1.8~~	~~20~~	~~41~~	~~61~~	~~81~~	~~102~~	~~122~~	~~25~~	~~49~~	~~74~~	~~98~~	~~123~~	~~147~~
~~2.0~~	~~21~~	~~41~~	~~62~~	~~83~~	~~103~~	~~124~~	~~25~~	~~50~~	~~75~~	~~100~~	~~125~~	~~150~~
~~2.2~~	~~21~~	~~42~~	~~64~~	~~85~~	~~106~~	~~127~~	~~26~~	~~51~~	~~77~~	~~102~~	~~128~~	~~153~~
~~2.4~~	~~22~~	~~43~~	~~65~~	~~86~~	~~108~~	~~129~~	~~26~~	~~52~~	~~79~~	~~105~~	~~131~~	~~157~~
~~2.6~~	~~22~~	~~44~~	~~66~~	~~87~~	~~109~~	~~131~~	~~27~~	~~53~~	~~80~~	~~107~~	~~133~~	~~160~~
~~2.8~~	~~22~~	~~45~~	~~67~~	~~89~~	~~112~~	~~134~~	~~27~~	~~54~~	~~82~~	~~109~~	~~136~~	~~163~~
~~3.0~~	~~23~~	~~46~~	~~69~~	~~91~~	~~114~~	~~137~~	~~28~~	~~55~~	~~83~~	~~111~~	~~138~~	~~166~~

	pH = 8.0						pH = 8.5					
(mg/L)	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0
≤ 0.4	25	50	75	99	124	149	30	59	89	118	148	177
0.6	26	51	77	102	128	153	31	61	92	122	153	183
0.8	26	53	79	105	132	158	32	63	95	126	158	189
1.0	27	54	81	108	135	162	33	65	98	130	163	195
1.2	28	55	83	111	138	166	33	67	100	133	167	200
1.4	28	57	85	113	142	170	34	69	103	137	172	206
1.6	29	58	87	116	145	174	35	70	106	141	176	211
1.8	30	60	90	119	149	179	36	72	108	143	179	215
2.0	30	61	91	121	152	182	37	74	111	147	184	221
2.2	31	62	93	124	155	186	38	75	113	150	188	225
2.4	32	63	95	127	158	190	38	77	115	153	192	230
2.6	32	65	97	129	162	194	39	78	117	156	195	234
2.8	33	66	99	131	164	197	40	80	120	159	199	239
3.0	34	67	101	134	168	201	41	81	122	162	203	243

	pH = 9.0					
(mg/L)	0.5	1.0	1.5	2.0	2.5	3.0
≤ 0.4	35	70	105	139	174	209
0.6	36	73	109	145	182	218
0.8	38	75	113	151	188	226
1.0	39	78	117	156	195	234
1.2	40	80	120	160	200	240
1.4	41	82	124	165	206	247
1.6	42	84	127	169	211	253
1.8	43	86	130	173	216	259
2.0	44	88	133	177	221	265
2.2	45	90	136	181	226	271
2.4	46	92	138	184	230	276
2.6	47	94	141	187	234	281
2.8	48	96	144	191	239	287
3.0	49	97	146	195	243	292

~~TABLE L-5~~
~~CT VALUES FOR INACTIVATION OF GIARDIA CYSTS BY FREE CHLORINE AT 15 C~~

~~CHLORINE CONCENTRATION~~	~~LOG INACTIVATIONS~~						~~LOG INACTIVATIONS~~					
	~~pH ≤ 6.0~~						~~pH = 6.5~~					
~~(mg/L)~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~
~~≤ 0.4~~	~~8~~	~~16~~	~~25~~	~~33~~	~~41~~	~~49~~	~~10~~	~~20~~	~~30~~	~~39~~	~~49~~	~~59~~
~~0.6~~	~~8~~	~~17~~	~~25~~	~~33~~	~~42~~	~~50~~	~~10~~	~~20~~	~~30~~	~~40~~	~~50~~	~~60~~
~~0.8~~	~~9~~	~~17~~	~~26~~	~~35~~	~~43~~	~~52~~	~~10~~	~~20~~	~~31~~	~~41~~	~~51~~	~~61~~
~~1.0~~	~~9~~	~~18~~	~~27~~	~~35~~	~~44~~	~~53~~	~~11~~	~~21~~	~~32~~	~~42~~	~~53~~	~~63~~
~~1.2~~	~~9~~	~~18~~	~~27~~	~~36~~	~~45~~	~~54~~	~~11~~	~~21~~	~~32~~	~~43~~	~~53~~	~~64~~
~~1.4~~	~~9~~	~~18~~	~~28~~	~~37~~	~~46~~	~~55~~	~~11~~	~~22~~	~~33~~	~~43~~	~~54~~	~~65~~
~~1.6~~	~~9~~	~~19~~	~~28~~	~~37~~	~~47~~	~~56~~	~~11~~	~~22~~	~~33~~	~~44~~	~~55~~	~~66~~
~~1.8~~	~~10~~	~~19~~	~~29~~	~~38~~	~~48~~	~~57~~	~~11~~	~~23~~	~~34~~	~~45~~	~~57~~	~~68~~
~~2.0~~	~~10~~	~~19~~	~~29~~	~~39~~	~~48~~	~~58~~	~~12~~	~~23~~	~~35~~	~~46~~	~~58~~	~~69~~
~~2.2~~	~~10~~	~~20~~	~~30~~	~~39~~	~~49~~	~~59~~	~~12~~	~~23~~	~~35~~	~~47~~	~~58~~	~~70~~
~~2.4~~	~~10~~	~~20~~	~~30~~	~~40~~	~~50~~	~~60~~	~~12~~	~~24~~	~~36~~	~~48~~	~~60~~	~~72~~
~~2.6~~	~~10~~	~~20~~	~~31~~	~~41~~	~~51~~	~~61~~	~~12~~	~~24~~	~~37~~	~~49~~	~~61~~	~~73~~
~~2.8~~	~~10~~	~~21~~	~~31~~	~~41~~	~~52~~	~~62~~	~~12~~	~~25~~	~~37~~	~~49~~	~~62~~	~~74~~
~~3.0~~	~~11~~	~~21~~	~~32~~	~~42~~	~~53~~	~~63~~	~~13~~	~~25~~	~~38~~	~~51~~	~~63~~	~~76~~
	~~pH = 7.0~~						~~pH = 7.5~~					
~~(mg/L)~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~
~~≤ 0.4~~	~~12~~	~~23~~	~~35~~	~~47~~	~~58~~	~~70~~	~~14~~	~~28~~	~~42~~	~~55~~	~~69~~	~~83~~
~~0.6~~	~~12~~	~~24~~	~~36~~	~~48~~	~~60~~	~~72~~	~~14~~	~~29~~	~~43~~	~~57~~	~~72~~	~~86~~
~~0.8~~	~~12~~	~~24~~	~~37~~	~~49~~	~~61~~	~~73~~	~~15~~	~~29~~	~~44~~	~~59~~	~~73~~	~~88~~
~~1.0~~	~~13~~	~~25~~	~~38~~	~~50~~	~~63~~	~~75~~	~~15~~	~~30~~	~~45~~	~~60~~	~~75~~	~~90~~
~~1.2~~	~~13~~	~~25~~	~~38~~	~~51~~	~~63~~	~~76~~	~~15~~	~~31~~	~~46~~	~~61~~	~~77~~	~~92~~
~~1.4~~	~~13~~	~~26~~	~~39~~	~~52~~	~~65~~	~~78~~	~~16~~	~~31~~	~~47~~	~~63~~	~~78~~	~~94~~
~~1.6~~	~~13~~	~~26~~	~~40~~	~~53~~	~~66~~	~~79~~	~~16~~	~~32~~	~~48~~	~~64~~	~~80~~	~~96~~
~~1.8~~	~~14~~	~~27~~	~~41~~	~~54~~	~~68~~	~~81~~	~~16~~	~~33~~	~~49~~	~~65~~	~~82~~	~~98~~
~~2.0~~	~~14~~	~~28~~	~~42~~	~~55~~	~~69~~	~~83~~	~~17~~	~~33~~	~~50~~	~~67~~	~~83~~	~~100~~
~~2.2~~	~~14~~	~~28~~	~~43~~	~~57~~	~~71~~	~~85~~	~~17~~	~~34~~	~~51~~	~~68~~	~~85~~	~~102~~
~~2.4~~	~~14~~	~~29~~	~~43~~	~~57~~	~~72~~	~~86~~	~~18~~	~~35~~	~~53~~	~~70~~	~~88~~	~~105~~
~~2.6~~	~~15~~	~~29~~	~~44~~	~~59~~	~~73~~	~~88~~	~~18~~	~~36~~	~~54~~	~~71~~	~~89~~	~~107~~
~~2.8~~	~~15~~	~~30~~	~~45~~	~~59~~	~~74~~	~~89~~	~~18~~	~~36~~	~~55~~	~~73~~	~~91~~	~~109~~
~~3.0~~	~~15~~	~~30~~	~~46~~	~~61~~	~~76~~	~~91~~	~~19~~	~~37~~	~~56~~	~~74~~	~~93~~	~~111~~
	~~pH = 8.0~~						~~pH = 8.5~~					

(mg/L)	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0
≤ 0.4	17	33	50	66	83	99	20	39	59	79	98	118
0.6	17	34	51	68	85	102	20	41	61	81	102	122
0.8	18	35	53	70	88	105	21	42	63	84	105	126
1.0	18	36	54	72	90	108	22	43	65	87	108	130
1.2	19	37	56	74	93	111	22	45	67	89	112	134
1.4	19	38	57	76	95	114	23	46	69	91	114	137
1.6	19	39	58	77	97	116	24	47	71	94	118	141
1.8	20	40	60	79	99	119	24	48	72	96	120	144
2.0	20	41	61	81	102	122	25	49	74	98	123	147
2.2	21	41	62	83	103	124	25	50	75	100	125	150
2.4	21	42	64	85	106	127	26	51	77	102	128	153
2.6	22	43	65	86	108	129	26	52	78	104	130	156
2.8	22	44	66	88	110	132	27	53	80	106	133	159
3.0	22	45	67	89	112	134	27	54	81	108	135	162

pH = 9.0

(mg/L)	0.5	1.0	1.5	2.0	2.5	3.0
≤ 0.4	23	47	70	93	117	140
0.6	24	49	73	97	122	146
0.8	25	50	76	101	126	151
1.0	26	52	78	104	130	156
1.2	27	53	80	107	133	160
1.4	28	55	83	110	138	165
1.6	28	56	85	113	141	169
1.8	29	58	87	115	144	173
2.0	30	59	89	118	148	177
2.2	30	60	91	121	151	181
2.4	31	61	92	123	153	184
2.6	31	63	94	125	157	188
2.8	32	64	96	127	159	191
3.0	33	65	98	130	163	195

~~TABLE L-6~~
~~CT VALUES FOR INACTIVATION OF GIARDIA CYSTS BY FREE CHLORINE AT 20 C~~

~~CHLORINE CONCENTRATION~~	~~LOG INACTIVATIONS~~						~~LOG INACTIVATIONS~~					
	~~pH ≤ 6.0~~						~~pH = 6.5~~					
~~(mg/L)~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~
~~≤ 0.4~~	~~6~~	~~12~~	~~18~~	~~24~~	~~30~~	~~36~~	~~7~~	~~15~~	~~22~~	~~29~~	~~37~~	~~44~~
~~0.6~~	~~6~~	~~13~~	~~19~~	~~25~~	~~32~~	~~38~~	~~8~~	~~15~~	~~23~~	~~30~~	~~38~~	~~45~~
~~0.8~~	~~7~~	~~13~~	~~20~~	~~26~~	~~33~~	~~39~~	~~8~~	~~15~~	~~23~~	~~31~~	~~38~~	~~45~~
~~1.0~~	~~7~~	~~13~~	~~20~~	~~26~~	~~33~~	~~39~~	~~8~~	~~16~~	~~24~~	~~31~~	~~39~~	~~47~~
~~1.2~~	~~7~~	~~13~~	~~20~~	~~27~~	~~33~~	~~40~~	~~8~~	~~16~~	~~24~~	~~32~~	~~40~~	~~48~~
~~1.4~~	~~7~~	~~14~~	~~21~~	~~27~~	~~34~~	~~41~~	~~8~~	~~16~~	~~25~~	~~33~~	~~41~~	~~49~~
~~1.6~~	~~7~~	~~14~~	~~21~~	~~28~~	~~35~~	~~42~~	~~8~~	~~17~~	~~25~~	~~33~~	~~42~~	~~50~~
~~1.8~~	~~7~~	~~14~~	~~22~~	~~29~~	~~36~~	~~43~~	~~9~~	~~17~~	~~26~~	~~34~~	~~43~~	~~51~~
~~2.0~~	~~7~~	~~15~~	~~22~~	~~29~~	~~37~~	~~44~~	~~9~~	~~17~~	~~26~~	~~35~~	~~43~~	~~52~~
~~2.2~~	~~7~~	~~15~~	~~22~~	~~29~~	~~37~~	~~44~~	~~9~~	~~18~~	~~27~~	~~35~~	~~44~~	~~53~~
~~2.4~~	~~8~~	~~15~~	~~23~~	~~30~~	~~38~~	~~45~~	~~9~~	~~18~~	~~27~~	~~36~~	~~45~~	~~54~~
~~2.6~~	~~8~~	~~15~~	~~23~~	~~31~~	~~38~~	~~46~~	~~9~~	~~18~~	~~28~~	~~37~~	~~46~~	~~55~~
~~2.8~~	~~8~~	~~16~~	~~24~~	~~31~~	~~39~~	~~47~~	~~9~~	~~19~~	~~28~~	~~37~~	~~47~~	~~56~~
~~3.0~~	~~8~~	~~16~~	~~24~~	~~31~~	~~39~~	~~47~~	~~10~~	~~19~~	~~29~~	~~38~~	~~48~~	~~57~~
	~~pH = 7.0~~						~~pH = 7.5~~					
~~(mg/L)~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~
~~≤ 0.4~~	~~9~~	~~17~~	~~26~~	~~35~~	~~43~~	~~52~~	~~10~~	~~21~~	~~31~~	~~41~~	~~52~~	~~62~~
~~0.6~~	~~9~~	~~18~~	~~27~~	~~36~~	~~45~~	~~54~~	~~11~~	~~21~~	~~32~~	~~43~~	~~53~~	~~64~~
~~0.8~~	~~9~~	~~18~~	~~28~~	~~37~~	~~46~~	~~55~~	~~11~~	~~22~~	~~33~~	~~44~~	~~55~~	~~66~~
~~1.0~~	~~9~~	~~19~~	~~28~~	~~37~~	~~47~~	~~56~~	~~11~~	~~22~~	~~34~~	~~45~~	~~56~~	~~67~~
~~1.2~~	~~10~~	~~19~~	~~29~~	~~38~~	~~48~~	~~57~~	~~12~~	~~23~~	~~35~~	~~46~~	~~58~~	~~69~~
~~1.4~~	~~10~~	~~19~~	~~29~~	~~39~~	~~48~~	~~58~~	~~12~~	~~23~~	~~35~~	~~47~~	~~58~~	~~70~~
~~1.6~~	~~10~~	~~20~~	~~30~~	~~39~~	~~49~~	~~59~~	~~12~~	~~24~~	~~36~~	~~48~~	~~60~~	~~72~~
~~1.8~~	~~10~~	~~20~~	~~31~~	~~41~~	~~51~~	~~61~~	~~12~~	~~25~~	~~37~~	~~49~~	~~62~~	~~74~~
~~2.0~~	~~10~~	~~21~~	~~31~~	~~41~~	~~52~~	~~62~~	~~13~~	~~25~~	~~38~~	~~50~~	~~63~~	~~75~~
~~2.2~~	~~11~~	~~21~~	~~32~~	~~42~~	~~53~~	~~63~~	~~13~~	~~26~~	~~39~~	~~51~~	~~64~~	~~77~~
~~2.4~~	~~11~~	~~22~~	~~33~~	~~43~~	~~54~~	~~65~~	~~13~~	~~26~~	~~39~~	~~52~~	~~65~~	~~78~~
~~2.6~~	~~11~~	~~22~~	~~33~~	~~44~~	~~55~~	~~66~~	~~13~~	~~27~~	~~40~~	~~53~~	~~67~~	~~80~~
~~2.8~~	~~11~~	~~22~~	~~34~~	~~45~~	~~56~~	~~67~~	~~14~~	~~27~~	~~41~~	~~54~~	~~68~~	~~81~~
~~3.0~~	~~11~~	~~23~~	~~34~~	~~45~~	~~57~~	~~68~~	~~14~~	~~28~~	~~42~~	~~55~~	~~69~~	~~83~~

	pH = 8.0						pH = 8.5					
(mg/L)	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0
≤ 0.4	12	25	37	49	62	74	15	30	45	59	74	89
0.6	13	26	39	51	64	77	15	31	46	61	77	92
0.8	13	26	40	53	66	79	16	32	48	63	79	95
1.0	14	27	41	54	68	81	16	33	49	65	82	98
1.2	14	28	42	55	69	83	17	33	50	67	83	100
1.4	14	28	43	57	71	85	17	34	52	69	86	103
1.6	15	29	44	58	73	87	18	35	53	70	88	105
1.8	15	30	45	59	74	89	18	36	54	72	90	108
2.0	15	30	46	61	76	91	18	37	55	73	92	110
2.2	16	31	47	62	78	93	19	38	57	75	94	113
2.4	16	32	48	63	79	95	19	38	58	77	96	115
2.6	16	32	49	65	81	97	20	39	59	78	98	117
2.8	17	33	50	66	83	99	20	40	60	79	99	119
3.0	17	34	51	67	84	101	20	41	61	81	102	122

	pH = 9.0					
(mg/L)	0.5	1.0	1.5	2.0	2.5	3.0
≤ 0.4	18	35	53	70	88	105
0.6	18	36	55	73	91	109
0.8	19	38	57	75	94	113
1.0	20	39	59	78	98	117
1.2	20	40	60	80	100	120
1.4	21	41	62	82	103	123
1.6	21	42	63	84	105	126
1.8	22	43	65	86	108	129
2.0	22	44	66	88	110	132
2.2	23	45	68	90	113	135
2.4	23	46	69	92	115	138
2.6	24	47	71	94	118	141
2.8	24	48	72	95	119	143
3.0	24	49	73	97	122	146

~~TABLE L-7~~
~~CT VALUES FOR INACTIVATION OF GIARDIA CYSTS BY FREE CHLORINE~~

~~CHLORINE CONCENTRATION~~	~~LOG INACTIVATIONS~~						~~LOG INACTIVATIONS~~					
	~~pH ≤ 6.0~~						~~pH = 6.5~~					
~~(mg/L)~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~
~~≤ 0.4~~	~~4~~	~~8~~	~~12~~	~~16~~	~~20~~	~~24~~	~~5~~	~~10~~	~~15~~	~~19~~	~~24~~	~~29~~
~~0.6~~	~~4~~	~~8~~	~~13~~	~~17~~	~~21~~	~~25~~	~~5~~	~~10~~	~~15~~	~~20~~	~~25~~	~~30~~
~~0.8~~	~~4~~	~~9~~	~~13~~	~~17~~	~~22~~	~~26~~	~~5~~	~~10~~	~~16~~	~~21~~	~~26~~	~~31~~
~~1.0~~	~~4~~	~~9~~	~~13~~	~~17~~	~~22~~	~~26~~	~~5~~	~~10~~	~~16~~	~~21~~	~~26~~	~~31~~
~~1.2~~	~~5~~	~~9~~	~~14~~	~~18~~	~~23~~	~~27~~	~~5~~	~~11~~	~~16~~	~~21~~	~~27~~	~~32~~
~~1.4~~	~~5~~	~~9~~	~~14~~	~~18~~	~~23~~	~~27~~	~~6~~	~~11~~	~~17~~	~~22~~	~~28~~	~~33~~
~~1.6~~	~~5~~	~~9~~	~~14~~	~~19~~	~~23~~	~~28~~	~~6~~	~~11~~	~~17~~	~~22~~	~~28~~	~~33~~
~~1.8~~	~~5~~	~~10~~	~~15~~	~~19~~	~~24~~	~~29~~	~~6~~	~~11~~	~~17~~	~~23~~	~~28~~	~~34~~
~~2.0~~	~~5~~	~~10~~	~~15~~	~~19~~	~~24~~	~~29~~	~~6~~	~~12~~	~~18~~	~~23~~	~~29~~	~~35~~
~~2.2~~	~~5~~	~~10~~	~~15~~	~~20~~	~~25~~	~~30~~	~~6~~	~~12~~	~~18~~	~~23~~	~~29~~	~~35~~
~~2.4~~	~~5~~	~~10~~	~~15~~	~~20~~	~~25~~	~~30~~	~~6~~	~~12~~	~~18~~	~~24~~	~~30~~	~~36~~
~~2.6~~	~~5~~	~~10~~	~~16~~	~~21~~	~~26~~	~~31~~	~~6~~	~~12~~	~~19~~	~~25~~	~~31~~	~~37~~
~~2.8~~	~~5~~	~~10~~	~~16~~	~~21~~	~~26~~	~~31~~	~~6~~	~~12~~	~~19~~	~~25~~	~~31~~	~~37~~
~~3.0~~	~~5~~	~~11~~	~~16~~	~~21~~	~~27~~	~~32~~	~~6~~	~~13~~	~~19~~	~~25~~	~~32~~	~~38~~
	~~pH = 7.0~~						~~pH = 7.5~~					
~~(mg/L)~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~	~~0.5~~	~~1.0~~	~~1.5~~	~~2.0~~	~~2.5~~	~~3.0~~
~~≤ 0.4~~	~~6~~	~~12~~	~~18~~	~~23~~	~~29~~	~~35~~	~~7~~	~~14~~	~~21~~	~~28~~	~~35~~	~~42~~
~~0.6~~	~~6~~	~~12~~	~~18~~	~~24~~	~~30~~	~~36~~	~~7~~	~~14~~	~~22~~	~~29~~	~~36~~	~~43~~
~~0.8~~	~~6~~	~~12~~	~~19~~	~~25~~	~~31~~	~~37~~	~~7~~	~~15~~	~~22~~	~~29~~	~~37~~	~~44~~
~~1.0~~	~~6~~	~~12~~	~~19~~	~~25~~	~~31~~	~~37~~	~~8~~	~~15~~	~~23~~	~~30~~	~~38~~	~~45~~
~~1.2~~	~~6~~	~~13~~	~~19~~	~~25~~	~~32~~	~~38~~	~~8~~	~~15~~	~~23~~	~~31~~	~~38~~	~~46~~
~~1.4~~	~~7~~	~~13~~	~~20~~	~~26~~	~~33~~	~~39~~	~~8~~	~~16~~	~~24~~	~~31~~	~~39~~	~~47~~
~~1.6~~	~~7~~	~~13~~	~~20~~	~~27~~	~~33~~	~~40~~	~~8~~	~~16~~	~~24~~	~~32~~	~~40~~	~~48~~
~~1.8~~	~~7~~	~~14~~	~~21~~	~~27~~	~~34~~	~~41~~	~~8~~	~~16~~	~~25~~	~~33~~	~~41~~	~~49~~
~~2.0~~	~~7~~	~~14~~	~~21~~	~~27~~	~~34~~	~~41~~	~~8~~	~~17~~	~~25~~	~~33~~	~~42~~	~~50~~
~~2.2~~	~~7~~	~~14~~	~~21~~	~~28~~	~~35~~	~~42~~	~~9~~	~~17~~	~~26~~	~~34~~	~~43~~	~~51~~
~~2.4~~	~~7~~	~~14~~	~~22~~	~~29~~	~~36~~	~~43~~	~~9~~	~~17~~	~~26~~	~~35~~	~~43~~	~~52~~
~~2.6~~	~~7~~	~~15~~	~~22~~	~~29~~	~~37~~	~~44~~	~~9~~	~~18~~	~~27~~	~~35~~	~~44~~	~~53~~
~~2.8~~	~~8~~	~~15~~	~~23~~	~~30~~	~~38~~	~~45~~	~~9~~	~~18~~	~~27~~	~~36~~	~~45~~	~~54~~
~~3.0~~	~~8~~	~~15~~	~~23~~	~~31~~	~~38~~	~~46~~	~~9~~	~~18~~	~~28~~	~~37~~	~~46~~	~~55~~

	pH = 8.0						pH = 8.5					
(mg/L)	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0
≤ 0.4	8	17	25	33	42	50	10	20	30	39	49	59
0.6	9	17	26	34	43	51	10	20	31	41	51	61
0.8	9	18	27	35	44	53	11	21	32	42	53	63
1.0	9	18	27	36	45	54	11	22	33	43	54	65
1.2	9	18	28	37	46	55	11	22	34	45	56	67
1.4	10	19	29	38	48	57	12	23	35	46	58	69
1.6	10	19	29	39	48	58	12	23	35	47	58	70
1.8	10	20	30	40	50	60	12	24	36	48	60	72
2.0	10	20	31	41	51	61	12	25	37	49	62	74
2.2	10	21	31	41	52	62	13	25	38	50	63	75
2.4	11	21	32	42	53	63	13	26	39	51	64	77
2.6	11	22	33	43	54	65	13	26	39	52	65	78
2.8	11	22	33	44	55	66	13	27	40	53	67	80
3.0	11	22	34	45	56	67	14	27	41	54	68	81

	pH = 9.0					
(mg/L)	0.5	1.0	1.5	2.0	2.5	3.0
≤ 0.4	12	23	35	47	58	70
0.6	12	24	37	49	61	73
0.8	13	25	38	50	63	75
1.0	13	26	39	52	65	78
1.2	13	26	40	53	67	80
1.4	14	27	41	55	68	82
1.6	14	28	42	56	70	84
1.8	14	29	43	57	72	86
2.0	15	29	44	59	73	88
2.2	15	30	45	60	75	90
2.4	15	31	46	61	77	92
2.6	16	31	47	63	78	94
2.8	16	32	48	64	80	96
3.0	16	32	49	65	81	97

TABLE L-8
BAFFLING CLASSIFICATIONS

Baffling Condition	T_{10}/T	Baffling Description
Unbaffled (mixed flow)	0.1	None, agitated basin, very low length to width ratio, high inlet and outlet flow velocities
Poor	0.3	Single or multiple unbaffled inlets and outlets, no intrabasin baffles
Average	0.5	Baffled inlet or outlet with some intrabasin baffles
Superior	0.7	Perforated inlet baffle, serpentine or perforated intrabasin baffles, outlet weir or perforated launders
Excellent	0.9	Serpentine baffling throughout basin, very high length to width ratio
Perfect (plug flow)	1.0[(1)]	Very high length to width ratio (pipeline flow), perforated inlet, outlet, and intrabasin baffles

[(1)]At perfect plug flow conditions, T_{10} is equal to T.

Table L-9.
CT Values for Inactivation of Viruses by Free Chlorine, pH 6.0-9.0

Inactivation (log)	Temperature (°C)												
	0.5	1	2	3	4	5	6	7	8	9	10	11	12
2	6.0	5.8	5.3	4.9	4.4	4.0	3.8	3.6	3.4	3.2	3.0	2.8	2.6
3	9.0	8.7	8.0	7.3	6.7	6.0	5.6	5.2	4.8	4.4	4.0	3.8	3.6
4	12.0	11.6	10.7	9.8	8.9	8.0	7.6	7.2	6.8	6.4	6.0	5.6	5.2
Inactivation (log)	Temperature (°C)												
	13	14	15	16	17	18	19	20	21	22	23	24	25
2	2.4	2.2	2.0	1.8	1.6	1.4	1.2	1.0	1.0	1.0	1.0	1.0	1.0
3	3.4	3.2	3.0	2.8	2.6	2.4	2.2	2.0	1.8	1.6	1.4	1.2	1.0
4	4.8	4.4	4.0	3.8	3.6	3.4	3.2	3.0	2.8	2.6	2.4	2.2	2.0

Source: AWWA, 1991. Modified by linear interpolation between 5°C increments.

Table L-10.
CT Values for Inactivation of Giardia Cysts by Chlorine Dioxide, pH 6.0-9.0

Inactivation (log)	Temperature (°C)												
	1	2	3	4	5	6	7	8	9	10	11	12	13
0.5	10.0	8.6	7.2	5.7	4.3	4.2	4.2	4.1	4.1	4.0	3.8	3.7	3.5
1	21.0	17.9	14.9	11.8	8.7	8.5	8.3	8.1	7.9	7.7	7.4	7.1	6.9
1.5	32.0	27.3	22.5	17.8	13.0	12.8	12.6	12.4	12.2	12.0	11.6	11.2	10.8
2	42.0	35.8	29.5	23.3	17.0	16.6	16.2	15.8	15.4	15.0	14.6	14.2	13.8
2.5	52.0	44.5	37.0	29.5	22.0	21.4	20.8	20.2	19.6	19.0	18.4	17.8	17.2
3	63.0	53.8	44.5	35.3	26.0	25.4	24.8	24.2	23.6	23.0	22.2	21.4	20.6

Inactivation (log)	Temperature (°C)												
	14	15	16	17	18	19	20	21	22	23	24	25	
0.5	3.4	3.2	3.1	2.9	2.8	2.6	2.5	2.4	2.3	2.2	2.1	2.0	
1	6.6	6.3	6.0	5.8	5.5	5.3	5.0	4.7	4.5	4.2	4.0	3.7	
1.5	10.4	10.0	9.5	9.0	8.5	8.0	7.5	7.1	6.7	6.3	5.9	5.5	
2	13.4	13.0	12.4	11.8	11.2	10.6	10.0	9.5	8.9	8.4	7.8	7.3	
2.5	16.6	16.0	15.4	14.8	14.2	13.6	13.0	12.2	11.4	10.6	9.8	9.0	
3	19.8	19.0	18.2	17.4	16.6	15.8	15.0	14.2	13.4	12.6	11.8	11.0	

Source: AWWA, 1991. Modified by linear interpolation between 5°C increments.

Table L-11.
CT Values for Inactivation of Viruses by Chlorine Dioxide, pH 6.0-9.0

Inactivation (log)	Temperature (°C)												
	1	2	3	4	5	6	7	8	9	10	11	12	13
2	8.4	7.7	7.0	6.3	5.6	5.3	5.0	4.8	4.5	4.2	3.9	3.6	3.4
3	25.6	23.5	21.4	19.2	17.1	16.2	15.4	14.5	13.7	12.8	12.0	11.1	10.3
4	50.1	45.9	41.8	37.6	33.4	31.7	30.1	28.4	26.8	25.1	23.4	21.7	20.1
Inactivation (log)	Temperature (°C)												
	14	15	16	17	18	19	20	21	22	23	24	25	
2	3.1	2.8	2.7	2.5	2.4	2.2	2.1	2.0	1.8	1.7	1.5	1.4	
3	9.4	8.6	8.2	7.7	7.3	6.8	6.4	6.0	5.6	5.1	4.7	4.3	
4	18.4	16.7	15.9	15.0	14.2	13.3	12.5	11.7	10.9	10.0	9.2	8.4	

Source: AWWA, 1991. Modified by linear interpolation between 5°C increments.

Table L-12.
CT Values for Inactivation of Giardia Cysts by Chloramine, pH 6.0-9.0

Inactivation (log)	Temperature (°C)												
	1	2	3	4	5	6	7	8	9	10	11	12	13
0.5	635	568	500	433	365	354	343	332	321	310	298	286	274
1	1,270	1,136	1,003	869	735	711	687	663	639	615	592	569	546
1.5	1,900	1,700	1,500	1,300	1,100	1,066	1,032	998	964	930	894	858	822
2	2,535	2,269	2,003	1,736	1,470	1,422	1,374	1,326	1,278	1,230	1,184	1,138	1,092
2.5	3,170	2,835	2,500	2,165	1,830	1,772	1,714	1,656	1,598	1,540	1,482	1,424	1,366
3	3,800	3,400	3,000	2,600	2,200	2,130	2,060	1,990	1,920	1,850	1,780	1,710	1,640
Inactivation (log)	Temperature (°C)												
	14	15	16	17	18	19	20	21	22	23	24	25	
0.5	262	250	237	224	211	198	185	173	161	149	137	125	
1	523	500	474	448	422	396	370	346	322	298	274	250	

1.5	786	750	710	670	630	590	550	515	480	445	410	375	
2	1,046	1,000	947	894	841	788	735	688	641	594	547	500	
2.5	1,308	1,250	1,183	1,116	1,049	982	915	857	799	741	683	625	
3	1,570	1,500	1,420	1,340	1,260	1,180	1,100	1,030	960	890	820	750	

Source: AWWA, 1991. Modified by linear interpolation between 5°C increments.

Table L-13.
CT Values for Inactivation of Viruses by Chloramine

Inactivation (log)	Temperature (°C)												
	1	2	3	4	5	6	7	8	9	10	11	12	13
2	1,243	1,147	1,050	954	857	814	771	729	686	643	600	557	514
3	2,063	1,903	1,743	1,583	1,423	1,352	1,281	1,209	1,138	1,067	996	925	854
4	2,883	2,659	2,436	2,212	1,988	1,889	1,789	1,690	1,590	1,491	1,392	1,292	1,193
Inactivation (log)	Temperature (°C)												
	14	15	16	17	18	19	20	21	22	23	24	25	
2	471	428	407	385	364	342	321	300	278	257	235	214	
3	783	712	676	641	605	570	534	498	463	427	392	356	
4	1,093	994	944	895	845	796	746	696	646	597	547	497	

Source: AWWA, 1991. Modified by linear interpolation between 5°C increments.

Table L-14.
CT Values for Inactivation of Giardia Cysts by Ozone

Inactivation (log)	Temperature (°C)												
	1	2	3	4	5	6	7	8	9	10	11	12	13
0.5	0.48	0.44	0.40	0.36	0.32	0.30	0.28	0.27	0.25	0.23	0.22	0.20	0.19
1.0	0.97	0.89	0.80	0.72	0.63	0.60	0.57	0.54	0.51	0.48	0.45	0.42	0.38
1.5	1.50	1.36	1.23	1.09	0.95	0.90	0.86	0.81	0.77	0.72	0.67	0.62	0.58
2.0	1.90	1.75	1.60	1.45	1.30	1.23	1.16	1.09	1.02	0.95	0.89	0.82	0.76
2.5	2.40	2.20	2.00	1.80	1.60	1.52	1.44	1.36	1.28	1.20	1.12	1.04	0.95
3.0	2.90	2.65	2.40	2.15	1.90	1.81	1.71	1.62	1.52	1.43	1.33	1.24	1.14
Inactivation (log)	Temperature (°C)												
	14	15	16	17	18	19	20	21	22	23	24	25	
0.5	0.17	0.16	0.15	0.14	0.14	0.13	0.12	0.11	0.10	0.10	0.09	0.08	
1.0	0.35	0.32	0.30	0.29	0.27	0.26	0.24	0.22	0.21	0.19	0.18	0.16	
1.5	0.53	0.48	0.46	0.43	0.41	0.38	0.36	0.34	0.31	0.29	0.26	0.24	
2.0	0.69	0.63	0.60	0.57	0.54	0.51	0.48	0.45	0.42	0.38	0.35	0.32	
2.5	0.87	0.79	0.75	0.71	0.68	0.64	0.60	0.56	0.52	0.48	0.44	0.40	
3.0	1.05	0.95	0.90	0.86	0.81	0.77	0.72	0.67	0.62	0.58	0.53	0.48	

Source: AWWA, 1991. Modified by linear interpolation between 5°C increments.

Table L-15.
CT Values for Inactivation of Viruses by Ozone

Inactivation (log)	Temperature (°C)												
	1	2	3	4	5	6	7	8	9	10	11	12	13
2	0.90	0.83	0.75	0.68	0.60	0.58	0.56	0.54	0.52	0.50	0.46	0.42	0.38
3	1.40	1.28	1.15	1.03	0.90	0.88	0.86	0.84	0.82	0.80	0.74	0.68	0.62
4	1.80	1.65	1.50	1.35	1.20	1.16	1.12	1.08	1.04	1.00	0.92	0.84	0.76
Inactivation (log)	Temperature (°C)												
	14	15	16	17	18	19	20	21	22	23	24	25	
2	0.34	0.30	0.29	0.28	0.27	0.26	0.25	0.23	0.21	0.19	0.17	0.15	
3	0.56	0.50	0.48	0.46	0.44	0.42	0.40	0.37	0.34	0.31	0.28	0.25	
4	0.68	0.60	0.58	0.56	0.54	0.52	0.50	0.46	0.42	0.38	0.34	0.30	

Source: AWWA, 1991. Modified by linear interpolation between 5°C increments

APPENDIX M. LEAD AND COPPER [REPEALED]

APPENDIX M. LEAD AND COPPER

Table M1
Monitoring Frequency for Initial Sampling Requirements

PWS Size	Monitoring Type	Location	No. Samples	Frequency
Large PWSs				
>100,000	Lead and Copper	Taps	100	6 months
	Water Quality Parameters	Distribution System	25	Twice per 6 months
	Source Water	Entry Points		
	— Lead and Copper		1	6 months*
	— Water Quality Parameters		1	Twice per 6 months
50,001-100,000	Lead and Copper	Taps	60	6 months
	Water Quality Parameters	Distribution System	10	Twice per 6 months
	Source Water	Entry Points		
	— Lead and Copper		1	6 months*
	— Water Quality Parameters		1	Twice per 6 months
Medium PWSs				
10,001-50,000	Lead and Copper	Taps	60	6 months
	If ALs Exceeded			
	Water Quality Parameters	Distribution System	10	Twice per 6 months
	Source Water	Entry Points		
	— Lead and Copper		1	6 months

	— Water Quality Parameters		1	Twice per 6 months
3,301-10,000	Lead and Copper	Taps	40	6 months
	If ALs Exceeded			
	Water Quality Parameters	Distribution System	3	Twice per 6 months
	Source Water	Entry Points		
	— Lead and Copper		1	6 months
	— Water Quality Parameters		1	Twice per 6 months
Small PWSs				
501-3,300	Lead and Copper*	Taps	20	6 months
	If ALs Exceeded			
	Water Quality Parameters	Distribution System	2	Twice per 6 months
	Source Water	Entry Points		
	— Lead and Copper		1	6 months
	— Water Quality Parameters		1	Twice per 6 months
101-500	Lead and Copper	Taps	10	6 months
	If ALs Exceeded			
	Water Quality Parameters	Distribution System	1	Twice per 6 months
	Source Water	Entry Points		
	— Lead and Copper		1	6 months
	— Water Quality Parameters		1	Twice per 6 months
≤100	Lead and Copper*	Taps	5	6 months
	If ALs Exceeded			
	Water Quality Parameters	Distribution System	1	Twice per 6 months
	Source Water	Entry Points		
	— Lead and Copper		1	6 months
	— Water Quality Parameters		1	Twice per 6 months
Nontransient Noncommunity Water Systems	Lead and Copper Water Quality Parameters	Taps Distribution System	No more than one per building per monitoring period	

*If system wants to attempt to demonstrate optimization based on difference between source water levels and 90% tap level. Otherwise, one sample per entry point required if an AL is exceeded.

LEAD AND COPPER
Table M2

Monitoring Frequency for Follow-up and Routine Sampling Requirements

PWS Size	Monitoring Type	Location	No. Samples	Frequency
Large PWSs				
>100,000	Lead and Copper	Taps	100	6 months
	Water Quality Parameters	Distribution System	25	Twice per 6 months
	Source Water	Entry Points		
	— Lead and Copper		1	6 months*
	— Water Quality Parameters		1	Biweekly
50,001-100,000	Lead and Copper	Taps	60	6 months
	Water Quality Parameters	Distribution System	10	Twice per 6 months
	Source Water	Entry Points		
	— Lead and Copper		1	6 months*
	— Water Quality Parameters		1	Biweekly
Medium PWSs				
10,001-50,000	Lead and Copper	Taps	60	6 months
	Water Quality Parameters	Distribution System	10	Twice per 6 months
	Source Water	Entry Points		
	— Lead and Copper		1	6 months*
	— Water Quality Parameters		1	Biweekly
3,301-10,000	Lead and Copper	Taps	40	6 months
	Water Quality Parameters	Distribution System	3	Twice per 6 months
	Source Water	Entry Points		
	— Lead and Copper		1	6 months*
	— Water Quality Parameters		1	Biweekly
Small PWSs				
501-3,300	Lead and Copper	Taps	20	6 months
	Water Quality Parameters	Distribution System	2	Twice per 6 months
	Source Water	Entry Points		
	— Lead and Copper		1	6 months*
	— Water Quality Parameters		1	Biweekly
101-500	Lead and Copper*	Taps	10	6 months

	~~Water Quality Parameters~~	~~Distribution System~~	~~1~~	~~Twice per 6 months~~
	~~Source Water~~	~~Entry Points~~		
	~~— Lead and Copper~~		~~1~~	~~6 months~~
	~~— Water Quality Parameters~~		~~1~~	~~Biweekly~~
~~£100~~	~~Lead and Copper*~~	~~Taps~~	~~5~~	~~6 months~~
	~~Water Quality Parameters~~	~~Distribution System~~	~~1~~	~~Twice per 6 months~~
	~~Source Water~~	~~Entry Points~~		
	~~— Lead and Copper~~		~~1~~	~~6 months*~~
	~~— Water Quality Parameters~~		~~1~~	~~Biweekly~~
~~Nontransient Noncommunity Water Systems~~	~~Lead and Copper Water Quality Parameters~~	~~Taps Distribution System~~	~~No more than one per building per monitoring period~~	

~~*If source water treatment installed; otherwise, see reduced monitoring requirements.~~

~~LEAD AND COPPER~~
~~Table M3~~

~~Monitoring Frequency for Reduced Sampling Requirements~~

~~PWS Size~~	~~Monitoring Type~~	~~Reduced Monitoring~~	~~Ultimate Reduced Monitoring~~
~~Large PWSs~~			
~~>100,000~~	~~Lead and Copper~~	~~50 per year~~	~~50 per 3 years~~
	~~Water Quality Parameters~~	~~10 twice per 6 months~~	~~10 twice per year~~
	~~Points of Entry Lead and Copper~~		
	~~— Groundwater Supply~~	~~1 per 3 years~~	~~1 per 9 years~~
	~~— Surface Water Supply~~	~~Annually~~	~~1 per 9 years~~
	~~Water Quality Parameters~~	~~Biweekly~~	~~Biweekly~~
~~50,001-100,000~~	~~Lead and Copper~~	~~30 per year~~	~~30 per 3 years~~
	~~Water Quality Parameters~~	~~7 twice per 6 months~~	~~7 twice per year~~
	~~Points of Entry Lead and Copper~~		
	~~— Groundwater Supply~~	~~1 per 3 years~~	~~1 per 9 years~~
	~~— Surface Water Supply~~	~~Annually~~	~~1 per 9 years~~
	~~Water Quality Parameters~~	~~Biweekly~~	~~Biweekly~~
~~Medium PWSs~~			
~~10,001-50,000~~	~~Lead and Copper~~	~~30 per year~~	~~30 per 3 years~~
	~~Water Quality Parameters~~	~~7 twice per 6 months~~	~~7 twice per year~~
	~~Points of Entry Lead and Copper~~		
	~~— Groundwater Supply~~	~~1 per 3 years~~	~~1 per 9 years~~

	— Surface Water Supply	Annually	1 per 9 years
	Water Quality Parameters	Biweekly	Biweekly
3,301-10,000	Lead and Copper	20 per year	20 per 3 years
	Water Quality Parameters	3 twice per 6 months	3 twice per year
	Points of Entry Lead and Copper		
	— Groundwater Supply	1 per 3 years	1 per 9 years
	— Surface Water Supply	Annually	1 per 9 years
	Water Quality Parameters	Biweekly	Biweekly
Small PWSs			
501-3,300	Lead and Copper	10 per year	10 per 3 years
	Water Quality Parameters	2 twice per 6 months	2 twice per year
	Points of Entry Lead and Copper		
	— Groundwater Supply	1 per 3 years	1 per 9 years
	— Surface Water Supply	Annually	1 per 9 years
	Water Quality Parameters	Biweekly	Biweekly
101-500	Lead and Copper	5 per year	5 per 3 years
	Water Quality Parameters	1 twice per 6 months	1 twice per year
	Points of Entry Lead and Copper		
	— Groundwater Supply	1 per 3 years	1 per 9 years
	— Surface Water Supply	Annually	1 per 9 years
	Water Quality Parameters	Biweekly	Biweekly
£100	Lead and Copper	5 per year	5 per 3 years
	Water Quality Parameters	1 twice per 6 months	1 twice per year
	Points of Entry Lead and Copper		
	— Groundwater Supply	1 per 3 years	1 per 9 years
	— Surface Water Supply	Annually	1 per 9 years
	Water Quality Parameters	Biweekly	Biweekly

Table M4

SUMMARY OF MONITORING REQUIREMENTS FOR WATER QUALITY PARAMETERS[1]

Monitoring Period	Parameters[2]	Location	Frequency
Initial Monitoring	pH, alkalinity, orthophosphate or silica,[3] calcium, conductivity, temperature	Taps and at entry point(s) to distribution system	Every 6 months
After Installation of Corrosion Control	pH, alkalinity, orthophosphate or silica,[3] calcium[4]	Taps	Every 6 months
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as part of corrosion control), inhibitor dosage rate and inhibitor residual[5]	Entry point(s) to distribution system[6]	No less frequently than every two weeks.

After State Specifies Parameter Values For Optimal Corrosion Control	pH, alkalinity, orthophosphate or silica,[3] calcium[4]	Taps	Every 6 months
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as part of corrosion control), inhibitor dosage rate and inhibitor residual[5]	Entry point(s) to distribution system	No less frequently than every two weeks.
Reduced Monitoring	pH, alkalinity, orthophosphate or silica,[3] calcium[4]	Taps	Every six months, annually[7] or every 3 years[8] at a reduced number of sites
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as part of corrosion control), inhibitor dosage rate and inhibitor residual[5]	Entry point(s) to distribution system	No less frequently than every two weeks.

[1]Table is for illustrative purposes; consult the text of this section for precise regulatory requirements.

[2]Small and medium-size systems have to monitor for water quality parameters only during monitoring periods in which the system exceeds the lead or copper action level.

[3]Orthophosphate must be measured only when an inhibitor containing a phosphate compound is used. Silica must be measured only when an inhibitor containing silicate compound is used.

[4]Calcium must be measured only when calcium carbonate stabilization is used as part of corrosion control.

[5]Inhibitor dosage rates and inhibitor residual concentrations (orthophosphate or silica) must be measured only when an inhibitor is used.

[6]Groundwater systems may limit monitoring to representative locations throughout the system.

[7]Waterworks may reduce frequency of monitoring for water quality parameters at the tap from every six months to annually if they maintain the minimum values or range of values for water quality parameters reflecting optimal corrosion control treatment during three consecutive years of monitoring.

[8]Waterworks may further reduce the frequency of monitoring for water quality parameters at the tap from annually to once every three years if they have maintained the minimum values or range of values for water quality parameters reflecting optimal corrosion control treatment during three consecutive years of annual monitoring. Waterworks may accelerate the triennial monitoring for water quality parameters at the tap if they have maintained 90th percentile lead levels less than or equal to 0.005 mg/L, 90th percentile copper levels less than or equal to 0.65 mg/L, and the range of water quality parameters designated by the Commissioner under 12 VAC 5-590-420-C-1-f as representing optimal corrosion control during two consecutive six-month periods.

APPENDIX N. INORGANIC COMPOUNDS AND ORGANIC CHEMICALS. (Repealed.)

APPENDIX N. INORGANIC COMPOUNDS AND ORGANIC CHEMICALS.

TABLE I
INORGANIC COMPOUNDS

Contaminant	BAT(s)
Arsenic[d]	1, 2, 5, 6, 7, 9, 12[e]
Antimony	2, 7
Asbestos	2, 3, 8
Barium	5, 6, 7, 9
Beryllium	1, 2, 5, 6, 7
Cadmium	2, 5, 6, 7
Chromium	2, 5, 6[b], 7
Cyanide	5, 7, 13
Fluoride	1, 7, 9
Mercury	2[a], 4, 6[a], 7[a]
Nickel	5, 6, 7
Nitrate	5, 7, 9
Nitrite	5, 7
Selenium	1, 2[c], 6, 7, 9
Thallium	1,5

Key to Best Available Technologies/Treatment Techniques

1. Activated Alumina

2. Coagulation/Filtration (except for waterworks serving less than 500 service connections)

3. Direct or Diatomite Filtration

4. Granular Activated Carbon

5. Ion Exchange

6. Lime Softening (except for waterworks serving less than 500 service connections)

7. Reverse Osmosis

8. Corrosion Control

9. Electrodialysis/Electrodialysis Reversing

10. Chlorine

11. Ultraviolet

12. Oxidation/Filtration

13. Alkaline Chlorination pH ≥ 8.5

NOTES ON BAT DESIGNATIONS

a. BAT only if influent mercury concentrations are less than or equal to 10 µg/l

b. BAT for Chromium III only

c. BAT for Selenium IV only

d. BATs for Arsenic V. Preoxidation may be required to convert Arsenic III to Arsenic V.

e. To obtain high removals, iron to arsenic ratio must be at least 20:1.

TABLE II
ORGANIC CHEMICALS

Contaminant	BAT(s)
Acrylamide	3
Alachlor	1
Aldicarb	1
Aldicarb sulfoxide	1
Aldicarb sulfone	1
Atrazine	1
Benzene	1, 2
Carbofuran	1
Carbon tetrachloride	1, 2
Chlordane	1
2,4-D	1
Dibromochloropropane (DBCP)	1, 2
o-Dichlorobenzene	1, 2
p-Dichlorobenzene	1, 2
1,2-Dichloroethane	1, 2
1,1-Dichloroethylene	1, 2
cis-1,2-Dichloroethylene	1, 2
trans-1,2-Dichloroethylene	1, 2
1,2-Dichloropropane	1, 2
Epichlorohydrin	3
Ethylene dibromide (EDB)	1, 2
Ethylbenzene	1, 2
Heptachlor	1
Heptachlor epoxide	1
Lindane	1
Methoxychlor	1
Monochlorobenzene	1, 2
PCBs	1
Pentachlorophenol	1
Styrene	1, 2
2,4,5-TP (Silvex)	1
Tetrachloroethylene	1, 2
1,1,1-Trichloroethane	1, 2
Trichloroethylene	1, 2
Toluene	1, 2
Toxaphene	1
Vinyl chloride	2
Xylenes (total)	1, 2
Benzo(a)pyrene	1
Dalapon	1
Dichloromethane	2
Di(2-ethylhexyl)adipate	1, 2
Di(2-ethylhexyl)phthalate	1
Dinoseb	1
Diquat	1
Endothall	1
Endrin	1
Glyphosate	4
Hexachlorobenzene	1
Hexachloropentadiene	1, 2
Oxamyl (Vydate)	1

Picloram	1
Simazine	1
1,2,4 Trichlorobenzene	1, 2
1,1,2 Trichloroethane	1, 2
2,3,7,8 TCDD (Dioxin)	1

Key to Best Available Technologies/Treatment Techniques

1. Granular Activated Carbon

2. Packed Tower Aeration

3. Polymer Addition Practices

4. Oxidation (chlorination, with the exception of water having cyanide (as free cyanide) exceeding 0.2 mg/l, or ozonation)

Statutory Authority

APPENDIX O.
REGULATED CONTAMINANTS FOR CONSUMER CONFIDENCE REPORTS AND PUBLIC NOTIFICATION
(Repealed.)

Key

AL = Action Level
PMCL = Primary Maximum Contaminant Level
MCLG = Maximum Contaminant Level Goal
MFL = million fibers per liter
mrem/year = millirems per year (a measure of radiation absorbed by the body)
MRDL = Maximum Residual Disinfectant Level
MRDLG = Maximum Residual Disinfectant Level Goal
NTU = Nephelometric Turbidity Units
pCi/l = picocuries per liter (a measure of radioactivity)
ppb = parts per billion, or micrograms per liter (µg/L)
ppm = parts per million, or milligrams per liter (mg/L)
ppq = parts per quadrillion, or picograms per liter
ppt = parts per trillion, or nanograms per liter
TT = Treatment Technique

Contaminant (units)	Traditional PMCL in mg/l	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
Microbiological Contaminants						
(1) Total coliform bacteria	TT			n/a	Naturally present in the environment	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the waterworks.
(2) E. coli	PMCL: In compliance unless (i) the waterworks has an E. coli-positive repeat sample following a total coliform-positive routine sample; (ii) the waterworks has a total coliform-positive repeat sample following an E. coli-positive routine sample; (iii) the waterworks owner fails to take all required repeat samples following an E. coli-positive routine sample; or (iv) the waterworks owner fails to test for E. coli when any repeat sample tests positive for total coliform.			0	Human and animal fecal waste	E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely-compromised immune systems.
(3) E. coli	TT			n/a	Human and animal fecal waste	E. coli are bacteria whose presence indicates that the water may be

						contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune systems.
(4) Source water fecal indicator (E. coli)	TT	–	TT	0 for E. coli	Human and animal fecal waste	Fecal indicators are microbeswhose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune system.
(5)Groundwater rule TT violations other than (4) above[1]	TT	–	–	TT	–	Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps, and associated headaches.
(6) Turbidity	TT	-	TT	n/a	Soil runoff	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.
(7) Giardia lamblia, viruses, Heterotrophic plate count, Legionella, Cryptosporidium[1]	TT[3]	-	n/a	0	n/a	Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause

						symptoms such as nausea, cramps, diarrhea, and associated headaches.
Radioactive Contaminants						
(8) Beta/photon emitters (mrem/yr)	4 mrem/yr		4	0	Decay of natural and man-made deposits	Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.
(9) Alpha emitters (pCi/L)	15 pCi/L		15	0	Erosion of natural deposits	Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
(10) Combined radium (pCi/L)	5 pCi/L		5	0	Erosion of natural deposits	Some people who drink water containing radium-226 or radium-228 in excess of the MCL over many years may have an increased risk of getting cancer.
(11) Uranium (ppb)	30 µg/L		30	0	Erosion of natural deposits	Some people who drink water containing uranium in excess of the MCL over many years may have an increased risk of getting cancer and kidney toxicity.
Inorganic Contaminants						
(12) Antimony (ppb)	0.006	1000	6	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder	Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.
(13) Arsenic (ppb)	0.010	1000	10.	0[2]	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes	Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.

~~(14) Asbestos (MFL)~~	~~7 MFL~~		~~7~~	~~7~~	~~Decay of asbestos cement water mains; Erosion of natural deposits~~	~~Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.~~
~~(15) Barium (ppm)~~	~~2~~		~~2~~	~~2~~	~~Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits~~	~~Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.~~
~~(16) Beryllium (ppb)~~	~~0.004~~	~~1000~~	~~4~~	~~4~~	~~Discharge from metal refineries and coal-burning factories; Discharge from electrical, aerospace, and defense industries~~	~~Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.~~
~~(17) Cadmium (ppb)~~	~~0.005~~	~~1000~~	~~5~~	~~5~~	~~Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; Run-off from waste batteries and paints~~	~~Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.~~
~~(18) Chromium (ppb)~~	~~0.1~~	~~1000~~	~~100~~	~~100~~	~~Discharge from steel and pulp mills; Erosion of natural deposits~~	~~Some people who drink water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.~~
~~(19) Copper (ppm)~~	~~AL=1.3~~		~~AL=1.3~~	~~1.3~~	~~Corrosion of household plumbing systems; Erosion of natural deposits~~	~~Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.~~
~~(20) Cyanide (ppb)~~	~~0.2~~	~~1000~~	~~200~~	~~200~~	~~Discharge from steel/metal factories; Discharge from plastic and fertilizer factories~~	~~Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve damage or problems with their~~

						thyroid.
(21) Fluoride (ppm)	4		4	4	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories	Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Fluoride in drinking water at half the MCL or more may cause mottling of children's teeth, usually in children less than nine years old. Mottling, also known as dental fluorosis, may include brown staining and/or pitting of the teeth, and occurs only in developing teeth before they erupt from the gums.
(22) Lead (ppb)	AL=0.015	1000	AL=15	0	Corrosion of household plumbing systems; Erosion of natural deposits	Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.
(23) Mercury [inorganic] (ppb)	.002	1000	2	2	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland	Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.
(24) Nitrate (ppm)	10		10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
(25) Nitrite (ppm)	1		1	1	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.

~~(26) Total Nitrate and Nitrite~~	~~10~~		~~n/a~~	~~10~~	~~n/a~~	~~Infants below the age of six months who drink water containing nitrate and nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.~~
~~(27) Selenium (ppb)~~	~~0.05~~	~~1000~~	~~50~~	~~50~~	~~Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines~~	~~Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.~~
~~(28) Thallium (ppb)~~	~~0.002~~	~~1000~~	~~2~~	~~0.5~~	~~Leaching from ore-processing sites; Discharge from electronics, glass, and drug factories~~	~~Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.~~
~~**Synthetic Organic Contaminants including Pesticides and Herbicides**~~						
~~(29) 2,4-D (ppb)~~	~~0.07~~	~~1000~~	~~70~~	~~70~~	~~Runoff from herbicides used on row crops~~	~~Some people who drink water containing the weed killer 2,4-D well in excess of the MCL over many years could experience problems with their kidneys, liver, or adrenal glands.~~
~~(30) 2,4,5-TP [Silvex] (ppb)~~	~~0.05~~	~~1000~~	~~50~~	~~50~~	~~Residue of banned herbicide~~	~~Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems.~~
~~(31) Acrylamide~~	~~TT~~		~~TT~~	~~0~~	~~Added to water during sewage/wastewater treatment~~	~~Some people who drink water containing high levels of acrylamide over a long period of time could have problems with their nervous system or blood, and may have an increased risk of getting cancer.~~
~~(32) Alachlor (ppb)~~	~~0.002~~	~~1000~~	~~2~~	~~0~~	~~Runoff from herbicide used on row crops~~	~~Some people who drink water containing alachlor in excess of the MCL over many years could have problems with their eyes,~~

						liver, kidneys, or spleen, or experience anemia, and may have an increased risk of getting cancer.
(33) Atrazine (ppb)	0.003	1000	3	3	Runoff from herbicide used on row crops	Some people who drink water containing the atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties.
(34) Benzo(a)pyrene[PAH]	0.0002	1,000,000	200	0	Leaching from linings of water storage tanks and distribution lines	Some people who drink water containing benzo(a)pyrene in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
(35) Carbofuran (ppb)	0.04	1000	40	40	Leaching of soil fumigant used on rice and alfalfa	Some people who drink water containing carbofuran in excess of the MCL over many years could experience problems with their blood, or nervous or reproductive systems.
(36) Chlordane (ppb)	0.002	1000	2	0	Residue of banned termiticide	Some people who drink water containing chlordane in excess of the MCL over many years could experience problems with their liver or nervous system, and may have an increased risk of getting cancer.
(37) Dalapon (ppb)	0.2	1000	200	200	Runoff from herbicide used on rights of way	Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes.
(38) Di(2-ethylhexyl) adipate (ppb)	0.4	1000	400	400	Discharge from chemical factories	Some people who drink water containing di(2-ethyhexyl)adipate well in excess of the MCL over many years could experience toxic effects, such as weight loss, liver enlargement or possible reproductive difficulties.
(39) Di(2-ethylhexyl)phthalate (ppb)	0.006	1000	6	0	Discharge from rubber and chemical factories	Some people who drink water containing di(2-ethylhexyl)phthalate in excess of the MCL over many years may have

						problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer.
(40) Dibromochloropropane (ppt)	0.0002	1,000,000	200	0	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards	Some people who drink water containing DBCP well in excess of the MCL over many years could experience reproductive problems and may have an increased risk of getting cancer.
(41) Dinoseb (ppb)	0.007	1000	7	7	Runoff from herbicide used on soybeans and vegetables	Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.
(42) Diquat (ppb)	0.02	1000	20	20	Runoff from herbicide use	Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.
(43) Dioxin [2,3,7,8-TCDD] (ppq)	0.00000003	1,000,000,000	30	0	Emissions from waste incineration and other combustion; Discharge from chemical factories	Some people who drink water containing dioxin in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
(44) Endothall (ppb)	0.1	1000	100	100	Runoff from herbicide use	Some people who drink water containing endothall in excess of the MCL over many years could experience problems with their stomach or intestines.
(45) Endrin (ppb)	0.002	1000	2	2	Runoff of banned insecticide	Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems.
(46) Epichlorohydrin	TT	-	TT	0	Discharge from industrial chemical factories; An impurity of some water treatment chemicals	Some people who drink water containing high levels of epichlorohydrin over a long period of time could experience stomach problems, and may have an increased risk of getting cancer.
(47) Ethylene dibromide (ppt)	0.00005	1,000,000	50	0	Discharge from petroleum refineries	Some people who drink water containing ethylene dibromide in excess of the MCL over many years could experience problems with their liver, stomach,

						~~reproductive system, or kidneys, and may have an increased risk of getting cancer.~~
~~(48) Glyphosate (ppb)~~	~~0.7~~	~~1000~~	~~700~~	~~700~~	~~Runoff from herbicide use~~	~~Some people who drink water containing glyphosate in excess of the MCL over many years could experience problems with their kidneys or reproductive difficulties.~~
~~(49) Heptachlor (ppt)~~	~~0.0004~~	~~1,000,000~~	~~400~~	~~0~~	~~Residue of banned pesticide~~	~~Some people who drink water containing heptachlor in excess of the MCL over many years could experience liver damage and may have an increased risk of getting cancer.~~
~~(50) Heptachlor epoxide (ppt)~~	~~0.0002~~	~~1,000,000~~	~~200~~	~~0~~	~~Breakdown of heptachlor~~	~~Some people who drink water containing heptachlor epoxide in excess of the MCL over many years could experience liver damage, and may have an increased risk of getting cancer.~~
~~(51) Hexachlorobenzene (ppb)~~	~~0.001~~	~~1000~~	~~1~~	~~0~~	~~Discharge from metal refineries and agricultural chemical factories~~	~~Some people who drink water containing hexachlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys or adverse reproductive effects, and may have an increased risk of getting cancer.~~
~~(52) Hexachlorocyclopentadiene (ppb)~~	~~0.05~~	~~1000~~	~~50~~	~~50~~	~~Discharge from chemical factories~~	~~Some people who drink water containing hexachlorocyclopentadiene well in excess of the MCL over many years could experience problems with their stomach or kidneys.~~
~~(53) Lindane (ppt)~~	~~0.0002~~	~~1,000,000~~	~~200~~	~~200~~	~~Runoff/leaching from insecticide used on cattle, lumber, gardens~~	~~Some people who drink water containing lindane in excess of the MCL over many years could experience problems with their kidneys or liver.~~
~~(54) Methoxychlor (ppb)~~	~~0.04~~	~~1000~~	~~40~~	~~40~~	~~Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock~~	~~Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.~~

~~(55) Oxamyl [Vydate] (ppb)~~	~~0.2~~	~~1000~~	~~200~~	~~200~~	~~Runoff/leaching from insecticide used on apples, potatoes and tomatoes~~	~~Some people who drink water containing ethylene oxamyl in excess of the MCL over many years could experience slight nervous system effects.~~
~~(56) PCBs [Polychlorinated biphenyls] (ppt)~~	~~0.0005~~	~~1,000,000~~	~~500~~	~~0~~	~~Runoff from landfills; Discharge of waste chemicals~~	~~Some people who drink water containing PCBs in excess of the MCL over many years could experience changes in their skin, problems with their thymus gland, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer.~~
~~(57) Pentachlorophenol (ppb)~~	~~0.001~~	~~1000~~	~~1~~	~~0~~	~~Discharge from wood preserving factories~~	~~Some people who drink water containing pentachlorophenol in excess of the MCL over many years could experience problems with their liver or kidneys, and may have an increased risk of getting cancer.~~
~~(58) Picloram (ppb)~~	~~0.5~~	~~1000~~	~~500~~	~~500~~	~~Herbicide runoff~~	~~Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver.~~
~~(59) Simazine (ppb)~~	~~0.004~~	~~1000~~	~~4~~	~~4~~	~~Herbicide runoff~~	~~Some people who drink water containing simazine in excess of the MCL over many years could experience problems with their blood.~~
~~(60) Toxaphene (ppb)~~	~~0.003~~	~~1000~~	~~3~~	~~0~~	~~Runoff/leaching from insecticide used on cotton and cattle~~	~~Some people who drink water containing toxaphene in excess of the MCL over many years could experience problems with their thyroid, kidneys, or liver and may have an increased risk of getting cancer.~~
~~**Volatile Organic Contaminants**~~						
~~(61) Benzene (ppb)~~	~~0.005~~	~~1000~~	~~5~~	~~0~~	~~Discharge from factories; Leaching from gas storage tanks and landfills~~	~~Some people who drink water containing benzene in excess of the MCL over many years could experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer.~~

~~(62) Carbon tetrachloride (ppb)~~	~~0.005~~	~~1000~~	~~5~~	~~0~~	~~Discharge from chemical plants and other industrial activities~~	~~Some people who drink water containing carbon tetrachloride in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.~~
~~(63) Chlorobenzene (ppb)~~	~~0.1~~	~~1000~~	~~100~~	~~100~~	~~Discharge from chemical and agricultural chemical factories~~	~~Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.~~
~~(64) o-Dichlorobenzene (ppb)~~	~~0.6~~	~~1000~~	~~600~~	~~600~~	~~Discharge from industrial chemical factories~~	~~Some people who drink water containing o-dichlorobenzene well in excess of the MCL over many years could experience problems with their liver, kidneys, or spleen, or changes in their blood.~~
~~(65) p-Dichlorobenzene (ppb)~~	~~0.075~~	~~1000~~	~~75~~	~~75~~	~~Discharge from industrial chemical factories~~	~~Some people who drink water containing p-dichlorobenzene in excess of the MCL over many years could experience anemia, damage to their liver, kidneys, or circulatory systems.~~
~~(66) 1,2-Dichloroethane (ppb)~~	~~0.005~~	~~1000~~	~~5~~	~~0~~	~~Discharge from industrial chemical factories~~	~~Some people who drink water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.~~
~~(67) 1,1-Dichloroethylene (ppb)~~	~~0.007~~	~~1000~~	~~7~~	~~7~~	~~Discharge from industrial chemical factories~~	~~Some people who drink water containing 1,1-dichloroethylene in excess of the MCL over many years could experience problems with their liver.~~
~~(68) cis-1,2-Dichloroethylene (ppb)~~	~~0.07~~	~~1000~~	~~70~~	~~70~~	~~Discharge from industrial chemical factories~~	~~Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.~~
~~(69) trans-1,2-Dichloroethylene (ppb)~~	~~0.1~~	~~1000~~	~~100~~	~~100~~	~~Discharge from industrial chemical factories~~	~~Some people who drink water containing trans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.~~

~~(70) Dichloromethane (ppb)~~	~~0.005~~	~~1000~~	~~5~~	~~0~~	~~Discharge from pharmaceutical and chemical factories~~	~~Some people who drink water containing dichloromethane in excess of the MCL over many years could have liver problems and may have an increased risk of getting cancer.~~
~~(71) 1,2-Dichloropropane (ppb)~~	~~0.005~~	~~1000~~	~~5~~	~~0~~	~~Discharge from industrial chemical factories~~	~~Some people who drink water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.~~
~~(72) Ethylbenzene (ppb)~~	~~0.7~~	~~1000~~	~~700~~	~~700~~	~~Discharge from petroleum refineries~~	~~Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.~~
~~(73) Styrene (ppb)~~	~~0.1~~	~~1000~~	~~100~~	~~100~~	~~Discharge from rubber and plastic factories; Leaching from landfills~~	~~Some people who drink water containing styrene well in excess of the MCL over many years could experience problems with their liver, kidneys, or circulatory system.~~
~~(74) Tetrachloroethylene (ppb)~~	~~0.005~~	~~1000~~	~~5~~	~~0~~	~~Discharge from factories and dry cleaners~~	~~Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increased risk of getting cancer.~~
~~(75) 1,2,4-Trichlorobenzene (ppb)~~	~~0.07~~	~~1000~~	~~70~~	~~70~~	~~Discharge from textile-finishing factories~~	~~Some people who drink water containing 1,2,4-trichlorobenzene well in excess of the MCL over many years could experience changes in their adrenal glands.~~
~~(76) 1,1,1-Trichloroethane (ppb)~~	~~0.2~~	~~1000~~	~~200~~	~~200~~	~~Discharge from metal degreasing sites and other factories~~	~~Some people who drink water containing 1,1,1-trichloroethane in excess of the MCL over many years could experience problems with their liver, nervous system, or circulatory system.~~
~~(77) 1,1,2-Trichloroethane (ppb)~~	~~0.005~~	~~1000~~	~~5~~	~~3~~	~~Discharge from industrial chemical factories~~	~~Some people who drink water containing 1,1,2-trichloroethane well in excess of the MCL over many years could have~~

						problems with their liver, kidneys, or immune systems.
(78) Trichloroethylene (ppb)	0.005	1000	5	0	Discharge from metal degreasing sites and other factories	Some people who drink water containing trichloroethylene in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
(79) Toluene (ppm)	1	–	1	1	Discharge from petroleum factories	Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys, or liver.
(80) Vinyl Chloride (ppb)	0.002	1000	2	0	Leaching from PVC piping; Discharge from plastic factories	Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.
(81) Xylenes (ppm)	10	–	10	10	Discharge from petroleum factories; Discharge from chemical factories	Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.
Disinfection By-Products, Precursors, and Residuals						
(82) TTHMs [total trihalomethanes] (ppb)	0.080	1000	80	n/a	By-product of drinking water disinfection	Some people who drink water containing trihalomethanes in excess of the MCL over many years could experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.
(83) Haloacetic acids (HAA) (ppb)	0.060	1000	60	n/a	By-product of drinking water disinfection	Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.
(84) Bromate (ppb)	0.010	1000	10	0	By-product of drinking water disinfection	Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.

~~(85) Chloramines (ppm)~~	~~MRDL=4.0~~	~~-~~	~~MRDL=4.0~~	~~MRDLG=4~~	~~Water additive used to control microbes~~	~~Some people who use water containing chloramines well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.~~
~~(86) Chlorine (ppm)~~	~~MRDL=4.0~~	~~-~~	~~MRDL=4.0~~	~~MRDLG=4~~	~~Water additive used to control microbes~~	~~Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.~~
~~(87) Chlorine dioxide (ppb)[2]~~	~~MRDL=0.8~~	~~1000~~	~~MRDL=800~~	~~MRDLG=800~~	~~Water additive used to control microbes~~	~~Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia.~~
~~(87a) Chlorine dioxide, where any two consecutive daily samples taken at the entrance to the distribution system are above the MRDL.[1]~~	~~MRDL=0.8~~	~~–~~	~~–~~	~~MRDLG=0.8~~	~~–~~	~~The chlorine dioxide violations reported today are the result of exceedances at the treatment facility only, not within the distribution system which delivers water to consumers. Continued compliance with chlorine dioxide levels within the distribution system minimizes the potential risk of these violations to consumers.~~
~~(87b) Chlorine dioxide, where one or more distribution system samples are above the MRDL.[1]~~	~~MRDL=0.8~~	~~-~~	~~–~~	~~MRDLG=0.8~~	~~–~~	~~The chlorine dioxide violations reported today include exceedances of the EPA standard within the distribution system which delivers water to consumers. Violations of the chlorine dioxide~~

						standard within the distribution system may harm human health based on short-term exposures. Certain groups, including fetuses, infants, and young children, may be especially susceptible to nervous system effects from excessive chlorine dioxide exposure.
(88) Chlorite (ppm)	1.0	-	1.0	0.8	By-product of drinking water disinfection	Some infants and young children who drink water containing chlorite in excess of the MCL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the MCL. Some people may experience anemia.
(89) Total organic carbon (ppm)	TT	-	TT	n/a	Naturally present in the environment	Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection byproducts. These byproducts include trihalomethanes (THMs) and haloacetic acids (HAAs). Drinking water containing these byproducts in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous systems effects, and may lead to an increased risk of getting cancer.

[1]This information is for public notification purposes only.

[2]This information is for Consumer Confidence Report purposes only.

[3]Violations of the treatment technique requirements for filtration and disinfection that involve turbidity exceedances may use the health effects language for turbidity instead.

APPENDIX P (Repealed.)

Best available technologies (BATs) for radionuclides. The commissioner identifies as indicated in the following table the best technology available for achieving compliance with the maximum contaminant levels for combined radium 226 and radium 228, uranium, gross alpha particle activity, and beta particle and photon radioactivity.

Table I.
BAT for Combined Radium-226 and Radium-228, Uranium, Gross Alpha Particle Activity, and Beta Particle and Photon Radioactivity.

Contaminant	BAT
1. Combined radium-226 and radium-228.	1. Ion exchange, reverse osmosis, lime softening.
2. Uranium.	2. Ion exchange, reverse osmosis, lime softening, coagulation/ filtration.
3. Gross alpha particle activity (excluding Radon and Uranium).	3. Reverse osmosis.
4. Beta particle and photon radioactivity.	4. Ion exchange, reverse osmosis.

Small systems compliance technologies list for radionuclides.

Table II.
List of Small Systems Compliance Technologies for Radionuclides and Limitations to Use.

Unit technologies	Limitations (see footnotes)[1]	Operator Skill Level required[2]	Raw water quality range and considerations.[2]
1. Ion exchange (IE).	(a)	Intermediate.	All ground waters.
2. Point of use (POU[3]) IE.	(b)	Basic.	All ground waters.
3. Reverse osmosis (RO).	(c)	Advanced.	Surface waters usually require pre-filtration.
4. POU[3] RO.	(b)	Basic.	Surface waters usually require pre-filtration.
5. Lime softening.	(d)	Advanced.	All waters.
6. Green sand filtration.	(e)	Basic.	All waters.
7. Co-precipitation with Barium sulfate.	(f)	Intermediate to Advanced.	Ground waters with suitable water quality.
8. Electrodialysis/Electrodialysis Reversal.	..	Basic to Intermediate.	All ground waters.
9. Pre-formed hydrous Manganese oxide.	(g)	Intermediate.	All ground waters.
10. Activated alumina.	(a), (h)	Advanced.	All ground waters; competing anion concentrations may affect regeneration frequency.
11. Enhanced coagulation/ filtration.	(i)	Advanced.	Can treat a wide range of water qualities.

[1]Limitations Footnotes: Technologies for Radionuclides:

a. The regeneration solution contains high concentrations of the contaminant ions. Disposal options should be carefully considered before choosing this technology.

b. When POU devices are used for compliance, programs for long-term operation, maintenance, and monitoring must be provided by water utility to ensure proper performance.

c. Reject water disposal options should be carefully considered before choosing this technology. See other RO limitations described in the SWTR Compliance Technologies Table.

d. The combination of variable source water quality and the complexity of the water chemistry involved may make this technology too complex for small surface water systems.

e. Removal efficiencies can vary depending on water quality.

f. This technology may be very limited in application to small systems. Since the process requires static mixing, detention basins, and filtration, it is most applicable to systems with sufficiently high sulfate levels that already have a suitable filtration treatment train in place.

g. This technology is most applicable to small systems that already have filtration in place.

h. Handling of chemicals required during regeneration and pH adjustment may be too difficult for small systems without an adequately trained operator.

i. Assumes modification to a coagulation/filtration process already in place.

[2]National Research Council (NRC). Safe Water from Every Tap: Improving Water Service to Small Communities. National Academy Press. Washington, D.C. 1997.

[3]A POU, or ``point of use'' technology is a treatment device installed at a single tap used for the purpose of reducing contaminants in drinking water at that one tap. POU devices are typically installed at the kitchen tap. See the April 21, 2000, NODA for more details.

Table III.
Compliance Technologies by System Size Category for Radionuclide NPDWR's.

Contaminant	Compliance technologies[1] for system size categories (population served)		
	25—500	501—3,300	3,300—10,000
1. Combined radium 226 and radium 228.	1, 2, 3, 4, 5, 6, 7, 8, 9.	1, 2, 3, 4, 5, 6, 7, 8, 9.	1, 2, 3, 4, 5, 6, 7, 8, 9.
2. Gross alpha particle activity.	3,4.	3,4.	3,4.
3. Beta particle activity and photon activity.	1, 2, 3, 4. 1, 2, 4, 10, 11.	1, 2, 3, 4.	1, 2, 3, 4.
4. Uranium.		1, 2, 3, 4, 5, 10, 11.	1, 2, 3, 4, 5, 10, 11.

Note: [1] Numbers correspond to those technologies found listed in Table II.

NOTICE: Forms used in administering the regulation have been filed by the agency. The forms are not being published; however, online users of this issue of the Virginia Register of Regulations may click on the name of a form with a hyperlink to access it. The forms are also available from the agency contact or may be viewed at the Office of the Registrar of Regulations, 900 East Main Street, 11th Floor, Richmond, Virginia 23219.

FORMS (12VAC5-590)

Uniform Water Well Completion Report, Form GW-2 (rev. 7/2016 & 8/2016)

Waterworks Level 1 Assessment, Form ODW 4 (eff. 4/2016)

Waterworks Level 2 Assessment, Form ODW 5 (eff. 4/2016)

Application for Monitoring Waivers (rev. 3/2019)

Waterworks Permit Application, ODW-001 (filed 10/2019)

Operational Evaluation Reporting Form (filed 10/2019)

Waterworks Level 1 Assessment (rev. 9/2017)

Waterworks Level 2 Assessment (rev. 9/2017)

DOCUMENTS INCORPORATED BY REFERENCE (12VAC5-590)

"Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure," National Bureau of Standards Handbook 69.

Standard Methods for the Examination of Water and Wastewater, 18th edition, American Public Health Association, American Waterworks Association, and Water Pollution Control Federation, 1992.

ANSI/NSF Standard for Drinking Water Treatment System Components, ANSI/NSF 61, American National Standard Institute, November, 1994.

AWWA Standard for American National Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water, C 104, American Waterworks Association.

AWWA Standard for American National Standard for Polyethylene Encasement for Ductile Iron Pipe and Fittings for Water, C 105, American Waterworks Association.

AWWA Standard for American National Standard for Ductile Iron and Gray Iron Fittings 3 Inch Through 48 Inch for Water, C 110, American Waterworks Association.

AWWA Standard for American National Standard for Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings, C 111, American Waterworks Association.

AWWA Standard for American National Standard for Flanged Ductile Iron Pipe with Threaded Flanges, C 115, American Waterworks Association.

AWWA Standard for American National Standard for the Thickness Design of Ductile Iron Pipe, C 150, American Waterworks Association.

AWWA Standard for American National Standard for Ductile Iron Pipe, Centrifugally Cast, for Water or Other Liquids, C 151, American Waterworks Association.

AWWA Standard for American National Standard for Ductile Iron Pipe, Compact Fittings, 3 Inch Through 16 Inch, for Water and Other Liquids, C 153, American Waterworks Association.

AWWA Standard for Steel Water Pipe, 6 Inch and Larger, C 200, American Waterworks Association.

AWWA Standard for Coal Tar Protective Coatings and Linings for Steel Water Pipelines- Enamel and Tape-Hot Applied, C 203, American Waterworks Association.

~~AWWA Standard for Cement-Mortar Protective Lining and Coating for Steel Water Pipe 4 Inch and Larger Shop Applied, C 205, American Waterworks Association.~~

~~AWWA Standard for Field Welding of Steel Water Pipe, C 206, American Waterworks Association.~~

~~AWWA Standard for Steel Pipe Flanges for Waterworks Service 4 Inch and Larger Shop Applied, C 207, American Waterworks Association.~~

~~AWWA Standard for Dimensions for Fabricated Steel Water Pipe Fittings, C 208, American Waterworks Association.~~

~~AWWA Standards for Cold Applied Coatings for the Exterior of Special Sections, Connections, and Fittings for Steel Water Pipelines, C 209, American Waterworks Association.~~

~~AWWA Standard for Liquid Epoxy Coating Systems for the Interior and Exterior of Steel Water Pipelines, C 210, American Waterworks Association.~~

~~AWWA Standard for Fusion Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines, C 213, American Waterworks Association.~~

~~AWWA Standards for Tape Coating Systems for the Exterior of Steel Water Pipelines, C 214, American Waterworks Association.~~

~~AWWA Standard for Extruded Polyolefin Coatings for the Exterior of Steel Water Pipelines, C 215, American Waterworks Association.~~

~~AWWA Standard for Cross Linked Polyolefin Coatings for the Exterior of Special Sections, Connections, and Fittings for Buried Steel Water Pipelines, C 216, American Waterworks Association.~~

~~AWWA Standard for Cold Applied Petrolatum Tape and Petroleum Wax Tape Coatings for the Exterior of Special Sections, Connections, and Fittings for Buried Steel Water Pipelines, C 217, American Waterworks Association.~~

~~AWWA Standard for Coating the Exterior of Aboveground Steel Water Pipelines and Fittings, C 218, American Waterworks Association.~~

~~AWWA Standard for Bolted, Sleeve Type Couplings for Plain End Pipe, C 219, American Waterworks Association.~~

~~AWWA Standard for Stainless Steel Pipe, 4 Inch and Larger, C 220, American Waterworks Association.~~

~~AWWA Standard for Reinforced Concrete Pressure Pipe, Steel Cylinder Type, for Water and Other Liquids, C 300, American Waterworks Association.~~

~~AWWA Standard for Prestressed Concrete Pressure Pipe, Steel Cylinder Type, for Water and Other Liquids, C 301, American Waterworks Association.~~

~~AWWA Standard for Reinforced Concrete Pressure Pipe, Noncylinder Type, for Water and Other Liquids, C 302, American Waterworks Association.~~

~~AWWA Standard for Reinforced Concrete Pressure Pipe, Noncylinder Type, Pretensioned, for Water and Other Liquids, C 303, American Waterworks Association.~~

~~AWWA Standard for Design of Prestressed Concrete Cylinder Pipe, C 304, American Waterworks Association.~~

~~AWWA Standard for the Selection of Asbestos Cement Transmission and Feeder Main Pipe, C 403, American Waterworks Association.~~

~~AWWA Standard for Cement Mortar Lining of Water Pipelines 4 Inch (1000 mm) and Larger In Place, C 602, American Waterworks Association.~~

~~AWWA Standard for Underground Service Line Valves and Fittings, C 800, American Waterworks Association.~~

~~AWWA Standard for Polyvinyl Chloride Pressure Pipe, 4 Inch Through 12 Inch for Water Distribution, C 900, American Waterworks Association.~~

~~AWWA Standard for Polybutylene Pressure Pipe and Tubings, 1/2 Inch Through 3 Inch, for Water Service, C 902, American Waterworks Association.~~

~~AWWA Standard for Polyethylene Pressure Pipe and Fittings, 4 Inch Through 63 Inch, for Water Distribution, C 906, American Waterworks Association.~~

~~AWWA Standard for Polyethylene Pressure Pipe and Tubing, 1/2 Inch Through 3 Inch, for Water Service, C 901, American Waterworks Association.~~

~~AWWA Standard for Polyvinyl Chloride Water Transmission Pipe, Nominal Diameters 14 Inch Through 36 Inch, C 905, American Waterworks Association.~~

~~AWWA Standard for Polyvinyl Chloride Pressure Fittings, 4 Inch Through 8 Inch, C 907, American Waterworks Association.~~

~~AWWA Standard for Fiberglass Pressure Pipe, C 950. American Waterworks Association.~~

~~AWWA Standard for Asbestos Cement Pressure Pipe, 4 Inch Through 16 Inch, for Water Distribution Systems, C 400, American Waterworks Association.~~

~~AWWA Standard for Selection of Asbestos Cement Pressure Pipe, 4 Inch Through 16 Inch, for Water Distribution Systems, C 401, American Waterworks Association.~~

~~AWWA Standard for Asbestos Cement Transmission Pipe, 18 Inch Through 42 Inch, for Potable Water and Other Liquids, C 402, American Waterworks Association.~~

~~AWWA Standard for Installation of Ductile-Iron Pipe and Their Appurtenances, C 600, American Waterworks Association.~~

~~AWWA Standard for Installation of Asbestos Cement Pressure Pipe, C 603, American Waterworks Association.~~

~~AWWA Standard for Grooved and Shouldered Joints, C 606, American Waterworks Association.~~

~~AWWA Standard for Disinfecting Water Mains, C 651, American Waterworks Association.~~

~~Control of Communicable Diseases in Man, 15 edition, American Public Health Association, 1990.~~

U.S. Department of Commerce (https:/www.commerce.gov/):

Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure, NBS Handbook 69 issued June 5, 1959 and amended August 1963, U.S. Department of Commerce

U.S. Environmental Protection Agency (https:/www.epa.gov/):

Ultraviolet Disinfection Guidance Manual for the Final Long Term 2 Enhanced Surface Water Treatment Rule, EPA 815-R-06-007, Office of Water, November 2006

Enhanced Coagulation and Enhanced Precipitative Softening Guidance Manual, EPA 815-R-99-012, Office of Water, May 1999

Consensus Method for Determining Groundwaters under the Direct Influence of Surface Water Using Microscopic Particulate Analysis (MPA), EPA 910/992029, Environmental Services Division, October 1992

Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 DBPR) - Implementation Guidance, EPA 816-R-07-007, Office of Water, August 2007

Long Term 2 Enhanced Surface Water Treatment Rule Toolbox Guidance Manual, EPA 815-R-09-016, Office of Water, April 2010

NSF International, P.O. Box 130140, 789 N. Dixboro Road, Ann Arbor, MI 48105 (http://www.nsf.org/):

NSF/ANSI Standard 60-2017, Drinking Water Treatment Chemicals - Health Effects, April 23, 2017

NSF/ANSI Standard 61-2017, Drinking Water System Components - Health Effects, March 13, 2017

ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959 (https://www.astm.org/):

ASTM F480-14, Standard Specification for Thermoplastic Well Casing Pipe and Couplings Made in Standard Dimension Ratios (SDR), SCH 40 and SCH 80, March 1, 2014

American Water Works Association, 666 W. Quincy Avenue, Denver, CO 80235 (https://www.awwa.org/):

AWWA Standard, ANSI/AWWA A100-15, Water Wells, December 1, 2015

AWWA Standard, ANSI/AWWA B114-16, Reverse Osmosis and Nanofiltration Systems for Water Treatment, May 1, 2016

AWWA Standard, ANSI/AWWA C600-17, Installation of Ductile-Iron Mains and Their Appurtenances, July 1, 2017

AWWA Standard, ANSI/AWWA C604-17, Installation of Buried Steel Water Pipe – 4 In. (100 mm) and Larger, August 1, 2017

AWWA Standard, ANSI/AWWA C605-13, Underground Installation of Polyvinyl Chloride (PVC) and Molecularly Oriented Polyvinyl Chloride (PVCO) Pressure Pipe and Fittings, February 1, 2014

AWWA Standard, ANSI/AWWA C651-14, Disinfecting Water Mains, February 1, 2015

AWWA Standard, ANSI/AWWA C652-11, Disinfection of Water-Storage Facilities, October 1, 2011

AWWA Standard, ANSI/AWWA C653-13, Disinfection of Water Treatment Plants, December 1, 2013

AWWA Standard, ANSI/AWWA C654-13, Disinfection of Wells, July 1, 2013

AWWA Standard, ANSI/AWWA D100-11, Welded Carbon Steel Tanks for Water Storage, July 1, 2011

AWWA Standard, ANSI/AWWA D102-17, Coating Steel Water-Storage Tanks, December 1, 2017

AWWA Standard, ANSI/AWWA D103-09, Factory-Coated Bolted Carbon Steel Tanks for Water Storage, November 1, 2009

AWWA Standard, ANSI/AWWA D104-17, Automatically Controlled, Impressed-Current Cathodic Protection for the Interior Submerged Surfaces of Steel Water Storage Tanks, December 1, 2017

AWWA Standard, ANSI/AWWA D106-16, Sacrificial Anode Cathodic Protection Systems for the Interior Submerged Surfaces of Steel Water Storage Tanks, June 1, 2016

AWWA Standard, ANSI/AWWA D107-16, Composite Elevated Tanks for Water Storage, January 1, 2017

AWWA Standard, ANSI/AWWA D108-10, Aluminum Dome Roofs for Water Storage Facilities, June 1, 2010

AWWA Standard, ANSI/AWWA D110-13 (R-18), Wire- and Strand-Wound, Circular, Prestressed Concrete Water Tanks, August 1, 2018

AWWA Standard, ANSI/AWWA D115-17, Tendon-Prestressed Concrete Water Tanks, July 1, 2017

AWWA Standard, ANSI/AWWA D120-09, Thermosetting Fiberglass-Reinforced Plastic Tanks, October 1, 2009

AWWA Standard, ANSI/AWWA D121-12, Bolted Aboveground Thermosetting Fiberglass-Reinforced Plastic Panel-Type Tanks for Water Storage, June 1, 2012

VA.R. Doc. No. R18-5204; Filed October 16, 2019, 4:55 p.m.

DEPARTMENT OF MEDICAL ASSISTANCE SERVICES

Fast-Track Regulation

Title of Regulation: **12VAC30-60. Standards Established and Methods Used to Assure High Quality Care (amending 12VAC30-60-5).**

Statutory Authority: § 32.1-325 of the COV; 42 USC § 1396 et seq.

Public Hearing Information: No public hearings are scheduled.

Public Comment Deadline: December 11, 2019.

Effective Date: December 26, 2019.

Agency Contact: Emily McClellan, Regulatory Supervisor, Policy Division, Department of Medical Assistance Services, 600 East Broad Street, Suite 1300, Richmond, VA 23219, telephone (804) 371-4300, FAX (804) 786-1680, or email emily.mcclellan@dmas.virginia.gov.

Basis: Section 32.1-325 of the Code of Virginia grants the Board of Medical Assistance Services the authority to administer and amend the State Plan for Medical Assistance and to promulgate regulations. Section 32.1-324 of the Code of Virginia authorizes the Director of the Department of Medical Assistance Services (DMAS) to administer and amend the State Plan for Medical Assistance and to promulgate regulations according to the board's requirements. The Medicaid authority as established by § 1902(a) of the Social Security Act (42 USC § 1396a) provides governing authority for payments for services.

Purpose: The purpose of the amendments is to establish documentation requirements for qualifications and credentials for providers of community mental health services, including residential treatment services. This regulatory change is essential to protect the health, safety, and welfare of the public in that it ensures that community mental health services are rendered by individuals with appropriate qualifications and credentials

Rationale for Using Fast-Track Rulemaking Process: Item 303 X (1) of Chapter 2 of the 2018 Acts of Assembly directed the agency to make changes to the utilization review and provider qualifications for community mental health services in order to ensure appropriate utilization and cost efficiency. Specifically, the language states:

"The Department of Medical Assistance Services shall make programmatic changes in the provision of Intensive In-Home services and Community Mental Health services in order to ensure appropriate utilization and cost efficiency. The department shall consider all available options including, but not limited to, prior authorization, utilization review and provider qualifications. The Department of Medical Assistance Services shall promulgate regulations to implement these changes within 280 days or less from the enactment date of this Act."

This action implements changes related to provider qualifications by incorporating the registration requirements previously established by the Department of Health Professions (DHP). This action is expected to be noncontroversial because individuals are required to comply with DHP regulations without regard to any DMAS regulatory language. DMAS is merely updating its regulations to reflect the current state of DHP regulations rather than establishing any new requirements.

Substance: DMAS has established provider requirements, but regulations are needed to provide clarification to providers of the documentation required to establish that services are rendered by individuals with appropriate qualifications and credentials. The amendments will also update the regulations by referring to new DHP requirements for registration of qualified mental health professional-child, qualified mental health professional-adult, and qualified mental health professional-trainee.

Issues: The primary advantage of this action is that it updates DMAS regulations to refer to DHP regulations. There are no disadvantages to the public, the agency, or the Commonwealth.

Department of Planning and Budget's Economic Impact Analysis:

Summary of the Proposed Amendments to Regulation. The Board of Medical Assistance Services (Board) proposes to incorporate the Department of Health Professions' (DHP) documentation requirements for registration as a Qualified Mental Health Practitioner (QMHP). These changes have already been in effect under an emergency regulation.[2]

Result of Analysis. The benefits likely exceed the costs for all proposed changes.

Estimated Economic Impact. The qualifications for registered QMHPs and the documentation of those qualifications are currently in the final stage of being permanently established

by DHP.[3] The Board proposes to incorporate those documentation requirements in its own regulation. This change would not create any costs for the Medicaid mental health providers employing affected mental health professionals as they are already required to maintain such documentation under the DHP regulation. However, this change allows DMAS to ensure that the DHP documentation requirements are complied with for Medicaid reimbursement purposes. The proposed changes have already been in effect under an emergency regulation.

Businesses and Entities Affected. There are approximately 4,270 community mental health service providers that employ QMHPs. Currently, there are 5,270 QMHP-Adult, 4,823 QMHP-Child, 717 QMHP-Trainee registered with DHP.

Localities Particularly Affected. The proposed amendments do not affect any locality more than others.

Projected Impact on Employment. The proposed amendments would not affect total employment.

Effects on the Use and Value of Private Property. The proposed amendments would not affect the use and value of private property.

Real Estate Development Costs. The proposed amendments would not affect real estate development costs.

Small Businesses:

Definition. Pursuant to § 2.2-4007.04 of the Code of Virginia, small business is defined as "a business entity, including its affiliates, that (i) is independently owned and operated and (ii) employs fewer than 500 full-time employees or has gross annual sales of less than $6 million."

Costs and Other Effects. Of the 4,270 CMHS providers that employ QMHPs, most are believed to be small businesses.

Alternative Method that Minimizes Adverse Impact. The proposed amendments would not adversely affect small businesses.

Adverse Impacts:

Businesses. The proposed amendments would not adversely affect businesses.

Localities. The proposed amendments would not adversely affect localities.

Other Entities. The proposed amendments would not adversely affect other entities.

---

[2]https://townhall.virginia.gov/l/ViewStage.cfm?stageid=8191

[3]https://townhall.virginia.gov/L/ViewStage.cfm?stageid=8650

Agency's Response to Economic Impact Analysis: The agency has reviewed the economic impact analysis prepared by the Department of Planning and Budget and takes no issues with this analysis.

Summary:

The amendments clarify the documentation required to establish that services are rendered by individuals with appropriate qualifications and credentials and update the regulations to include Department of Health Professions requirements for registration of qualified mental health professionals.

12VAC30-60-5. Applicability of utilization review requirements.

A. These utilization requirements shall apply to all Medicaid covered services unless otherwise specified.

B. Some Medicaid covered services require an approved service authorization prior to service delivery in order for reimbursement to occur. ~~1.~~ To obtain service authorization, all providers' information supplied to the Department of Medical Assistance Services (DMAS) or its contractor shall be fully substantiated throughout individuals' medical records.

~~2.~~ C. Providers shall be required to maintain documentation detailing all relevant information about the Medicaid individuals who are in the provider's care. Such documentation shall fully disclose the extent of services provided in order to support the provider's claims for reimbursement for services rendered. This documentation shall be written, signed, and dated at the time the services are rendered unless specified otherwise.

D. Providers shall maintain documentation that demonstrates that individuals providing services have the required qualifications established by DMAS, the Department of Health Professions (DHP), or the Department of Behavioral Health and Developmental Services (DBHDS).

~~C.~~ E. DMAS, or its contractor, shall perform reviews of the utilization of all Medicaid covered services pursuant to 42 CFR 440.260 and 42 CFR Part 456.

~~D.~~ F. DMAS shall recover expenditures made for covered services when providers' documentation does not comport with standards specified in all applicable regulations.

~~E.~~ G. Providers who are determined not to be in compliance with DMAS requirements shall be subject to 12VAC30-80-130 for the repayment of those overpayments to DMAS.

~~F.~~ H. Utilization review requirements specific to community mental health services and residential treatment services, including therapeutic group homes and psychiatric residential treatment facilities (PRTFs), as set out in 12VAC30-50-130 and 12VAC30-50-226, shall be as follows:

1. To apply to be reimbursed as a Medicaid provider, the required ~~Department of Behavioral Health and~~

~~Developmental Services (DBHDS)~~ DBHDS license shall be either a full, annual, triennial, or conditional license. ~~Providers must be enrolled with DMAS or its contractor to be reimbursed. Once a health care entity has been enrolled as a provider, it shall maintain, and update periodically as DMAS or its contractor requires, a current Provider Enrollment Agreement for each Medicaid service that the provider offers.~~

2. Health care entities with provisional licenses issued by DBHDS shall not be reimbursed as Medicaid providers ~~of community mental health services~~.

3. ~~Payments~~ Reimbursement shall not be permitted to health care entities that ~~either hold provisional licenses or~~ fail to enter into a provider contract with DMAS or its contractor for a service prior to rendering that service or fail to maintain a current Medicaid Provider Enrollment Agreement. If services are provided through a managed care organization (MCO), services shall not be reimbursed unless the provider is also enrolled with the MCO as a Medicaid provider.

4. DMAS or its contractor shall apply a national standardized set of medical necessity criteria in use in the industry or an equivalent standard authorized in advance by DMAS. Services that fail to meet medical necessity criteria shall be denied service authorization.

5. Service providers shall maintain documentation to establish that services are rendered by individuals with appropriate qualifications and credentials, including proof of licensure or registration through DHP if applicable. Qualified mental health professional-eligibles, as defined by DBHDS, shall maintain documentation of supervision and of progress toward the requirements for DHP registration as a qualified mental health professional-child or progress toward the requirements for DHP registration as a qualified mental health professional-adult as those terms are defined by DBHDS.

VA.R. Doc. No. R19-5371; Filed October 15, 2019, 3:46 p.m.

Fast-Track Regulation

Title of Regulation: **12VAC30-80. Methods and Standards for Establishing Payment Rates; Other Types of Care (amending 12VAC30-80-30).**

Statutory Authority: § 32.1-325 of the Code of Virginia; 42 USC 1396 et seq.

Public Hearing Information: No public hearings are currently scheduled.

Public Comment Deadline: December 12, 2019.

Effective Date: December 27, 2019.

Agency Contact: Emily McClellan, Regulatory Supervisor, Department of Medical Assistance Services, 600 East Broad Street, Suite 1300, Richmond, VA 23219, telephone (804) 371-4300, FAX (804) 786-1680, or email emily.mcclellan@dmas.virginia.gov.

Basis: Section 32.1-325 of the Code of Virginia authorizes the Board of Medical Assistance Services to administer and amend the State Plan for Medical Assistance and to promulgate regulations. Section 32.1-324 of the Code of Virginia authorizes the Director of the Department of Medical Assistance Services (DMAS) to administer and amend the State Plan for Medical Assistance and to promulgate regulations according to the board's requirements. The Medicaid authority as established by § 1902 (a) of the Social Security Act (42 USC § 1396a) provides governing authority for payments for services.

Item 303 XX 2 a of Chapter 2 of the 2018 Acts of Assembly states:

"The Department of Medical Assistance Services shall promulgate regulations to make supplemental payments to Medicaid physician providers with a medical school located in Eastern Virginia that is a political subdivision of the Commonwealth. The amount of the supplemental payment shall be based on the difference between the average commercial rate approved by CMS and the payments otherwise made to physicians. The department shall have the authority to implement these reimbursement changes consistent with the effective date in the State Plan amendment approved by CMS and prior to completion of any regulatory process in order to effect such changes."

Purpose: The purpose of this action is to update the average commercial rate (ACR) calculation for supplemental payments for physicians affiliated with Eastern Virginia Medical School (EVMS) effective November 1, 2018. The updated ACR percentage is 145%. This action protects the health, safety, and welfare of citizens in that it increases access to physician services.

Rationale for Using Fast-Track Rulemaking Process: This action is expected to be noncontroversial because supplemental payments for physician services are increased from 137% of the Medicare rate to 145% of the Medicare rate.

Substance: Currently, supplemental payments are provided to physicians affiliated with EVMS. A physician affiliated with EVMS is a physician who is employed by a publicly funded medical school that is a political subdivision of the Commonwealth of Virginia, who provides clinical services through the faculty practice plan affiliated with the publicly funded medical school, and who has entered in contractual arrangements for the assignment of payments in accordance with 42 CFR 447.10.

Effective October 1, 2015, the supplemental payment set was the difference between the Medicaid payments otherwise made for physician services and 137% of Medicare rates.

As outlined in 12VAC30-80-300, physician supplemental payment amounts are calculated using the Medicare equivalent of the ACR methodology prescribed by the Centers for Medicare and Medicaid Services (CMS). The Medicare equivalent of the ACR demonstration is updated every three years, and the last update was effective October 1, 2015.

This action will revise the ACR calculation of supplemental payments for physicians affiliated with EVMS effective November 1, 2018, to the difference between the Medicaid payments others made for physician services and 145% of Medicare rates. CMS approved this update in the State Plan on February 1, 2019, with an effective date of November 1, 2018.

Issues: These changes create no disadvantages to the public, the agency, the Commonwealth, or the regulated community. The change implements directives in the state budget and update existing regulations to conform with the State Plan. Furthermore, updating supplemental payment amounts for physicians affiliated with EVMS is expected to be advantageous as it will improve access to services.

Department of Planning and Budget's Economic Impact Analysis:

Summary of the Proposed Amendments to Regulation. Pursuant to 2018 Acts of Assembly, Chapter 2, Item 303.XX.2.a, the Department of Medical Assistance Services proposes to revise the maximum reimbursement for physicians affiliated with Eastern Virginia Medical School (EVMS) from 137% to 145% of Medicare rates effective November 1, 2018.

Background. Virginia's State Plan for Medical Assistance, which has been approved by the Centers for Medicare and Medicaid Services (CMS), allows Medicaid to make supplemental payments to physicians that are members of a practice group organized by or under the control of a state academic health system or an academic health system that operates under state authority. The physicians affected by this change are the physicians affiliated with EVMS.

Supplemental payments are calculated as the difference between the Medicaid payments otherwise made and the maximum payment allowed. The maximum payment allowed by CMS is the average commercial rate (ACR). As the payments made by commercial providers change over time so does the ACR. The ACR has increased from 137% of the Medicare rates to 145% of Medicare rates effective November 1, 2018, and CMS approved this change. The new rate has already been applied under the statutory authority. The proposed change will incorporate the new rate in the regulations.

Estimated Benefits and Costs. The proposed rate change equates to a $22,777 fee-for-service payment increase in what EVMS receive for its physicians. The source of this increase will be 50% from federal government and 50% from an intergovernmental transfer from EVMS. Depending on how these additional funds are distributed, EVMS physicians should benefit from this change.

Businesses and Other Entities Affected. The proposed amendments apply only to the EVMS physician practice plan.

Localities[2] Affected.[3] The proposed changes apply to EVMS physician practice plan which is located in Norfolk. The proposed amendments do not introduce costs for local governments. Accordingly, no additional funds would be required from them.

Projected Impact on Employment. The proposed amendments do not appear to affect total employment.

Effects on the Use and Value of Private Property. No impact on the use and value of private property and real estate development costs is expected.

Adverse Effect on Small Businesses.[4] The proposed amendments do not adversely affect small businesses.

Types and Estimated Number of Small Businesses Affected: None.

Costs and Other Effects: None.

Alternative Method that Minimizes Adverse Impact: No adverse impact on small businesses is identified.

---

[2]"Locality" can refer to either local governments or the locations in the Commonwealth where the activities relevant to the regulatory change are most likely to occur.

[3]§ 2.2-4007.04 defines "particularly affected" as bearing disproportionate material impact.

[4]Pursuant to § 2.2-4007.04 of the Code of Virginia, small business is defined as "a business entity, including its affiliates, that (i) is independently owned and operated and (ii) employs fewer than 500 full-time employees or has gross annual sales of less than $6 million."

Agency's Response to Economic Impact Analysis: The agency has reviewed the economic impact analysis prepared by the Department of Planning and Budget and raises no issues with this analysis.

Summary:

The amendments update the average commercial rate calculation of supplemental payments for physicians affiliated with Eastern Virginia Medical School effective November 1, 2018, and remove obsolete language.

12VAC30-80-30. Fee-for-service providers.

A. Payment for the following services, except for physician services, shall be the lower of the state agency fee schedule (12VAC30-80-190 has information about the state agency fee schedule) or actual charge (charge to the general public). Except as otherwise noted in this section, state developed fee

schedule rates are the same for both governmental and private individual practitioners. The state agency fee schedule is published on the DMAS website at http://www.dmas.virginia.gov/#/searchcptcodes.

1. Physicians' services. Payment for physician services shall be the lower of the state agency fee schedule or actual charge (charge to the general public).

2. Dentists' services. Dental services, dental provider qualifications, and dental service limits are identified in 12VAC30-50-190. Dental services are paid based on procedure codes, which are listed in the agency's fee schedule. Except as otherwise noted, state-developed fee schedule rates are the same for both governmental and private individual practitioners.

3. Mental health services.

a. Professional services furnished by nonphysicians as described in 12VAC30-50-150. These services are reimbursed using current procedural technology (CPT) codes. The agency's fee schedule rate is based on the methodology as described in subsection A of this section.

(1) Services provided by licensed clinical psychologists shall be reimbursed at 90% of the reimbursement rate for psychiatrists in subdivision A 1 of this section.

(2) Services provided by independently enrolled licensed clinical social workers, licensed professional counselors, licensed clinical nurse specialists-psychiatric, or licensed marriage and family therapists shall be reimbursed at 75% of the reimbursement rate for licensed clinical psychologists.

b. Intensive in-home services are reimbursed on an hourly unit of service. The agency's rates are set as of July 1, 2011, and are effective for services on or after that date.

c. Therapeutic day treatment services are reimbursed based on the following units of service: one unit equals two to 2.99 hours per day; two units equals three to 4.99 hours per day; three units equals five or more hours per day. No room and board is included in the rates for therapeutic day treatment. The agency's rates are set as of July 1, 2011, and are effective for services on or after that date.

d. Therapeutic group home services (formerly called level A and level B group home services) shall be reimbursed based on a daily unit of service. The agency's rates are set as of July 1, 2011, and are effective for services on or after that date.

e. Therapeutic day treatment or partial hospitalization services shall be reimbursed based on the following units of service: one unit equals two to three hours per day; two units equals four to 6.99 hours per day; three units equals seven or more hours per day. The agency's rates are set as of July 1, 2011, and are effective for services on or after that date.

f. Psychosocial rehabilitation services shall be reimbursed based on the following units of service: one unit equals two to 3.99 hours per day; two units equals four to 6.99 hours per day; three units equals seven or more hours per day. The agency's rates are set as of July 1, 2011, and are effective for services on or after that date.

g. Crisis intervention services shall be reimbursed on the following units of service: one unit equals two to 3.99 hours per day; two units equals four to 6.99 hours per day; three units equals seven or more hours per day. The agency's rates are set as of July 1, 2011, and are effective for services on or after that date.

h. Intensive community treatment services shall be reimbursed on an hourly unit of service. The agency's rates are set as of July 1, 2011, and are effective for services on or after that date.

i. Crisis stabilization services shall be reimbursed on an hourly unit of service. The agency's rates are set as of July 1, 2011, and are effective for services on or after that date.

j. Independent living and recovery services (previously called mental health skill building services) shall be reimbursed based on the following units of service: one unit equals one to 2.99 hours per day; two units equals three to 4.99 hours per day. The agency's rates are set as of July 1, 2011, and are effective for services on or after that date.

4. Podiatry.

5. Nurse-midwife services.

6. Durable medical equipment (DME) and supplies.

Definitions. The following words and terms when used in this section shall have the following meanings unless the context clearly indicates otherwise:

"DMERC" means the Durable Medical Equipment Regional Carrier rate as published by the Centers for Medicare and Medicaid Services at http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/DMEPOSFeeSched/DMEPOS-Fee-Schedule.html.

"HCPCS" means the Healthcare Common Procedure Coding System, Medicare's National Level II Codes, HCPCS 2006 (Eighteenth edition), as published by Ingenix, as may be periodically updated.

a. Obtaining prior authorization shall not guarantee Medicaid reimbursement for DME.

b. The following shall be the reimbursement method used for DME services:

(1) If the DME item has a DMERC rate, the reimbursement rate shall be the DMERC rate minus 10%. For dates of service on or after July 1, 2014, DME items subject to the Medicare competitive bidding program shall be reimbursed the lower of:

(a) The current DMERC rate minus 10%; or

(b) The average of the Medicare competitive bid rates in Virginia markets.

(2) For DME items with no DMERC rate, the agency shall use the agency fee schedule amount. The reimbursement rates for DME and supplies shall be listed in the DMAS Medicaid Durable Medical Equipment (DME) and Supplies Listing and updated periodically. The agency fee schedule shall be available on the agency website at www.dmas.virginia.gov.

(3) If a DME item has no DMERC rate or agency fee schedule rate, the reimbursement rate shall be the manufacturer's net charge to the provider, less shipping and handling, plus 30%. The manufacturer's net charge to the provider shall be the cost to the provider minus all available discounts to the provider. Additional information specific to how DME providers, including manufacturers who are enrolled as providers, establish and document their cost ~~or costs~~ for DME codes that do not have established rates can be found in the relevant agency guidance document.

c. DMAS shall have the authority to amend the agency fee schedule as it deems appropriate and with notice to providers. DMAS shall have the authority to determine alternate pricing, based on agency research, for any code that does not have a rate.

d. The reimbursement for incontinence supplies shall be by selective contract. Pursuant to § 1915(a)(1)(B) of the Social Security Act and 42 CFR 431.54(d), the Commonwealth assures that adequate services or devices shall be available under such arrangements.

e. Certain durable medical equipment used for intravenous therapy and oxygen therapy shall be bundled under specified procedure codes and reimbursed as determined by the agency. Certain services or durable medical equipment such as service maintenance agreements shall be bundled under specified procedure codes and reimbursed as determined by the agency.

(1) Intravenous therapies. The DME for a single therapy, administered in one day, shall be reimbursed at the established service day rate for the bundled durable medical equipment and the standard pharmacy payment, consistent with the ingredient cost as described in 12VAC30-80-40, plus the pharmacy service day and dispensing fee. Multiple applications of the same therapy shall be included in one service day rate of reimbursement. Multiple applications of different therapies administered in one day shall be reimbursed for the bundled durable medical equipment service day rate as follows: the most expensive therapy shall be reimbursed at 100% of cost; the second and all subsequent most expensive therapies shall be reimbursed at 50% of cost. Multiple therapies administered in one day shall be reimbursed at the pharmacy service day rate plus 100% of every active therapeutic ingredient in the compound (at the lowest ingredient cost methodology) plus the appropriate pharmacy dispensing fee.

(2) Respiratory therapies. The DME for oxygen therapy shall have supplies or components bundled under a service day rate based on oxygen liter flow rate or blood gas levels. Equipment associated with respiratory therapy may have ancillary components bundled with the main component for reimbursement. The reimbursement shall be a service day per diem rate for rental of equipment or a total amount of purchase for the purchase of equipment. Such respiratory equipment shall include oxygen tanks and tubing, ventilators, noncontinuous ventilators, and suction machines. Ventilators, noncontinuous ventilators, and suction machines may be purchased based on the individual patient's medical necessity and length of need.

(3) Service maintenance agreements. Provision shall be made for a combination of services, routine maintenance, and supplies, to be known as agreements, under a single reimbursement code only for equipment that is recipient owned. Such bundled agreements shall be reimbursed either monthly or in units per year based on the individual agreement between the DME provider and DMAS. Such bundled agreements may apply to, but not necessarily be limited to, either respiratory equipment or apnea monitors.

7. Local health services.

8. Laboratory services (other than inpatient hospital). The agency's rates for clinical laboratory services were set as of July 1, 2014, and are effective for services on or after that date.

9. Payments to physicians who handle laboratory specimens, but do not perform laboratory analysis (limited to payment for handling).

10. X-ray services.

11. Optometry services.

12. Reserved.

13. Home health services. Effective June 30, 1991, cost reimbursement for home health services is eliminated. A rate per visit by discipline shall be established as set forth by 12VAC30-80-180.

14. Physical therapy; occupational therapy; and speech, hearing, language disorders services when rendered to noninstitutionalized recipients.

15. Clinic services, as defined under 42 CFR 440.90, except for services in ambulatory surgery clinics reimbursed under 12VAC30-80-35.

16. Supplemental payments for services provided by Type I physicians.

a. In addition to payments for physician services specified elsewhere in this chapter, DMAS provides supplemental payments to Type I physicians for furnished services provided on or after July 2, 2002. A Type I physician is a member of a practice group organized by or under the control of a state academic health system or an academic health system that operates under a state authority and includes a hospital~~,~~ who has entered into contractual agreements for the assignment of payments in accordance with 42 CFR 447.10.

b. The methodology for determining the Medicare equivalent of the average commercial rate is described in 12VAC30-80-300.

c. Supplemental payments shall be made quarterly no later than 90 days after the end of the quarter.

d. ~~Effective April 1, 2017, the supplemental payment amount for Type I physician services shall be the difference between the Medicaid payments otherwise made for physician services and 256% of Medicare rates.~~ Effective May 1, 2017, the supplemental payment amount for Type I physician services shall be the difference between the Medicaid payments otherwise made for physician services and 258% of Medicare rates.

17. Supplemental payments for services provided by physicians at Virginia freestanding children's hospitals.

a. In addition to payments for physician services specified elsewhere in this chapter, DMAS provides supplemental payments to Virginia freestanding children's hospital physicians providing services at freestanding children's hospitals with greater than 50% Medicaid inpatient utilization in state fiscal year 2009 for furnished services provided on or after July 1, 2011. A freestanding children's hospital physician is a member of a practice group (i) organized by or under control of a qualifying Virginia freestanding children's hospital, or (ii) who has entered into contractual agreements for provision of physician services at the qualifying Virginia freestanding children's hospital and that is designated in writing by the Virginia freestanding children's hospital as a practice plan for the quarter for which the supplemental payment is made subject to DMAS approval. The freestanding children's hospital physicians also must have entered into contractual agreements with the practice plan for the assignment of payments in accordance with 42 CFR 447.10.

b. ~~Effective July 1, 2011, the supplemental payment amount for freestanding children's hospital physician services shall be the difference between the Medicaid payments otherwise made for freestanding children's hospital physician services and 143% of Medicare rates as defined in the supplemental payment calculation described in the Medicare equivalent of the average commercial rate methodology (see 12VAC30-80-300), subject to the following reduction. Final payments shall be reduced on a prorated basis so that total payments for freestanding children's hospital physician services are $400,000 less annually than would be calculated based on the formula in the previous sentence.~~ Effective July 1, 2015, the supplemental payment amount for freestanding children's hospital physician services shall be the difference between the Medicaid payments otherwise made for freestanding children's hospital physician services and 178% of Medicare rates as defined in the supplemental payment calculation for Type I physician services. Payments shall be made on the same schedule as Type I physicians.

18. Supplemental payments for services provided by physicians affiliated with Eastern Virginia Medical Center.

a. In addition to payments for physician services specified elsewhere in this chapter, the Department of Medical Assistance Services provides supplemental payments to physicians affiliated with Eastern Virginia Medical Center for furnished services provided on or after October 1, 2012. A physician affiliated with Eastern Virginia Medical Center is a physician who is employed by a publicly funded medical school that is a political subdivision of the Commonwealth of Virginia, who provides clinical services through the faculty practice plan affiliated with the publicly funded medical school, and who has entered into contractual arrangements for the assignment of payments in accordance with 42 CFR 447.10.

b. ~~Effective October 1, 2015, the supplemental payment amount shall be the difference between the Medicaid payments otherwise made for physician services and 137% of Medicare rates. The methodology for determining the Medicare equivalent of the average commercial rate is described in 12VAC30-80-300.~~ Effective November 1, 2018, the supplemental payment amount shall be the difference between the Medicaid payments otherwise made for physician services and 145% of the Medicare rates. The methodology for determining the Medicare equivalent of the average commercial rate is described in 12VAC30-80-300.

c. Supplemental payments shall be made quarterly, no later than 90 days after the end of the quarter.

19. Supplemental payments for services provided by physicians at freestanding children's hospitals serving children in Planning District 8.

a. In addition to payments for physician services specified elsewhere in this chapter, DMAS shall make supplemental payments for physicians employed at a freestanding children's hospital serving children in Planning District 8 with more than 50% Medicaid inpatient utilization in fiscal year 2014. This applies to physician practices affiliated with Children's National Health System.

b. The supplemental payment amount for qualifying physician services shall be the difference between the Medicaid payments otherwise made and 178% of Medicare rates but no more than $551,000 for all qualifying physicians. The methodology for determining allowable percent of Medicare rates is based on the Medicare equivalent of the average commercial rate described in this chapter.

c. Supplemental payments shall be made quarterly no later than 90 days after the end of the quarter. Any quarterly payment that would have been due prior to the approval date shall be made no later than 90 days after the approval date.

20. Supplemental payments to nonstate government-owned or operated clinics.

a. In addition to payments for clinic services specified elsewhere in this chapter, DMAS provides supplemental payments to qualifying nonstate government-owned or government-operated clinics for outpatient services provided to Medicaid patients on or after July 2, 2002. Clinic means a facility that is not part of a hospital but is organized and operated to provide medical care to outpatients. Outpatient services include those furnished by or under the direction of a physician, dentist or other medical professional acting within the scope of his license to an eligible individual. Effective July 1, 2005, a qualifying clinic is a clinic operated by a community services board. The state share for supplemental clinic payments will be funded by general fund appropriations.

b. The amount of the supplemental payment made to each qualifying nonstate government-owned or government-operated clinic is determined by:

(1) Calculating for each clinic the annual difference between the upper payment limit attributed to each clinic according to subdivision 20 d of this subsection and the amount otherwise actually paid for the services by the Medicaid program;

(2) Dividing the difference determined in subdivision 20 b (1) of this subsection for each qualifying clinic by the aggregate difference for all such qualifying clinics; and

(3) Multiplying the proportion determined in subdivision 20 b (2) of this subsection by the aggregate upper payment limit amount for all such clinics as determined in accordance with 42 CFR 447.321 less all payments made to such clinics other than under this section.

c. Payments for furnished services made under this section will be made annually in a lump sum during the last quarter of the fiscal year.

d. To determine the aggregate upper payment limit referred to in subdivision 20 b (3) of this subsection, Medicaid payments to nonstate government-owned or government-operated clinics will be divided by the "additional factor" whose calculation is described in 12VAC30-80-190 B 2 in regard to the state agency fee schedule for Resource Based Relative Value Scale. Medicaid payments will be estimated using payments for dates of service from the prior fiscal year adjusted for expected claim payments. Additional adjustments will be made for any program changes in Medicare or Medicaid payments.

21. Personal assistance services (PAS) for individuals enrolled in the Medicaid Buy-In program described in 12VAC30-60-200. These services are reimbursed in accordance with the state agency fee schedule described in 12VAC30-80-190. The state agency fee schedule is published on the DMAS website at http://www.dmas.virginia.gov.

22. Supplemental payments to state-owned or state-operated clinics.

a. Effective for dates of service on or after July 1, 2015, DMAS shall make supplemental payments to qualifying state-owned or state-operated clinics for outpatient services provided to Medicaid patients on or after July 1, 2015. Clinic means a facility that is not part of a hospital but is organized and operated to provide medical care to outpatients. Outpatient services include those furnished by or under the direction of a physician, dentist, or other medical professional acting within the scope of his license to an eligible individual.

b. The amount of the supplemental payment made to each qualifying state-owned or state-operated clinic is determined by calculating for each clinic the annual difference between the upper payment limit attributed to each clinic according to subdivision 19 b of this subsection and the amount otherwise actually paid for the services by the Medicaid program.

c. Payments for furnished services made under this section shall be made annually in lump sum payments to each clinic.

d. To determine the upper payment limit for each clinic referred to in subdivision 19 b of this subsection, the

state payment rate schedule shall be compared to the Medicare resource-based relative value scale nonfacility fee schedule per Current Procedural Terminology code for a base period of claims. The base period claims shall be extracted from the Medical Management Information System and exclude crossover claims.

B. Hospice services payments must be no lower than the amounts using the same methodology used under Part A of Title XVIII, and take into account the room and board furnished by the facility, equal to at least 95% of the rate that would have been paid by the state under the plan for facility services in that facility for that individual. Hospice services shall be paid according to the location of the service delivery and not the location of the agency's home office.

VA.R. Doc. No. R20-5833; Filed October 17, 2019, 3:56 p.m.

Fast-Track Regulation

Title of Regulation: **12VAC30-141. Family Access to Medical Insurance Security Plan (amending 12VAC30-141-880).**

Statutory Authority: § 32.1-325 of the Code of Virginia; 42 USC § 1396 et seq.

Public Hearing Information: No public hearings are scheduled.

Public Comment Deadline: December 12, 2019.

Effective Date: December 27, 2019.

Agency Contact: Emily McClellan, Regulatory Supervisor, Policy Division, Department of Medical Assistance Services, 600 East Broad Street, Suite 1300, Richmond, VA 23219, telephone (804) 371-4300, FAX (804) 786-1680, or email emily.mcclellan@dmas.virginia.gov.

Basis: Section 32.1-325 of the Code of Virginia grants the Board of Medical Assistance Services the authority to administer and amend the State Plan for Medical Assistance. Section 32.1-324 of the Code of Virginia authorizes the Director of the Department of Medical Assistance Services (DMAS) to administer and amend the State Plan for Medical Assistance according to the board's requirements. The Medicaid authority as established by § 1902(a) of the Social Security Act (42 USC § 1396a), provides governing authority for payments for services.

Purpose: The purpose of this action is to bring Virginia regulations into alignment with current Family Access to Medical Insurance Security (FAMIS) MOMS contracts and current Medicaid Managed Care practice. DMAS intends to remove an exclusion for individuals in the third trimester of pregnancy. These changes will stipulate that members in their third trimester of pregnancy will no longer be allowed to request exclusion from Managed Care Organization (MCO) enrollment. In the last year, only 10 women requested exemption. With the implementation of Medallion 4.0 and the upcoming Medicaid expansion, this exemption is no longer necessary to ensure access to care. The Medicaid Managed Care health plans all have 100% network adequacy for prenatal and obstetric care, including obstetricians and gynecologists, nurse practitioners, family physicians, and certified nurse midwives in all regions of the Commonwealth. Women will still have the option of changing health plans if their provider is not contracted with a specific MCO. The regulations are essential to protect the health, safety, and welfare of citizens in that the regulatory changes ensure access to care for women in their third trimester of pregnancy.

Rationale for Using Fast-Track Rulemaking Process: This regulatory action is being promulgated as a fast-track rulemaking action because it is not expected to be controversial. The changes in the regulatory text do not reflect changes in Medicaid programs, but rather the updated text reflects changes that have already been made in FAMIS MOMS contracts and practice.

Substance: The removal of the third trimester managed care exclusion from 12VAC30-141-880 within the FAMIS MOMS regulations is also being removed from the Medallion 4.0 regulations in a separate fast-track rulemaking action. The Medallion 4.0 plans provide a number of innovations to improve outcomes for pregnant women and their infants. These plans also ensure that pregnant women receive high quality care and care coordination, which is not available to fee-for-service members. As a result, pregnant women will receive a greater benefit from enrolling in Medicaid Managed Care and receive high quality care and care coordination as early as possible in their pregnancies.

These benefits are designed to improve health outcomes for women and their infants and are not available for the fee-for-service population. By ending this third trimester exclusion, DMAS is committed to ensuring that all pregnant women and infants can receive the comprehensive array of high quality services and care coordination offered by the Medicaid Managed Care health plans.

Issues: The primary advantages of this action to both the public and the agency are (i) the removal of regulations that could negatively impact health outcomes and (ii) improved access to care for qualified Medicaid members. These changes create no disadvantages to the public, the agency, the Commonwealth, or the regulated community.

Department of Planning and Budget's Economic Impact Analysis:

Summary of the Proposed Amendments to Regulation. The Board of Medical Assistance Services (Board) proposes to remove the language allowing exclusion from managed care enrollment for individuals in the third trimester of pregnancy to reflect changes in practice and contracts as they apply to the Family Access to Medical Insurance Security (FAMIS) plan.[2]

Result of Analysis. There is insufficient data to accurately compare the magnitude of the benefits versus the costs. Detailed analysis of the benefits and costs can be found in the next section.

Estimated Economic Impact. The purpose of this action is to bring this regulation into alignment with the current FAMIS MOMS contracts and current Medicaid managed care practices.

Current language in this regulation provides an exemption for individuals in the third trimester of pregnancy to opt out of the requirement to enroll in a managed care plan. Prior to 2012, managed care coverage was not available in all parts of Virginia, especially in rural areas as the managed care delivery system in Virginia had been gaining ground but was not fully mature yet. To address this issue, this regulation has allowed pregnant individuals to receive services from fee-for-service providers who were not enrolled in a managed care provider network (e.g., certified professional midwives). In 2012, managed care coverage had become available statewide, and currently all six managed care organizations include the 13 major health systems in their network and all provide statewide coverage. As a result of the managed care network expansions, there were only 10 exemption requests last year.

In addition to the changes in practice reducing the number of exemption requests significantly, the Department of Medical Assistance Services (DMAS) plans to add specific contract language effective July 1, 2019, that will address how these pregnant individuals could access the services they need. These changes will stipulate that members in their third trimester of pregnancy will no longer be allowed to request exclusion from managed care enrollment but will still provide the option of changing health plans if their provider is not contracted with a specific managed care organization but is a part of another plan's network. In other words, affected individuals will be allowed to switch their managed care network that does not include the provider sought and enroll in the one that has a contract with the desired provider. If the desired provider is not in the network of any of the six managed care organizations, affected individuals will not have access to that specific provider under the contract language.

However, DMAS plans to revise the existing "Good Cause Exemption" under 12VAC30-141-880 to allow qualified pregnant women to temporarily remain in fee-for-service while under the care of a Medicaid-enrolled certified professional or licensed midwife. This process will require that pregnant members obtain an attestation from a physician or nurse practitioner (including certified nurse midwives and other nurse practitioners), within the third trimester, that no diagnoses are present that could increase the risk of adverse outcomes for mother or baby. To define these risks, DMAS will work with the Board of Medicine, the Board of Nursing, the American College of Obstetricians and Gynecologists, the American College of Nurse Midwives and other stakeholders, as deemed appropriate.

According to DMAS, the managed care health plans all have 100% network adequacy for prenatal and obstetric care, including obstetricians/gynecologists, nurse practitioners, family physicians, and certified nurse midwives in all regions of the Commonwealth. DMAS also notes that managed care plans provide a number of innovations to improve outcomes for pregnant women and their infants and ensure that pregnant women receive high quality care and care coordination, which is not available to fee-for-service members. Therefore, DMAS believes the proposed amendments will be beneficial for the affected individuals by assuring quality care. If an affected individual desires to receive services from a fee-for-service-only provider, DMAS is working to provide the option to request it under the "Good Cause Exemption." The "Good Cause Exemption" determination process will be revised to ensure that only the low-risk pregnancies are allowed an exemption. Thus, the proposed amendments will encourage affected individuals to stay in the managed care network but will allow exemptions as appropriate.

Provided that DMAS achieves its goal of tailoring the "Good Cause Exemption" to accommodate the affected individuals by the time the proposed amendments become effective, this action should provide a net benefit as it will reflect the changes in contracts and practice without taking away what may be a valued option for some. Otherwise, the net effect would depend on the level of quality achieved by forcing affected individuals to receive services only from a managed care network and the value attached by the pregnant members to receiving services from the fee-for-service-only provider they prefer.

Businesses and Entities Affected. Last year, there were 10 requests to opt out of managed care network to receive services from fee-for-service-only pregnancy care providers.

Localities Particularly Affected. The third trimester pregnancy exclusion has been more common in rural areas such as in Southwest Virginia.

Projected Impact on Employment. The proposed amendments are unlikely to significantly affect total employment.

Effects on the Use and Value of Private Property. The proposed amendments are unlikely to significantly affect the use and value of private property.

Real Estate Development Costs. The proposed amendments would not affect real estate development costs.

Small Businesses:

Definition. Pursuant to § 2.2-4007.04 of the Code of Virginia, small business is defined as "a business entity, including its affiliates, that (i) is independently owned and operated and

(ii) employs fewer than 500 full-time employees or has gross annual sales of less than $6 million."

Costs and Other Effects. Although a few fee-for-service-only providers may lose a few pregnant Medicaid members as customers due to added encouragement to stay in the managed care network during pregnancy, the costs and other effects are unlikely to be significant.

Alternative Method that Minimizes Adverse Impact. The proposed amendments are unlikely to have a significant adverse impact on small businesses.

Adverse Impacts:

Businesses. The proposed amendments are unlikely to have a significant adverse impact on businesses.

Localities. The proposed amendments would not adversely affect localities.

Other Entities. The proposed amendments would not adversely affect other entities.

---

[2]This exclusion is also proposed to be removed from Medallion 4.0 regulations in a separate regulatory action. See http://townhall.virginia.gov/l/viewstage.cfm?stageid=8178

Agency's Response to Economic Impact Analysis: The agency has reviewed the economic impact analysis prepared by the Department of Planning and Budget and concurs with this analysis.

Summary:

The amendments remove an exclusion from using Medicaid Managed Care through a managed care organization for individuals in the third trimester of pregnancy.

12VAC30-141-880. Assignment to managed care.

A. All eligible enrollees shall be assigned in managed care through the department or the central processing unit (CPU) under contract to DMAS. FAMIS MOMS individuals, during the preassignment period to an MCHIP, shall receive Medicaid-like benefits via fee-for-service utilizing a FAMIS MOMS card issued by DMAS. After assignment to an MCHIP, benefits and the delivery of benefits shall be administered specific to the managed care program in which the individual is enrolled.

1. MCHIPs shall be offered to enrollees in all areas.

2. All enrollees shall be assigned to that contracted MCHIP.

3. Enrollees shall be assigned through a random system algorithm.

4. Enrolled individuals will receive a letter indicating that they may select one of the contracted MCHIPs that serve such area. Enrollees who do not select an MCHIP as described above, shall be assigned to an MCHIP as described in subdivision 3 of this subsection.

5. Individuals assigned to an MCHIP who lose and then regain eligibility for FAMIS MOMS within 60 ~~calendar~~ days will be reassigned to their previous MCHIP.

B. Following their initial assignment to an MCHIP, those enrollees shall be restricted to that MCHIP until their next annual eligibility redetermination, unless appropriately disenrolled by the department.

1. During the first 90 ~~calendar~~ days of managed care assignment, an enrollee may request reassignment for any reason from that MCHIP to another MCHIP serving that geographic area. Such reassignment shall be effective no later than the first day of the second month after the month in which the enrollee requests reassignment.

2. After the first 90 calendar days of the assignment period, the enrollee may only be reassigned from one MCHIP to another MCHIP upon determination by DMAS that good cause exists pursuant to subsection C of this section.

C. Disenrollment for good cause may be requested at any time.

1. After the first 90 ~~calendar~~ days of assignment in managed care, enrollees may request disenrollment from DMAS based on good cause. The request must be made in writing to DMAS and cite the reasons why the enrollee wishes to be reassigned. DMAS shall establish procedures for good cause reassignment through written policy directives.

2. DMAS shall determine whether good cause exists for reassignment.

~~D. Exclusion for assignment to a MCHIP. The following individuals shall be excluded from assignment to a MCHIP. Newly eligible individuals who are in the third trimester of pregnancy and who request exclusion within a department-specified timeframe of the effective date of their MCHIP enrollment. Exclusion may be granted only if the member's obstetrical provider (physician or hospital) does not participate with the enrollee's assigned MCHIP. Exclusion requests made during the third trimester may be made by the enrollee, MCHIP, or provider. DMAS shall determine if the request meets the criteria for exclusion.~~

VA.R. Doc. No. R20-5636; Filed October 15, 2019, 3:39 p.m.

STATE BOARD OF BEHAVIORAL HEALTH AND DEVELOPMENTAL SERVICES

Proposed Regulation

Title of Regulation: **12VAC35-105. Rules and Regulations for Licensing Providers by the Department of Behavioral Health and Developmental Services (amending 12VAC35-105-20, 12VAC35-105-30, 12VAC35-105-50, 12VAC35-105-120, 12VAC35-105-150, 12VAC35-105-155, 12VAC35-105-160, 12VAC35-105-170, 12VAC35-105-320, 12VAC35-105-330, 12VAC35-105-400, 12VAC35-105-440, 12VAC35-105-450, 12VAC35-105-460, 12VAC35-105-520, 12VAC35-105-580, 12VAC35-105-590, 12VAC35-105-620, 12VAC35-105-650, 12VAC35-105-660, 12VAC35-105-665, 12VAC35-105-675, 12VAC35-105-691, 12VAC35-105-800, 12VAC35-105-830, 12VAC35-105-1140, 12VAC35-105-1250, 12VAC35-105-1360; adding 12VAC35-105-1245).**

Statutory Authority: §§ 37.2-302 and 37.2-400 of the Code of Virginia.

Public Hearing Information:

November 18, 2019 - 10 a.m. - Fairfield Henrico County Public Library, Meeting Room 1401, North Laburnum Avenue, Richmond, VA 23223

Public Comment Deadline: January 10, 2020.

Agency Contact: Emily Bowles, Legal Coordinator, Office of Licensing, Department of Behavioral Health and Developmental Services, 1220 Bank Street, P.O. Box 1797, Richmond, VA 23218, telephone (804) 225-3281, FAX (804) 692-0066, TTY (804) 371-8977, or email emily.bowles@dbhds.virginia.gov.

Basis: Section 37.2-203 of the Code of Virginia authorizes the Board of Behavioral Health and Developmental Services to adopt regulations that may be necessary to carry out the provisions of Title 37.2 of the Code of Virginia and other laws of the Commonwealth administered by the commissioner and the department.

Purpose: The purpose of this regulatory action is to address several items that have been cited by the Independent Reviewer as obstacles to compliance with the provisions of the U.S. Department of Justice's Settlement Agreement with Virginia. This regulatory action will facilitate the submission of necessary information by providers after a serious incident occurs and the development of the required quality and risk management processes and strengthen case management services as required by the Settlement Agreement. The Department of Behavioral Health and Developmental Services (DBHDS) has determined that these changes will be beneficial to the population served because they are essential to the health, safety, and welfare of individuals served. Enhanced requirements for providers to establish effective risk management and quality improvement processes, improved reporting of serious incidents and injuries to allow the Commonwealth to obtain more consistent data regarding the prevalence of serious incidents, and strengthened expectations for case management to ensure the individual's plan is appropriate and implemented correctly and that potential risks are identified are all benefits of the changes in this action.

Substance: DBHDS has narrowly focused the amendments for this action to address the concerns of the Independent Reviewer and not to unduly impact the system.

The proposed amendments enhance the requirements of providers for establishing effective risk management and quality improvement processes by requiring (i) the person leading risk management activities have training and experience in investigations, root cause analysis, and data analysis; (ii) annual risk assessments, to include review of the environment, staff competence, seclusion and restraint, serious incidents, and risk triggers and thresholds; (iii) policies and procedures for a quality improvement program that include a quality improvement plan that is reviewed and updated at least annually; and (iv) providers to conduct a root cause analysis within 30 days of discovery of Level II serious incidents and any Level III serious incidents that occur during the provision of a service or on the provider's premises.

The proposed amendments improve reporting of serious incidents and injuries to allow the Commonwealth to obtain more consistent data regarding the prevalence of serious incidents by establishing the following three levels of incidents, and require providers to report on and conduct root cause analysis of more serious incidents that occur within the provision of the provider services or on their property and to track and monitor serious incidents: (i) Level I serious incidents, which include incidents without injury but potential for harm, and are tracked but are not reported; (ii) Level II serious incidents, which include serious injuries, an individual who is or was missing, unplanned hospitalizations, choking incidents that require direct physical intervention by another person, ingestion of hazardous materials, diagnosis of decubitus ulcers, bowel obstructions, or aspiration pneumonia, and are reported when the incidents occur during provision of service or on the provider premises; and (iii) Level III serious incidents, which include deaths, sexual assaults, suicide attempts resulting in hospitalization, and are reported regardless of where the incidents occurred within the provision of the provider's services or on their premises.

The proposed amendments also strengthen expectations for case management by adding assessment for unidentified risks, status of previously identified risks, whether the plan is being implemented appropriately and remains appropriate for the individual.

Issues: The advantages to the public, the agency, and the Commonwealth of the proposed amendments are enhanced requirements for providers to establish effective risk management and quality improvement processes; improved

reporting of serious incidents and injuries, allowing the Commonwealth to obtain more consistent data regarding the prevalence of serious incidents; and stronger expectations for case management, all to ensure an individual's plan is appropriate and implemented correctly, including potential risks are identified for an individual. These requirements are essential to the health, safety, and welfare of individuals served. Also, they are essential to address several items that have been cited by the Independent Reviewer as obstacles to compliance with the provisions of the Settlement Agreement between the United States Department of Justice and Virginia (United States of America v. Commonwealth of Virginia, Civil Action No. 3:12cv059-JAG), which includes provisions of quality and risk management. There is no known disadvantage to the Commonwealth, DBHDS, other government entities, or the public in regard to these proposed amendments.

Department of Planning and Budget's Economic Impact Analysis:

Summary of the Proposed Amendments to Regulation. Pursuant to a settlement agreement,[2] the State Board of Behavioral Health and Developmental Services (Board) proposes to: 1) categorize types of patient injuries that must be reported, 2) require annual risk assessments to include review of the environment, staff competence, seclusion and restraint, serious incidents, and risk triggers and thresholds, and 3) conduct a root cause analysis within 30 days of discovery of serious incidents.

Result of Analysis. The benefits likely exceed the costs for all proposed changes.

Estimated Economic Impact. The purpose of the proposed amendments is to enhance requirements for providers to improve quality and risk management practices as required under the settlement agreement. In order to achieve that goal, the Board proposes to categorize types of patient injuries that must be reported into Levels 1, 2, and 3 according to severity. The types of injuries that would fall in any of the three levels are already required to be reported, but not as categorized as such. In addition to the categorization, language has been proposed to clarify when reporting is required. These changes are expected to standardize the reporting process, reduce reporting errors and duplicate reports, which should be beneficial.

The Board proposes to require annual risk assessments to include review of the environment, staff competence, seclusion and restraint, serious incidents, and risk triggers and thresholds. Similarly, annual risk assessments are already required, but the proposed additional language should clarify what needs to be addressed in the assessment and improve its quality. The change that has to do with review of environment will clarify that a facility must maintain adequate staff at all times to safely evacuate all patients in case of a fire. The Department of Behavioral Health and Developmental Services (DBHDS) states that this has already been required, but the additional clarity may bring some facilities that may be currently out of compliance with this requirement into compliance. Since these changes do not impose any new costs on facilities but may improve compliance they should produce a net benefit.

The Board proposes to require providers to conduct a root cause analysis within 30 days of discovery of Level II and III serious incidents that occur during the provision of a service or on the provider's premises.[3] Even though the root cause analysis has not been required in the past, DBHDS indicates that the facilities would readily have many elements for such analysis and the analysis would not take more than 15 minutes in most cases. Thus, some administrative costs may be imposed on regulated facilities. However, the root cause analysis is also expected to improve quality and risk management at the regulated facilities.

Finally, the Board proposes to require that the person leading risk management activities possess training and experience in investigations, root cause analysis, and data analysis. DBHDS believes most facilities already have personnel with these qualifications, but the possibility of a few facilities having to hire additional staff cannot be ruled out.

DBHDS also reports that the proposed reporting requirements will be implemented through modifications to the existing reporting system. The modifications would be handled with the resources already slated for ongoing maintenance of the system. Thus, DBHDS does not expect any additional administrative costs from the proposed changes.

Overall, DBHDS expects that the proposed changes would allow more targeted reporting by providers and improve the efficiency in reporting and handling of the reportable cases, while at the same time putting more preventive measures in place for the safety of individuals receiving services.

Businesses and Entities Affected. Approximately 1,100 service providers licensed by DBHDS would be affected by this regulatory action.

Localities Particularly Affected. The proposed amendments do not disproportionately affect particular localities.

Projected Impact on Employment. The proposed amendments are unlikely to significantly affect total employment.

Effects on the Use and Value of Private Property. The proposed amendments are unlikely to significantly affect the use and value of private property.

Real Estate Development Costs. The proposed amendments are unlikely to affect real estate development costs.

Small Businesses:

Definition. Pursuant to § 2.2-4007.04 of the Code of Virginia, small business is defined as "a business entity, including its affiliates, that (i) is independently owned and operated and

(ii) employs fewer than 500 full-time employees or has gross annual sales of less than $6 million."

Costs and Other Effects. Although DBHDS does not know how many of the licensed facilities may be small businesses, most are likely to be so. However, the proposed amendments are unlikely to significantly affect costs for small businesses.

Alternative Method that Minimizes Adverse Impact. The proposed amendments do not adversely affect small businesses.

Adverse Impacts:

Businesses. The proposed amendments do not adversely affect businesses.

Localities. The proposed amendments do not adversely affect localities.

Other Entities. The proposed amendments do not adversely affect other entities.

---

[2]The settlement agreement between the United States Department of Justice and Virginia (United States of America v. Commonwealth of Virginia, Civil Action No. 3:12cv059-JAG).

[3]Root Cause Analysis is a patient safety improvement activity that is focused on identifying, and eliminating or controlling, system vulnerabilities that can result in patient injury.

Agency's Response to Economic Impact Analysis: The agency concurs with Department of Planning and Budget's economic impact analysis.

Summary:

The proposed regulatory action addresses several items necessary for compliance with the U.S. Department of Justice's Settlement Agreement with Virginia, including facilitating the submission of necessary information by providers after a serious incident occurs, establishing the required quality and risk management processes, and strengthening case management services.

The proposed amendments to provider provisions include requiring (i) the person leading risk management activities to have certain training and experience in investigations, root cause analysis, and data analysis; (ii) annual risk assessments, to include review of the environment, staff competence, seclusion and restraint, serious incidents, and risk triggers and thresholds; (iii) policies and procedures for a quality improvement program that includes a quality improvement plan reviewed and updated at least annually; (iv) a root cause analysis of serious incidents that occur during the provision of a service or on the provider's premises; and (v) case management direct assessments. The proposed amendments also establish three levels of patient incidents to improve reporting of serious incidents.

Article 2
Definitions

12VAC35-105-20. Definitions.

The following words and terms when used in this chapter shall have the following meanings unless the context clearly indicates otherwise:

"Abuse" ~~(§ 37.2-100 of the Code of Virginia)~~ means any act or failure to act by an employee or other person responsible for the care of an individual in a facility or program operated, licensed, or funded by the department, excluding those operated by the Virginia Department of Corrections, that was performed or was failed to be performed knowingly, recklessly, or intentionally, and that caused or might have caused physical or psychological harm, injury, or death to ~~a person~~ an individual receiving care or treatment for mental illness, ~~mental retardation (intellectual disability)~~ developmental disabilities, or substance abuse ~~(substance use disorders)~~. Examples of abuse include acts such as:

1. Rape, sexual assault, or other criminal sexual behavior;

2. Assault or battery;

3. Use of language that demeans, threatens, intimidates, or humiliates the ~~person~~ individual;

4. Misuse or misappropriation of the ~~person's~~ individual's assets, goods, or property;

5. Use of excessive force when placing ~~a person~~ an individual in physical or mechanical restraint;

6. Use of physical or mechanical restraints on ~~a person~~ an individual that is not in compliance with federal and state laws, regulations, and policies, professional accepted standards of practice, or ~~the person's~~ his individualized services plan; or

7. Use of more restrictive or intensive services or denial of services to punish ~~the person~~ an individual or that is not consistent with ~~the person's~~ his individualized services plan.

"Activities of daily living" or "ADLs" means personal care activities and includes bathing, dressing, transferring, toileting, grooming, hygiene, feeding, and eating. An individual's degree of independence in performing these activities is part of determining the appropriate level of care and services.

"Admission" means the process of acceptance into a service as defined by the provider's policies.

"Authorized representative" means a person permitted by law or 12VAC35-115 to authorize the disclosure of information or consent to treatment and services or participation in human research.

"Behavior intervention" means those principles and methods employed by a provider to help an individual receiving services to achieve a positive outcome and to address challenging behavior in a constructive and safe manner. Behavior intervention principles and methods ~~must~~ shall be employed in accordance with the individualized services plan and written policies and procedures governing service expectations, treatment goals, safety, and security.

"Behavioral treatment plan," "functional plan," or "behavioral support plan" means any set of documented procedures that are an integral part of the individualized services plan and are developed on the basis of a systematic data collection, such as a functional assessment, for the purpose of assisting individuals to achieve the following:

1. Improved behavioral functioning and effectiveness;

2. Alleviation of symptoms of psychopathology; or

3. Reduction of challenging behaviors.

"Brain injury" means any injury to the brain that occurs after birth, but before age 65, that is acquired through traumatic or nontraumatic insults. Nontraumatic insults may include anoxia, hypoxia, aneurysm, toxic exposure, encephalopathy, surgical interventions, tumor, and stroke. Brain injury does not include hereditary, congenital, or degenerative brain disorders or injuries induced by birth trauma.

~~"Care" or "treatment"~~ "Care," "treatment," or "support" means the individually planned therapeutic interventions that conform to current acceptable professional practice and that are intended to improve or maintain functioning of an individual receiving services delivered by a provider.

"Case management service" or "support coordination service" means services that can include assistance to individuals and their family members in ~~assessing~~ accessing needed services that are responsive to the ~~person's individual~~ individual's needs. Case management services include identifying potential users of the service; assessing needs and planning services; linking the individual to services and supports; assisting the individual directly to locate, develop, or obtain needed services and resources; coordinating services with other providers; enhancing community integration; making collateral contacts; monitoring service delivery; discharge planning; and advocating for individuals in response to their changing needs. "Case management service" does not include assistance in which the only function is maintaining service waiting lists or periodically contacting or tracking individuals to determine potential service needs.

"Clinical experience" means providing direct services to individuals with mental illness or the provision of direct geriatric services or special education services. Experience may include supervised internships, practicums, and field experience.

"Commissioner" means the Commissioner of the Department of Behavioral Health and Developmental Services.

"Community gero-psychiatric residential services" means 24-hour care provided to individuals with mental illness, behavioral problems, and concomitant health problems who are usually age 65 or older in a geriatric setting that is less intensive than a psychiatric hospital but more intensive than a nursing home or group home. Services include assessment and individualized services planning by an interdisciplinary services team, intense supervision, psychiatric care, behavioral treatment planning and behavior interventions, nursing, and other health related services.

~~"Community intermediate care facility/mental retardation" or "ICF/MR" means a residential facility in which care is provided to individuals who have mental retardation (intellectual disability) or a developmental disability who need more intensive training and supervision than may be available in an assisted living facility or group home. Such facilities shall comply with Title XIX of the Social Security Act standards and federal certification requirements, provide health or rehabilitative services, and provide active treatment to individuals receiving services toward the achievement of a more independent level of functioning or an improved quality of life.~~

"Complaint" means an allegation of a violation of this chapter or a provider's policies and procedures related to this chapter.

"Co-occurring disorders" means the presence of more than one and often several of the following disorders that are identified independently of one another and are not simply a cluster of symptoms resulting from a single disorder: mental illness, ~~mental retardation (intellectual disability)~~ a developmental disability, ~~or~~ substance abuse (substance use disorders)~~;~~ , or brain injury~~; or developmental disability~~.

"Co-occurring services" means individually planned therapeutic treatment that addresses in an integrated concurrent manner the service needs of individuals who have co-occurring disorders.

"Corrective action plan" means the provider's pledged corrective action in response to cited areas of noncompliance documented by the regulatory authority. ~~A corrective action plan must be completed within a specified time.~~

"Correctional facility" means a facility operated under the management and control of the Virginia Department of Corrections.

"Crisis" means a deteriorating or unstable situation often developing suddenly or rapidly that produces acute, heightened, emotional, mental, physical, medical, or behavioral distress ~~or any situation or circumstance in which the individual perceives or experiences a sudden loss of the~~

~~individual's ability to use effective problem-solving and coping skills~~.

"Crisis stabilization" means direct, intensive nonresidential or residential direct care and treatment to nonhospitalized individuals experiencing an acute crisis that may jeopardize their current community living situation. Crisis stabilization is intended to avert hospitalization or rehospitalization; provide normative environments with a high assurance of safety and security for crisis intervention; stabilize individuals in crisis; and mobilize the resources of the community support system, family members, and others for ongoing rehabilitation and recovery.

"Day support service" means structured programs of ~~activity or training services~~ training, assistance, and specialized supervision in the acquisition, retention, or improvement of self-help, socialization, and adaptive skills for adults with ~~an intellectual disability or~~ a developmental disability~~, generally in clusters of two or more continuous hours per day~~ provided to groups or individuals in nonresidential community-based settings. Day support services may provide opportunities for peer interaction and community integration and are designed to enhance the following: self-care and hygiene, eating, toileting, task learning, community resource utilization, environmental and behavioral skills, social skills, medication management, prevocational skills, and transportation skills. The term "day support service" does not include services in which the primary function is to provide employment-related services, general educational services, or general recreational services.

"Department" means the Virginia Department of Behavioral Health and Developmental Services.

"Developmental ~~disabilities"~~ disability" means ~~autism or~~ a severe, chronic disability ~~that meets all of the following conditions identified in 42 CFR 435.1009: 1. Attributable to cerebral palsy, epilepsy, or any other condition, other than mental illness, that is found to be closely related to mental retardation (intellectual disability) because this condition results in impairment of general intellectual functioning or adaptive behavior similar to behavior of individuals with mental retardation (intellectual disability) and requires treatment or services similar to those required for these individuals; 2. Manifested before the individual reaches age 18; 3. Likely to continue indefinitely; and 4. Results in substantial functional limitations in three or more of the following areas of major life activity: a. Self-care; b. Understanding and use of language; c. Learning; d. Mobility; e. Self-direction; or f. Capacity for independent living~~ of an individual that (i) is attributable to a mental or physical impairment or a combination of mental and physical impairments other than a sole diagnosis of mental illness; (ii) is manifested before the individual reaches 22 years of age; (iii) is likely to continue indefinitely; (iv) results in substantial functional limitations in three or more of the following areas of major life activity: self-care, receptive and expressive language, learning, mobility, self-direction, capacity for independent living, or economic self-sufficiency; and (v) reflects the individual's need for a combination and sequence of special interdisciplinary or generic services, individualized supports, or other forms of assistance that are of lifelong or extended duration and are individually planned and coordinated. An individual from birth to nine years of age, inclusive, who has a substantial developmental delay or specific congenital or acquired condition may be considered to have a developmental disability without meeting three or more of the criteria described in clauses (i) through (v) if the individual without services and supports has a high probability of meeting those criteria later in life.

"Developmental services" means planned, individualized, and person-centered services and supports provided to individuals with developmental disabilities for the purpose of enabling these individuals to increase their self-determination and independence, obtain employment, participate fully in all aspects of community life, advocate for themselves, and achieve their fullest potential to the greatest extent possible.

"Direct care position" means any position that includes responsibility for (i) treatment, case management, health, safety, development, or well-being of an individual receiving services or (ii) immediately supervising a person in a position with this responsibility.

"Discharge" means the process by which the individual's active involvement with a service is terminated by the provider, individual, or authorized representative.

"Discharge plan" means the written plan that establishes the criteria for an individual's discharge from a service and identifies and coordinates delivery of any services needed after discharge.

"Dispense" means to deliver a drug to an ultimate user by or pursuant to the lawful order of a practitioner, including the prescribing and administering, packaging, labeling, or compounding necessary to prepare the substance for that delivery (§ 54.1-3400 et seq. of the Code of Virginia).

"Emergency service" means unscheduled and sometimes scheduled crisis intervention, stabilization, and referral assistance provided over the telephone or face-to-face, if indicated, available 24 hours a day and seven days per week. Emergency services also may include walk-ins, home visits, jail interventions, and preadmission screening activities associated with the judicial process.

"Group home or community residential service" means a congregate service providing 24-hour supervision in a community-based home having eight or fewer residents. Services include supervision, supports, counseling, and training in activities of daily living for individuals whose individualized services plan identifies the need for the specific types of services available in this setting.

"HCBS Waiver" means a Medicaid Home and Community Based Services Waiver.

"Home and noncenter based" means that a service is provided in the individual's home or other noncenter-based setting. This includes noncenter-based day support, supportive in-home, and intensive in-home services.

~~"IFDDS Waiver" means the Individual and Family Developmental Disabilities Support Waiver.~~

"Individual" or "individual receiving services" means a ~~person receiving services that are licensed under this chapter whether that person is referred to as a patient, consumer, client, resident, student, individual, recipient, family member, relative, or other term~~ current direct recipient of public or private mental health, developmental, or substance abuse treatment, rehabilitation, or habilitation services and includes the terms "consumer," "patient," "resident," "recipient," or "client". When the term is used in this chapter, the requirement applies to every individual receiving licensed services from the provider.

"Individualized services plan" or "ISP" means a comprehensive and regularly updated written plan that describes the individual's needs, the measurable goals and objectives to address those needs, and strategies to reach the individual's goals. An ISP is person-centered, empowers the individual, and is designed to meet the needs and preferences of the individual. The ISP is developed through a partnership between the individual and the provider and includes an individual's treatment plan, habilitation plan, person-centered plan, or plan of care, which are all considered individualized service plans.

"Informed choice" means a decision made after considering options based on adequate and accurate information and knowledge. These options are developed through collaboration with the individual and his authorized representative, as applicable, and the provider with the intent of empowering the individual and his authorized representative to make decisions that will lead to positive service outcomes.

"Informed consent" means the voluntary written agreement of an individual, or that individual's authorized representative, to surgery, electroconvulsive treatment, use of psychotropic medications, or any other treatment or service that poses a risk of harm greater than that ordinarily encountered in daily life or for participation in human research. To be voluntary, informed consent must be given freely and without undue inducement; any element of force, fraud, deceit, or duress; or any form of constraint or coercion.

"Initial assessment" means an assessment conducted prior to or at admission to determine whether the individual meets the service's admission criteria; what the individual's immediate service, health, and safety needs are; and whether the provider has the capability and staffing to provide the needed services.

"Inpatient psychiatric service" means intensive 24-hour medical, nursing, and treatment services provided to individuals with mental illness or substance abuse (substance use disorders) in a hospital as defined in § 32.1-123 of the Code of Virginia or in a special unit of such a hospital.

"Instrumental activities of daily living" or "IADLs" means meal preparation, housekeeping, laundry, and managing money. A person's degree of independence in performing these activities is part of determining appropriate level of care and services.

"Intellectual disability" means a disability originating before 18 years of age, characterized concurrently by (i) significant subaverage intellectual functioning as demonstrated by performance on a standardized measure of intellectual functioning administered in conformity with accepted professional practice that is at least two standard deviations below the mean and (ii) significant limitations in adaptive behavior as expressed in conceptual, social, and practical adaptive skills.

"Intensive community treatment service" or "ICT" means a self-contained interdisciplinary team of at least five full-time equivalent clinical staff, a program assistant, and a full-time psychiatrist that:

1. Assumes responsibility for directly providing needed treatment, rehabilitation, and support services to identified individuals with severe and persistent mental illness, especially those who have severe symptoms that are not effectively remedied by available treatments or who because of reasons related to their mental illness resist or avoid involvement with mental health services;

2. Minimally refers individuals to outside service providers;

3. Provides services on a long-term care basis with continuity of caregivers over time;

4. Delivers 75% or more of the services outside program offices; and

5. Emphasizes outreach, relationship building, and individualization of services.

"Intensive in-home service" means family preservation interventions for children and adolescents who have or are at-risk of serious emotional disturbance, including individuals who also have a diagnosis of ~~mental retardation (intellectual disability)~~ developmental disability. Intensive in-home service is usually time-limited and is provided typically in the residence of an individual who is at risk of being moved to out-of-home placement or who is being transitioned back home from an out-of-home placement. The service includes 24-hour per day emergency response; crisis treatment; individual and family counseling; life, parenting, and communication skills; and case management and coordination with other services.

"Intermediate care facility/individuals with intellectual disability" or "ICF/IID" means a facility or distinct part of a facility certified by the Virginia Department of Health as meeting the federal certification regulations for an intermediate care facility for individuals with intellectual disability and persons with related conditions and that addresses the total needs of the residents, which include physical, intellectual, social, emotional, and habilitation, providing active treatment as defined in 42 CFR 435.1010 and 42 CFR 483.440.

"Investigation" means a detailed inquiry or systematic examination of the operations of a provider or its services regarding an alleged violation of regulations or law. An investigation may be undertaken as a result of a complaint, an incident report, or other information that comes to the attention of the department.

"Licensed mental health professional" or "LMHP" means a physician, licensed clinical psychologist, licensed professional counselor, licensed clinical social worker, licensed substance abuse treatment practitioner, licensed marriage and family therapist, certified psychiatric clinical nurse specialist, licensed behavior analyst, or licensed psychiatric/mental health nurse practitioner.

"Location" means a place where services are or could be provided.

"Medically managed withdrawal services" means detoxification services to eliminate or reduce the effects of alcohol or other drugs in the individual's body.

"Mandatory outpatient treatment order" means an order issued by a court pursuant to § 37.2-817 of the Code of Virginia.

"Medical detoxification" means a service provided in a hospital or other 24-hour care facility under the supervision of medical personnel using medication to systematically eliminate or reduce effects of alcohol or other drugs in the individual's body.

"Medical evaluation" means the process of assessing an individual's health status that includes a medical history and a physical examination of an individual conducted by a licensed medical practitioner operating within the scope of his license.

"Medication" means prescribed or over-the-counter drugs or both.

"Medication administration" means the direct application of medications by injection, inhalation, ingestion, or any other means to an individual receiving services by (i) persons legally permitted to administer medications or (ii) the individual at the direction and in the presence of persons legally permitted to administer medications.

"Medication assisted treatment (Opioid treatment service)" means an intervention strategy that combines outpatient treatment with the administering or dispensing of synthetic narcotics, such as methadone or buprenorphine (suboxone), approved by the federal Food and Drug Administration for the purpose of replacing the use of and reducing the craving for opioid substances, such as heroin or other narcotic drugs.

"Medication error" means an error in administering a medication to an individual and includes when any of the following occur: (i) the wrong medication is given to an individual, (ii) the wrong individual is given the medication, (iii) the wrong dosage is given to an individual, (iv) medication is given to an individual at the wrong time or not at all, or (v) the wrong method is used to give the medication to the individual.

"Medication storage" means any area where medications are maintained by the provider, including a locked cabinet, locked room, or locked box.

"Mental Health Community Support Service ~~(MHCSS)~~" or "MCHSS" means the provision of recovery-oriented services to individuals with long-term, severe mental illness. MHCSS includes skills training and assistance in accessing and effectively utilizing services and supports that are essential to meeting the needs identified in the individualized services plan and development of environmental supports necessary to sustain active community living as independently as possible. MHCSS may be provided in any setting in which the individual's needs can be addressed, skills training applied, and recovery experienced.

"Mental illness" means a disorder of thought, mood, emotion, perception, or orientation that significantly impairs judgment, behavior, capacity to recognize reality, or ability to address basic life necessities and requires care and treatment for the health, safety, or recovery of the individual or for the safety of others.

~~"Mental retardation (intellectual disability)" means a disability originating before the age of 18 years characterized concurrently by (i) significantly subaverage intellectual functioning as demonstrated by performance on a standardized measure of intellectual functioning administered in conformity with accepted professional practice that is at least two standard deviations below the mean; and (ii) significant limitations in adaptive behavior as expressed in conceptual, social, and practical adaptive skills (§ 37.2-100 of the Code of Virginia).~~

"Missing" means a circumstance in which an individual is not physically present when and where he should be and his absence cannot be accounted for or explained by his supervision needs or pattern of behavior.

"Neglect" means the failure by ~~an individual~~ a person, or a program or facility operated, licensed, or funded by the department, excluding those operated by the Department of

Corrections, responsible for providing services to do so, including nourishment, treatment, care, goods, or services necessary to the health, safety, or welfare of ~~a person~~ an individual receiving care or treatment for mental illness, ~~mental retardation (intellectual disability)~~ developmental disabilities, or substance abuse ~~(substance use disorders)~~.

"Neurobehavioral services" means the assessment, evaluation, and treatment of cognitive, perceptual, behavioral, and other impairments caused by brain injury that affect an individual's ability to function successfully in the community.

"Outpatient service" means treatment provided to individuals on an hourly schedule, on an individual, group, or family basis, and usually in a clinic or similar facility or in another location. Outpatient services may include diagnosis and evaluation, screening and intake, counseling, psychotherapy, behavior management, psychological testing and assessment, laboratory and other ancillary services, medical services, and medication services. "Outpatient service" specifically includes:

1. Services operated by a community services board or a behavioral health authority established pursuant to Chapter 5 (§ 37.2-500 et seq.) or Chapter 6 (§ 37.2-600 et seq.) of Title 37.2 of the Code of Virginia;

2. Services contracted by a community services board or a behavioral health authority established pursuant to Chapter 5 (§ 37.2-500 et seq.) or Chapter 6 (§ 37.2-600 et seq.) of Title 37.2 of the Code of Virginia; or

3. Services that are owned, operated, or controlled by a corporation organized pursuant to the provisions of either Chapter 9 (§ 13.1-601 et seq.) or Chapter 10 (§ 13.1-801 et seq.) of Title 13.1 of the Code of Virginia.

"Partial hospitalization service" means time-limited active treatment interventions that are more intensive than outpatient services, designed to stabilize and ameliorate acute symptoms, and serve as an alternative to inpatient hospitalization or to reduce the length of a hospital stay. Partial hospitalization is focused on individuals with serious mental illness, substance abuse (substance use disorders), or co-occurring disorders at risk of hospitalization or who have been recently discharged from an inpatient setting.

"Person-centered" means focusing on the needs and preferences of the individual; empowering and supporting the individual in defining the direction for his life; and promoting self-determination, community involvement, and recovery.

"Program of assertive community treatment service" or "PACT" means a self-contained interdisciplinary team of at least 10 full-time equivalent clinical staff, a program assistant, and a ~~full-~~ full-time or part-time psychiatrist that:

1. Assumes responsibility for directly providing needed treatment, rehabilitation, and support services to identified individuals with severe and persistent mental illnesses, including those who have severe symptoms that are not effectively remedied by available treatments or who because of reasons related to their mental illness resist or avoid involvement with mental health services;

2. Minimally refers individuals to outside service providers;

3. Provides services on a long-term care basis with continuity of caregivers over time;

4. Delivers 75% or more of the services outside program offices; and

5. Emphasizes outreach, relationship building, and individualization of services.

"Provider" means any person, entity, or organization, excluding an agency of the federal government by whatever name or designation, that delivers (i) services to individuals with mental illness, ~~mental retardation (intellectual disability)~~ developmental disabilities, or substance abuse (substance use disorders)~~,~~ or (ii) ~~services to individuals who receive day support, in home support, or crisis stabilization services funded through the IFDDS Waiver, or (iii)~~ residential services for individuals with brain injury. The person, entity, or organization shall include a hospital as defined in § 32.1-123 of the Code of Virginia, community services board, behavioral health authority, private provider, and any other similar or related person, entity, or organization. It shall not include any individual practitioner who holds a license issued by a health regulatory board of the Department of Health Professions or who is exempt from licensing pursuant to §§ 54.1-2901, 54.1-3001, 54.1-3501, 54.1-3601, and 54.1-3701 of the Code of Virginia.

"Psychosocial rehabilitation service" means a program of two or more consecutive hours per day provided to groups of adults in a nonresidential setting. Individuals must demonstrate a clinical need for the service arising from a condition due to mental, behavioral, or emotional illness that results in significant functional impairments in major life activities. This service provides education to teach the individual about mental illness, substance abuse, and appropriate medication to avoid complication and relapse and opportunities to learn and use independent skills and to enhance social and interpersonal skills within a consistent program structure and environment. Psychosocial rehabilitation includes skills training, peer support, vocational rehabilitation, and community resource development oriented toward empowerment, recovery, and competency.

"Qualified developmental disability professional" or "QDDP" means a person who possesses at least one year of documented experience working directly with individuals who have a developmental disability and who possesses one of the following credentials: (i) a doctor of medicine or osteopathy licensed in Virginia, (ii) a registered nurse licensed in Virginia, (iii) a licensed occupational therapist, or

(iv) completion of at least a bachelor's degree in a human services field, including sociology, social work, special education, rehabilitation counseling, or psychology.

"Quality improvement plan" means a detailed work plan developed by a provider that defines steps the provider will take to review the quality of services it provides and to manage initiatives to improve quality. A quality improvement plan consists of systematic and continuous actions that lead to measurable improvement in the services, supports, and health status of the individuals receiving services.

"Qualified mental health professional" or "QMHP" means a person who by education and experience is professionally qualified and registered by the Board of Counseling in accordance with 18VAC115-80 to provide collaborative mental health services for adults or children. A QMHP shall not engage in independent or autonomous practice. A QMHP shall provide such services as an employee or independent contractor of the department or a provider licensed by the department.

"Qualified mental health professional-adult" or "QMHP-A" means a person who by education and experience is professionally qualified and registered with the Board of Counseling in accordance with 18VAC115-80 to provide collaborative mental health services for adults. A QMHP-A shall provide such services as an employee or independent contractor of the department or a provider licensed by the department. A QMHP-A may be an occupational therapist who by education and experience is professionally qualified and registered with the Board of Counseling in accordance with 18VAC115-80.

"Qualified mental health professional-child" or "QMHP-C" means a person who by education and experience is professionally qualified and registered with the Board of Counseling in accordance with 18VAC115-80 to provide collaborative mental health services for children. A QMHP-C shall provide such services as an employee or independent contractor of the department or a provider licensed by the department. A QMHP-C may be an occupational therapist who by education and experience is professionally qualified and registered with the Board of Counseling in accordance with 18VAC115-80.

"Qualified mental health professional-eligible" or "QMHP-E" means a person receiving supervised training in order to qualify as a QMHP in accordance with 18VAC115-80 and who is registered with the Board of Counseling.

"Qualified paraprofessional in mental health" or "QPPMH" means a person who must meet at least one of the following criteria: (i) registered with the United States Psychiatric Association (USPRA) as an Associate Psychiatric Rehabilitation Provider (APRP); (ii) has an associate's degree in a related field (social work, psychology, psychiatric rehabilitation, sociology, counseling, vocational rehabilitation, human services counseling) and at least one year of experience providing direct services to individuals with a diagnosis of mental illness; (iii) licensed as an occupational therapy assistant, and supervised by a licensed occupational therapist, with at least one year of experience providing direct services to individuals with a diagnosis of mental illness; or (iv) has a minimum of 90 hours classroom training and 12 weeks of experience under the direct personal supervision of a QMHP-A providing services to individuals with mental illness and at least one year of experience (including the 12 weeks of supervised experience).

"Recovery" means a journey of healing and transformation enabling an individual with a mental illness to live a meaningful life in a community of his choice while striving to achieve his full potential. For individuals with substance abuse (substance use disorders), recovery is an incremental process leading to positive social change and a full return to biological, psychological, and social functioning. For individuals with ~~mental retardation (intellectual disability)~~ a developmental disability, the concept of recovery does not apply in the sense that individuals with ~~mental retardation (intellectual disability)~~ a developmental disability will need supports throughout their entire lives although these may change over time. With supports, individuals with ~~mental retardation (intellectual disability)~~ a developmental disability are capable of living lives that are fulfilling and satisfying and that bring meaning to themselves and others whom they know.

"Referral" means the process of directing an applicant or an individual to a provider or service that is designed to provide the assistance needed.

"Residential crisis stabilization service" means (i) providing short-term, intensive treatment to nonhospitalized individuals who require multidisciplinary treatment in order to stabilize acute psychiatric symptoms and prevent admission to a psychiatric inpatient unit; (ii) providing normative environments with a high assurance of safety and security for crisis intervention; and (iii) mobilizing the resources of the community support system, family members, and others for ongoing rehabilitation and recovery.

"Residential service" means providing 24-hour support in conjunction with care and treatment or a training program in a setting other than a hospital or training center. Residential services provide a range of living arrangements from highly structured and intensively supervised to relatively independent requiring a modest amount of staff support and monitoring. Residential services include residential treatment, group ~~or community~~ homes, supervised living, residential crisis stabilization, community gero-psychiatric residential, ~~community intermediate care facility-MR~~ ICF/IID, sponsored residential homes, medical and social detoxification, neurobehavioral services, and substance abuse residential treatment for women and children.

"Residential treatment service" means providing an intensive and highly structured mental health, substance abuse, or neurobehavioral service, or services for co-occurring disorders in a residential setting, other than an inpatient service.

"Respite care service" means providing for a short-term, ~~time limited~~ time-limited period of care of an individual for the purpose of providing relief to the individual's family, guardian, or regular care giver. Persons providing respite care are recruited, trained, and supervised by a licensed provider. These services may be provided in a variety of settings including residential, day support, in-home, or a sponsored residential home.

"Restraint" means the use of a mechanical device, medication, physical intervention, or hands-on hold to prevent an individual receiving services from moving his body to engage in a behavior that places him or others at imminent risk. There are three kinds of restraints:

1. Mechanical restraint means the use of a mechanical device that cannot be removed by the individual to restrict the individual's freedom of movement or functioning of a limb or portion of an individual's body when that behavior places him or others at imminent risk.

2. Pharmacological restraint means the use of a medication that is administered involuntarily for the emergency control of an individual's behavior when that individual's behavior places him or others at imminent risk and the administered medication is not a standard treatment for the individual's medical or psychiatric condition.

3. Physical restraint, also referred to as manual hold, means the use of a physical intervention or hands-on hold to prevent an individual from moving his body when that individual's behavior places him or others at imminent risk.

"Restraints for behavioral purposes" means using a physical hold, medication, or a mechanical device to control behavior or involuntary restrict the freedom of movement of an individual in an instance when all of the following conditions are met: (i) there is an emergency; (ii) nonphysical interventions are not viable; and (iii) safety issues require an immediate response.

"Restraints for medical purposes" means using a physical hold, medication, or mechanical device to limit the mobility of an individual for medical, diagnostic, or surgical purposes, such as routine dental care or radiological procedures and related post-procedure care processes, when use of the restraint is not the accepted clinical practice for treating the individual's condition.

"Restraints for protective purposes" means using a mechanical device to compensate for a physical or cognitive deficit when the individual does not have the option to remove the device. The device may limit an individual's movement, for example, bed rails or a gerichair, and prevent possible harm to the individual or it may create a passive barrier, such as a helmet to protect the individual.

"Restriction" means anything that limits or prevents an individual from freely exercising his rights and privileges.

"Risk management" means an integrated system-wide program to ensure the safety of individuals, employees, visitors, and others through identification, mitigation, early detection, monitoring, evaluation, and control of risks.

"Root cause analysis" means a method of problem solving designed to identify the underlying causes of a problem. The focus of a root cause analysis is on systems, processes, and outcomes that require change to reduce the risk of harm.

"Screening" means the process or procedure for determining whether the individual meets the minimum criteria for admission.

"Seclusion" means the involuntary placement of an individual alone in an area secured by a door that is locked or held shut by a staff person, by physically blocking the door, or by any other physical means so that the individual cannot leave it.

"Serious incident" means any event or circumstance that causes or could cause harm to the health, safety, or well-being of an individual. The term "serious incident" includes death and serious injury.

"Level I serious incident" means a serious incident that occurs or originates during the provision of a service or on the premises of the provider and does not meet the definition of a Level II or Level III serious incident. Level I serious incidents do not result in significant harm to individuals, but may include events that result in minor injuries that do not require medical attention or events that have the potential to cause serious injury, even when no injury occurs. "Level II serious incident" means a serious incident that occurs or originates during the provision of a service or on the premises of the provider that results in a significant harm or threat to the health and safety of an individual that does not meet the definition of a Level III serious incident.

"Level II serious incident" includes a significant harm or threat to the health or safety of others caused by an individual. Level II serious incidents include:

1. A serious injury;

2. An individual who is or was missing;

3. An emergency room visit;

4. An unplanned psychiatric or unplanned medical hospital admission of an individual receiving services other than licensed emergency services;

5. Choking incidents that require direct physical intervention by another person;

6. Ingestion of any hazardous material; or

7. A diagnosis of:

a. A decubitus ulcer or an increase in severity of level of previously diagnosed decubitus ulcer;

b. A bowel obstruction; or

c. Aspiration pneumonia.

"Level III serious incident" means a serious incident whether or not the incident occurs while in the provision of a service or on the provider's premises and results in:

1. Any death of an individual;

2. A sexual assault of an individual; or

3. A suicide attempt by an individual admitted for services, other than licensed emergency services, that results in a hospital admission.

"Serious injury" means any injury resulting in bodily hurt, damage, harm, or loss that requires medical attention by a licensed physician, doctor of osteopathic medicine, physician assistant, or nurse practitioner ~~while the individual is supervised by or involved in services, such as attempted suicides, medication overdoses, or reactions from medications administered or prescribed by the service~~.

"Service" means (i) planned individualized interventions intended to reduce or ameliorate mental illness, ~~mental retardation (intellectual disability)~~ developmental disabilities, or substance abuse (substance use disorders) through care, treatment, training, habilitation, or other supports that are delivered by a provider to individuals with mental illness, ~~mental retardation (intellectual disability)~~ developmental disabilities, or substance abuse (substance use disorders). Services include outpatient services, intensive in-home services, opioid treatment services, inpatient psychiatric hospitalization, community gero-psychiatric residential services, assertive community treatment and other clinical services; day support, day treatment, partial hospitalization, psychosocial rehabilitation, and habilitation services; case management services; and supportive residential, special school, halfway house, in-home services, crisis stabilization, and other residential services; and (ii) ~~day support, in home support, and crisis stabilization services provided to individuals under the IFDDS Waiver; and (iii)~~ planned individualized interventions intended to reduce or ameliorate the effects of brain injury through care, treatment, or other supports ~~or~~ provided in residential services for persons with brain injury.

"Shall" means an obligation to act is imposed.

"Shall not" means an obligation not to act is imposed.

"Skills training" means systematic skill building through curriculum-based psychoeducational and cognitive-behavioral interventions. These interventions break down complex objectives for role performance into simpler components, including basic cognitive skills such as attention, to facilitate learning and competency.

"Social detoxification service" means providing nonmedical supervised care for the individual's natural process of withdrawal from use of alcohol or other drugs.

"Sponsored residential home" means a service where providers arrange for, supervise, and provide programmatic, financial, and service support to families or persons (sponsors) providing care or treatment in their own homes for individuals receiving services.

"State board" means the State Board of Behavioral Health and Developmental Services. The board has statutory responsibility for adopting regulations that may be necessary to carry out the provisions of Title 37.2 of the Code of Virginia and other laws of the Commonwealth administered by the commissioner or the department.

"State methadone authority" means the Virginia Department of Behavioral Health and Developmental Services that is authorized by the federal Center for Substance Abuse Treatment to exercise the responsibility and authority for governing the treatment of opiate addiction with an opioid drug.

"Substance abuse (substance use disorders)" means the use of drugs enumerated in the Virginia Drug Control Act (§ 54.1-3400 et seq.) without a compelling medical reason or alcohol that (i) results in psychological or physiological dependence or danger to self or others as a function of continued and compulsive use or (ii) results in mental, emotional, or physical impairment that causes socially dysfunctional or socially disordering behavior; and (iii), because of such substance abuse, requires care and treatment for the health of the individual. This care and treatment may include counseling, rehabilitation, or medical or psychiatric care.

"Substance abuse intensive outpatient service" means treatment provided in a concentrated manner for two or more consecutive hours per day to groups of individuals in a nonresidential setting. This service is provided over a period of time for individuals requiring more intensive services than an outpatient service can provide. Substance abuse intensive outpatient services include multiple group therapy sessions during the week, individual and family therapy, individual monitoring, and case management.

"Substance abuse residential treatment for women with children service" means a 24-hour residential service providing an intensive and highly structured substance abuse service for women with children who live in the same facility.

"Suicide attempt" means a nonfatal, self-directed, potentially injurious behavior with an intent to die as a result of the behavior regardless of whether it results in injury.

"Supervised living residential service" means the provision of significant direct supervision and community support services to individuals living in apartments or other residential settings. These services differ from supportive in-home service because the provider assumes responsibility for management of the physical environment of the residence, and staff supervision and monitoring are daily and available on a 24-hour basis. Services are provided based on the needs of the individual in areas such as food preparation, housekeeping, medication administration, personal hygiene, treatment, counseling, and budgeting.

"Supportive in-home service" (formerly supportive residential) means the provision of community support services and other structured services to assist individuals, to strengthen individual skills, and that provide environmental supports necessary to attain and sustain independent community residential living. Services include drop-in or friendly-visitor support and counseling to more intensive support, monitoring, training, in-home support, respite care, and family support services. Services are based on the needs of the individual and include training and assistance. These services normally do not involve overnight care by the provider; however, due to the flexible nature of these services, overnight care may be provided on an occasional basis.

"Systemic deficiency" means violations of regulations documented by the department that demonstrate multiple or repeat defects in the operation of one or more services.

"Therapeutic day treatment for children and adolescents" means a treatment program that serves (i) children and adolescents from birth through ~~age~~ 17 years of age and under certain circumstances up to 21 years of age with serious emotional disturbances, substance use, or co-occurring disorders or (ii) children from birth through ~~age~~ seven years of age who are at risk of serious emotional disturbance, in order to combine psychotherapeutic interventions with education and mental health or substance abuse treatment. Services include: evaluation; medication education and management; opportunities to learn and use daily living skills and to enhance social and interpersonal skills; and individual, group, and family counseling.

"Time out" means the involuntary removal of an individual by a staff person from a source of reinforcement to a different, open location for a specified period of time or until the problem behavior has subsided to discontinue or reduce the frequency of problematic behavior.

"Volunteer" means a person who, without financial remuneration, provides services to individuals on behalf of the provider.

Part II
Licensing Process

12VAC35-105-30. Licenses.

A. Licenses are issued to providers who offer services to individuals who have mental illness, ~~mental retardation (intellectual disability)~~ a developmental disability, or substance abuse (substance use disorders)~~; have developmental disability and are served under the IFDDS Waiver;~~ or have brain injury and are receiving residential services.

B. Providers shall be licensed to provide specific services as defined in this chapter or as determined by the commissioner. These services include:

1. Case management;

2. Community gero-psychiatric residential;

3. ~~Community intermediate care facility MR~~ ICF/IID;

4. Residential crisis stabilization;

5. Nonresidential crisis stabilization;

6. Day support;

7. Day treatment, includes therapeutic day treatment for children and adolescents;

8. Group home and community residential;

9. Inpatient psychiatric;

10. Intensive ~~Community Treatment~~ community treatment (ICT);

11. Intensive in-home;

12. Managed withdrawal, including medical detoxification and social detoxification;

13. Mental health community support;

14. Opioid treatment/medication assisted treatment;

15. Emergency;

16. Outpatient;

17. Partial hospitalization;

18. Program of assertive community treatment (PACT);

19. Psychosocial rehabilitation;

20. Residential treatment;

21. Respite care;

22. Sponsored residential home;

23. Substance abuse residential treatment for women with children;

24. Substance abuse intensive outpatient;

25. Supervised living residential; and

26. Supportive in-home.

C. A license addendum shall describe the services licensed, the disabilities of individuals who may be served, the specific locations where services are to be provided or administered, and the terms and conditions for each service offered by a licensed provider. For residential and inpatient services, the license identifies the number of individuals each residential location may serve at a given time.

12VAC35-105-50. Issuance of licenses.

A. The commissioner may issue the following types of licenses:

1. A conditional license ~~shall~~ may be issued to a new provider for services that demonstrates compliance with administrative and policy regulations but has not demonstrated compliance with all the regulations.

a. A conditional license shall not exceed six months.

b. A conditional license may be renewed if the provider is not able to demonstrate compliance with all the regulations at the end of the license period. A conditional license and any renewals shall not exceed 12 successive months for all conditional licenses and renewals combined.

c. A provider holding a conditional license for a service shall demonstrate progress toward compliance.

d. A provider holding a conditional license shall not add services or locations during the conditional period.

e. A group home or community residential service provider shall be limited to providing services in a single location, serving no more than four individuals during the conditional period.

2. A provisional license may be issued to a provider for a service that has demonstrated an inability to maintain compliance with all applicable regulations, including this chapter and 12VAC35-115, has violations of human rights or licensing regulations that pose a threat to the health or safety of individuals ~~being served~~ receiving services, has multiple violations of human rights or licensing regulations, or has failed to comply with a previous corrective action plan.

a. A provisional license may be issued at any time.

b. The term of a provisional license shall not exceed six months.

c. A provisional license may be renewed; but a provisional license and any renewals shall not exceed 12 successive months for all provisional licenses and renewals combined.

d. A provider holding a provisional license for a service shall demonstrate progress toward compliance.

e. A provider holding a provisional license for a service shall not increase its services or locations or expand the capacity of the service.

f. A provisional license for a service shall be noted as a stipulation on the provider license. The stipulation shall also indicate the violations to be corrected and the expiration date of the provisional license.

3. A full license shall be issued after a provider or service demonstrates compliance with all the applicable regulations.

a. A full license may be granted to a provider for service for up to three years. The length of the license shall be in the sole discretion of the commissioner.

b. If a full license is granted for three years, it shall be referred to as a triennial license. A triennial license shall be granted to providers for services that have demonstrated full compliance with ~~the~~ all applicable regulations. The commissioner may issue a triennial license to a provider for service that had violations during the previous license period if those violations did not pose a threat to the health or safety of individuals ~~being served~~ receiving services, and the provider or service has demonstrated consistent compliance for more than a year and has a process in place that provides sufficient oversight to maintain compliance.

c. If a full license is granted for one year, it shall be referred to as an annual license.

d. The term of the first full renewal license after the expiration of a conditional or provisional license shall not exceed one year.

B. The commissioner may add stipulations on a license issued to a provider that may place limits on the provider or to impose additional requirements on the provider.

C. A license shall not be transferred or assigned to another provider. A new application shall be made and a new license issued when there is a change in ownership.

~~D. A license shall not be issued or renewed unless the provider is affiliated with a local human rights committee.~~

~~E.~~ D. No service shall be issued a license with an expiration date that is after the expiration date of the provider license.

~~F.~~ E. A license shall continue in effect after the expiration date if the provider has submitted a renewal application before the date of expiration and there are no grounds to deny the application. The department shall issue a letter stating the provider or service license shall be effective for six additional months if the renewed license is not issued before the date of expiration.

12VAC35-105-120. Variances.

The commissioner may grant a variance to a specific regulation if he determines that such a variance will not jeopardize the health, safety, or welfare of individuals ~~and upon demonstration by the provider requesting~~. A provider shall submit a request for such variance in writing to the commissioner. The request shall demonstrate that complying with the regulation would be a hardship unique to the provider and that the variance will not jeopardize the health, safety, or welfare of individuals. The department may limit the length of time a variance will be effective. ~~A provider shall submit a request for a variance in writing to the commissioner. A variance may be time-limited or have other conditions attached to it. The department must approve a variance prior to implementation~~ The provider shall not implement a variance until it has been approved in writing by the commissioner.

12VAC35-105-150. Compliance with applicable laws, regulations and policies.

The provider including its employees, contractors, students, and volunteers shall comply with:

1. ~~These regulations~~ This chapter;

2. The terms and stipulations of the license;

3. All applicable federal, state, or local laws and regulations including:

a. Laws regarding employment practices including the Equal Employment Opportunity Act;

b. The Americans with Disabilities Act and the Virginians with Disabilities Act;

c. For home and community-based services waiver settings subject to this chapter, 42 CFR 441.301(c)(1) through (4), contents of request for a waiver;

d. Occupational Safety and Health Administration regulations;

~~d.~~ e. Virginia Department of Health regulations;

~~e. Laws and regulations of the~~ f. Virginia Department of Health Professions regulations;

~~f.~~ g. Virginia Department of Medical Assistance Services regulations;

~~g.~~ h. Uniform Statewide Building Code; and

~~h.~~ i. Uniform Statewide Fire Prevention Code.

4. Section 37.2-400 of the Code of Virginia and related human rights regulations adopted by the state board; and

5. The provider's own policies. All required policies shall be in writing.

12VAC35-105-155. Preadmission screening, discharge planning, involuntary commitment, and mandatory outpatient treatment orders.

A. Providers responsible for complying with §§ 37.2-505 and 37.2-606 of the Code of Virginia regarding community ~~service~~ services board and behavioral health authority preadmission screening and discharge planning shall implement policies and procedures that include:

1. Identification, qualification, training, and responsibilities of employees responsible for preadmission screening and discharge planning.

2. Completion of a discharge plan prior to an individual's discharge in consultation with the state facility that:

a. Involves the individual or his authorized representative and reflects the individual's preferences to the greatest extent possible consistent with the individual's needs.

b. Involves mental health, ~~mental retardation (intellectual disability)~~ developmental disability, substance abuse, social, educational, medical, employment, housing, legal, advocacy, transportation, and other services that the individual will need upon discharge into the community and identifies the public or private agencies or persons that have agreed to provide them.

B. Any provider who serves individuals through an emergency custody order, temporary detention order, or mandatory outpatient treatment order shall implement policies and procedures to comply with §§ 37.2-800 through 37.2-817 of the Code of Virginia.

12VAC35-105-160. Reviews by the department; requests for information; required reporting.

A. The provider shall permit representatives from the department to conduct reviews to:

1. Verify application information;

2. Assure compliance with this chapter; and

3. Investigate complaints.

B. The provider shall cooperate fully with inspections and investigations and shall provide all information requested ~~to assist representatives from~~ by the department ~~who conduct inspections~~.

C. The provider shall collect, maintain, and review at least quarterly all serious incidents, including Level I serious incidents, as part of the quality improvement program in accordance with 12VAC35-105-620 to include an analysis of trends, potential systemic issues or causes, indicated remediation, and documentation of steps taken to mitigate the potential for future incidents.

D. The provider shall collect, maintain, and report or make available to the department the following information:

1. Each allegation of abuse or neglect shall be reported to the ~~assigned human rights advocate and the individual's authorized representative within 24 hours from the receipt of the initial allegation. Reported information shall include the type of abuse, neglect, or exploitation that is alleged and whether there is physical or psychological injury to the individual~~ department as provided in 12VAC35-115-230 A.

2. ~~Each instance of death or serious injury~~ Level II and Level III serious incidents shall be reported ~~in writing to the department's assigned licensing specialist~~ using the department's web-based reporting application and by telephone to anyone designated by the individual to receive such notice and to the individual's authorized representative within 24 hours of discovery ~~and by phone to the individual's authorized representative within 24 hours~~. Reported information shall include the information specified by the department as required in its web-based reporting application, but at least the following: the date ~~and~~, place, and circumstances of the ~~individual's death or serious injury;~~ serious incident. For serious injuries and deaths, the reported information shall also include the nature of the individual's injuries or circumstances of the death and ~~the~~ any treatment received~~; and the circumstances of the death or serious injury~~. For all other Level II and Level III serious incidents, the reported information shall also include the consequences or risk of harm that resulted from the serious incident. Deaths that occur in a hospital as a result of illness or injury occurring when the individual was in a licensed service shall be reported.

3. ~~Each instance~~ Instances of seclusion or restraint ~~that does not comply with the human rights regulations or approved variances or that results in injury to an individual shall be reported to the individual's authorized representative and the assigned human rights advocate within 24 hours~~ shall be reported to the department as provided in 12VAC35-115-230 C 4.

E. A root cause analysis shall be conducted by the provider within 30 days of discovery of Level II serious incidents and any Level III serious incidents that occur during the provision of a service or on the provider's premises. The root cause analysis shall include at least the following information: (i) a detailed description of what happened; (ii) an analysis of why it happened, including identification of all identifiable underlying causes of the incident that were under the control of the provider; and (iii) identified solutions to mitigate its reoccurrence when applicable. A more detailed root cause analysis, including convening a team, collecting and analyzing data, mapping processes, and charting causal factors should be considered based upon the circumstances of the incident.

~~D.~~ F. The provider shall ~~submit, or~~ make available and, when requested, submit reports and information that the department requires to establish compliance with these regulations and applicable statutes.

~~E.~~ G. Records that are confidential under federal or state law shall be maintained as confidential by the department and shall not be further disclosed except as required or permitted by law; however, there shall be no right of access to communications that are privileged pursuant to § 8.01-581.17 of the Code of Virginia.

~~F.~~ H. Additional information requested by the department if compliance with a regulation cannot be determined shall be submitted within 10 business days of the issuance of the licensing report requesting additional information. Extensions may be granted by the department when requested prior to the due date, but extensions shall not exceed an additional 10 business days.

~~G.~~ I. Applicants and providers shall not submit any misleading or false information to the department.

12VAC35-105-170. Corrective action plan.

A. If there is noncompliance with any applicable regulation during an initial or ongoing review, inspection, or investigation, the department shall issue a licensing report describing the noncompliance and requesting the provider to submit a corrective action plan for each violation cited.

B. The provider shall submit to the department and implement a written corrective action plan for each ~~regulation with which it is found to be in violation as identified in the licensing report~~ violation cited.

C. The corrective action plan shall include a:

1. ~~Description~~ Detailed description of the corrective actions to be taken that will minimize the possibility that the violation will occur again and correct any systemic deficiencies;

2. Date of completion for each corrective action; and

3. Signature of the person responsible for the service.

D. The provider shall submit a corrective action plan to the department within 15 business days of the issuance of the licensing report. ~~Extensions~~ One extension may be granted by the department when requested prior to the due date, but extensions shall not exceed an additional 10 business days. An immediate corrective action plan shall be required if the department determines that the violations pose a danger to individuals receiving the service.

E. Upon receipt of the corrective action plan, the department shall review the plan and determine whether the plan is approved or not approved. The provider has an additional 10 business days to submit a revised corrective action plan after receiving a notice that ~~the plan submitted has not been~~

~~approved by~~ the department has not approved the revised plan. If the submitted revised corrective action plan is still unacceptable, the provider shall follow the dispute resolution process identified in this section.

F. When the provider disagrees with a citation of a violation or the disapproval of the revised corrective action plans, the provider shall discuss this disagreement with the licensing specialist initially. If the disagreement is not resolved, the provider may ask for a meeting with the licensing specialist's supervisor, in consultation with the director of licensing, to challenge a finding of noncompliance. The determination of the director is final.

G. The provider shall implement and monitor ~~implementation of~~ the approved corrective action ~~and include a~~ plan ~~for monitoring in~~. The provider shall monitor implementation and effectiveness of approved corrective actions as part of its quality ~~assurance activities~~ improvement program ~~specified in~~ required by 12VAC30-105-620.

12VAC35-105-320. Fire inspections.

The provider shall document at the time of its original application and annually thereafter that buildings and equipment in residential service locations ~~serving more than eight individuals~~ are maintained in accordance with the Virginia Statewide Fire Prevention Code (13VAC5-51). ~~This section does not apply to correctional facilities or home and noncenter based or sponsored residential home services.~~ The provider shall evaluate each individual and, based on that evaluation, shall provide appropriate environmental supports and adequate staff to safely evacuate all individuals during an emergency.

Article 3
Physical Environment of ~~Residential/Inpatient~~ Residential and Inpatient Service Locations

12VAC35-105-330. Beds.

A. The provider shall not operate more beds than the number for which its service location ~~or locations are~~ is licensed.

B. ~~A community ICF/MR~~ An ICF/IID may not have more than 12 beds at any one location. This applies to new applications for services and not to existing services or locations licensed prior to December 7, 2011.

12VAC35-105-400. Criminal ~~registry~~ background checks and registry searches.

A. Providers shall comply with the requirements for obtaining criminal history background ~~check requirements for direct care positions~~ checks as outlined in §§ 37.2-416, 37.2-506, and 37.2-607 of the Code of Virginia for individuals hired after July 1, 1999.

~~B. Prior to a new employee beginning his duties, the provider shall obtain the employee's written consent and personal information necessary to obtain a search of the registry of founded complaints of child abuse and neglect maintained by the Virginia Department of Social Services.~~

~~C.~~ B. The provider shall develop a written policy for criminal history background checks and registry ~~checks for all employees, contractors, students, and volunteers~~ searches. The policy shall require at a minimum a disclosure statement ~~from the employee, contractor, student, or volunteer~~ stating whether the person has ever been convicted of or is the subject of pending charges for any offense and shall address what actions the provider will take should it be discovered that ~~an employee, student, contractor, or volunteer~~ a person has a founded case of abuse or neglect or both, or a conviction or pending criminal charge.

~~D.~~ C. The provider shall submit all information required by the department to complete the criminal history background checks and registry ~~checks for all employees and for contractors, students, and volunteers if required by the provider's policy~~ searches.

~~E.~~ D. The provider shall maintain the following documentation:

1. The disclosure statement from the applicant stating whether he has ever been convicted of or is the subject of pending charges for any offense; and

2. Documentation that the provider submitted all information required by the department to complete the criminal history background checks and registry ~~checks~~ searches, memoranda from the department transmitting the results to the provider, and the results from the Child Protective Registry ~~check~~ search.

12VAC35-105-440. Orientation of new employees, contractors, volunteers, and students.

New employees, contractors, volunteers, and students shall be oriented commensurate with their function or job-specific responsibilities within 15 business days. The provider shall document that the orientation covers each of the following policies, procedures, and practices:

1. Objectives and philosophy of the provider;

2. Practices of confidentiality including access, duplication, and dissemination of any portion of an individual's record;

3. Practices that assure an individual's rights including orientation to human rights regulations;

4. Applicable personnel policies;

5. Emergency preparedness procedures;

6. Person-centeredness;

7. Infection control practices and measures; ~~and~~

8. Other policies and procedures that apply to specific positions and specific duties and responsibilities; and

9. Serious incident reporting, including when, how, and under what circumstances a serious incident report must be submitted and the consequences of failing to report a serious incident to the department in accordance with this chapter.

12VAC35-105-450. Employee training and development.

The provider shall provide training and development opportunities for employees to enable them to support the individuals ~~served~~ receiving services and to carry out ~~the~~ their job responsibilities ~~of their jobs~~. The provider shall develop a training policy that addresses the frequency of retraining on serious incident reporting, medication administration, behavior intervention, emergency preparedness, and infection control, to include flu epidemics. Employee participation in training and development opportunities shall be documented and accessible to the department.

12VAC35-105-460. Emergency medical or first aid training.

There shall be at least one employee or contractor on duty at each location who holds a current certificate (i) issued by the American Red Cross, the American Heart Association, or comparable authority in standard first aid and cardiopulmonary resuscitation (CPR) or (ii) as an emergency medical technician. A licensed medical professional who holds a current professional license shall be deemed to hold a current certificate in first aid, but not in CPR. The certification process shall include a hands-on, in-person demonstration of first aid and CPR competency.

Article 5
Health and Safety Management

12VAC35-105-520. Risk management.

A. The provider shall designate a person responsible for the risk management function who has training and expertise in conducting investigations, root cause analysis, and data analysis.

B. The provider shall implement a written plan to identify, monitor, reduce, and minimize ~~risks associated with~~ harms and risk of harm, including personal injury, infectious disease, property damage or loss, and other sources of potential liability.

C. The provider shall conduct systemic risk assessment reviews at least annually to identify and respond to practices, situations, and policies that could result in the risk of harm to individuals receiving services. The risk assessment review shall address (i) the environment of care; (ii) clinical assessment or reassessment processes; (iii) staff competence and adequacy of staffing; (iv) use of high risk procedures, including seclusion and restraint; and (v) a review of serious incidents. This process shall incorporate uniform risk triggers and thresholds as defined by the department.

~~C.~~ D. The provider shall conduct and document that a safety inspection has been performed at least annually of each service location owned, rented, or leased by the provider. Recommendations for safety improvement shall be documented and implemented by the provider.

~~D.~~ E. The provider shall document serious injuries to employees, contractors, students, volunteers, and visitors that occur during the provision of a service or on the provider's property. Documentation shall be kept on file for three years. The provider shall evaluate serious injuries at least annually. Recommendations for improvement shall be documented and implemented by the provider.

12VAC35-105-580. Service description requirements.

A. The provider shall develop, implement, review, and revise its descriptions of services offered according to the provider's mission and shall make service descriptions available for public review.

B. The provider shall outline how each service offers a structured program of individualized interventions and care designed to meet the individuals' physical and emotional needs; provide protection, guidance and supervision; and meet the objectives of any required individualized services plan.

C. The provider shall prepare a written description of each service it offers. Elements of each service description shall include:

1. Service goals;

2. A description of care, treatment, ~~training~~ skills acquisition, or other supports provided;

3. Characteristics and needs of individuals to ~~be served~~ receive services;

4. Contract services, if any;

5. Eligibility requirements and admission, continued stay, and exclusion criteria;

6. Service termination and discharge or transition criteria; and

7. Type and role of employees or contractors.

D. The provider shall revise the written service description whenever the operation of the service changes.

E. The provider shall not implement services that are inconsistent with its most current service description.

F. The provider shall admit only those individuals whose service needs are consistent with the service description, for whom services are available, and for which staffing levels

and types meet the needs of the individuals ~~served~~ receiving services.

G. The provider shall provide for the physical separation of children and adults in residential and inpatient services and shall provide separate group programming for adults and children, except in the case of family services. The provider shall provide for the safety of children accompanying parents receiving services. Older adolescents transitioning from school to adult activities may participate in ~~mental retardation (intellectual disability)~~ developmental day support services with adults.

H. The service description for substance abuse treatment services shall address the timely and appropriate treatment of pregnant women with substance abuse (substance use disorders).

I. If the provider plans to serve individuals as of a result of a temporary detention order to a service, prior to admitting those individuals to that service, the provider shall submit a written plan for adequate staffing and security measures to ensure the individual can ~~be served~~ receive services safely within the service to the department for approval. If the plan is approved, the department ~~will~~ shall add a stipulation to the license authorizing the provider to serve individuals who are under temporary detention orders.

12VAC35-105-590. Provider staffing plan.

A. The provider shall implement a written staffing plan that includes the types, roles, and numbers of employees and contractors that are required to provide the service. This staffing plan shall reflect the:

1. Needs of the individuals ~~served~~ receiving services;

2. Types of services offered;

3. Service description; ~~and~~

4. Number of ~~people~~ individuals to ~~be served~~ receive services at a given time; and

5. Adequate number of staff required to safely evacuate all individuals during an emergency.

B. The provider shall develop a written transition staffing plan for new services, added locations, and changes in capacity.

C. The provider shall meet the following staffing requirements related to supervision.

1. The provider shall describe how employees, volunteers, contractors, and student interns will be supervised in the staffing plan and how that supervision will be documented.

2. Supervision of employees, volunteers, contractors, and student interns shall be provided by persons who have experience in working with individuals receiving services and in providing the services outlined in the service description.

3. Supervision shall be appropriate to the services provided and the needs of the individual. Supervision shall be documented.

4. Supervision shall include responsibility for approving assessments and individualized services plans, as appropriate. This responsibility may be delegated to an employee or contractor who meets the qualification for supervision as defined in this section.

5. Supervision of mental health, substance abuse, or co-occurring services that are of an acute or clinical nature such as outpatient, inpatient, intensive in-home, or day treatment shall be provided by a licensed mental health professional or a mental health professional who is license-eligible and registered with a board of the Department of Health Professions.

6. Supervision of mental health, substance abuse, or co-occurring services that are of a supportive or maintenance nature, such as psychosocial rehabilitation or mental health supports, shall be provided by a QMHP-A, a licensed mental health professional, or a mental health professional who is license-eligible and registered with a board of the Department of Health Professions. An individual who is a QMHP-E may not provide this type of supervision.

7. Supervision of ~~mental retardation (intellectual disability)~~ developmental services shall be provided by a person with at least one year of documented experience working directly with individuals who have ~~mental retardation (intellectual disability) or other~~ developmental disabilities and holds at least a bachelor's degree in a human services field such as sociology, social work, special education, rehabilitation counseling, nursing, or psychology. Experience may be substituted for the education requirement.

8. ~~Supervision of individual and family developmental disabilities support (IFDDS) services shall be provided by a person possessing at least one year of documented experience working directly with individuals who have developmental disabilities and is one of the following: a doctor of medicine or osteopathy licensed in Virginia; a registered nurse licensed in Virginia; or a person holding at least a bachelor's degree in a human services field such as sociology, social work, special education, rehabilitation counseling, or psychology. Experience may be substituted for the education requirement. 9.~~ Supervision of brain injury services shall be provided at a minimum by a clinician in the health professions field who is trained and experienced in providing brain injury services to individuals who have a brain injury diagnosis including~~:~~ (i) a doctor of medicine or osteopathy licensed in Virginia; (ii) a psychiatrist who is a doctor of medicine or osteopathy

specializing in psychiatry and licensed in Virginia; (iii) a psychologist who has a master's degree in psychology from a college or university with at least one year of clinical experience; (iv) a social worker who has a bachelor's degree in human services or a related field (social work, psychology, psychiatric evaluation, sociology, counseling, vocational rehabilitation, human services counseling, or other degree deemed equivalent to those described) from an accredited college or university with at least two years of clinical experience providing direct services to individuals with a diagnosis of brain injury; (v) a Certified Brain Injury Specialist; (vi) a registered nurse licensed in Virginia with at least one year of clinical experience; or (vii) any other licensed rehabilitation professional with one year of clinical experience.

D. The provider shall employ or contract with persons with appropriate training, as necessary, to meet the specialized needs of and to ensure the safety of individuals ~~being served~~ receiving services in residential services with medical or nursing needs; speech, language, or hearing problems; or other needs where specialized training is necessary.

E. Providers of brain injury services shall employ or contract with a neuropsychologist or licensed clinical psychologist specializing in brain injury to assist, as appropriate, with initial assessments, development of individualized services plans, crises, staff training, and service design.

F. Direct care staff who provide brain injury services shall have at least a high school diploma and two years of experience working with individuals with disabilities or shall have successfully completed an approved training curriculum on brain injuries within six months of employment.

12VAC35-105-620. Monitoring and evaluating service quality.

The provider shall develop and implement written policies and procedures ~~to~~ for a quality improvement program sufficient to identify, monitor, and evaluate clinical and service quality and effectiveness on a systematic and ongoing basis. The program shall utilize standard quality improvement tools, including root cause analysis, and shall include a quality improvement plan that (i) is reviewed and updated at least annually; (ii) defines measurable goals and objectives; (iii) includes and reports on statewide performance measures, if applicable, as required by DBHDS; (iv) monitors implementation and effectiveness of approved corrective action plans pursuant to 12VAC35-105-170; and (v) includes ongoing monitoring and evaluation of progress toward meeting established goals and objectives. The provider's policies and procedures shall include the criteria the provider will use to establish measurable goals and objectives. Input from individuals receiving services and their authorized representatives, if applicable, about services used and satisfaction level of participation in the direction of service planning shall be part of the provider's quality ~~assurance~~ ~~system~~ improvement plan. The provider shall implement improvements, when indicated.

12VAC35-105-650. Assessment policy.

A. The provider shall implement a written assessment policy. The policy shall define how assessments will be conducted and documented.

B. The provider shall actively involve the individual and authorized representative, if applicable, in the preparation of initial and comprehensive assessments and in subsequent reassessments. In these assessments and reassessments, the provider shall consider the individual's needs, strengths, goals, preferences, and abilities within the individual's cultural context.

C. The assessment policy shall designate employees or contractors who are responsible for conducting assessments. These employees or contractors shall have experience in working with the needs of individuals who are being assessed, the assessment ~~tool or~~ tools being utilized, and the provision of services that the individuals may require.

D. Assessment is an ongoing activity. The provider shall make reasonable attempts to obtain previous assessments or relevant history.

E. An assessment shall be initiated prior to or at admission to the service. With the participation of the individual and the individual's authorized representative, if applicable, the provider shall complete an initial assessment detailed enough to determine whether the individual qualifies for admission and to initiate an ISP for those individuals who are admitted to the service. This assessment shall assess immediate service, health, and safety needs, and at a minimum include the individual's:

1. Diagnosis;

2. Presenting needs including the individual's stated needs, psychiatric needs, support needs, and the onset and duration of problems;

3. Current medical problems;

4. Current medications;

5. Current and past substance use or abuse, including co-occurring mental health and substance abuse disorders; and

6. At-risk behavior to self and others.

F. A comprehensive assessment shall update and finalize the initial assessment. The timing for completion of the comprehensive assessment shall be based upon the nature and scope of the service but shall occur no later than 30 days, after admission for providers of mental health and substance abuse services and 60 days after admission for providers of ~~mental retardation (intellectual disability) and~~ developmental ~~disabilities~~ services. It shall address:

1. Onset and duration of problems;

2. Social, behavioral, developmental, and family history and supports;

3. Cognitive functioning including strengths and weaknesses;

4. Employment, vocational, and educational background;

5. Previous interventions and outcomes;

6. Financial resources and benefits;

7. Health history and current medical care needs, to include:

a. Allergies;

b. Recent physical complaints and medical conditions;

c. Nutritional needs;

d. Chronic conditions;

e. Communicable diseases;

f. Restrictions on physical activities if any;

g. Restrictive protocols or special supervision requirements;

h. Past serious illnesses, serious injuries, and hospitalizations;

~~h.~~ i. Serious illnesses and chronic conditions of the individual's parents, siblings, and significant others in the same household; and

~~i.~~ j. Current and past substance use including alcohol, prescription and nonprescription medications, and illicit drugs.

8. Psychiatric and substance use issues including current mental health or substance use needs, presence of co-occurring disorders, history of substance use or abuse, and circumstances that increase the individual's risk for mental health or substance use issues;

9. History of abuse, neglect, sexual, or domestic violence, or trauma including psychological trauma;

10. Legal status including authorized representative, commitment, and representative payee status;

11. Relevant criminal charges or convictions and probation or parole status;

12. Daily living skills;

13. Housing arrangements;

14. Ability to access services including transportation needs; and

15. As applicable, and in all residential services, fall risk, communication methods or needs, and mobility and adaptive equipment needs.

G. Providers of short-term intensive services including inpatient and crisis stabilization services shall develop policies for completing comprehensive assessments within the time frames appropriate for those services.

H. Providers of ~~non-intensive~~ nonintensive or short-term services shall meet the requirements for the initial assessment at a minimum. ~~Non-intensive~~ Nonintensive services are services provided in jails, nursing homes, or other locations when access to records and information is limited by the location and nature of the services. Short-term services typically are provided for less than 60 days.

I. Providers may utilize standardized state or federally sanctioned assessment tools that do not meet all the criteria of 12VAC35-105-650 as the initial or comprehensive assessment tools as long as the tools assess the individual's health and safety issues and substantially meet the requirements of this section.

J. Individuals who receive medication-only services shall be reassessed at least annually to determine whether there is a change in the need for additional services and the effectiveness of the medication.

12VAC35-105-660. Individualized services plan (ISP).

A. The provider shall actively involve the individual and authorized representative, as appropriate, in the development, review, and revision of a person-centered ISP. The individualized services planning process shall be consistent with laws protecting confidentiality, privacy, human rights of individuals receiving services, and rights of minors.

B. The provider shall develop and implement an initial person-centered ISP for the first 60 days for ~~mental retardation (intellectual disability) and~~ developmental ~~disabilities~~ services or for the first 30 days for mental health and substance abuse services. This ISP shall be developed and implemented within 24 hours of admission to address immediate service, health, and safety needs and shall continue in effect until the ISP is developed or the individual is discharged, whichever comes first.

C. The provider shall implement a person-centered comprehensive ISP as soon as possible after admission based upon the nature and scope of services but no later than 30 days after admission for providers of mental health and substance abuse services and 60 days after admission for providers of ~~mental retardation (intellectual disability) and~~ developmental ~~disabilities~~ services.

D. The initial ISP and the comprehensive ISP shall be developed based on the respective assessment with the participation and informed choice of the individual receiving services. To ensure the individual's participation and

informed choice, the provider shall explain to the individual or the individual's authorized representative, as applicable, in a reasonable and comprehensible manner the proposed services to be delivered, alternative services that might be advantageous for the individual, and accompanying risks or benefits. The provider shall clearly document that the individual's information was explained to the individual or the individual's authorized representative and the reasons the individual or the individual's authorized representative chose the option included in the ISP.

12VAC35-105-665. ISP requirements.

A. The comprehensive ISP shall be based on the individual's needs, strengths, abilities, personal preferences, goals, and natural supports identified in the assessment. The ISP shall include:

1. Relevant and attainable goals, measurable objectives, and specific strategies for addressing each need;

2. Services and supports and frequency of services required to accomplish the goals including relevant psychological, mental health, substance abuse, behavioral, medical, rehabilitation, training, and nursing needs and supports;

3. The role of the individual and others in implementing the service plan;

4. A communication plan for individuals with communication barriers, including language barriers;

5. A behavioral support or treatment plan, if applicable;

6. A safety plan that addresses identified risks to the individual or to others, including a fall risk plan;

7. A crisis or relapse plan, if applicable;

8. Target dates for accomplishment of goals and objectives;

9. Identification of employees or contractors responsible for coordination and integration of services, including employees of other agencies; ~~and~~

10. Recovery plans, if applicable; and

11. Services the individual elects to self direct, if applicable.

B. The ISP shall be signed and dated at a minimum by the person responsible for implementing the plan and the individual receiving services or the authorized representative in order to document agreement. If the signature of the individual receiving services or the authorized representative cannot be obtained, the provider shall document ~~his attempt~~ attempts to obtain the necessary signature and the reason why he was unable to obtain it. The ISP shall be distributed to the individual and others authorized to receive it.

C. The provider shall designate a person who ~~will~~ shall be responsible for developing, implementing, reviewing, and revising each individual's ISP in collaboration with the individual or authorized representative, as appropriate.

D. Employees or contractors who are responsible for implementing the ISP shall demonstrate a working knowledge of the objectives and strategies contained in the individual's current ISP.

E. Providers of short-term intensive services such as inpatient and crisis ~~stabilization~~ services that are typically provided for less than 30 days shall implement a policy to develop an ISP within a timeframe consistent with the length of stay of individuals.

F. ~~The ISP shall be consistent with the plan of care for individuals served by the IFDDS Waiver. G.~~ When a provider provides more than one service to an individual the provider may maintain a single ISP document that contains individualized objectives and strategies for each service provided.

~~H.~~ G. Whenever possible the identified goals in the ISP shall be written in the words of the individual receiving services.

12VAC35-105-675. Reassessments and ISP reviews.

A. Reassessments shall be completed at least annually and ~~when~~ any time there is a need based on changes in the medical, psychiatric, ~~or~~ behavioral, or other status of the individual.

B. Providers shall complete changes to the ISP as a result of the assessments.

C. The provider shall update the ISP at least annually and any time assessments identify risks, injuries, needs, or a change in status of the individual.

D. The provider shall review the ISP at least every three months from the date of the implementation of the ISP or whenever there is a revised assessment based upon the individual's changing needs or goals.

1. These reviews shall evaluate the individual's progress toward meeting the ~~plan's~~ ISP's goals and objectives and the continued relevance of the ISP's objectives and strategies. The provider shall update the goals, objectives, and strategies contained in the ISP, if indicated, and implement any updates made.

2. These reviews shall document evidence of progression toward or achievement of a specific targeted outcome for each goal and objective.

3. For goals and objectives that were not accomplished by the identified target date, the provider and any appropriate treatment team members shall meet to review the reasons for lack of progress and provide the individual an opportunity to make an informed choice of how to proceed.

12VAC35-105-691. Transition of individuals among service.

A. The provider shall implement written procedures that define the process for transitioning an individual between or among services operated by the provider. At a minimum the policy shall address:

1. The process by which the provider will assure continuity of services during and following transition;

2. The participation of the individual or his authorized representative, as applicable, in the decision to move and in the planning for transfer;

3. The process and timeframe for transferring the access to individual's record and ISP to the destination location;

4. The process and timeframe for completing the transfer summary; and

5. The process and timeframe for transmitting or accessing, where applicable, discharge summaries to the destination service.

B. The transfer summary shall include at a minimum the following:

1. Reason for the individual's transfer;

2. Documentation of ~~involvement~~ informed choice by the individual or his authorized representative, as applicable, in the decision to and planning for the transfer;

3. Current psychiatric and known medical conditions or issues of the individual and the identity of the individual's health care providers;

4. Updated progress of the individual in meeting goals and objectives in his ISP;

5. Emergency medical information;

6. Dosages of all currently prescribed medications and over-the-counter medications used by the individual when prescribed by the provider or known by the case manager;

7. Transfer date; and

8. Signature of employee or contractor responsible for preparing the transfer summary.

C. The transfer summary may be documented in the individual's progress notes or in information easily accessible within an electronic health record.

Article 6
Behavior Interventions

12VAC35-105-800. Policies and procedures on behavior interventions and supports.

A. The provider shall implement written policies and procedures that describe the use of behavior interventions, including seclusion, restraint, and time out. The policies and procedures shall:

1. Be consistent with applicable federal and state laws and regulations;

2. Emphasize positive approaches to behavior interventions;

3. List and define behavior interventions in the order of their relative degree of intrusiveness or restrictiveness and the conditions under which they may be used in each service for each individual;

4. Protect the safety and well-being of the individual at all times, including during fire and other emergencies;

5. Specify the mechanism for monitoring the use of behavior interventions; and

6. Specify the methods for documenting the use of behavior interventions.

B. Employees and contractors trained in behavior support interventions shall implement and monitor all behavior interventions.

C. Policies and procedures related to behavior interventions shall be available to individuals, their families, authorized representatives, and advocates. Notification of policies does not need to occur in correctional facilities.

D. Individuals receiving services shall not discipline, restrain, seclude, or implement behavior interventions on other individuals receiving services.

E. Injuries resulting from or occurring during the implementation of ~~behavior interventions~~ seclusion or restraint shall be ~~recorded in the individual's services record and~~ reported to the ~~assigned human rights advocate and the employee or contractor responsible for the overall coordination of services~~ department as provided in 12VAC35-115-230 C.

12VAC35-105-830. Seclusion, restraint, and time out.

A. The use of seclusion, restraint, and time out shall comply with applicable federal and state laws and regulations and be consistent with the provider's policies and procedures.

B. Devices used for mechanical restraint shall be designed specifically for emergency behavior management of human beings in clinical or therapeutic programs.

C. Application of time out, seclusion, or restraint shall be documented in the individual's record and include the following:

1. Physician's order for seclusion or mechanical restraint or chemical restraint;

2. Date and time;

3. Employees or contractors involved;

4. Circumstances and reasons for use including other emergency behavior management techniques attempted;

5. Duration;

6. Type of technique used; and

7. Outcomes, including documentation of debriefing of the individual and staff involved following the incident.

Article 3
Services in Department of Corrections Correctional Facilities

12VAC35-105-1140. Clinical and security coordination.

A. The provider shall have formal and informal methods of resolving procedural and programmatic issues regarding individual care arising between the clinical and security employees or contractors.

B. The provider shall demonstrate ongoing communication between clinical and security employees to ensure individual care.

C. The provider shall provide cross-training for the clinical and security employees or contractors that includes:

1. Mental health, ~~mental retardation (intellectual disability)~~ developmental disability, and substance abuse education;

2. Use of clinical and security restraints; and

3. Channels of communication.

D. Employees or contractors shall receive periodic in-service training, and have knowledge of and be able to demonstrate the appropriate use of clinical and security restraint.

E. Security and behavioral assessments shall be completed at the time of admission to determine service eligibility and at least weekly for the safety of individuals, other persons, employees, and visitors.

F. Personal grooming and care services for individuals shall be a cooperative effort between the clinical and security employees or contractors.

G. Clinical needs and security level shall be considered when arrangements are made regarding privacy for individual contact with family and attorneys.

H. Living quarters shall be assigned on the basis of the individual's security level and clinical needs.

I. An assessment of the individual's clinical condition and needs shall be made when disciplinary action or restrictions are required for infractions of security measures.

J. Clinical services consistent with the individual's condition and plan of treatment shall be provided when security detention or isolation is imposed.

12VAC35-105-1245. Case management direct assessments.

Case managers shall meet with each individual face-to-face as dictated by the individual's needs. At face-to-face meetings, the case manager shall (i) observe and assess for any previously unidentified risks, injuries, needs, or other changes in status; (ii) assess the status of previously identified risks, injuries, or needs, or other changes in status; (iii) assess whether the individual's service plan is being implemented appropriately and remains appropriate for the individual; and (iv) assess whether supports and services are being implemented consistent with the individual's strengths and preferences and in the most integrated setting appropriate to the individual's needs.

12VAC35-105-1250. Qualifications of case management employees or contractors.

A. Employees or contractors providing case management services shall have knowledge of:

1. Services and systems available in the community including primary health care, support services, eligibility criteria and intake processes and generic community resources;

2. The nature of serious mental illness, ~~mental retardation (intellectual disability)~~ developmental disability, substance abuse (substance use disorders), or co-occurring disorders depending on the individuals ~~served~~ receiving services, including clinical and developmental issues;

3. Different types of assessments, including functional assessment, and their uses in service planning;

4. Treatment modalities and intervention techniques, such as behavior management, independent living skills training, supportive counseling, family education, crisis intervention, discharge planning, and service coordination;

5. Types of mental health, developmental, and substance abuse programs available in the locality;

6. The service planning process and major components of a service plan;

7. The use of medications in the care or treatment of the population served; and

8. All applicable federal and state laws and regulations and local ordinances.

B. Employees or contractors providing case management services shall have skills in:

1. Identifying and documenting an individual's need for resources, services, and other supports;

2. Using information from assessments, evaluations, observation, and interviews to develop service plans;

3. Identifying and documenting how resources, services, and natural supports such as family can be utilized to promote achievement of an individual's personal habilitative or rehabilitative and life goals; and

4. Coordinating the provision of services by diverse public and private providers.

C. Employees or contractors providing case management services shall have abilities to:

1. Work as team members, maintaining effective ~~inter-~~ inter-agency and intra-agency working relationships;

2. Work independently performing position duties under general supervision; and

3. Engage in and sustain ongoing relationships with individuals receiving services.

D. Case managers serving individuals with developmental disability shall complete the DBHDS core competency-based curriculum within 30 days of hire.

Article 7
Intensive Community Treatment and Program of Assertive Community Treatment Services

12VAC35-105-1360. Admission and discharge criteria.

A. Individuals must meet the following admission criteria:

1. Diagnosis of a severe and persistent mental illness, predominantly schizophrenia, other psychotic disorder, or bipolar disorder that seriously impairs functioning in the community. Individuals with a sole diagnosis of substance addiction or abuse or ~~mental retardation (intellectual disability)~~ developmental disability are not eligible for services.

2. Significant challenges to community integration without intensive community support including persistent or recurrent difficulty with one or more of the following:

a. Performing practical daily living tasks;

b. Maintaining employment at a self-sustaining level or consistently carrying out homemaker roles; or

c. Maintaining a safe living situation.

3. High service needs indicated due to one or more of the following:

a. Residence in a state hospital or other psychiatric hospital but clinically assessed to be able to live in a more independent situation if intensive services were provided or anticipated to require extended hospitalization, if more intensive services are not available;

b. Multiple admissions to or at least one recent long-term stay (30 days or more) in a state hospital or other acute psychiatric hospital inpatient setting within the past two years; or a recent history of more than four interventions by psychiatric emergency services per year;

c. Persistent or very recurrent severe major symptoms (e.g., affective, psychotic, suicidal);

d. Co-occurring substance addiction or abuse of significant duration (e.g., greater than six months);

e. High risk or a recent history (within the past six months) of criminal justice involvement (e.g., arrest or incarceration);

f. Ongoing difficulty meeting basic survival needs or residing in substandard housing, homeless, or at imminent risk of becoming homeless; or

g. Inability to consistently participate in traditional office-based services.

B. Individuals receiving PACT or ICT services should not be discharged for failure to comply with treatment plans or other expectations of the provider, except in certain circumstances as outlined. Individuals must meet at least one of the following criteria to be discharged:

1. Change in the individual's residence to a location out of the service area;

2. Death of the individual;

3. Incarceration of the individual for a period to exceed a year or ~~long-term~~ long-term hospitalization (more than one year); however, the provider is expected to prioritize these individuals for PACT or ICT services upon ~~their~~ the individual's anticipated return to the community if the individual wishes to return to services and the service level is appropriate to his needs;

4. Choice of the individual with the provider responsible for revising the ISP to meet any concerns of the individual leading to the choice of discharge; or

5. Significant sustained recovery by the individual in all major role areas with minimal team contact and support for at least two years as determined by both the individual and ICT or PACT team.

VA.R. Doc. No. R18-4381; Filed October 17, 2019, 11:28 a.m.

TITLE 18. PROFESSIONAL AND OCCUPATIONAL LICENSING

BOARD OF ACCOUNTANCY

Final Regulation

REGISTRAR'S NOTICE: The Board of Accountancy is claiming an exemption from the Administrative Process Act in accordance with § 2.2-4002 B 13 of the Code of Virginia, which excludes agency actions relating to content of, or rules for the conduct of, any examination required by law. The Board of Accountancy will receive, consider, and respond to petitions by any interested person at any time with respect to reconsideration or revision.

Title of Regulation: **18VAC5-22. Board of Accountancy Regulations (amending 18VAC5-22-80).**

Statutory Authority: §§ 54.1-4402 and 54.1-4403 of the Code of Virginia.

Effective Date: December 11, 2019.

Agency Contact: Elizabeth Marcello, Information and Policy Advisor, Board of Accountancy, 9960 Mayland Drive, Suite 402, Henrico, VA 23233, telephone (804) 367-2006, or email elizabeth.marcello@boa.virginia.gov.

Summary:

The amendments authorize the board to modify the current provisions on when a person may retake a failed section of the Certified Professional Accountant examination.

18VAC5-22-80. Examination.

A. In order to comply with subdivision A 1 b of § 54.1-4409.2 of the Code of Virginia:

1. Each section of the CPA examination must be passed by attaining a uniform passing grade established through a psychometrically acceptable standard-setting procedure approvedby the board.

2. Persons may take sections of the CPA examination in any order.

~~3. A~~ a. Subject to subdivision 2 b of this subsection, a person who fails a section of the CPA examination may not retake that section until the next quarter of the calendar year unless otherwise prescribed by the board.

b. The board may decide to eliminate the current restriction outlined in subdivision 2 a of this subsection and allow a person to retake sections of the CPA examination as soon as the person's grade for any previous attempt of that same section has been released.

~~4.~~ 3. When a person first passes a section of the CPA examination, ~~he~~ the person has 18 months to pass the remaining sections. If the remaining sections are not passed within the 18-month period, the person loses credit for the first section passed, and a new 18-month period starts with the next section passed. Depending on the facts and circumstances, the board may grant additional time to pass the remaining sections provided that the waiver or deferral is in the public interest.

B. Failure to comply with the policies established by the board for conduct at the CPA examination may result in the loss of eligibility to take the CPA examination or credit for sections of the CPA examination passed. Cheating by a person in connection with the CPA examination shall invalidate any grade earned on any section of the CPA examination and may warrant expulsion from the CPA examination site and disqualification from taking the CPA examination for a specified period of time as determined by the board.

C. The board may postpone scheduled CPA examinations, the release of grades, or the issuance of licenses under the following circumstances:

1. A breach of CPA examination security;

2. Unauthorized acquisition or disclosure of the contents of a CPA examination;

3. Suspected or actual negligence, errors, omissions, or irregularities in conducting a CPA examination; or

4. Any other reasonable circumstances.

D. Prior to being considered for a Virginia license, a person shall pass an ethics examination approved by the board.

VA.R. Doc. No. R20-6193; Filed October 21, 2019, 9:50 a.m.

COMMON INTEREST COMMUNITY BOARD

Final Regulation

REGISTRAR'S NOTICE: The Common Interest Community Board is claiming an exemption from Article 2 of the Administrative Process Act in accordance with § 2.2-4006 A 4 a of the Code of Virginia, which excludes regulations that are necessary to conform to changes in Virginia statutory law or the appropriation act where no agency discretion is involved. The Common Interest Community Board will receive, consider, and respond to petitions by any interested person at any time with respect to reconsideration or revision.

Title of Regulation: **18VAC48-30. Condominium Regulations (amending 18VAC48-30-10 through 18VAC48-30-50, 18VAC48-30-80, 18VAC48-30-90, 18VAC48-30-110 through 18VAC48-30-140, 18VAC48-30-160, 18VAC48-30-170, 18VAC48-30-180, 18VAC48-30-200, 18VAC48-30-230, 18VAC48-30-250, 18VAC48-30-260, 18VAC48-30-270, 18VAC48-30-290, 18VAC48-30-300, 18VAC48-30-320, 18VAC48-30-330, 18VAC48-30-360 through 18VAC48-30-390, 18VAC48-30-430, 18VAC48-30-450, 18VAC48-30-460, 18VAC48-30-480,**

18VAC48-30-490, 18VAC48-30-500, 18VAC48-30-510, 18VAC48-30-530 through 18VAC48-30-580, 18VAC48-30-600 through 18VAC48-30-650, 18VAC48-30-690).

Statutory Authority: § 54.1-2349 of the Code of Virginia.

Effective Date: December 31, 2019.

Agency Contact: Trisha Henshaw, Board Executive Director, Common Interest Community Board, 9960 Mayland Drive, Suite 400, Richmond, VA 23233, telephone (804) 367-8510, FAX (866) 490-2723, or email cic@dpor.virginia.gov.

Summary:

The technical amendments update the Condominium Regulations to reflect the changes to the Code of Virginia resulting from the recodification of Title 55 of the Code of Virginia pursuant to Chapter 712 of the 2019 Acts of Assembly.

Part I
General

18VAC48-30-10. Purpose.

This chapter governs the exercise of powers granted to and the performance of duties imposed upon the Common Interest Community Board by the Virginia Condominium Act ~~(§ 55-79.39~~ (§ 55.1-1900 et seq. of the Code of Virginia) as the act pertains to the registration of condominiums.

18VAC48-30-20. Definitions.

A. Section 54.1-2345 of the Code of Virginia provides definitions of the following terms and phrases as used in this chapter:

"Association"

"Board"

B. Section ~~55-79.41~~ 55.1-1900 of the Code of Virginia provides definitions of the following terms and phrases as used in this chapter:

"Common elements"	"Identifying number"
"Common expenses"	"Land"
"Condominium"	"Leasehold condominium"
"Condominium instruments"	"Limited common element"
"Condominium unit"	"Nonbinding reservation agreement"
"Conversion condominium"	"Offer"
"Convertible land"	"Person"
"Convertible space"	"Purchaser"
"Declarant"	"Special declarant rights"
"Dispose" or "disposition"	"Unit"
"Executive ~~organ"~~ board"	"Unit owner"
"Expandable condominium"	

C. The following words, terms, and phrases when used in this chapter shall have the following meanings unless the context clearly indicates otherwise.

"Annual report" means a completed, board-prescribed form and required documentation submitted in compliance with ~~§ 55-79.93~~ § 55.1-1979 of the Code of Virginia.

"Application" means a completed, board-prescribed form submitted with the appropriate fee and other required documentation in compliance with ~~§ 55-79.89~~ § 55.1-1975 of the Code of Virginia.

"Class of physical assets" means two or more physical assets that are substantially alike in function, manufacture, date of construction or installation, and history of use and maintenance.

~~"Condominium Act" means Chapter 4.2 (§ 55-79.39 et seq.) of Title 55 of the Code of Virginia.~~

"Department" means the Department of Professional and Occupational Regulation.

"Expected useful life" means the estimated number of years from the date on which such estimate is made until the date when, because of the effects of time, weather, stress, or wear, a physical asset will become incapable of performing its intended function and will have to be replaced.

"Firm" means a sole proprietorship, association, partnership, corporation, limited liability company, limited liability partnership, or any other form of business organization recognized under the laws of the Commonwealth of Virginia.

"Full and fair disclosure" means the degree of disclosure necessary to ensure reasonably complete and materially accurate representation of the condominium in order to protect the interests of purchasers.

"Limited common expense" means any common expense against one or more, but less than all, of the units.

"Major utility installation" means a utility installation or portion thereof that is a common element or serves more than one unit.

"Material change" means a change in any information or document disclosed in the application for registration, including the public offering statement or an attachment thereto, that renders inaccurate, incomplete, or misleading any information or document in such a way as to affect substantially a purchaser's rights or obligations or the nature of a unit or appurtenant limited common element or the amenities of the project available for the purchaser's use as described in the public offering statement.

"Offering" means the continuing act of the declarant in making condominium units owned by the declarant within a particular condominium available for acquisition by purchasers or, where appropriate, to the aggregate of the condominium units thus made available.

"Offering literature" means any written promise, assertion, representation, or statement of fact or opinion made in connection with a condominium marketing activity mailed or delivered directly to a specific prospective purchaser, except that information printed in a publication shall not be deemed offering literature solely by virtue of the fact that the publication is mailed or delivered directly to a prospective purchaser.

"Personal communication" means a communication directed to a particular prospective purchaser that has not been and is not intended to be directed to any other prospective purchaser.

"Physical asset" means either a structural component or a major utility installation.

"Present condition" means condition as of the date of the inspection by means of which condition is determined.

"Registration file" means the application for registration, supporting materials, annual reports, and amendments that constitute all information submitted and reviewed pertaining to a particular condominium registration. A document that has not been accepted for filing by the board is not part of the registration file.

"Regular common expense" means a common expense apportioned among and assessed to all of the condominium units pursuant to subsection D of ~~§ 55-79.83~~ § 55.1-1964 of the Code of Virginia or similar law or condominium instrument provision.

"Replacement cost" means the expenditure that would be necessary to replace a physical asset with an identical or substantially equivalent physical asset as of the date on which replacement cost is determined and includes all costs of (i) removing the physical asset to be replaced, (ii) obtaining its replacement, and (iii) erecting or installing the replacement.

"Structural component" means a component constituting any portion of the structure of a unit or common element.

"Structural defect" shall have the meaning given in subsection B of ~~§ 55-79.79~~ § 55.1-1955 of the Code of Virginia.

"Substituted public offering statement" means a document originally prepared in compliance with the laws of another jurisdiction and modified in accordance with the provisions of this chapter to fulfill the disclosure requirements established for public offering statements by subsection A of ~~§ 55-79.90~~ § 55.1-1976 of the Code of Virginia and, if applicable, subsection ~~A~~ B of ~~§ 55-79.94~~ § 55.1-1982 of the Code of Virginia.

"Virginia Condominium Act" means Chapter 19 (§ 55.1-1900 et seq.) of Title 55.1 of the Code of Virginia.

18VAC48-30-30. Explanation of terms.

Each reference in this chapter to a "declarant," "purchaser," and "unit owner" or to the plural of those terms shall be deemed to refer, as appropriate, to the masculine and the feminine, to the singular and the plural, and to natural persons and organizations. The term "declarant" shall refer to any successors to the persons referred to in ~~§ 55-79.41~~ § 55.1-1900 of the Code of Virginia who come to stand in the same relation to the condominium as their predecessors in that they assumed rights reserved for the benefit of a declarant that (i) offers to dispose of his interest in a condominium unit not previously disposed of, (ii) reserves or succeeds to any special declarant right, or (iii) applies for registration of the condominium.

18VAC48-30-40. Condominiums located outside of Virginia.

A. In any case involving a condominium located outside of Virginia in which the laws or practices of the jurisdiction in which such condominium is located prevent compliance with a provision of this chapter, the board shall prescribe, by order, a substitute provision to be applicable in such case that is as nearly equivalent to the original provision as is reasonable under the circumstances.

B. The words "declaration," "bylaws," "plats," and "plans," when used in this chapter with reference to a condominium located outside of Virginia, shall refer to documents, portions of documents, or combinations thereof, by whatever name denominated, that have a content and function identical or substantially equivalent to the content and function of their Virginia counterparts.

C. The words "recording" or "recordation," when used with reference to condominium instruments of a condominium located outside of Virginia, shall refer to a procedure that, in the jurisdiction in which such condominium is located, causes the condominium instruments to become legally effective.

D. This chapter shall apply to a contract for the disposition of a condominium unit located outside of Virginia only to the extent permissible under the provisions of subsection B of ~~§ 55-79.40~~ § 55.1-1901 of the Code of Virginia.

18VAC48-30-50. Exemptions from registration.

A. The exemption from registration of condominiums in which all units are restricted to nonresidential use provided in subsection B of ~~§ 55-79.87~~ § 55.1-1972 of the Code of Virginia shall not be deemed to apply to any condominium as to which there is a substantial possibility that a unit therein other than a unit owned by the declarant or the unit owners'

association will be used as permanent or temporary living quarters or as a site upon which vehicular or other portable living quarters will be placed and occupied. Residential use for the purposes of this chapter includes transient occupancy.

B. Nothing in this chapter shall apply in the case of a condominium exempted from registration by ~~§ 55-79.87~~ § 55.1-1972 of the Code of Virginia or condominiums located outside of Virginia as provided in subsection B of ~~§ 55-79.40~~ § 55.1-1901 of the Code of Virginia for which no contracts are to be signed in Virginia.

18VAC48-30-80. Offering literature.

A. Offering literature mailed or delivered prior to the registration of the condominium that is the subject of the offering literature shall bear a conspicuous legend containing the substance of the following language:

> "The condominium has not been registered by the Common Interest Community Board. A condominium unit may be reserved on a nonbinding reservation agreement, but no contract of sale or lease may be entered into prior to registration."

B. Offering literature or marketing activities violative of the Virginia Fair Housing Law (§ 36-96.1 et seq. of the Code of Virginia) and subsection C of ~~§ 55-79.52~~ § 55.1-1914 of the Code of Virginia is prohibited.

C. Offering literature shall indicate that the property being offered is under the condominium form of ownership. The requirement of this subsection is satisfied by including the full name of the condominium in all offering literature.

Part III
Application for Registration

18VAC48-30-90. Application procedures.

A declarant seeking registration of a condominium pursuant to Chapter ~~4.2~~ 19 ~~(~~§ 55-79.39 (§ 55.1-1900 et seq.) of Title ~~55~~ 55.1 of the Code of Virginia shall submit an application on the appropriate form provided by the board, along with the appropriate fee specified in 18VAC48-30-100.

By submitting the application to the board, the declarant certifies that the declarant has read and understands the applicable statutes and the board's regulations.

The receipt of an application and the deposit of fees by the board do not indicate approval or acceptance of the application by the board.

The board may make further inquiries and investigations to confirm or amplify information supplied. All applications shall be completed in accordance with the instructions contained in this section and on the application. Applications will not be considered complete until all required documents are received by the board.

Applications that are not approved within 12 months after receipt of the application in the board's office will be purged and a new application and fee must be submitted in order to be reconsidered for registration.

18VAC48-30-110. Review of application for registration.

A. Upon receipt of an application for registration, the board shall issue the notice of filing required by subsection A of ~~§ 55-79.92~~ § 55.1-1978 of the Code of Virginia.

B. Upon the review of the application for registration, if the requirements of ~~§§ 55-79.89~~ §§ 55.1-1975 and ~~55-79.91~~ 55.1-1977 of the Code of Virginia have not been met, the board shall notify the applicant as required by subsection C of ~~§ 55-79.92~~ § 55.1-1978 of the Code of Virginia.

C. A request for an extension of the 60-day application review period described in ~~§ 55-79.92~~ § 55.1-1978 of the Code of Virginia shall be in writing and shall be delivered to the board prior to the expiration of the period being extended. The request shall be for an extension of definite duration. The board may grant in writing a request for an extension of the application review period, and it may limit the extension to a period not longer than is reasonably necessary to permit correction of the application. An additional extension of the application review period may be obtained, subject to the conditions applicable to the initial request. A request for an extension of the application review period shall be deemed a consent to delay within the meaning of subsection A of ~~§ 55-79.92~~ § 55.1-1978 of the Code of Virginia.

D. If the requirements for registration are not met within the application review period or a valid extension thereof, the board shall, upon the expiration of such period, enter an order rejecting the registration as required by subsection C of ~~§ 55-79.92~~ § 55.1-1978 of the Code of Virginia.

E. An applicant may submit a written request for an informal conference in accordance with § 2.2-4019 of the Code of Virginia at any time between receipt of a notification pursuant to subsection B of this section and the effective date of the order of rejection entered pursuant to subsection D of this section. A request for such proceeding shall be deemed a consent to delay within the meaning of subsection A of ~~§ 55-79.92~~ § 55.1-1978 of the Code of Virginia.

F. The board shall receive and act upon corrections to the application for registration at any time prior to the effective date of an order rejecting the registration. If the board determines after review of the corrections that the requirements for registration have not been met, the board may proceed with an informal conference in accordance with § 2.2-4019 of the Code of Virginia to allow reconsideration of whether the requirements for registration are met. If the board does not opt to proceed with an informal conference, the applicant may submit a written request for an informal conference in accordance with § 2.2-4019 of the Code of Virginia to reconsider whether the requirements for

registration are met. If the board does not proceed with an informal conference and no request for an informal conference is received from the applicant, an amended order of rejection stating the factual basis for the rejection shall be issued. A new 20-day period for the order of rejection to become effective shall commence.

G. At such time as the board affirmatively determines that the requirements of ~~§§ 55-79.89~~ §§ 55.1-1975 and ~~55-79.91~~ 55.1-1977 of the Code of Virginia have been met, the board shall enter an order registering the condominium and shall designate the form, content, and effective date of the public offering statement, substituted public offering statement, or prospectus to be used.

18VAC48-30-120. Prerequisites for registration.

The following provisions are prerequisites for registration and are supplementary to the provisions of ~~§ 55-79.91~~ § 55.1-1977 of the Code of Virginia.

A. The declarant shall own or have the right to acquire an estate in the land constituting or to constitute the condominium that is of at least as great a degree and duration as the estate to be conveyed in the condominium units.

B. The condominium instruments must be adequate to bring a condominium into existence upon recordation except that the certification requirements of ~~§ 55-79.58~~ § 55.1-1920 of the Code of Virginia need not be complied with as a prerequisite for registration. This subsection does not apply to condominium instruments that may be recorded after the condominium has been created.

C. The declarant shall have filed with the board reasonable evidence of its financial ability to complete all proposed improvements on the condominium. Such evidence may include (i) financial statements and a signed affidavit attesting that the declarant has sufficient funds to complete all proposed improvements on the condominium and that the funds will be used for completion of the proposed improvements or (ii) proof of a commitment of an institutional lender to advance construction funds to the declarant and, to the extent that any such commitments will not furnish all the necessary funds, other evidence, satisfactory to the board, of the availability to the declarant of necessary funds. A lender's commitment may be subject to such conditions, including registration of the condominium units and presale requirements, as are normal for loans of the type and as to which nothing appears to indicate that the conditions will not be complied with or fulfilled.

1. In the case of a condominium located in Virginia, "proposed improvements" are improvements that are not yet begun or not yet complete and that the declarant is affirmatively and unconditionally obligated to complete under ~~§§ 55-79.58~~ §§ 55.1-1920 and ~~55-79.67 (a1)~~ 55.1-1930 B of the Code of Virginia and applicable provisions of the condominium instruments or that the declarant would be so obligated to complete if plats and plans filed with the board in accordance with 18VAC48-30-140 A were recorded.

2. In the case of a condominium located outside of Virginia, "proposed improvements" are improvements that are not yet begun or not yet complete and that the declarant represents, without condition or limitation, will be built or placed in the condominium.

D. The current and planned condominium marketing activities of the declarant shall comply with § 18.2-216 of the Code of Virginia, 18VAC48-30-80, and 18VAC48-30-660.

E. The declarant shall have filed with the board (i) a proposed public offering statement that complies with this chapter and subsection A of ~~§ 55-79.90~~ § 55.1-1976 of the Code of Virginia and, if applicable, subsection ~~A~~ B of ~~§ 55-79.94~~ § 55.1-1982 of the Code of Virginia; (ii) a substituted public offering statement that complies with this chapter; or (iii) a prospectus that complies with this chapter.

F. Declarants may be organized as individuals or firms. Firms shall be organized as business entities under the laws of the Commonwealth of Virginia or otherwise authorized to transact business in Virginia. Firms shall register any trade or fictitious names with the State Corporation Commission or the clerk of court in the jurisdiction where the business is to be conducted in accordance with §§ 59.1-69 through 59.1-76 of the Code of Virginia before submitting an application to the board.

18VAC48-30-130. Minimum requirements for registration.

Applications for registration shall include the following:

1. The documents and information contained in ~~§ 55-79.89~~ § 55.1-1975 of the Code of Virginia.

2. The application fee specified in 18VAC48-30-100.

3. The following documents shall be included as exhibits. All exhibits shall be labeled as indicated and submitted in hardcopy form and electronically in a format acceptable to the board.

a. Exhibit A: A copy of the certificate of incorporation or certificate of authority to transact business in Virginia issued by the Virginia State Corporation Commission or other entity formation documents.

b. Exhibit B: A copy of the title opinion, title policy, or a statement of the condition of the title to the condominium project including encumbrances as of a specified date within 30 days of the date of application by a title company or licensed attorney who is not a salaried employee, officer, or director of the declarant or owner, in accordance with subdivision A 5 of ~~§ 55-79.89~~ § 55.1-1975 of the Code of Virginia.

c. Exhibit C: A copy of the instruments that will be delivered to a purchaser to evidence the purchaser's interest in the unit and of the contracts and other agreements that a purchaser will be required to agree to or sign.

d. Exhibit D: A narrative description of the promotional plan for the disposition of the condominium units.

e. Exhibit E: A copy of documentation demonstrating the declarant's financial ability to complete the project in accordance with 18VAC48-30-120.

f. Exhibit F: A copy of the proposed public offering statement that complies with subsection A of ~~§ 55-79.90~~ § 55.1-1976 and subsection ~~A~~ B of ~~§ 55-79.94~~ § 55.1-1982 of the Code of Virginia, as applicable, and this chapter. A substitute public offering statement or a prospectus pursuant to 18VAC48-30-370 and 18VAC48-30-380 respectively may be submitted for a condominium formed in another jurisdiction.

g. Exhibit G: Copies of bonds required by ~~§§ 55-79.58:1, 55.79.84:1,~~ §§ 55.1-1921, 55.1-1968, and ~~55-79.95~~ 55.1-1983 of the Code of Virginia, as applicable.

h. Exhibit H: A list with the name of every officer of the declarant who is directly responsible for the project or person occupying a similar status within, or performing similar functions for, the declarant. The list must include each individual's address, principal occupation for the past five years, and extent and nature of the individual's interest in the condominium as of a specified date within 30 days of the filing of the application.

i. Exhibit I: Plats and plans of the condominium that (i) comply with the provisions of ~~§ 55-79.58~~ § 55.1-1920 of the Code of Virginia and 18VAC48-30-140 other than the certification requirements and (ii) show all units and buildings containing units to be built anywhere within the submitted land other than within the boundaries of any convertible lands. Hardcopy submittals of plats and plans must be no larger than 11 inches by 17 inches.

j. Exhibit J: Conversion condominiums must attach (i) a copy of the general notice provided to tenants of the condominium at the time of application pursuant to subsection ~~B~~ C of ~~§ 55-79.94~~ § 55.1-1982 of the Code of Virginia, (ii) a copy of the formal notice to be sent at the time of registration to the tenants, if any, of the ~~building or~~ buildings, and (iii) the certified statement required in accordance with subsection ~~C~~ D of ~~§ 55-79.94~~ § 55.1-1982 of the Code of Virginia.

18VAC48-30-140. Requirements for plats and plans.

A. Except as provided in subsection C of this section, all plats and plans submitted with the application for registration shall comply with ~~§ 55-79.58~~ § 55.1-1920 of the Code of Virginia but the certification need not be signed until recordation. The plats and plans filed with the application for registration shall be the same as the plats and plans the declarant intends to record. A material change to the plats and plans shall be submitted to the board in accordance with Part VI (18VAC48-30-460 et seq.) of this chapter. Once recorded, copies of plats and plans as recorded shall be filed with the board in accordance with Part VI of this chapter.

B. In the case of units that are substantially identical, the requirement to show the location and dimensions (within normal construction tolerances) of the boundaries of each unit pursuant to subsection B of ~~§ 55-79.58~~ § 55.1-1920 of the Code of Virginia may be deemed satisfied by depiction of the location and dimensions of the vertical boundaries and horizontal boundaries, if any, of one such unit. The identifying numbers of all units represented by such depiction shall be indicated. Each structure within which any such units are located shall be depicted so as to indicate the exact location of each such unit within the structure.

C. In the case of a condominium located outside Virginia, certain materials may be filed with the application for registration in lieu of plats and plans complying with the provisions of ~~§ 55-79.58~~ § 55.1-1920 of the Code of Virginia. Such materials shall contain, as a minimum, (i) a plat of survey depicting all existing improvements, and all improvements that the declarant represents, without condition or limitation, will be built or placed in the condominium; and (ii) legally sufficient descriptions of each unit. Any improvements whose completion is subject to conditions or limitations shall be appropriately labeled to indicate that such improvements may not be completed. Unit descriptions may be written or graphic, shall demarcate each unit vertically and, if appropriate, horizontally, and shall indicate each unit's location relative to established points or datum.

D. The plats and plans must bear the form of the certification statement required by subsections A and B ~~§ 55-79.58~~ § 55.1-1920 of the Code of Virginia. However, as stated in subsection A of this section, the statement need not be executed prior to recordation. The certification statement may appear in a separate document that is recorded, or to be recorded.

Part IV
Public Offering Statement

18VAC48-30-160. Public offering statement requirements, generally.

In addition to the provisions of ~~§ 55-79.90~~ § 55.1-1976 of the Code of Virginia, the following will be considered, as applicable, during review of the public offering statement.

1. The public offering statement shall provide full and fair disclosure in accordance with 18VAC48-30-170.

2. The public offering statement shall pertain to a single offering and to the entire condominium in which the condominium units being offered are located.

3. The public offering statement shall be clear, organized, and legible.

4. Except for brief excerpts, the public offering statement may refer to, but should not incorporate verbatim, portions of the condominium instruments, the Virginia Condominium Act, or this chapter. This does not preclude compliance with 18VAC48-30-180.

18VAC48-30-170. Full and fair disclosure.

A. The provisions of ~~§ 55-79.90~~ § 55.1-1976 and subsection ~~A~~ B of ~~§ 55-79.94~~ § 55.1-1982 of the Code of Virginia and this chapter shall be strictly construed to promote full and fair disclosure in the public offering statement. In addition, the following will be considered, as applicable, during review to assure full and fair disclosure:

1. The information shall be presented in a manner that is clear and understandable to a reasonably informed consumer, while maintaining consistency with the requirements of this chapter and the Virginia Condominium Act.

2. In addition to specific information required by this chapter and the Virginia Condominium Act, the public offering statement shall disclose any other information necessary for full and fair disclosure.

3. No information shall be incorporated by reference to an outside source that is not reasonably available to a prospective purchaser.

4. If required information is not known or not reasonably available, such fact shall be stated and explained in the public offering statement.

B. The board has the sole discretion to require additional information or amendment of existing information as it finds necessary to ensure full and fair disclosure.

18VAC48-30-180. Contents of public offering statement.

A. A cover, if used, must be blank or bear identification information only.

B. The first page of the public offering statement shall be substantially as follows:

PURCHASER SHOULD READ THIS DOCUMENT FOR THE PURCHASER'S PROTECTION

PUBLIC OFFERING STATEMENT

NAME OF CONDOMINIUM: _____

LOCATION OF CONDOMINIUM: _____

NAME OF DECLARANT: _____

ADDRESS OF DECLARANT: _____

EFFECTIVE DATE OF PUBLIC OFFERING STATEMENT: _____

REVISED: _____

THE PURCHASER SHOULD READ THIS DOCUMENT FOR THE PURCHASER'S OWN PROTECTION. Living in a common interest community carries with it certain rights, responsibilities, and benefits, including certain financial obligations, rights, and restrictions concerning the use and maintenance of units and common elements, and decision-making authority vested in the unit owners' association. The purchaser will be bound by the provisions of the condominium instruments and should review the Public Offering Statement, the condominium instruments, and other exhibits carefully prior to purchase.

This Public Offering Statement presents information regarding condominium units being offered for sale by the declarant. Virginia law requires that a Public Offering Statement be given to every Purchaser in order to provide full and fair disclosure of the significant features of the condominium units being offered. The Public Offering Statement is not intended, however, to be all-inclusive. The Purchaser should consult other sources for details not covered by the Public Offering Statement.

The Public Offering Statement summarizes information and documents furnished by the declarant to the Virginia Common Interest Community Board. The Board has carefully reviewed the Public Offering Statement to ensure that it contains required disclosures, but the Board does not guarantee the accuracy or completeness of the Public Offering Statement. In the event of any inconsistency between the Public Offering Statement and the material it is intended to summarize, the latter will control.

Under Virginia law a purchaser of a condominium unit is afforded a 5-day period during which the purchaser may cancel the purchase contract of sale and obtain a full refund of any sums deposited in connection with the purchase contract. The 5-day period begins on the purchase contract date or the date of delivery of a Public Offering Statement, whichever is later. The purchaser may, if practicable, inspect the condominium unit and the common elements and obtain professional advice. If the purchaser elects to cancel, the purchaser must deliver notice of cancellation to the declarant pursuant to ~~§ 55-79.88~~ § 55.1-1974 of the Code of Virginia.

Allegations of violation of any law or regulation contained in the Virginia Condominium Act or the Condominium

Regulations should be reported to the Virginia Common Interest Community Board, Perimeter Center, Suite 400, 9960 Mayland Drive, Richmond, Virginia 23233.

C. A summary of important considerations shall immediately follow the first page for the purpose of reinforcing the disclosure of significant information. The summary shall be titled as such and shall be introduced by the following statement:

"Following are important matters to be considered in acquiring a condominium unit. They are highlights only. The Public Offering Statement should be examined in its entirety to obtain detailed information."

Appropriate modifications shall be made to reflect facts and circumstances that may vary. The summary shall consist of, but not be limited to, the following, as applicable:

1. A statement on the governance of the condominium wherein unit owners are allocated votes for certain decisions of the association. In addition, the statement shall include that all unit owners will be bound by the decisions made by the association, even if the individual unit owner disagrees.

2. A statement concerning the decision-making authority of the executive ~~organ~~ board of the unit owners' association.

3. A statement regarding the payment of expenses of the association on the basis of a periodic budget, to include a disclosure of any provision for reserves, including a statement if there are no reserves.

4. A statement detailing the requirement for each unit owner to pay a periodic assessment and the inability to reduce the amount of an assessment by refraining from the use of the common elements.

5. A statement of the unit owner's responsibility to pay additional assessments, if any.

6. A statement regarding the consequences for failure to pay an assessment when due. The statement shall include reference to the enforcement mechanisms available to the association, including obtaining a lien against the condominium unit, pursuing civil action against the unit owner, and certain other penalties.

7. A statement that the declarant must pay assessments on unsold condominium units.

8. A statement indicating whether the declarant, its predecessors, or principal officer have undergone a debtor's relief proceeding.

9. A statement that the declarant will retain control of the unit owners' association for an initial period.

10. A statement indicating whether a managing agent will perform the routine operations of the unit owners' association. The statement shall include whether the managing agent is related to the declarant, director, or officer of the unit owners' association.

11. A statement indicating whether the declarant may lease unsold condominium units and a statement indicating whether the right of a unit owner to lease that owner's unit to another is subject to restrictions.

12. A statement indicating whether the declarant may expand or contract the condominium or convert convertible land or space without the consent of any unit owner.

13. A statement indicating whether the right of the unit owner to resell the owner's condominium unit is subject to restrictions.

14. A statement indicating whether the units are restricted to residential use and whether the units may be utilized for commercial, retail, or professional use. The statement shall provide detail if units have different voting rights. Further, the statement shall also detail whether the allocation of rights and responsibilities among commercial, retail, professional, or residential use units are the same.

15. A statement indicating whether approval of the declarant or unit owners' association is necessary in order for a unit owner to alter the structure of the unit or modify the exterior of the unit.

16. A statement regarding the obligation of the unit owners' association to obtain certain insurance benefiting the unit owner, along with the necessity for a unit owner to obtain other insurance.

17. A statement regarding the unit owner's obligation to pay real estate taxes.

18. A statement regarding any limits the declarant asserts on the association or the unit owner's right to bring legal action against the declarant. Nothing in this statement shall be deemed to authorize such limits where those limits are otherwise prohibited by law.

19. A statement that the association or unit owners are members of another association or obligated to perform duties or pay fees or charges to that association or entity.

20. A statement indicating whether the condominium is subject to development as a time-share.

21. A statement affirming that marketing and sale of condominium units will be conducted in accordance with the Virginia Fair Housing Law (§ 36-96.1 et seq. of the Code of Virginia) and the Virginia Condominium Act (Chapter ~~4.2~~ 19 ~~(§ 55-79.39~~ (§ 55.1-1900 et seq.) of Title ~~55~~ 55.1 of the Code of Virginia).

D. The content after the summary of important considerations shall include the narrative sections in 18VAC48-30-190 through 18VAC48-30-360. Supplementary sections may be included as necessary.

E. Clear and legible copies of the following documents shall be attached as exhibits to the public offering statement:

1. The declaration;

2. The bylaws;

3. The projected budget;

4. Rules and regulations of the unit owners' association, if available;

5. Master association documents, if applicable;

6. Any management contract, along with the license number of the common interest community manager, if applicable;

7. Depiction of unit layouts;

8. Any lease of recreational areas;

9. Any contract or agreement affecting the use, maintenance, or access of all or any portion of the condominium, the nature, duration, or expense of which has a material impact on the operation and administration of the condominium;

10. Warranty information, if applicable; and

11. Other documents obligating the association or unit owner to perform duties or obligations or pay charges or fees.

F. Other information and documentation may be included as necessary to ensure full and fair disclosure. The board may also require additional information as necessary to ensure full and fair disclosure.

18VAC48-30-200. Narrative sections; creation of condominium.

The public offering statement shall contain a section captioned "Creation of the Condominium." The section shall briefly explain the manner in which the condominium was or will be created, the locality wherein the condominium instruments will be or have been recorded, and each of the condominium instruments, their functions, and the procedure for their amendment. The section shall indicate where each of the condominium instruments or copies thereof may be found. In the case of a condominium located in Virginia or in a jurisdiction having a law similar to ~~§ 55-79.96~~ § 55.1-1984 of the Code of Virginia, the section shall indicate that the purchaser will receive copies of the recorded declaration and bylaws, including amendments, as appropriate, within the time provided in the applicable statute.

18VAC48-30-230. Narrative sections; common elements.

A. The public offering statement shall contain a section captioned "Common Elements." The section shall contain a general description of the common elements.

B. For any common elements that are not completed or not expected to be substantially complete when the units are complete, a statement of the anticipated completion dates of unfinished common elements shall be included.

C. In the case of a condominium located in Virginia, if common elements are not expected to be substantially complete when the units are completed, the section shall state the nature, source, and extent of the obligation to complete such common elements that the declarant has incurred or intends to incur upon recordation of the condominium instruments pursuant to ~~§§ 55-79.58~~ §§ 55.1-1920 A and ~~55-79.67 (a1)~~ 55.1-1930 B of the Code of Virginia and applicable provisions of the condominium instruments. In addition the section shall state that pursuant to ~~§ 55-79.58:1~~ § 55.1-1921 of the Code of Virginia, the declarant has filed with the board a bond to insure completion of improvements to the common elements that the declarant is obligated as stated in the declaration.

D. In the case of a condominium located outside of Virginia, a description of the nature, source, and extent of the obligation to complete such common elements that the declarant has incurred or intends to incur under the law of the jurisdiction in which the condominium is located shall be included.

E. The section shall describe any limited common elements that are assigned or that may be assigned and shall indicate the reservation of exclusive use. In the case of limited common elements that may be assigned, the section shall state the manner of such assignment or reassignment.

F. The section shall indicate the availability of vehicular parking spaces including the number of spaces available per unit and restrictions on or charges for the use of spaces.

18VAC48-30-250. Narrative sections; declarant.

A. The public offering statement shall contain a section captioned "The Declarant." The section shall contain a brief history of the declarant with emphasis on its experience in condominium development.

B. The following information shall be stated with regard to persons immediately responsible for the development of the condominium: (i) name, (ii) length of time associated with the declarant, (iii) role in the development of the condominium, and (iv) experience in real estate development. If different from the persons immediately responsible for the development of the condominium, the principal officers of the declarant shall also be identified.

C. The section shall describe the type of legal entity of the declarant and explain if any other entities have any obligation to satisfy the financial obligations of the declarant.

D. If the declarant or its parent or predecessor organization has, during the preceding 10 years, been adjudicated as bankrupt or has undergone any proceeding for the relief of

debtors, such ~~fact or~~ facts shall be stated. If any of the persons identified pursuant to subsection B of this section has, during the preceding three years, been adjudicated a bankrupt or undergone any proceeding for the relief of debtors, such ~~fact or~~ facts shall be stated.

E. The section shall indicate any final action taken against the declarant, its principals, or the condominium by an administrative agency, civil court, or criminal court where the action reflected adversely upon the performance of the declarant as a developer of real estate projects. The section shall also indicate any current or past proceedings brought against the declarant by any condominium unit owners' association or by its executive ~~organ~~ board or any managing agent on behalf of such association or that has been certified as a class action on behalf of some or all of the unit owners. For the purposes of the previous sentence with respect to past proceedings, if the ultimate disposition of those proceedings was one that reflected adversely upon the performance of the declarant, that disposition shall be disclosed. If the ultimate disposition was resolved favorably towards the declarant, its principals, or the condominium, the final action does not need to be disclosed. The board has the sole discretion to require additional disclosure of any proceedings where it finds such disclosure necessary to assure full and fair disclosure.

18VAC48-30-260. Narrative sections; terms of the offering.

A. The public offering statement shall contain a section captioned "Terms of the Offering." The section shall discuss the expenses to be borne by a purchaser in acquiring a condominium unit and present information regarding the settlement of purchase contracts as provided in subsections B through H of this section.

B. The section shall indicate the offering prices for condominium units or a price range for condominium units, if either is established.

C. The section shall set forth the significant terms of any financing offered by or through the declarant to purchasers. Such discussion shall include the substance of the following statement:

"Financing is subject to additional terms and conditions stated in the loan commitment or instruments."

D. The section shall discuss in detail any costs collected by or paid to the declarant, association, or master association that are not normal for residential real estate transactions including, without limitation, any contribution to the initial or working capital of the unit owners' association, including any master association, to be paid by a purchaser.

E. The section shall discuss any penalties or forfeitures to be incurred by a purchaser upon default in performance of a purchase contract that are not normal for residential real estate transactions. Penalties or forfeitures to be discussed include, without limitation, the declarant's right to retain sums deposited in connection with a purchase contract in the event of a refusal by a lending institution to provide financing to a purchaser who has made proper application for same.

F. The section shall discuss the right of the declarant to cancel a purchase contract upon failure of the declarant to obtain purchase contracts on a given number or percentage of condominium units being offered or upon failure of the declarant to meet other conditions precedent to obtaining necessary financing.

G. The section shall discuss the process for cancellation of a purchase contract by a purchaser in accordance with subdivision 2 of ~~§ 55-79.88~~ § 55.1-1974 of the Code of Virginia. The section shall include a statement as to whether deposits will be held in an escrow fund or if a bond or letter of credit will be filed with the board in lieu of escrowing deposits, all in accordance with ~~§ 55-79.95~~ § 55.1-1983 of the Code of Virginia.

H. The section shall set forth any restrictions in the purchase contract that limit the unit owner's right to bring legal action against the declarant or the association. The section shall set forth the paragraph or section and page number of the purchase contract where such provision is located. Nothing in this statement shall be deemed to authorize such limits where those limits are otherwise prohibited by law.

18VAC48-30-270. Narrative sections; encumbrances.

A. The public offering statement shall contain a section captioned "Encumbrances" that shall include the significant terms of any encumbrances, easements, liens, and matters of title affecting the condominium other than those contained in the condominium instruments and disclosed elsewhere in the public offering statement, as provided in subsections B through J of this section.

B. Except to the extent that such encumbrances are required to be satisfied or released by subsection A of ~~§ 55-79.46~~ § 55.1-1908 of the Code of Virginia, or a similar law, the section shall describe every mortgage, deed of trust, other perfected lien, or choate mechanics' or materialmen's lien affecting all or any portion of the condominium other than those placed on condominium units by their purchasers or owners. Such description shall (i) identify the lender secured or the lienholder, (ii) state the nature and original amount of the obligation secured, (iii) identify the party having primary responsibility for performance of the obligation secured, and (iv) indicate the practical effect upon unit owners of failure of the party to perform the obligation.

C. Normal easements for utilities, municipal rights-of-way, and emergency access shall be described only as such, without reference to ownership, location, or other details.

D. Easements reserved to the declarant to facilitate conversion, expansion, or sales shall be briefly described.

E. Easements reserved to the declarant or to the unit owners' association or to either entity's representatives or agents for access to units shall be briefly described. In the event that access to a unit may be had without notice to the unit owner, such fact shall be stated.

F. Easements across the condominium reserved to the owners or occupants of land located in the vicinity of the condominium, or across adjacent land benefitting the condominium including, without limitation, easements for the use of recreational areas shall be briefly described.

G. Covenants, servitudes, or other devices that create an actual restriction on the right of any unit owner to use and enjoy the unit or any portion of the common elements other than limited common elements shall be briefly described.

H. Any matter of title that is not otherwise required to be disclosed by the provisions of this section and that has or may have a substantial adverse impact upon unit owners' interests in the condominium shall be described. Under normal circumstances, normal and customary utility easements, easements for encroachments, and easements running in favor of unit owners for ingress and egress across the common elements shall be deemed not to have a substantial adverse impact upon unit owners' interest in the condominium.

I. The section need not include any information required to be disclosed by 18VAC48-30-210 C, 18VAC48-30-220, or 18VAC48-30-280.

J. In addition to the description of easements required in this section, pertinent easements that can be located shall be shown on the condominium plats and plans.

18VAC48-30-290. Narrative sections; unit owners' association.

A. The public offering statement shall contain a section captioned "Unit Owners' Association." The section shall discuss the manner in which the condominium is governed and administered and shall include the information required by subsections B through K of this section.

B. The section shall summarize the functions of the unit owners' association.

C. The section shall describe the organizational structure of the unit owners' association. Such description shall indicate (i) the existence of or provision for an executive ~~organ~~ board, officers, and managing agent, if any; (ii) the relationships between such persons or bodies; (iii) the manner of election or appointment of such persons or bodies; and (iv) the assignment or delegation of responsibility for the performance of the functions of the unit owners' association.

D. The section shall describe the method of allocating votes among the unit owners.

E. The section shall describe any retention by the declarant of control over the unit owners' association, including the time period of declarant control. The section shall state that the association shall register with the Common Interest Community Board upon transition of declarant control by filing the required annual report in accordance with ~~§ 55-79.93:1~~ § 55.1-1980 of the Code of Virginia.

F. The managing agent, if any, shall be identified. If a managing agent is to be employed in the future, the criteria, if any, for selection of the managing agent shall be briefly stated. The section shall indicate any relationship between the managing agent and the declarant or a member of the executive ~~organ~~ board or an officer of the unit owners' association. The duration of any management agreement shall be stated.

G. Except to the extent otherwise disclosed in connection with discussion of a management agreement, the significant terms of any lease of recreational areas or similar contract or agreement affecting the use, maintenance, or access of all or any part of the condominium shall be stated. The section shall include a brief narrative statement of the effect of each such agreement upon a purchaser.

H. Rules and regulations of the unit owners' association and the authority to promulgate rules and regulations shall be discussed. Particular provisions of the rules and regulations need not be discussed except as required by other provisions of this chapter. The purchaser's attention shall be directed to the copy of rules and regulations, if any, attached to the public offering statement.

I. Any standing committees established or to be established to perform functions of the unit owners' association shall be discussed. Such committees include, without limitation, architectural control committees and committees having the authority to interpret condominium instruments, rules, and regulations or other operative provisions.

J. Unless required to be disclosed by 18VAC48-30-270 E, any power of the declarant or of the unit owners' association or its representatives or agents to enter units shall be discussed. To the extent each is applicable, the following facts shall be stated (i) a unit may be entered without notice to the unit owner, (ii) the declarant or the unit owners' association or its representatives or agents are empowered to take actions or perform work in a unit without the consent of the unit owner, and (iii) the unit owner may be required to bear the costs of actions so taken or work so performed.

K. The section shall state whether the condominium is part of a master or other association and briefly describe such relationship and the responsibilities of and obligations to the master association, including any charges for which the unit owner or the unit owners' association may be responsible. The disclosures required by this subsection may be contained in this narrative section or another narrative section. The section shall also describe any other obligation of the association or unit owners arising out of any agreements, easements, deed

restrictions, or proffers, including the obligation to pay fees or other charges.

18VAC48-30-300. Narrative sections; display of flag.

The public offering statement shall include a section captioned "Display of Flag." This section shall describe any restrictions, limitations, or prohibitions on the right of a unit owner to display the flag of the United States in accordance with ~~§ 55-79.75:2~~ § 55.1-1951 of the Code of Virginia.

18VAC48-30-320. Narrative sections; financial matters.

A. The public offering statement shall contain a section captioned "Financial Matters." The section shall discuss the expenses incident to the ownership of a condominium unit, excluding certain taxes, in the manner provided in subsections B through I of this section.

B. The section shall distinguish, in general terms, the following categories of costs of operation, maintenance, repair, and replacement of various portions of the condominium: (i) common expenses apportioned among and assessed to all of the condominium units pursuant to subsection ~~C~~ D of ~~§ 55-79.83~~ § 55.1-1964 of the Code of Virginia or similar law or condominium instrument provision; (ii) common expenses, if any, apportioned among and assessed to less than all of the condominium units pursuant to subsections A and B of ~~§ 55-79.83~~ § 55.1-1964 of the Code of Virginia or similar law or condominium instrument provisions; and (iii) costs borne directly by individual unit owners. The section need not discuss taxes assessed against individual condominium units and payable directly by the unit owners.

C. A budget shall show projected common expenses for the first year of the condominium's operation or, if different, the latest year for which a budget is available. The projected budget shall be attached to the public offering statement as an exhibit and the section shall direct the purchaser's attention to such exhibit. The section shall describe the manner in which the projected budget is established. If the condominium is phased, the budget shall project future years until all phases are projected to be developed and all common elements that must be built have been completed. The budget shall include an initial working capital budget showing sources and uses of initial working capital and a reserve table showing amounts to be collected to fund those reserves. The budget shall show regular individual assessments by unit type. The budget shall note that the figures are not guaranteed and may vary.

D. The section shall describe the manner in which regular common expenses are apportioned among and assessed to the condominium units. The section shall include the substance of the following statement, if applicable:

> "A unit owner cannot obtain a reduction of the regular common expenses assessed against the unit by refraining from use of any of the common elements."

E. The section shall describe budget provisions for reserves for capital expenditures in accordance with ~~§ 55-79.83:1~~ § 55.1-1965 of the Code of Virginia and for contingencies, if any. If there are no reserves, the section shall so state.

F. The section shall describe provisions for additional assessments to be levied in accordance with subsection E of ~~§ 55-79.83~~ § 55.1-1964 of the Code of Virginia in the event that budgeted assessments provide insufficient funds for operation of the unit owners' association. The section shall also describe the provisions for an assessment against an individual unit owner.

G. The section shall discuss any common expenses actually planned to be specially assessed pursuant to subsections A and B of ~~§ 55-79.83~~ § 55.1-1964 of the Code of Virginia or similar law or condominium instrument provisions.

H. The section shall indicate any fee, rent, or other charge to be payable by unit owners other than through common expense assessments to any party for use of the common elements or for use of recreational or parking facilities in the vicinity of the condominium. As an exception to the provisions of this subsection, the section need not discuss any fees provided for in subsection H of ~~§ 55-79.84~~ §§ 55.1-1966 and ~~§ 55-79.85~~ 55.1-1969 of the Code of Virginia, or similar laws or condominium instrument provisions or any costs for certificates for resale.

I. The section shall discuss the effect of failure of a unit owner to pay the assessments levied against the condominium unit. Such discussion shall indicate provisions for charges or other remedies that may be imposed to be applied in the case of overdue assessments and for acceleration of unpaid assessments. The section shall indicate the existence of a lien for unpaid assessments and where applicable the bond or letter of credit conditioned on the payment of assessments filed with the board in accordance with ~~§ 55-79.84:1~~ § 55.1-1968 of the Code of Virginia. The section shall include, to the extent applicable, the substance of the following statement:

> "The unit owners' association may obtain payment of overdue assessments by bringing legal action against the unit owner or by foreclosure of the lien resulting in a forced sale of the condominium unit."

18VAC48-30-330. Narrative sections; insurance.

A. The public offering statement shall contain a section captioned "Insurance." The section shall describe generally the insurance on the condominium to be maintained by the unit owners' association. The section shall state, with respect to such insurance, each of the following circumstances, to the extent applicable: (i) property damage coverage will not insure personal property belonging to unit owners; (ii) property damage coverage will not insure improvements to a unit that increase its value beyond the limits of coverage provided in the unit owners' association's policy~~,~~; and (iii) liability coverage will not insure against liability arising from

an accident or injury occurring within a unit or as a result of the act or negligence of a unit owner. The section shall include a statement whether the unit owner is obligated to obtain coverage for any or all of the coverages described. The section shall also include a statement that the unit owner should consult with an insurance professional to determine the appropriate coverage.

B. The section shall indicate any conditions imposed by the condominium instruments or the rules and regulations to which insurance obtained directly by unit owners will be subject. Such indication may be made by reference to pertinent provisions of the condominium instruments or the rules and regulations.

C. The section shall explain that the association is the only party that can make a claim under the master policy and is the sole decision-maker as to whether to make a claim, including a statement as to the circumstances under which a unit owner could be responsible for payment of the deductible.

D. The section shall state that the unit owners' association is required to obtain and maintain a blanket fidelity bond or employee dishonesty insurance policy in accordance with subsection B of ~~§ 55-79.81~~ § 55.1-1963 of the Code of Virginia.

18VAC48-30-360. Narrative sections; warranties.

The public offering statement shall contain a section captioned "Warranties." The section shall describe any warranties provided by or through the declarant on the units or the common elements and a summary of the process for commencement of an action for breach of warranty in accordance with subsection C of ~~§ 55-79.79~~ § 55.1-1955 of the Code of Virginia. The section shall describe the structural defect warranty required by and described in subsection B of ~~§ 55-79.79~~ § 55.1-1955 of the Code of Virginia. The section shall also include the substance of the following statement:

> "Nothing contained in the warranty provided by the declarant shall limit the protection afforded by the statutory warranty."

18VAC48-30-370. Documents from other jurisdictions.

A. A substituted public offering statement shall only be permitted for a condominium located outside of Virginia.

B. The substituted public offering statement shall be prepared by deleting from the original disclosure document (i) references to any governmental agency of another jurisdiction to which application has been made or will be made for registration or related action; (ii) references to the action of such governmental agency relative to the condominium; (iii) statements of the legal effect in another jurisdiction of delivery, failure to deliver, acknowledgment of receipt, or related events involving the disclosure document; (iv) the effective ~~date or~~ dates in another jurisdiction of the disclosure document; and (v) all other information that is untrue, inaccurate, or misleading with respect to marketing, offers, or disposition of condominium units in Virginia.

C. The substituted public offering statement shall incorporate all information not otherwise included that is necessary to effect fully and accurately the disclosures required by subsection A of ~~§ 55-79.90~~ § 55.1-1976 of the Code of Virginia and, if applicable, subsection ~~A~~ B of ~~§ 55-79.94~~ § 55.1-1982 of the Code of Virginia. The substituted disclosure document shall clearly explain any nomenclature that is different from the definitions provided in ~~§ 55-79.41~~ § 55.1-1900 of the Code of Virginia.

D. The substituted public offering statement shall include as the first item of the summary of important considerations a statement that includes the following information: (i) the designation by which the original disclosure document is identified in the original jurisdiction, (ii) the governmental agency of such other jurisdiction where the original disclosure document is or will be filed, and (iii) the jurisdiction of such filing.

E. The provisions of subdivision 2 of ~~§ 55-79.88~~ § 55.1-1974, ~~§ 55-79.90~~ § 55.1-1976, and subsection ~~A~~ B of ~~§ 55-79.94~~ § 55.1-1982 of the Code of Virginia and 18VAC48-30-160, 18VAC48-30-170, and 18VAC48-30-180 shall apply to substituted public offering statements in the same manner and to the same extent that they apply to public offering statements.

18VAC48-30-380. Condominium securities.

A prospectus filed in compliance with the securities laws of a state or federal agency used in lieu of a public offering statement shall contain or have attached thereto copies of documents, other than the projected budget required to be attached to a public offering statement by subsection E of 18VAC48-30-180. Such prospectus shall be deemed to satisfy all of the disclosure requirements of subsections C and D of 18VAC48-30-180 and 18VAC48-30-190 through 18VAC48-30-360. In the case of a conversion condominium, the prospectus shall have attached thereto, in suitable form, the information required by 18VAC48-30-420, subsections C and D of 18VAC48-30-430, and 18VAC48-30-440 to be disclosed in public offering statements for conversion condominiums. The provisions of subdivision 2 of ~~§ 55-79.88~~ § 55.1-1974 of the Code of Virginia shall apply to the delivery of the prospectus in the same manner and to the same extent that they apply to the delivery of a public offering statement.

18VAC48-30-390. Board oversight of public offering statement.

The board at any time may require a declarant to alter or amend the public offering statement to assure full and fair disclosure to prospective purchasers and to ensure compliance with the Virginia Condominium Act and this chapter.

In accordance with subsection B of ~~§ 55-79.90~~ § 55.1-1976 of the Code of Virginia, the board does not approve or recommend the condominium or disposition thereof. The board's issuance of an effective date for a public offering statement shall not be construed to (i) constitute approval of the condominium, (ii) represent that the board asserts that either all facts or material changes or both concerning the condominium have been fully or adequately disclosed, or (iii) indicate that the board has made judgment on the value or merits of the condominium.

18VAC48-30-430. Present condition of conversion condominium.

A. The section captioned "Present Condition of the Condominium" shall contain a statement of the approximate dates of original construction or installation of all physical assets in the condominium. A single construction or installation date may be stated for all of the physical assets (i) in the condominium, (ii) within a distinctly identifiable portion of the condominium, or (iii) within a distinctly identifiable category of physical assets. A statement made pursuant to the preceding sentence shall include a separate reference to the construction or installation date of any physical asset within a stated group of physical assets that was constructed or installed significantly earlier than the construction or installation date indicated for the group generally. No statement shall be made that a physical asset or portion thereof has been repaired, altered, improved, or replaced subsequent to its construction or installation unless the approximate date, nature, and extent of such repair, alteration, improvement, or replacement is also stated.

B. Subject to the exceptions provided in subsections D, E, and F of this section, the section captioned "Present Condition of the Condominium" shall contain a description of the present condition of all physical assets within the condominium. The description of present condition shall disclose all structural defects and incapacities of major utility installations to perform their intended functions as would be observable, detectable, or deducible by means of standard inspection and investigative techniques employed by architects or professional engineers, as the case may be.

C. The section shall indicate the dates of inspection by means of which the described present condition was determined; provided, however, that such inspections shall have been conducted not more than one year prior to the date of filing the application for registration. The section shall identify the party ~~or parties~~ by whom present condition was ascertained and shall indicate the relationship of such party ~~or parties~~ to the declarant.

D. A single statement of the present condition of a class of physical assets shall suffice to disclose the present condition of each physical asset within the class; provided, however, that, unless subsection F of this section applies, such statement shall include a separate reference to the present condition of any physical asset within the class that is significantly different from the present condition indicated for the class generally.

E. The description of present condition may include a statement that all structural components in the condominium or in a distinctly identifiable portion thereof are in sound condition except those for which structural defects are noted.

F. In a case in which there are numerous physical assets within a class of physical assets and inspection of each such physical asset is impracticable, the description of present condition of all the physical assets within the class may be based upon an inspection of a number of them selected at random, provided that the number selected is large enough to yield a reasonably reliable sample and that the total number of physical assets within the class and the number selected are disclosed.

G. The section shall include statements disclosing any environmental issues pertaining to the building and the surrounding area, to include ~~but not be limited to~~:

1. The presence of any asbestos-containing material following an inspection of each building completed prior to July 1, 1978, as well as whether any response actions have been or will need to be taken as required by ~~§ 55-79.94 A 5~~ § 55.1-1982 B 5 of the Code of Virginia;

2. Any known information on lead-based paint and lead-based paint hazards in each building constructed prior to 1978 pursuant to the Residential Lead-Based Paint Hazard Reduction Act of 1992 - Title X (42 USC § 4851 et seq.); and

3. Any obligations related to the declarant's participation in voluntary or nonvoluntary remediation activities.

18VAC48-30-450. Notice to tenants.

No notice to terminate tenancy of a unit provided for by subsection ~~B~~ C of ~~§ 55-79.94~~ § 55.1-1982 of the Code of Virginia shall be given prior to the registration of the condominium including such unit as to which the tenancy is to be terminated.

Part VI
Post-Registration Provisions

18VAC48-30-460. Minimum post-registration reporting requirements.

A. Subsequent to the issuance of a registration for a condominium by the board, the declarant of a condominium shall:

1. File an annual report in accordance with ~~§ 55-79.93~~ § 55.1-1979 of the Code of Virginia and this chapter.

2. File a copy of the formal notice to the tenants of a conversion condominium upon delivery or no later than 15

days after delivery to such tenants in accordance with subsection ~~B~~ C of ~~§ 55-79.94~~ § 55.1-1982.

3. Upon the occurrence of a material or nonmaterial change, file an amended public offering statement or substituted public offering statement in accordance with the provisions of 18VAC48-30-480 or 18VAC48-30-490, as applicable.

4. Notify the board of a change in the bond or letter of credit, as applicable, required by ~~§§ 55-79.58:1, 55-79.84:1,~~ §§ 55.1-1921, 55.1-1968, and ~~55-79.95~~ 55.1-1983 of the Code of Virginia.

5. File a complete application for registration of unregistered additional units upon the expansion of the condominium or the formation of units out of additional land. Notwithstanding the preceding, nonresidential units created out of convertible space need not be registered. Documents on file with the board and not changed with the creation of additional units need not be refiled provided that the application indicates that such documents are unchanged.

6. Notify the board of transition of control of the unit owners' association.

7. Notify the board upon the transfer of special declarant rights to a successor declarant.

8. Submit appropriate documentation to the board once the registration is eligible for termination.

9. Submit to the board any other document or information that may include information or documents that have been amended or may not have existed previously that affects the accuracy, completeness, or representation of any information or document filed with the application for registration.

10. Submit to the board any document or information to make the registration file accurate and complete.

B. Notwithstanding the requirements of subsection A of this section, the board at any time may require a declarant to provide information or documents, or amendments thereof, to assure full and fair disclosure to prospective purchasers and to ensure compliance with the Virginia Condominium Act and this chapter.

18VAC48-30-480. Nonmaterial changes to the public offering statement.

A. Changes to the public offering statement that are not material shall be filed with the board but shall not be deemed an amendment of the public offering statement for the purposes of this chapter and shall not give rise to a renewed right of rescission in any purchase. Nonmaterial changes to the public offering statement include~~, but may not be limited to,~~ the following:

1. Correction of spelling, grammar, omission, or other similar errors not affecting the substance of the public offering statement;

2. Changes in presentation or format;

3. Substitution of an executed, filed, or recorded copy of a document for the otherwise substantially identical unexecuted, unfiled, or unrecorded copy of the document that was previously submitted;

4. Inclusion of updated information such as identification or description of the current officers and directors of the declarant;

5. Disclosure of completion of improvements for improvements that were previously proposed or not complete;

6. Changes in real estate tax assessment or rate or modifications related to those changes;

7. Changes in utility charges or rates or modifications related to those changes;

8. Adoption of a new budget that does not result in a significant change in the common expense assessment or significantly impact the rights or obligations of the prospective purchasers;

9. Modifications related to changes in insurance company or financial institution, policy, or amount for bonds or letters of credit required pursuant to ~~§§ 55-79.58:1, 55-79.84:1,~~ §§ 55.1-1921, 55.1-1968, and ~~55-79.95~~ 55.1-1983 of the Code of Virginia;

10. Changes in management agent or common interest community manager; and

11. Any change that is the result of orderly development of the condominium in accordance with the condominium instruments as described in the public offering statement.

B. Nonmaterial changes to the public offering statement shall be submitted with the effective date of the changes detailed. All changes shall be clearly represented in the documentation presented. The additions and deletions of text in the public offering statement and exhibits shall be identified by underlining and striking through text to be added and deleted, and any documents being added to or deleted from the contents of the public offering statement shall be clearly and accurately reflected in the table of contents utilizing underlines and strike-throughs for additions and deletions. In addition to the copies showing edits to the text, a clean copy of all new and amended documents shall be provided. In addition, the declarant shall include a statement with the submission of the declarant's plans, if any, to deliver the public offering statement to purchasers pursuant to subdivision 2 of ~~§ 55-79.88~~ § 55.1-1974 of the Code of Virginia.

C. The board has the sole discretion for determining whether a change is nonmaterial. The declarant will be notified in writing within 15 days of receipt by the board if the submitted changes are determined to be material. Should a change be submitted as nonmaterial but determined to be a material change during review, the requirements contained in 18VAC48-30-470 and 18VAC48-30-490 shall be applicable.

18VAC48-30-490. Filing of amended public offering statement.

A. The declarant shall promptly file with the board for review a copy of the amended public offering statement or substituted public offering statement together with a copy of a summary of proposed amendments that shall be distributed to purchasers during the board review period. The summary of proposed amendments shall enumerate the amendments to the public offering statement submitted for board review and include a statement that the amendments to the public offering statement have been filed with the board but have not yet been accepted. The form of the submission is at the discretion of the declarant provided, however, that (i) all amendments are clearly represented in the documentation presented, (ii) the additions and deletions of text in the public offering statement and exhibits shall be identified by underlining and striking through text to be added and deleted, and (iii) any documents being added to or deleted from the contents of the public offering statement shall be clearly and accurately reflected in the table of contents utilizing underlines and strike-throughs for additions and deletions. In addition to the copies showing edits to the text, a clean copy of all new and amended documents shall be provided.

B. The amended public offering statement submitted to the board for review shall include the effective date of the amendments.

C. The board shall issue a notice of filing within five business days following receipt of the amended public offering statement.

D. Within 30 days of the issuance of the notice of filing required by subsection C of this section, the board shall review the amended public offering statement and supporting materials to determine whether the amendment complies with this chapter. If the board's review determines that the amended public offering statement complies with this chapter, it shall notify the declarant in writing and confirm the new effective date of the public offering statement.

E. If the board's review determines that the amended public offering statement does not comply with this chapter, it shall immediately notify the declarant in writing that the review has determined the amended public offering statement is not in compliance and shall specify the particulars of such noncompliance. The declarant shall then have 20 days in which to correct the particulars of noncompliance identified by the board. The declarant may, prior to the completion of the 20-day correction period, request an extension in writing of the 20-day correction period. Upon expiration of the 20-day correction period, if requested corrections have not been made or a request for extension properly received, the board may issue a temporary cease and desist order in accordance with ~~§ 55-79.100 (b)~~ § 55.1-1986 B of the Code of Virginia to require the cessation of sales until such time as affirmative action as directed by the board is taken. Use of the noncompliant public offering statement may result in further action by the board pursuant to ~~§§ 55-79.100, 55-79.101,~~ §§ 55.1-1986, 55.1-1987, and ~~55-79.103~~ 55.1-1989 of the Code of Virginia.

F. Notwithstanding an extension of the 30-day period for review agreed to in writing by the board and declarant, if the board does not perform the required review of the public offering statement in accordance with subsection D of this section, the amendment shall be deemed to comply with 18VAC48-30-160 through 18VAC48-30-380, and the new effective date shall be the effective date of the amendment provided pursuant to subsection B of this section.

G. In each case in which an amended document is filed pursuant to this section and the manner of its amendment is not apparent on the face of the document, the declarant shall provide an indication of the manner and extent of amendment.

18VAC48-30-500. Current public offering statement.

A. Upon issuance of an effective date by the board, any purchasers who received a public offering statement and summary of proposed amendments during the board review period pursuant to subsection A of 18VAC48-30-490 shall be provided with the public offering statement as accepted by the board. A public offering statement remains current until such time as the occurrence of a material change requires amendment of the public offering statement pursuant to this chapter and a new effective date is issued by the board.

B. Upon issuance of an effective date by the board, a public offering statement remains current until such time as a new effective date is established pursuant to this chapter.

C. Notwithstanding the board's authority to issue a cease and desist order pursuant to ~~§ 55-79.100~~ § 55.1-1986 of the Code of Virginia, the filing of an amended public offering statement shall not require the declarant to cease sales provided that the declarant provides to purchasers the summary of proposed amendments pursuant to subsection A of 18VAC48-30-490 pending the issuance of a new effective date by the board.

18VAC48-30-510. Public offering statement not current; notification of purchasers.

A. A purchaser who has been delivered a public offering statement that is not current due to a material change and was not provided with the summary of proposed amendments

containing the proposed changes to the amended public offering statement pursuant to subsection A of 18VAC48-30-490 pending the issuance of a new effective date by the board shall be notified of such fact by the declarant.

B. A purchaser who has been delivered a public offering statement and summary of proposed amendments pursuant to subsection A of 18VAC48-30-490, but the amended public offering statement is determined to be noncompliant in accordance with subsection E of 18VAC48-30-490 shall be notified of such fact by the declarant.

1. The notification shall indicate that any contract for disposition of a condominium unit may be canceled by the purchaser pursuant to subdivision 2 of ~~§ 55-79.88~~ § 55.1-1974 of the Code of Virginia.

2. The declarant shall file a copy of the notification with the board and provide proof that such notification has been delivered to all purchasers under contract.

18VAC48-30-530. Filing of phase amendment application.

A. A phase amendment application shall be filed when adding land to or converting land in the condominium, provided that no such application need be filed for units previously registered. Such phase amendment application shall be accompanied by the fee provided for in 18VAC48-30-100 and shall be subject to all of the provisions of 18VAC48-30-90 through 18VAC48-30-150. Documents on file with the board that have not changed in connection with the additional units need not be refiled, provided that the phase amendment application indicates that such documents are unchanged.

B. The application shall include a new or amended bond or letter of credit required pursuant to ~~§ 55-79.84:1~~ § 55.1-1968 of the Code of Virginia for the additional units.

C. The board shall review the phase amendment application and supporting materials to determine whether the amendment complies with this chapter. If the board's review determines the phase amendment application complies with this chapter, it shall issue an amended order of registration for the condominium and shall provide that any previous orders and designations of the form, content, and effective date of the public offering statement, substituted public offering statement, or prospectus to be used are superseded. If the board's review determines that the phase amendment application is not complete, the board shall correspond with the declarant to specify the particulars that must be completed to obtain compliance with this chapter.

18VAC48-30-540. Annual report by declarant.

A. A declarant shall file an annual report on a form provided by the board to update the material contained in the registration file at least 30 days prior to the anniversary date of the order registering the condominium. Prior to filing the annual report required by ~~§ 55-79.93~~ § 55.1-1979 of the Code of Virginia, the declarant shall review the public offering statement then being delivered to purchasers. If such public offering statement is current, the declarant shall so certify in the annual report. If such public offering statement is not current, the declarant shall amend the public offering statement, and the annual report shall, in that event, include a filing in accordance with 18VAC48-30-490.

B. The annual report shall contain, but may not be limited to, the following:

1. Current contact information for the declarant;

2. Current contact information for the declarant's attorney, if applicable;

3. Date of the public offering statement currently being delivered to purchasers;

4. Date the condominium instruments were recorded and locality wherein recorded;

5. Number of phases registered with the board, if applicable;

6. Number of phases recorded, if applicable;

7. Number of units recorded;

8. Number of units conveyed;

9. Status of completion of all common elements within the condominium;

10. Status of declarant control;

11. Whether the declarant is current in the payment of assessments; and

12. Current evidence from the surety or financial institution of any bond or letters of credit, or submittal of replacement bonds or letters of credit, required pursuant to ~~§§ 55-79.58:1, 55-79.84:1,~~ §§ 55.1-1921, 55.1-1968, and ~~55-79.95~~ 55.1-1983 of the Code of Virginia. Such verification shall provide the following:

a. Principal of bond or letter of credit;

b. Beneficiary of bond or letter of credit;

c. Name of the surety or financial institution that issued the bond or letter of credit;

d. Bond or letter of credit number as assigned by the issuer;

e. The dollar amount; and

f. The expiration date or, if self-renewing, the date by which the bond or letter of credit shall be renewed.

18VAC48-30-550. Board review of annual report.

A. During review of the annual report, the board may make inquiries or request additional documentation to amplify or clarify the information provided.

B. If the board does not accept the annual report and the annual report filing is not completed within 60 days of a request by the board for additional information, the board may take further action pursuant to ~~§ 55-79.100, 55-79.101, or 55-79.103~~ §§ 55.1-1986, 55.1-1987, and 55.1-1989 of the Code of Virginia for failing to file an annual report as required by ~~§ 55-79.93~~ § 55.1-1979 of the Code of Virginia.

C. If the board does not perform the required review of the annual report within 30 days of receipt by the board, the annual report shall be deemed to comply with ~~§ 55-79.93~~ § 55.1-1979 of the Code of Virginia.

18VAC48-30-560. Transition of control of unit owners' association.

Upon transition of control of the association to the unit owners following the period of declarant control, the declarant shall, in addition to the requirements contained in subsection H of ~~§ 55-79.74~~ § 55.1-1943 of the Code of Virginia, notify the board in writing of the date of such transition and provide the name and contact information for members of the board of directors of the unit owners' association or the association's common interest community manager.

18VAC48-30-570. Return of assessment bond or letter of credit to declarant.

A. The declarant of a condominium required to post a bond or letter of credit pursuant to ~~§ 55-79.84:1~~ § 55.1-1968 of the Code of Virginia shall maintain such bond or letter of credit for all units registered with the board until the declarant owns less than 10% of the units in the condominium and is current in the payment of assessments. For condominiums containing less than 10 units, the bond or letter of credit shall be maintained until the declarant owns only one unit.

B. The declarant shall submit a written request to the board for the return of the bond or letter of credit. The written request shall attest that the declarant (i) owns less than 10% of the units or for condominiums containing less than 10 units, that the declarant owns only one unit and (ii) is current in the payment of assessments. The written request shall provide contact information for the unit owners' association.

C. Upon receipt of the written request from the declarant, the board shall send a request to the unit owners' association to confirm the information supplied by the declarant. The person certifying the information on behalf of the unit owners' association must not be affiliated with the declarant. The managing agent may confirm the information supplied by the declarant.

D. The board shall return the bond or letter of credit to the declarant if (i) the unit owners' association confirms that the declarant is current in the payment of assessments and owns less than 10% of the units in the condominium or (ii) no response is received from the unit owners' association within 90 days. The 90-day time frame in clause (ii) of this subsection may be extended at the discretion of the board.

E. If the unit owners' association attests the declarant is not current in the payment of assessments, the board shall retain the bond or letter of credit until evidence is received satisfactory to the board that the declarant is current in the payment of assessments.

F. The board may ask for additional information from the unit owners' association or the declarant as needed to confirm compliance with ~~§ 55-79.84:1~~ § 55.1-1968 of the Code of Virginia.

18VAC48-30-580. Return of completion bond or letter of credit to declarant.

A bond on file with the board pursuant to ~~§ 55-79.58:1~~ § 55.1-1921 of the Code of Virginia may be returned to the declarant upon written request. Such request shall include a copy of the recorded plat or plan showing completion or documentation acceptable to the board that the improvements to the common elements for which the bond was submitted is completed to the extent of the declarant's obligation.

18VAC48-30-600. Maintenance of bond or letter of credit.

A. The declarant shall report the extension, cancellation, amendment, expiration, termination, or any other change of any bond or letter of credit submitted in accordance with ~~§§ 55-79.58:1, 55-79.84:1,~~ §§ 55.1-1921, 55.1-1968, and ~~55-79.95~~ 55.1-1983 of the Code of Virginia within five days of the change.

B. The board at any time may request verification from the declarant of the status of a bond or letter of credit on file with the board. Such verification shall comply with the provisions of subdivision B 12 of 18VAC48-30-540.

C. Failure to report a change in the bond or letter of credit in accordance with this section shall result in further action by the board pursuant to Chapter ~~4.2~~ 19 ~~(§ 55-79.39~~ (§ 55.1-1900 et seq.) of Title ~~55~~ 55.1 of the Code of Virginia.

18VAC48-30-610. Termination of condominium registration.

A. The condominium registration shall be terminated upon receipt of documentation of one of the following:

1. In accordance with ~~§ 55-79.93~~ § 55.1-1979 of the Code of Virginia, an annual report filed pursuant to 18VAC48-30-540 indicates that all units in the condominium have been disposed of and all periods for conversion or expansion have expired.

2. Written notification is received from the declarant attesting that all units have been disposed of and that all periods for conversion or expansion have expired and all common elements have been completed.

3. Written notification is received from the declarant requesting termination pursuant to ~~§ 55-79.72:1~~ § 55.1-1937 of the Code of Virginia. Should the declarant later choose to offer condominium units in a condominium for which the registration has been terminated in accordance with this subsection, prior to offering a condominium unit, the declarant must submit a new application for registration of the condominium, meet all requirements in effect at the time of application, and be issued an order of registration for the condominium by the board.

B. Upon receipt and review of documentation pursuant to subsection A of this section, the board shall issue an order of termination for the condominium registration. The board may request additional information as necessary during the review of the submitted documentation to ensure that the condominium registration is eligible for termination.

C. The board shall send a copy of the order of termination for the condominium registration to the association.

18VAC48-30-620. Administrative termination of condominium registration.

In accordance with subsection B of ~~§ 55-79.93:2~~ § 55.1-1981 of the Code of Virginia, the board may administratively terminate the registration of a condominium. Prior to the administrative termination of the registration, the board shall send written notice of its intent to terminate the registration to all known parties associated with the condominium, including~~, but not limited to,~~ the registered agent, officer ~~or officers~~ of the unit owners' association, declarant's and association's attorneys, and principal ~~or principals~~ of the declarant. Such written notice shall be given to the parties by mail or otherwise if acknowledged by them in writing.

The board shall issue an order of termination for the condominium registration if (i) a response is not received within 30 days after sending the written notice or (ii) the response received does not indicate termination of the registration is inappropriate in accordance with Chapter ~~4.2~~ 19 ~~(~~§ 55-79.39 (§ 55.1-1900 et seq.) of Title ~~55~~ 55.1 of the Code of Virginia and this chapter.

Nothing contained in this section shall prevent the board from taking further action as allowed by law including issuance of a temporary cease and desist order, issuance of a cease and desist order, revocation of registration, and bringing action in the appropriate circuit court to enjoin the acts or practices and to enforce compliance.

18VAC48-30-630. Notification of successor declarant and transfer of special declarant rights.

A. In the event the special declarant rights of a condominium are transferred to a successor in accordance with ~~§ 55-79.74:3~~ § 55.1-1947 of the Code of Virginia, the successor declarant shall notify the board within 30 days. Before units may be offered for sale, the successor declarant shall submit the following to the board:

1. Completed application for the successor declarant;

2. Copy of the recorded document evidencing the transfer;

3. Copies of all condominium instruments that were amended to reflect the successor or transfer of special declarant rights;

4. A public offering statement amended in accordance with this chapter;

5. All bonds or letters of credit required pursuant to ~~§§ 55-79.58:1, 55-79.84:1,~~ §§ 55.1-1921, 55.1-1968, and ~~55-79.95~~ 55.1-1983 of the Code of Virginia; and

6. Other documents that may be required to ensure compliance with Chapter ~~4.2~~ 19 ~~(~~§ 55-79.39 (§ 55.1-1900 et seq.) of Title ~~55~~ 55.1 of the Code of Virginia and this chapter.

B. Documents on file with the board that have not changed in connection with the transfer need not be refiled, provided that the application for successor declarant indicates that such documents are unchanged.

18VAC48-30-640. Reporting of other changes to the condominium project.

Any other change made or known by the declarant that may affect the accuracy or completeness of the condominium registration file shall be promptly reported to the board. Such change may include ~~but is not limited to~~ the name of the declarant, name of the condominium project, or any other changes in information submitted in accordance with ~~§ 55-79.89~~ § 55.1-1975 of the Code of Virginia. The board may request additional information as necessary to ensure compliance with Chapter ~~4.2~~ 19 ~~(~~§ 55-79.39 (§ 55.1-1900 et seq.) of Title ~~55~~ 55.1 of the Code of Virginia and this chapter.

Part VII
Board Authority and Standards of Conduct

18VAC48-30-650. Grounds for disciplinary action.

The board may revoke a registration upon a finding that the registration is not in compliance with, or the declarant has violated, any provision of the regulations of the board or Chapter ~~4.2~~ 19 ~~(~~§ 55-79.39 (§ 55.1-1900 et seq.) of Title ~~55~~ 55.1 of the Code of Virginia. Additional action may include issuance of a temporary cease and desist order, issuance of a cease and desist order, revocation of registration, and bringing action in the appropriate circuit court to enjoin the acts or practices and to enforce compliance.

18VAC48-30-690. Prohibited acts.

The following acts are prohibited and any violation may result in action by the board, including ~~but not limited to~~

issuance of a temporary cease and desist order in accordance with ~~§ 55-79.100 (b)~~ § 55.1-1986 B of the Code of Virginia:

1. Violating, inducing another to violate, or cooperating with others in violating any of the provisions of any of the regulations of the board, Chapter 23.3 (§ 54.1-2345 et seq.) of Title 54.1 of the Code of Virginia, or Chapter ~~4.1~~ 19 ~~(§ 55-79.1~~ (§ 55.1-1900 et seq.) or Chapter ~~4.2~~ 20 ~~(§ 55-79.39~~ (§ 55.1-2000 et seq.) of Title ~~55~~ 55.1 of the Code of Virginia.

2. Obtaining or attempting to obtain a registration by false or fraudulent representation, or maintaining a registration by false or fraudulent representation.

3. Failing to comply with 18VAC48-30-80 in offering literature.

4. Failing to alter or amend the public offering statement as directed in accordance with 18VAC48-30-390 or 18VAC48-30-490.

5. Providing information to purchasers in a manner that willfully and intentionally fails to promote full and fair disclosure.

6. Failing to provide information or documents, or amendments thereof, in accordance with subsection B of 18VAC48-30-460.

7. Failing to comply with the post-registration requirements of 18VAC48-30-460, 18VAC48-30-470, 18VAC48-30-480, 18VAC48-30-490, 18VAC48-30-500, 18VAC48-30-510, 18VAC48-30-520, 18VAC48-30-530, and 18VAC48-30-540.

8. Failing to give notice to a purchaser in accordance with 18VAC48-30-510.

9. Failing to give notice to the board of transition of control of unit owners' association in accordance with 18VAC48-30-560.

10. Failing to transition control of the unit owners' association in accordance with ~~§ 55-79.74~~ § 55.1-1943 of the Code of Virginia.

11. Failing to turn over books and records in accordance with subsection H of ~~§ 55-79.74~~ § 55.1-1943 of the Code of Virginia.

12. Providing false information or misrepresenting an affiliation with an association in seeking return of a bond or letter of credit in accordance with 18VAC48-30-570 or 18VAC48-30-580.

13. Filing false or misleading information in the course of terminating a registration in accordance with 18VAC48-30-610 or 18VAC48-30-620.

14. Failing to comply with 18VAC48-30-630 and 18VAC48-30-640.

15. Failing to comply with the advertising standards contained in 18VAC48-30-670.

VA.R. Doc. No. R20-6020; Filed October 21, 2019, 6:21 p.m.

Final Regulation

Title of Regulation: **18VAC48-45. Time-Share Regulations (amending 18VAC48-45-20, 18VAC48-45-30, 18VAC48-45-40, 18VAC48-45-90 through 18VAC48-45-160, 18VAC48-45-220, 18VAC48-45-250, 18VAC48-45-270, 18VAC48-45-320, 18VAC48-45-330, 18VAC48-45-350 through 18VAC48-45-490, 18VAC48-45-570 through 18VAC48-45-620, 18VAC48-45-650 through 18VAC48-45-690, 18VAC48-45-710, 18VAC48-45-770).**

Statutory Authority: §§ 54.1-2349 and 55.1-2247 of the Code of Virginia.

Effective Date: December 30, 2019.

Agency Contact: Trisha Henshaw, Executive Director, Common Interest Community Board, Department of Professional and Occupational Regulation, 9960 Mayland Drive, Suite 400, Richmond, VA 23233, telephone (804) 367-8510, FAX (866) 490-2723, or email cic@dpor.virginia.gov.

Summary:

The technical amendments update the Time-Share Regulations to reflect the changes to the Code of Virginia resulting from the recodification of Title 55 of the Code of Virginia pursuant to Chapter 712 of the 2019 Acts of Assembly.

Part 1
General

18VAC48-45-20. Definitions.

A. ~~Section 55-362~~ Section 55.1-2200 of the Code of Virginia provides definitions of the following terms and phrases as used in this chapter:

"Affiliate"	"Offering" or "offer"
"Alternative purchase"	"Person"
"Association"	"Product"
"Board"	~~"Project"~~
"Board of directors"	"Public offering statement"
"Common elements"	"Purchaser"
"Contact information"	"Resale purchase contract"
"Contract" or "purchase contract"	~~"Resale time-share"~~ "Resale service"
"Conversion time-share project"	~~"Resale service"~~ "Resale time-share"
"Default"	"Resale transfer contract"

"Developer"	"Reseller"
"Developer control period"	"Reverter deed"
"Development right"	"Situs"
"Dispose" or "disposition"	"Time-share"
"Exchange company"	"Time-share estate"
"Exchange program"	"Time-share expense"
"Guest"	"Time-share instrument"
"Incidental benefit"	"Time-share owner" or "owner"
"Lead dealer"	"Time-share program" or "program"
"Managing agent"	"Time-share project" or "project"
"Managing entity"	"Time-share unit" or "unit"
"Material change"	"Time-share use"
	"Transfer"

B. The following words and terms when used in this chapter shall have the following meanings unless the context clearly indicates otherwise:

"Alternative disclosure statement" means a disclosure statement for an out-of-state time-share program or time-share project that is properly registered in the situs.

"Annual report" means a completed, board-prescribed form and required documentation submitted in compliance with ~~§ 55-394.1~~ § 55.1-2242 of the Code of Virginia.

"Application" means a completed, board-prescribed form submitted with the appropriate fee and other required documentation in compliance with the Virginia Real Estate Time-Share Act and this chapter.

"Blanket bond" means a blanket surety bond issued in accordance with the requirements of ~~§ 55-375~~ § 55.1-2220 of the Code of Virginia obtained and maintained by a developer in lieu of escrowing deposits accepted by a developer in connection with the purchase or reservation of a product.

"Blanket letter of credit" means a blanket irrevocable letter of credit issued in accordance with the requirements of ~~§ 55-375~~ § 55.1-2220 of the Code of Virginia obtained and maintained by a developer in lieu of escrowing deposits accepted by a developer in connection with the purchase or reservation of a product.

"Department" means the Department of Professional and Occupational Regulation.

"Electronic" means relating to technology having electrical, digital, magnetic, wireless, optical, electromagnetic, or similar capabilities.

"Firm" means a sole proprietorship, association, partnership, corporation, limited liability company, limited liability partnership, or any other form of business organization recognized under the laws of the Commonwealth of Virginia.

"Full and accurate disclosure" means the degree of disclosure necessary to ensure reasonably complete and materially accurate representation of the time-share in order to protect the interests of purchasers.

"Individual bond" means an individual surety bond issued in accordance with the requirements of ~~§ 55-375~~ § 55.1-2220 of the Code of Virginia obtained and maintained by a developer in lieu of escrowing a deposit accepted by a developer in connection with the purchase or reservation of a product.

"Individual letter of credit" means an individual irrevocable letter of credit issued in accordance with the requirements of ~~§ 55-375~~ § 55.1-2220 of the Code of Virginia obtained and maintained by a developer in lieu of escrowing a deposit accepted by a developer in connection with the purchase or reservation of a product.

"Registration file" means the application for registration, supporting materials, annual reports, and amendments that constitute all information submitted and reviewed pertaining to a particular time-share program, time-share project, alternative purchase, exchange company, or time-share reseller registration. A document that has not been accepted for filing by the board is not part of the registration file.

"Virginia Real Estate Time-Share Act" means ~~Chapter 21 (§ 55-360 et seq.) of Title 55~~ Chapter 22 (§ 55.1-2200 et seq.) of Title 55.1 of the Code of Virginia.

18VAC48-45-30. Explanation of terms.

Each reference in this chapter to a "developer," "purchaser," and "time-share owner" or to the plural of those terms shall be deemed to refer, as appropriate, to the masculine and the feminine, to the singular and the plural, and to natural persons and organizations. The term "developer" shall refer to any successors to the persons referred to in ~~§ 55-362~~ § 55.1-2200 of the Code of Virginia who come to stand in the same relation to the time-share as their predecessors in that they assumed rights reserved for the benefit of a developer that (i) offers to dispose of its interest in a time-share not previously disposed of or (ii) applies for registration of the time-share program.

18VAC48-45-40. Time-share projects located outside of Virginia.

A. In any case involving a time-share project located outside of Virginia in which the laws or practices of the jurisdiction in which such time-share project is located prevent

compliance with a provision of this chapter, the board shall prescribe by order a substitute provision to be applicable in such case that is as nearly equivalent to the original provision as is reasonable under the circumstances.

B. The words "time-share instrument" and "public offering statement," when used in this chapter with reference to a time-share located outside of Virginia, mean documents, portions of documents, or combinations thereof, by whatever name denominated, that have a content and function identical or substantially equivalent to the content and function of their Virginia counterparts.

C. The word "recording" or "recordation" when used with reference to time-share instruments of a time-share located outside of Virginia means a procedure that, in the jurisdiction in which such time-share is located, causes the time-share instruments to become legally effective.

D. This chapter shall apply to a contract for the disposition of a time-share located outside of Virginia only to the extent permissible under the provisions of subsection C of ~~§ 55-361.1~~ § 55.1-2201 of the Code of Virginia.

E. The time-share shall be properly registered in the state or other jurisdiction where the project is located.

18VAC48-45-90. Offering of gifts or prizes.

A. Any offering that includes a gift or prize shall include the disclosures contained in ~~§ 55-374.1~~ § 55.1-2218 of the Code of Virginia. Such disclosures shall be made with the same prominence as the offer.

B. The board may at any time require a developer to alter or amend any offering that includes a gift or prize in order to ensure compliance with this section.

Part IV
Application for Time-Share Project Registration

18VAC48-45-100. Registration of time-share project and program.

In accordance with ~~§ 55-390~~ § 55.1-2238 of the Code of Virginia, a developer offering or disposing of an interest in a time-share program must register the time-share project and its program with the board. For the purposes of this chapter as it relates to registration, the registration of a time-share project shall include the simultaneous registration of the time-share program.

18VAC48-45-110. Prerequisites for registration of a time-share project.

The following provisions are prerequisites for registration and are supplementary to the provisions of ~~§ 55-391.1~~ § 55.1-2239 of the Code of Virginia.

1. The developer shall own or have the right to acquire an estate in the land constituting or to constitute the time-share project that is of at least as great a degree and duration as the estate to be conveyed in the time-shares.

2. The time-share instrument must be adequate to bring a time-share project into existence upon recordation. This subdivision does not apply to a time-share instrument that may be recorded after the time-share project has been created.

3. The time-share instrument must include a statement detailing that the developer reserves or does not reserve the right to add or delete any alternative purchase.

4. The current and planned time-share advertising activities of the developer shall comply with § 18.2-216 of the Code of Virginia and this chapter.

5. If the developer is a firm, it shall be organized as a business entity under the laws of the Commonwealth of Virginia or otherwise authorized to transact business in Virginia. Firms shall register any trade or fictitious names with the State Corporation Commission or the clerk of court in the jurisdiction where the business is to be conducted in accordance with §§ 59.1-69 through 59.1-76 of the Code of Virginia before submitting an application to the board.

18VAC48-45-120. Review of application for registration of a time-share project.

A. Upon receipt of an application for registration of a time-share project, the board shall issue the notice of filing required by subsection A of ~~§ 55-393.1~~ § 55.1-2241 of the Code of Virginia.

B. Upon the review of the application for registration, if the requirements of ~~§ 55-391.1~~ § 55.1-2239 of the Code of Virginia and this chapter have not been met, the board shall notify the applicant as required by subsection C of ~~§ 55-393.1~~ § 55.1-2241 of the Code of Virginia.

C. If the requirements for registration are not met within the application review period or a valid extension thereof, the board shall, upon the expiration of such period, enter an order rejecting the registration as required by subsection C of ~~§ 55-393.1~~ § 55.1-2241 of the Code of Virginia. The order rejecting the registration shall become effective 20 days after issuance.

D. An applicant may submit a written request for an informal conference in accordance with § 2.2-4019 of the Code of Virginia at any time between receipt of a notification pursuant to subsection B of this section and the effective date of the order of rejection entered pursuant to subsection C of this section. A request for such proceeding shall be deemed a consent to delay within the meaning of subsection A of ~~§ 55-393.1~~ § 55.1-2241 of the Code of Virginia.

E. The board shall receive and act upon corrections to the application for registration at any time prior to the effective

date of an order rejecting the registration. If the board determines after review of the corrections that the requirements for registration have not been met, the board may proceed with an informal conference in accordance with § 2.2-4019 of the Code of Virginia in order to allow reconsideration of whether the requirements for registration are met. If the board does not opt to proceed with an informal conference, the applicant may submit a written request for an informal conference in accordance with § 2.2-4019 of the Code of Virginia in order to reconsider whether the requirements for registration are met. If the board does not proceed with an informal conference and no request for an informal conference is received from the applicant, an amended order of rejection stating the factual basis for the rejection shall be issued. A new 20-day period for the order of rejection to become effective shall commence.

F. At such time as the board affirmatively determines that the requirements of ~~§ 55-391.1~~ § 55.1-2239 of the Code of Virginia have been met, the board shall enter an order registering the time-share and shall designate the form, content, and effective date of the public offering statement.

18VAC48-45-130. Minimum application requirements for registration of a time-share project.

A. The documents and information contained in ~~§§ 55-367, 55-368, 55-369, 55-371, 55-374, and 55-391.1~~ §§ 55.1-2208, 55.1-2209, 55.1-2210, 55.1-2214, 55.1-2217, and 55.1-2239 of the Code of Virginia, as applicable, shall be included in the application for registration of a time-share project.

B. The application for registration of a time-share project shall include the fee specified in 18VAC48-45-70.

C. The following documents shall be included in the application for registration of a time-share project as exhibits. All exhibits shall be labeled as indicated and submitted in a format acceptable to the board.

1. Exhibit A: A copy of the certificate of incorporation or certificate of authority to transact business in Virginia issued by the Virginia State Corporation Commission, or any other entity formation documents, together with any trade or fictitious name certificate.

2. Exhibit B: A certificate of recordation or other acceptable documents from the city or county where the time-share is located.

3. Exhibit C: A copy of the title opinion, the title policy, or a statement of the condition of the title to the time-share project including encumbrances as of a specified date within 30 days of the date of application by a title company or licensed attorney who is not a salaried employee, officer, or director of the developer or owner, in accordance with subdivision A 5 of ~~§ 55-391.1~~ § 55.1-2239 of the Code of Virginia. If the developer is not the record owner of the land, a copy of any contract the developer has executed to purchase the land, any option the developer holds for the purchase of the land, or any lease under which the developer holds the land.

4. Exhibit D: Proof that the applicant or developer owns or has the right to acquire an estate in the land constituting or to constitute the time-share project, which is of at least as great a degree and duration as the estate to be conveyed in the time-share.

5. Exhibit E: A statement of the zoning, subdivision, or land use obligations or proffers and other governmental regulations affecting the use of the time-share, including the site plans and building permits and their status, any existing tax, and existing or proposed special taxes or assessments that affect the time-share.

6. Exhibit F: A copy of the time-share instrument, including all applicable amendments and exhibits, that will be delivered to a purchaser to evidence the purchaser's interest in the time-share and of the contracts and other agreements that a purchaser will be required to agree to or sign.

7. Exhibit G: A narrative description of the promotional plan for the disposition of the time-shares.

8. Exhibit H: A copy of the proposed public offering statement that complies with ~~§ 55-374~~ § 55.1-2217 of the Code of Virginia and this chapter. Pursuant to subsection G of ~~§ 55-374~~ § 55.1-2217, a similar disclosure statement required by other situs laws governing time-sharing may be submitted for a time-share located outside of the Commonwealth.

9. Exhibit I: A copy of the buyer's acknowledgment. Pursuant to ~~§ 55-376.5~~ § 55.1-2226 of the Code of Virginia, the purchaser shall be given this document prior to signing a purchase contract, and the document shall contain the information required by subsection B of ~~§ 55-376.5~~ § 55.1-2226.

10. Exhibit J: The signed original of (i) any bond or letter of credit obtained pursuant to ~~§ 55-375~~ § 55.1-2220 of the Code of Virginia in lieu of escrowing deposits and (ii) any bond or letter of credit required by subsection B of ~~§ 55-386~~ § 55.1-2234 of the Code of Virginia, as applicable.

11. Exhibit K: A copy of any management agreements and other contracts or agreements affecting the overall use, maintenance, management, or access of all or any part of the time-share project.

12. Exhibit L: A list with the names of every officer, manager, owner, or principal, as applicable to the type of firm under which the developer is organized to do business, of the developer or persons occupying a similar status within or performing similar functions for the developer. The list must include each individual's residential address or other address

valid for receipt of service, principal occupation for the past five years, and title.

13. Exhibit M: A statement whether any of the individuals or entities named in Exhibit L are or have been involved as defendants in any indictment, conviction, judgment, decree, or order of any court or administrative agency against the developer or managing entity for violation of a federal, state, local, or foreign country law or regulation in connection with activities relating to time-share sales, land sales, land investments, security sales, construction or sale of homes or improvements, or any similar or related activity.

14. Exhibit N: A statement whether, during the preceding five years, any of the individuals or entities named in Exhibit L have been adjudicated bankrupt or have undergone any proceeding for the relief of debtors.

15. Exhibit O: If the developer has reserved the right to add to or delete from the time-share program any incidental benefit or alternative purchase, a description of the incidental benefit or alternative purchase shall be provided pursuant to subdivision A 13 of ~~§ 55-391.1~~ § 55.1-2239 of the Code of Virginia.

16. Exhibit P: Conversion time-share projects must attach a copy of the notice required by subsection D of ~~§ 55-374~~ § 55.1-2217 of the Code of Virginia and a certified statement that such notice shall be mailed or delivered to each of the tenants in the building or buildings for which the registration is sought at the time of the registration of the conversion project.

Part V
Public Offering Statement

18VAC48-45-140. Public offering statement requirements, generally.

In addition to the provisions of ~~§ 55-374~~ § 55.1-2217 of the Code of Virginia, the following will be considered, as applicable, during review of the public offering statement:

1. The public offering statement shall provide full and accurate disclosure in accordance with 18VAC48-45-150.

2. The public offering statement shall pertain to the time-share project in which the time-shares being offered are located.

3. The public offering statement shall be clear, organized, and legible.

4. Except for brief excerpts, the public offering statement may refer to, but should not incorporate verbatim, portions of the time-share instruments, the Virginia Real Estate Time-Share Act, or this chapter. This does not preclude compliance with 18VAC48-45-170.

18VAC48-45-150. Full and accurate disclosure.

A. The provisions of ~~§ 55-374~~ § 55.1-2217 of the Code of Virginia and this chapter shall be strictly construed to promote full and accurate disclosure in the public offering statement. In addition, the following will be considered, as applicable, during review to assure full and accurate disclosure:

1. The information shall be presented in a manner that is clear and understandable to a reasonably informed consumer, while maintaining consistency with the requirements of this chapter and the Virginia Real Estate Time-Share Act.

2. No information shall be incorporated by reference to an outside source that is not reasonably available to a prospective purchaser.

3. If required information is not known or not reasonably available, such fact shall be stated and explained in the public offering statement.

B. The board has the sole discretion to require additional information or amendment of existing information as it finds necessary to ensure full and accurate disclosure.

18VAC48-45-160. Contents of public offering statement.

A. A cover, if used, must be blank or bear identification information only.

B. The developer may include as part of the public offering statement a receipt page printed in such a way that the developer may obtain verification that a prospective purchaser has received the public offering statement. The receipt page shall include the effective date of the public offering statement as well as a place for the date of delivery and signature lines for the prospective purchaser. The authorized receipt page in proper form, duly executed, shall be evidence that the public offering statement was delivered.

C. The first page of the public offering statement shall be substantially as follows~~.~~:

PURCHASER SHOULD READ THIS DOCUMENT FOR THE PURCHASER'S PROTECTION

PUBLIC OFFERING STATEMENT

NAME OF TIME-SHARE PROJECT: _____

LOCATION OF TIME-SHARE PROJECT: _____

NAME OF DEVELOPER: _____

ADDRESS OF DEVELOPER: _____

EFFECTIVE DATE OF PUBLIC OFFERING STATEMENT: _____

REVISED: _____

THE PURCHASER OF A TIME-SHARE MAY CANCEL THE CONTRACT UNTIL MIDNIGHT OF THE SEVENTH CALENDAR DAY FOLLOWING THE EXECUTION OF SUCH CONTRACT. THE PURCHASER SHOULD READ THIS DOCUMENT FOR THE PURCHASER'S OWN PROTECTION.

Purchasing a time-share carries with it certain rights, responsibilities, and benefits, including certain financial obligations, rights, and restrictions concerning the use and maintenance of units and common elements. The purchaser will be bound by the provisions of the time-share instruments and should review the Public Offering Statement, the time-share instruments, and other exhibits carefully prior to purchase.

This Public Offering Statement presents information regarding time-share(s) being offered for sale by the developer. The Virginia Real Estate Time-Share Act ~~(§ 55-360~~ (§ 55.1-2200 et seq. of the Code of Virginia) requires that a Public Offering Statement be given to every Purchaser in order to provide full and accurate disclosure of the characteristics of and material circumstances affecting the time-share project and the characteristics of the time-share(s) being offered. The Public Offering Statement is not intended, however, to be all-inclusive. The Purchaser should consult other sources for details not covered by the Public Offering Statement.

The Public Offering Statement summarizes information and documents furnished by the developer to the Virginia Common Interest Community Board. The Board has carefully reviewed the Public Offering Statement but does not guarantee the accuracy or completeness of the Public Offering Statement. In the event of any inconsistency between the Public Offering Statement and the material it is intended to summarize, the material shall control.

If the Purchaser elects to cancel the contract within the seven-day cancellation period, all payments made in connection with the purchase contract shall be refunded to the Purchaser within 45 days. If the Purchaser elects to cancel the contract, the Purchaser shall do so either by (i) hand-delivering the notice to the developer at its principal office or at the project or (ii) mailing the notice by certified United States mail, return receipt requested, to the developer or its agent designated in the contract.

Allegations of violation of any law or regulation contained in the Virginia Real Estate Time-Share Act or the Time-Share Regulations (18VAC48-45) should be reported to the Common Interest Community Board, Perimeter Center, Suite 400, 9960 Mayland Drive, Richmond, Virginia 23233.

D. A summary of important considerations shall immediately follow the first page for the purpose of reinforcing the disclosure of significant information. The summary shall be titled as such and shall be introduced by the following statement: "The following are important matters to be considered in acquiring a time-share. They are highlights only. The Public Offering Statement should be examined in its entirety to obtain detailed information." Appropriate modifications shall be made to reflect facts and circumstances that may vary. The summary shall consist of, but not be limited to, the following, as applicable:

1. A brief description of the time-share project and the time-share program.

2. A statement regarding all incidental benefits or alternative purchases that may be offered by the developer.

3. A brief description of all amenities located within or outside of the time-share project and available to time-share owners by virtue of ownership in the time-share project. If such amenities are not common elements of the time-share project, identify who owns the amenities and whether time-share owners are required to pay to access and use.

4. A statement describing any exchange program that may be offered to the purchaser.

5. A statement describing (i) the purchaser's responsibility to make principal and interest payment in connection with the purchase of the time-share as well as to pay maintenance fees or assessments, special assessments, user fees, insurance premiums, and real estate taxes and (ii) that a time-share owner cannot reduce the amount of any owner obligation for any reason.

6. A statement regarding the consequences for failure to pay maintenance fees or any special assessment when due. The statement may reference the enforcement mechanisms available to the developer, and if applicable the time-share association, by describing (i) any declaration of an owner being an "Owner Not in Good Standing"; (ii) any civil action taken for the collection of a debt; (iii) means for pursuing foreclosure or obtaining a lien against the time-share unit; and (iv) denial of access to the time-share project and participation in the time-share program.

7. A statement indicating whether the developer or managing agent has indictments, convictions, judgments, decrees, or order of any court or administrative agency for matters related to fraud or consumer protection violations that may be required to be disclosed by subdivisions A 1 c and A 1 d of ~~§ 55-374~~ § 55.1-2217 of the Code of Virginia.

8. A statement indicating the period of time the developer will retain control of the association for time-share estate projects.

9. A statement disclosing any management agreement with a managing agent to perform certain duties for the time-share project.

10. A statement indicating whether the developer may expand the time-share project.

11. A statement indicating whether the right of the time-share owner to resell or transfer the time-share is subject to restrictions.

12. A statement indicating the time-share units are restricted to lodging only.

13. A statement indicating that the time-share owner may not alter the interior or exterior of the time-share unit.

14. A statement regarding the obligation of the developer or association to obtain certain insurance benefiting the time-share owner.

15. A statement regarding a time-share estate and time-share owner's obligation to pay real estate taxes.

16. A statement regarding whether or not the developer reserves the right to add or delete any alternative purchase.

E. The content after the summary of important considerations shall include the narrative sections in 18VAC48-45-170 through 18VAC48-45-310. Supplementary sections may be included as necessary.

F. Clear and legible copies of the following documents shall be included as either supplements or exhibits to the public offering statement:

1. Project time-share instrument;

2. Association articles of incorporation;

3. Bylaws;

4. Association annual report or projected budget for time-share estate programs;

5. Rules and regulations of the time-share owners' association, if available;

6. Any management contract, if applicable;

7. Exchange company disclosure document and narrative statement required pursuant to subsection B of ~~§ 55-374~~ § 55.1-2217 of the Code of Virginia, if applicable; and

8. Other documents obligating the association or time-share owner to perform duties or obligations or pay charges or fees, if applicable.

G. Other information and documentation may be included as necessary to ensure full and accurate disclosure. The board may also require additional information as necessary to ensure full and accurate disclosure.

18VAC48-45-220. Narrative sections; terms of offering.

A. The public offering statement shall contain a section captioned "Terms of the Offering." The section shall discuss the expenses to be borne by a purchaser in acquiring a time-share and present information regarding the settlement of purchase contracts as provided in subsections B through H of this section.

B. The section shall indicate any initial or special fees due from the purchaser at settlement including a description of the purpose of such fees.

C. The section shall set forth a general description of any financing offered by or available through the developer to purchasers.

D. The section shall describe (i) services that the developer provides or expenses it pays and that it expects may become at any subsequent time a time-share expense of the owners and (ii) the projected time-share expense liability attributable to each of those services or expenses for each time-share.

E. The section shall discuss all penalties or forfeitures to be incurred by a purchaser upon default in performance of a purchase contract.

F. The section shall discuss the process for cancellation of a purchase contract by a purchaser in accordance with ~~§ 55-376~~ § 55.1-2221 of the Code of Virginia. The section shall include a statement that the purchaser has a nonwaivable right of cancellation and refer such purchaser to that portion of the contract in which the right of cancellation may be found.

G. The section shall describe the terms of the deposit escrow requirements, including a statement, if applicable, that the developer has filed a surety bond or letter of credit with the board in lieu of escrowing deposits, in accordance with ~~§ 55-375~~ § 55.1-2220 of the Code of Virginia. The section shall also state that deposits may be removed from escrow and no longer protected by a surety bond or letter of credit after the expiration of the cancellation period.

H. The section shall set forth all restrictions in the purchase contract that limit the time-share owner's right to bring legal action against the developer or the association. The section shall set forth the paragraph or section and page number of the purchase contract where such provision is located. Nothing in this statement shall be deemed to authorize such limits where those limits are otherwise prohibited by law.

18VAC48-45-250. Narrative sections; financial matters.

A. The public offering statement shall contain a section captioned "Financial Matters." The section shall discuss the expenses incident to the ownership of a time-share.

B. The section shall distinguish, in general terms, the following categories of costs of operation, maintenance, repair, and replacement of various portions of the time-share as follows: (i) time-share expenses; (ii) time-share estate occupancy expenses as defined in ~~§ 55-369~~ § 55.1-2200 of the Code of Virginia; and (iii) all other costs that may be borne directly by individual time-share owners.

C. A budget shall show projected common expenses in each of the categories in subsection B of this section for the first year of the time-share's operation or, if different, the latest year for which a budget is available. The projected budget shall be attached to the public offering statement as an exhibit and the section shall direct the purchaser's attention to such exhibit. The section shall describe the manner in which the projected budget is established. If the time-share is phased, the budget shall project future years until all phases are projected to be developed and all common elements that must be built have been completed. The budget shall include an initial working capital budget showing sources and uses of initial working capital and a reserve table showing amounts to be collected to fund those reserves. The budget shall show regular individual assessments by unit type. The budget shall note that the figures are not guaranteed and may vary.

D. The section shall describe the manner in which (i) time-share expenses; (ii) time-share estate occupancy expenses as defined in ~~§ 55-369~~ § 55.1-2200 of the Code of Virginia; and (iii) all other costs that may be borne directly by individual time-share owners are apportioned among and assessed to the time-share units. The section shall include the substance of the following statement, if applicable: "A time-share owner cannot obtain a reduction of the (i) time-share expenses; (ii) time-share estate occupancy expenses as defined in ~~§ 55-369~~ § 55.1-2200 of the Code of Virginia; and (iii) any other costs that may be borne directly by individual time-share owners assessed against the unit by refraining from use of any of the common elements."

E. The section shall describe budget provisions for reserves for capital expenditures, if any. If there are no reserves, the section shall so state.

F. The section shall discuss (i) time-share expenses; (ii) time-share estate occupancy expenses as defined in ~~§ 55-369~~ § 55.1-2200 of the Code of Virginia; (iii) all other costs that may be borne directly by individual time-share owners; and (iv) any right the developer or association has to institute special assessments.

G. The section shall indicate any fee, rental, or other charge to be payable by unit owners other than through assessments and maintenance fees to any party for use of the common elements or for use of recreational or parking facilities in the vicinity of the time-share project.

H. The section shall discuss the effect of failure of a time-share owner to pay the assessments and maintenance fees levied against the time-share unit. Such discussion shall indicate provisions for charges or other remedies that may be imposed to be applied in the case of unpaid and past due assessments and for acceleration of unpaid assessments.

18VAC48-45-270. Narrative sections; time-share owners' association.

A. For time-share estate projects the public offering statement shall contain a section captioned "Time-Share Owners' Association." The section shall discuss the arrangements for the management and operation of the time-share estate program and for the maintenance, repair, and furnishing of units and shall include the information required by subdivisions 1 through 15 of this subsection. The section shall describe or discuss the following:

1. The creation of the association.

2. The payment of costs and expenses of operating the time-share estate program and owning and maintaining the time-share units.

3. Employment and termination of employment of the managing agent for the time-share estate project.

4. Termination of leases and contracts for goods and services for the time-share estate project that were entered into during the developer control period.

5. Preparation and dissemination of the annual report required by ~~§ 55-370.1~~ § 55.1-2213 of the Code of Virginia to the time-share estate owners.

6. Adoption of standards and rules of conduct for the use, enjoyment, and occupancy of units by the time-share estate owners.

7. Collection of regular assessments, fees or dues, and special assessments from time-share estate owners to defray all time-share expenses.

8. Comprehensive general liability insurance for death, bodily injury, and property damage arising out of~~,~~ or in connection with~~,~~ the use and enjoyment of the time-share project by time-share estate owners, their guests, and other users. The cost for such insurance shall be a time-share expense.

9. Methods for providing compensation or alternate use periods or monetary compensation to a time-share estate owner if his contracted-for unit cannot be made available for the period to which the owner is entitled by schedule or by confirmed reservation.

10. Procedures for imposing a monetary penalty or suspension of a time-share estate owner's rights and privileges in the time-share estate program or time-share project for failure to comply with provisions of the time-share instrument or the rules and regulations of the association with respect to the use and enjoyment of the

units and the time-share project. Under these procedures a time-share estate owner must be given reasonable notice and reasonable opportunity to be heard and explain the charges against him in person or in writing to the board of directors of the association before a decision to impose discipline is rendered.

11. Employment of attorneys, accountants, and other professional persons as necessary to assist in the management of the time-share estate program and the time-share project.

12. Developer control period, during which time period the developer, or a managing agent selected by the developer, shall manage and control the time-share estate project and the common elements and units, including decisions about the financial operation of the association.

13. The managing agent, if any, shall be identified, and the section shall indicate any relationship between the managing agent and the developer. The duration of any management agreement shall be stated.

14. Except to the extent otherwise disclosed in connection with discussion of a management agreement, the significant terms of any lease of recreational areas or similar contract or agreement affecting the use, maintenance or access of all or any part of the time-share project shall be stated. The section shall include a brief narrative statement of the effect of each such agreement upon a purchaser.

15. Rules and regulations of the time-share estate association shall be discussed. The purchaser's attention shall be directed to the copy of rules and regulations, if any, attached to the public offering statement.

B. For time-share use projects, if an association is formed for management and operation of the time-share use program and for the maintenance, repair, and furnishing of time-share use units comprising the time-share, the public offering statement shall contain a section captioned "Time-Share Owners' Association." This section shall contain the information required by subdivisions A 1 through 15 of this section as applicable to the association for the time-share use project.

18VAC48-45-320. Documents from other jurisdictions.

A. A substituted public offering statement shall only be permitted for a time-share program for which some portion of the time-share project associated with the program is located outside of Virginia.

B. The substituted public offering statement shall be prepared by deleting from the original disclosure document the following: (i) references to any governmental agency of another jurisdiction to which application has been made or will be made for registration or related action; (ii) references to the action of such governmental agency relative to the time-share project and its time-share program; (iii) statements of the legal effect in another jurisdiction of delivery, failure to deliver, acknowledgment of receipt or related events involving the disclosure document; (iv) the effective date ~~or dates~~ in another jurisdiction of the disclosure document; and (v) all other information that is untrue, inaccurate, or misleading with respect to marketing, offers, or disposition of time-shares in Virginia.

C. The substituted public offering statement shall incorporate all information not otherwise included that is necessary to effect fully and accurately the disclosures required by ~~§ 55-374~~ § 55.1-2217 of the Code of Virginia. The substituted disclosure document shall clearly explain any nomenclature that is different from the definitions provided in ~~§ 55-362~~ § 55.1-2200 of the Code of Virginia.

D. The substituted public offering statement shall include as the first item of the summary of important considerations a statement that includes the following information: (i) the designation by which the original disclosure document is identified in the original jurisdiction; (ii) the governmental agency of such other jurisdiction where the original disclosure document is or will be filed; and (iii) the jurisdiction of such filing.

E. The provisions of ~~§§ 55-374 and 55-376~~ §§ 55.1-2217 and 55.1-2221 of the Code of Virginia and 18VAC48-45-140, 18VAC48-45-150, and 18VAC48-45-160~~, and 18VAC48-45-170~~ shall apply to substituted public offering statements in the same manner and to the same extent that they apply to public offering statements.

F. In the case of a time-share project located outside of the Commonwealth, pursuant to subsection G of ~~§ 55-374~~ § 55.1-2217 of the Code of Virginia, disclosure statements required by other situs laws governing time-sharing that are equivalent to the requirements of this chapter may be accepted as alternative disclosure statements.

Part VI
Time-Share Project Post-Registration Provisions

18VAC48-45-330. Minimum post-registration reporting requirements for a time-share project.

A. Subsequent to the issuance of a registration for a time-share by the board, the developer of a time-share shall do the following:

1. File an annual report in accordance with ~~§ 55-394.1~~ § 55.1-2242 of the Code of Virginia and this chapter.

2. Upon the occurrence of a material change, file an amended public offering statement in accordance with the provisions of subsection E of ~~§ 55-374~~ § 55.1-2217 and subsection C of ~~§ 55-394.1~~ § 55.1-2242 of the Code of Virginia and this chapter. These amendments shall be filed with the board within 20 business days after the occurrence of the material change.

3. Upon the occurrence of any material change in the information contained in the registration file, the developer shall immediately report such material changes to the board in accordance with the provisions of subsection B of ~~§ 55-391.1~~ § 55.1-2239 of the Code of Virginia.

4. Notify the board of a change in any bond or letter of credit, as applicable, filed with the board in accordance with ~~§ 55-375~~ § 55.1-2220 of the Code of Virginia or required by subsection B of ~~§ 55-386~~ § 55.1-2234 of the Code of Virginia.

5. File a completed application for registration of an unregistered phase ~~or phases~~ upon the expansion of the time-share, along with the appropriate fee specified in 18VAC48-45-70.

6. Notify the board of transition of control from the developer to the time-share estate owners' association (time-share estate projects only).

7. Submit appropriate documentation to the board once the registration is eligible for termination.

8. Submit to the board any other document or information, which may include information or documents that have been amended or may not have existed previously, that affects the accuracy, completeness, or representation of any information or document filed with the application for registration.

9. Submit to the board any document or information to make the registration file accurate and complete.

B. Notwithstanding the requirements of subsection A of this section, the board at any time may require a developer to provide information or documents, or amendments thereof, in order to assure full and accurate disclosure to prospective purchasers and to ensure compliance with the Virginia Real Estate Time-Share Act and this chapter.

18VAC48-45-350. Nonmaterial changes to the public offering statement.

Changes to the public offering statement that are not material are not required to be filed with the board, shall not be deemed an amendment of the public offering statement for the purposes of this chapter, and shall not give rise to a renewed right of rescission in any purchase. Nonmaterial changes to the public offering statement include the following:

1. Correction of spelling, grammar, omission, or other similar errors not affecting the substance of the public offering statement;

2. Changes in presentation or format;

3. Substitution of an executed, filed, or recorded copy of a document for the otherwise substantially identical unexecuted, unfiled, or unrecorded copy of the document that was previously submitted;

4. Inclusion of updated information such as identification or description of the current officers and directors of the developer;

5. Disclosure of completion of improvements for improvements that were previously proposed or not complete;

6. Changes in real estate tax assessment or rate or modifications related to those changes;

7. Changes in utility charges or rates or modifications related to those changes;

8. Addition or deletion of incidental benefits or alternative purchases provided the developer reserved in the time-share instrument the right to add or delete incidental benefits or alternative purchases;

9. Adoption of a new budget that does not result in a significant change in fees or assessments or significantly impact the rights or obligations of the prospective purchasers;

10. Modifications related to changes in insurance company or financial institution, policy, or amount for bonds or letters of credit filed with the board in accordance with ~~§ 55-375~~ § 55.1-2220 of the Code of Virginia or required pursuant to ~~§ 55-386~~ § 55.1-2234 of the Code of Virginia;

11. Changes in personnel of the managing agent; and

12. Any change that is the result of orderly development of the time-share in accordance with the time-share instruments as described in the public offering statement.

18VAC48-45-360. Filing of amended public offering statement.

A. The developer shall promptly file with the board for review a copy of the amended public offering statement together with a copy of a summary of proposed amendments that shall be distributed to purchasers during the board review period. The summary of proposed amendments shall enumerate the amendments to the public offering statement submitted for board review and include a statement that the amendments to the public offering statement have been filed with the board but have not yet been accepted. The form of the submission is at the discretion of the developer provided that (i) all amendments are clearly represented in the documentation presented; (ii) the additions and deletions of text in the public offering statement and exhibits shall be identified by underlining and striking through text to be added and deleted; and (iii) documents being added to or deleted from the contents of the public offering statement shall be clearly and accurately reflected in the table of contents utilizing underlines and strikethroughs for additions and deletions. In addition to the copies showing edits to the

text, a clean copy of all new and amended documents shall be provided.

B. The amended public offering statement submitted to the board for review shall include the effective date of the amendments.

C. Within 30 days of receipt of the amended public offering statement, the board shall review the amended public offering statement and supporting materials to determine whether the amendment complies with this chapter. If the board's review determines that the amended public offering statement complies with this chapter, it shall notify the developer in writing and confirm the new effective date of the public offering statement.

D. If the board's review determines that the amended public offering statement does not comply with this chapter, it shall immediately notify the developer in writing that the review has determined the amended public offering statement is not in compliance and shall specify the particulars of such noncompliance. The developer shall then have 20 days in which to correct the particulars of noncompliance identified by the board. The developer may, prior to the completion of the 20-day correction period, request an extension in writing of the 20-day correction period. Upon expiration of the 20-day correction period, if requested corrections have not been made or a request for extension properly received, the board may issue a temporary cease and desist order in accordance with subdivision D 2 of ~~§ 55-396~~ § 55.1-2247 of the Code of Virginia to require the cessation of sales until such time as affirmative action as directed by the board is taken. Use of the noncompliant public offering statement may result in further action by the board pursuant to ~~§§ 55-396, 55-399.1, and 55-400~~ §§ 55.1-2247, 55.1-2251, and 55.1-2252 of the Code of Virginia.

E. Notwithstanding an extension of the 30-day period for review agreed to in writing by the board and developer, if the board does not perform the required review of the public offering statement in accordance with subsection C of this section, the amendment shall be deemed to comply with 18VAC48-45-150 through 18VAC48-45-310, and the new effective date shall be the effective date of the amendment provided pursuant to subsection B of this section.

F. In each case in which an amended document is filed pursuant to this section and the manner of its amendment is not apparent on the face of the document, the developer shall provide an indication of the manner and extent of amendment.

18VAC48-45-370. Current public offering statement.

A. Upon issuance of an effective date by the board, all purchasers who received a public offering statement and summary of proposed amendments during the board review period pursuant to subsection A of 18VAC48-45-360 shall be provided with the public offering statement as accepted by the board. A public offering statement remains current until such time as the occurrence of a material change requires amendment of the public offering statement pursuant to this chapter and a new effective date is issued by the board.

B. Upon issuance of an effective date by the board, a public offering statement remains current until such time as a new effective date is established pursuant to this chapter.

C. Notwithstanding the board's authority to issue a cease and desist order pursuant to ~~§ 55-396~~ § 55.1-2247 of the Code of Virginia, the filing of an amended public offering statement shall not require the developer to cease sales provided that the developer provides to purchasers the summary of proposed amendments pursuant to subsection A of 18VAC48-45-360 pending the issuance of a new effective date by the board.

18VAC48-45-380. Public offering statement not current; notification of purchasers.

A. A purchaser who has been delivered a public offering statement that is not current due to a material change and was not provided with the summary of proposed amendments containing the proposed changes to the amended public offering statement pursuant to subsection A of 18VAC48-45-360 pending the issuance of a new effective date by the board shall be notified of such fact by the developer.

B. A purchaser who has been delivered a public offering statement and summary of proposed amendments pursuant to subsection A of 18VAC48-45-360, but the amended public offering statement is determined to be noncompliant in accordance with subsection D of 18VAC48-45-360, shall be notified of such fact by the developer.

1. The notification shall indicate that any contract for disposition of a time-share may be canceled by the purchaser pursuant to subsection C of ~~§ 55-376~~ § 55.1-2221 of the Code of Virginia.

2. The developer shall file a copy of the notification with the board and provide proof that such notification has been delivered to all purchasers under contract.

18VAC48-45-390. Filing of phase amendment application.

A. A phase amendment application for a time-share project shall be filed when adding a phase ~~or phases~~ to the time-share project. Such phase amendment application shall be accompanied by the fee provided for in 18VAC48-45-70 and shall be subject to all of the provisions of 18VAC48-45-50 ~~and~~, 18VAC48-45-110, 18VAC48-45-120, and 18VAC48-45-130. Documents on file with the board that have not changed in connection with the additional phase or phases need not be refiled, provided that the phase amendment application indicates that such documents are unchanged.

B. The application shall include a bond or letter of credit required pursuant to subsection B of ~~§ 55-386~~ § 55.1-2234 of the Code of Virginia if any of the time-share units and

common elements contained in the submitted additional phase or phases have not been completed.

C. The board shall review the phase amendment application and supporting materials to determine whether the amendment complies with this chapter. If the board's review determines the phase amendment application complies with this chapter, it shall issue an amended order of registration for the time-share project and shall provide that previous orders and designations of the form, content, and effective date of the public offering statement are superseded. If the board's review determines that the phase amendment application is not complete, the board shall correspond with the developer to specify the particulars that must be completed to obtain compliance with this chapter.

18VAC48-45-400. Annual report for a time-share project registration required by developer.

A. A developer shall file an annual report for a time-share project registration on a form provided by the board to update the material contained in the registration file by June 30 of each year the registration is effective and shall be accompanied by the fee specified in 18VAC48-45-70. Prior to filing the annual report required by ~~§ 55-394.1~~ § 55.1-2242 of the Code of Virginia, the developer shall review the public offering statement then being delivered to purchasers. If such public offering statement is current, the developer shall so certify in the annual report. If such public offering statement is not current, the developer shall amend the public offering statement and the annual report shall, in that event, include a filing in accordance with 18VAC48-45-360.

B. The annual report shall contain the following:

1. Current contact information for the developer;

2. Information concerning the current status of the time-share project;

3. Information concerning the current status of the time-share program, including (i) the type of time-shares being offered and sold; (ii) the total number of time-share interests available in the program; (iii) the total number of time-share interests sold; and (iv) information regarding any incomplete units and common elements;

4. If the project is a time-share estate project and the developer control period has not yet expired, a copy of the annual report that was prepared and distributed by the developer to the time-share owners required by ~~§ 55-370.1~~ § 55.1-2213 of the Code of Virginia must accompany the annual report;

5. Date of the public offering statement currently being delivered to purchasers; and

6. Current evidence from the surety or financial institution of bonds or letters of credit filed with the board in accordance with ~~§ 55-375~~ § 55.1-2220 of the Code of Virginia or required pursuant to subsection B of ~~§ 55-386~~ § 55.1-2234 of the Code of Virginia, or submittal of replacement bonds or letters of credit. Such verification shall provide the following:

a. Principal of bond or letter of credit;

b. Beneficiary of bond or letter of credit;

c. Name of the surety or financial institution that issued the bond or letter of credit;

d. Bond or letter of credit number as assigned by the issuer;

e. The dollar amount;

f. The expiration date or, if self-renewing, the date by which the bond or letter of credit shall be renewed; and

g. For any blanket bond or blanket letter of credit, a statement of the total amount of deposits held by the developer as of May 31 of that calendar year.

18VAC48-45-410. Board review of annual report for a time-share project registration.

A. During review of the annual report, the board may make inquiries or request additional documentation to amplify or clarify the information provided.

B. If the board does not accept the annual report and the annual report filing is not completed within 60 days of a request by the board for additional information, the board may take further action pursuant to ~~§§ 55-396, 55-399.1, and 55-400~~ §§ 55.1-2247, 55.1-2251, and 55.1-2252 of the Code of Virginia for failing to file an annual report as required by ~~§ 55-394.1~~ § 55.1-2242 of the Code of Virginia.

C. If the board does not perform the required review of the annual report within 30 days of receipt by the board, the annual report shall be deemed to comply with ~~§ 55-394.1~~ § 55.1-2242 of the Code of Virginia.

18VAC48-45-420. Return of bond or letter of credit to ensure completion of promised units and common elements to developer.

A bond or letter of credit on file with the board pursuant to subsection B of ~~§ 55-386~~ § 55.1-2234 of the Code of Virginia may be returned to the developer upon written request. Such request shall include a statement from the developer that indicates the units and common elements for which the bond or letter of credit was submitted have been completed. If the submitted statement is not sufficient to confirm completion, the board may request additional documentation.

18VAC48-45-430. Return of bond or letter of credit filed in lieu of escrowing deposits.

A. An individual bond or individual letter of credit on file with the board in accordance with ~~§ 55-375~~ § 55.1-2220 of the Code of Virginia may be returned to the developer upon

written request. Such request shall include a statement from the developer that indicates (i) the purchaser's cancellation period has expired, (ii) the purchaser's default under a purchase contract for the time-share estate entitling the developer to retain the deposit, or (iii) the purchaser's deposit was refunded.

B. Upon issuance of an order of termination of the time-share project registration pursuant to 18VAC48-45-450, a blanket bond or blanket letter of credit on file with the board in accordance with ~~§ 55-375~~ § 55.1-2220 of the Code of Virginia will be returned to the developer.

18VAC48-45-440. Maintenance of bond or letter of credit.

A. The developer shall report the extension, cancellation, amendment, expiration, termination, or any other change of any bond or letter of credit submitted in accordance with ~~§ 55-375~~ § 55.1-2220 and subsection B of ~~§ 55-386~~ § 55.1-2234 of the Code of Virginia within five days of the change.

B. The board at any time may request verification from the developer of the status of a bond or letter of credit on file with the board. Such verification shall comply with the provisions of subdivision B 6 of 18VAC48-45-400.

C. Failure to report a change in the bond or letter of credit in accordance with this section shall result in further action by the board pursuant to the Virginia Real Estate Time-Share Act.

18VAC48-45-450. Termination of time-share project registration.

A. The time-share project registration shall be terminated upon receipt of documentation of one of the following:

1. In accordance with subsection A of ~~§ 55-394.2~~ § 55.1-2243 of the Code of Virginia, an annual report for a time-share estate program filed pursuant to ~~§ 55-394.1~~ § 55.1-2242 of the Code of Virginia indicates that the developer has transferred title to the time-share owners' association and that no further development rights exist.

2. In accordance with subsection B of ~~§ 55-394.2~~ § 55.1-2243 of the Code of Virginia, written notification is received from the developer attesting that no further development of the project is anticipated and that the developer has ceased sales of time-shares at the project.

B. Upon receipt and review of documentation pursuant to subsection A of this section, the board shall issue an order of termination for the time-share registration. The board may request additional information as necessary during the review of the submitted documentation to ensure that the time-share registration is eligible for termination.

18VAC48-45-460. Administrative termination of time-share project registration.

A. In accordance with subsection C of ~~§ 55-394.2~~ § 55.1-2243 of the Code of Virginia, the board may administratively terminate the registration of a time-share project. Prior to the administrative termination of the registration, the board shall send written notice of its intent to terminate the registration to all known parties associated with the time-share project, including~~, but not limited to,~~ the registered agent, developer's attorney, and principals of the developer. Such written notice shall be given to the parties by mail or otherwise if acknowledged by them in writing.

B. The board shall issue an order of termination for the time-share registration if (i) a response is not received within 30 days after sending the written notice, or (ii) the response received does not indicate termination of the registration is inappropriate in accordance with the Virginia Real Estate Time-Share Act and this chapter.

C. Nothing contained in this section shall prevent the board from taking further action as allowed by law including issuance of a temporary cease and desist order, issuance of a cease and desist order, revocation of registration, and bringing action in the appropriate circuit court to enjoin the acts or practices and to enforce compliance.

18VAC48-45-470. Reporting of other changes to the time-share project.

Any other change made or known by the developer that may affect the accuracy or completeness of the time-share registration file shall be reported promptly to the board. Such change may include ~~but is not limited to~~ the name of the developer, name of the time-share project, or any other changes in information submitted in accordance with ~~§ 55-391.1~~ § 55.1-2239 of the Code of Virginia. The board may request additional information as necessary to ensure compliance with the Virginia Real Estate Time-Share Act and this chapter.

Part VII
Alternative Purchase Registration

18VAC48-45-480. Registration of alternative purchase required.

As required by ~~§ 55-394.5~~ § 55.1-2246 of the Code of Virginia, a time-share developer shall register an alternative purchase as defined by ~~§ 55-362~~ § 55.1-2200 of the Code of Virginia.

18VAC48-45-490. Application for registration of an alternative purchase.

Application for registration of alternative purchase shall be filed with the board on an application form furnished by the board and shall contain all of the documents and information required by ~~§ 55-394.5~~ § 55.1-2246 of the Code of Virginia.

18VAC48-45-570. Reporting of other changes to the alternative purchase.

In accordance with subsection B of ~~§ 55.394.5~~ § 55.1-2246 of the Code of Virginia, any material change made or known by the developer that may affect the accuracy or completeness of the alternative purchase registration file shall be filed with the board within 30 days of the effective date of the change. The board may request additional information as necessary to ensure compliance with the Virginia Real Estate Time-Share Act and this chapter.

Part VIII
Exchange Program Registration

18VAC48-45-580. Registration of exchange program required.

As required by ~~§ 55 374.2~~ § 55.1-2219 of the Code of Virginia, an exchange company that offers an exchange program in the Commonwealth shall register the exchange program with the board.

18VAC48-45-590. Minimum requirements for registration of an exchange program.

An application for registration of an exchange program shall include the following:

1. An application submitted in accordance with 18VAC48-45-50;

2. Current contact information for the exchange company;

3. A disclosure document that complies with ~~§ 55 374.2~~ § 55.1-2219 of the Code of Virginia; and

4. A report independently audited by a certified public accountant or accounting firm in accordance with the standards of the Accounting Standards Board of the American Institute of Certified Public Accountants. The report shall provide the following for the preceding calendar year:

a. The number of owners enrolled in the exchange program. Such numbers shall disclose the relationship between the exchange company and owners as being either fee paying or gratuitous in nature;

b. The number of time-share properties, accommodations or facilities eligible to participate in the exchange program;

c. The percentage of confirmed exchanges, which shall be the number of exchanges confirmed by the exchange company divided by the number of exchanges properly applied for, together with a complete and accurate statement of the criteria used to determine whether an exchange request was properly applied for;

d. The number of time-shares for which the exchange company has an outstanding obligation to provide an exchange to an owner who relinquished a time-share during the year in exchange for a time-share in any future year; and

e. The number of exchanges confirmed by the exchange company during the year.

18VAC48-45-600. Minimum exchange program post-registration reporting requirements.

A. Subsequent to the issuance of a registration for an exchange program by the board, the exchange company shall:

1. File an annual report in accordance with subsection E of ~~§ 55 374.2~~ § 55.1-2219 of the Code of Virginia and this chapter.

2. Upon the occurrence of a material change to the disclosure document, the exchange company shall file an amended disclosure document in accordance with the provisions of ~~§ 55 374.2~~ § 55.1-2219 of the Code of Virginia and this chapter. These amendments shall be filed with the board within 20 business days after the occurrence of the material change.

3. Upon the occurrence of any material change in the information contained in the registration file, the exchange company shall immediately report such material changes to the board.

4. Submit appropriate documentation to the board once the registration is eligible for termination.

5. Submit to the board any other document or information, which may include information or documents that have been amended or may not have existed previously, that affects the accuracy, completeness, or representation of any information or document filed with the application for registration.

6. Submit to the board any document or information to make the registration file accurate and complete to ensure compliance with the Virginia Real Estate Time-Share Act and this chapter.

B. Notwithstanding the requirements of subsection A of this section, the board at any time may require an exchange company to provide information or documents, or amendments thereof, in order to assure full and accurate disclosure to prospective purchasers and to ensure compliance with the Virginia Real Estate Time-Share Act and this chapter.

18VAC48-45-610. Annual report required for an exchange program registration.

A. An exchange company shall file an annual report to update the material contained in the exchange program registration file by July 1 of each year the registration is effective and shall be accompanied by the fee specified in 18VAC48-45-70.

B. The annual report shall contain, but may not be limited to, the following:

1. Current contact information for the exchange company;

2. Information concerning the current status of the exchange program; and

3. A report that contains the information in subdivision 4 of 18VAC48-45-590 and submitted in compliance with subdivision A 17 of ~~§ 55-374.2~~ § 55.1-2219 of the Code of Virginia.

18VAC48-45-620. Board review of annual report for exchange program registration.

A. During review of the annual report, the board may make inquiries or request additional documentation to amplify or clarify the information provided.

B. If the board does not accept the annual report and the annual report filing is not completed within 60 days of a request by the board for additional information, the board may take further action pursuant to ~~§§ 55-396, 55-399.1, and 55-400~~ §§ 55.1-2247, 55.1-2251, and 55.1-2252 of the Code of Virginia for failing to file an annual report as required by subsection E of ~~§ 55-374.2~~ § 55.1-2219 of the Code of Virginia.

C. If the board does not perform the required review of the annual report within 30 days of receipt by the board, the annual report shall be deemed to comply with subsection E of ~~§ 55-374.2~~ § 55.1-2219 of the Code of Virginia.

Part IX
Time-Share Reseller Registration

18VAC48-45-650. Registration of time-share reseller required.

In accordance with ~~§ 55-394.3~~ § 55.1-2244 of the Code of Virginia, a reseller shall not offer or provide any resale service without holding a current time-share reseller registration issued by the board.

18VAC48-45-660. Exemptions from time-share reseller registration.

Time-share reseller registration shall not apply to the following:

1. A person that solely or with affiliates engages in a resale service with respect to an aggregate of no more than 12 resale time-shares per calendar year;

2. A person that owns or acquires more than 12 resale time-shares and subsequently transfers all such resale time-shares to a single purchaser in a single transaction;

3. The owner, owner's agents, and employees of a regularly published newspaper, magazine, or other periodical publication of general circulation; broadcast station; website; or billboard, to the extent their activities are limited to solicitation and publication of advertisements and the transmission of responses to the persons who place the advertisements. Any person that would otherwise be exempt from this chapter pursuant to this section shall not be exempt if the person (i) solicits the placement of the advertisement by representing that the advertisement will generate cash, a certain price, or a similar type of representation for the time-share owner's resale time-share, (ii) makes a recommendation as to the sales price for which to advertise the resale time-share, (iii) makes representations to the person placing the advertisement regarding the success rate for selling resale time-shares advertised with such person, or (iv) makes misrepresentations as described in this chapter;

4. Sale by a developer or a party acting on its behalf of a resale time-share under a current registration of the time-share program in which the resale time-share is included;

5. Sale by an association, managing entity, or a party acting on its behalf of a resale time-share owned by the association provided the sale is in compliance with subsection C of ~~§ 55-380.1~~ § 55.1-2228; or

6. Attorneys, title agents, title companies, or escrow companies providing closing services in connection with the transfer of a resale time-share.

18VAC48-45-670. Requirements for registration as a time-share reseller.

A. Individuals or firms that provide any time-share resale services shall submit an application on a form prescribed by the board and shall meet the requirements of this section, including:

1. The information contained in ~~§ 55-394.3~~ § 55.1-2244 of the Code of Virginia.

2. The application fee specified in 18VAC48-45-70.

3. All contact information applicable to the time-share reseller and the lead dealer.

B. Any individual or firm offering resale services as defined in ~~§ 55-362~~ § 55.1-2200 of the Code of Virginia shall be registered with the board. All names under which the time-share reseller conducts business shall be disclosed on the application. The name under which the firm conducts business and holds itself out to the public (i.e., the trade or fictitious name) shall also be disclosed on the application. Firms shall be organized as business entities under the laws of the Commonwealth of Virginia or otherwise authorized to transact business in Virginia. Firms shall register any trade or fictitious names with the State Corporation Commission or the clerk of court in the jurisdiction where the business is to be conducted in accordance with §§ 59.1-69 through 59.1-76 of the Code of Virginia before submitting an application to the board.

C. The applicant for a time-share reseller registration shall disclose the firm's mailing address and the firm's physical address. A post office box is only acceptable as a mailing address when a physical address is also provided.

D. In accordance with § 54.1-204 of the Code of Virginia, each applicant for a time-share reseller registration shall disclose the following information about the firm, the lead dealer, and any of the principals of the firm, if applicable:

1. All felony convictions.

2. All misdemeanor convictions in any jurisdiction that occurred within three years before the date of application.

3. Any plea of nolo contendere or finding of guilt regardless of adjudication or deferred adjudication shall be considered a conviction for the purposes of this section. The record of conviction certified or authenticated in such form as to be admissible in evidence under the laws of the jurisdiction where convicted shall be admissible as prima facie evidence of such guilt.

E. The applicant for time-share reseller registration shall be in compliance with the standards of conduct set forth in Part X (18VAC48-45-720 et seq.) of this chapter at the time of application, while the application is under review by the board, and at all times when the registration is in effect.

F. The applicant for time-share reseller registration, the lead dealer, and all principals of the firm shall be in good standing in Virginia and in every jurisdiction and with every board or administrative body where licensed, certified, or registered, and the board, in its discretion, may deny registration to any applicant who has been subject to, or whose lead dealer or principals have been subject to, any form of adverse disciplinary action, including reprimand, revocation, suspension or denial, imposition of a monetary penalty, required to complete remedial education, or any other corrective action, in any jurisdiction or by any board or administrative body or surrendered a license, certificate, or registration in connection with any disciplinary action in any jurisdiction prior to obtaining registration in Virginia.

G. The applicant for time-share reseller registration shall provide all relevant information about the firm, the lead dealer, and of the principals of the firm for the seven years prior to application on outstanding judgments, past-due tax assessments, defaults on bonds, or pending or past bankruptcies and specifically shall provide all relevant financial information related to providing resale services as defined in ~~§ 55-362~~ § 55.1-2200 of the Code of Virginia.

H. The application for time-share reseller registration shall include the exhibits required pursuant to 18VAC48-45-680.

18VAC48-45-680. Exhibits required for registration as a time-share reseller.

A. The following documents shall be included as exhibits to the application for registration. All exhibits shall be labeled as indicated and submitted in a format acceptable to the board.

1. Exhibit A: A copy of the certificate of incorporation or certificate of authority to transact business in Virginia issued by the Virginia State Corporation Commission, or any other entity formation documents, together with any trade or fictitious name certificate.

2. Exhibit B: A copy of the resale purchase contract.

3. Exhibit C: A copy of the resale transfer contract.

4. Exhibit D: A copy of disclosures required by ~~§ 55-380.1~~ § 55.1-2228 of the Code of Virginia.

5. Exhibit E: A narrative description of the marketing or advertising plan.

B. The board has the sole discretion to require additional information or amendment of existing information as the board finds necessary to ensure full and accurate disclosure and compliance with the provisions of ~~§ 55-380.1~~ § 55.1-2228 of the Code of Virginia and to ensure compliance with the provisions of ~~§ 55-394.3~~ § 55.1-2244 of the Code of Virginia.

18VAC48-45-690. Renewal and reinstatement of a time-share reseller registration.

A. A time-share reseller registration issued under this chapter shall expire one year from the last day of the month in which it was issued. The fee specified in 18VAC48-45-70 shall be required for renewal.

B. Prior to the expiration date shown on the registration, a registration shall be renewed upon payment of the fees specified in 18VAC48-45-70.

C. The board will send a renewal notice to the regulant at the last known address of record. Failure to receive this notice shall not relieve the regulant of the obligation to renew. If the regulant fails to receive the renewal notice, a copy of the registration may be submitted with the required fees as an application for renewal. By submitting a renewal fee, the regulant is certifying continued compliance with this chapter, as applicable, and certifying that all documents required for registration pursuant to 18VAC48-45-680 on file with the board reflect the most current version used by the reseller.

D. If the requirements for renewal of a registration as specified in this chapter are not completed more than 30 days and within six months after the registration expiration date, the reinstatement fee specified in ~~18VAC48-50-70~~ 18VAC48-45-70 shall be required.

E. A registration may be reinstated for up to six months following the expiration date. After six months, the

registration may not be reinstated under any circumstances, and the firm or individual must meet all current entry requirements and apply as a new applicant.

F. The board may deny renewal or reinstatement of registration for the same reasons as it may refuse initial registration or discipline a registrant.

G. The date the renewal application and fee are received in the office of the board shall determine whether a registration shall be renewed without reinstatement, or shall be subject to reinstatement application procedures.

H. A registration that is reinstated shall be regarded as having been continuously registered without interruption. Therefore, the registration holder shall remain under the disciplinary authority of the board during the entire period and shall be accountable for its activities during the period. Nothing in this chapter shall divest the board of its authority to discipline a registration holder for a violation of the law or regulation during the period of time for which the regulant was registered.

I. Applicants for renewal shall continue to meet all of the qualifications for registration set forth in 18VAC48-45-680.

18VAC48-45-710. Recordkeeping for a time-share reseller registration.

A time-share reseller registered by the board shall comply with the recordkeeping provisions of ~~§ 55-394.4~~ § 55.1-2245 of the Code of Virginia.

18VAC48-45-770. Prohibited acts.

The following acts are prohibited and any violation may result in action by the board, including issuance of a temporary cease and desist order in accordance with subdivision D 2 of ~~§ 55-396~~ § 55.1-2247 of the Code of Virginia:

1. Violating, inducing another to violate, or cooperating with others in violating any of the provisions of any regulation of the board or the Virginia Real Estate Time-Share Act or engaging in any act enumerated in §§ 54.1-102 and 54.1-111 of the Code of Virginia.

2. Obtaining or attempting to obtain a registration by false or fraudulent representation, or maintaining, renewing, or reinstating a registration by false or fraudulent representation.

3. Failing to alter or amend the public offering statement or disclosure document as required in accordance with the provisions of this chapter.

4. Providing information to purchasers in a manner that willfully and intentionally fails to promote full and accurate disclosure.

5. Making any misrepresentation or making a false promise that might influence, persuade, or induce.

6. Failing to provide information or documents, or amendments thereof, in accordance with this chapter.

7. Failing to comply with the post-registration requirements of this chapter.

8. Filing false or misleading information in the course of terminating a registration in accordance with 18VAC48-45-450, 18VAC48-45-460, 18VAC48-45-560, or 18VAC48-45-630.

9. Failing to comply with the advertising standards contained in Part III (18VAC48-45-80 et seq.) of this chapter.

10. Allowing a registration issued by the board to be used by another.

11. A regulant having been convicted, found guilty, or disciplined in any jurisdiction of any offense or violation described in subdivisions C 13 and C 14 of 18VAC48-45-130, subdivisions 4 and 5 of 18VAC48-45-210, and subsections D, F, and G of 18VAC48-45-670.

12. Failing to inform the board in writing within 30 days that the regulant was convicted, found guilty, or disciplined in any jurisdiction of any offense or violation described in subsections D, F, and G of 18VAC48-45-670.

13. Failing to report a change as required by 18VAC48-45-470.

14. Failing to satisfy any judgments or restitution orders entered by a court or arbiter of competent jurisdiction.

15. Misrepresenting or misusing the intended purpose of a power of attorney or similar document to the detriment of any grantor of such power of attorney.

16. Engaging in dishonest or fraudulent conduct in providing resale services, including the following:

a. The intentional and unjustified failure to comply with the terms of the resale purchase contract or resale transfer contract.

b. Engaging in dishonest or fraudulent conduct in providing resale services.

c. Failing to comply with the recordkeeping requirements of ~~§ 55-394.4~~ § 55.1-2245 of the Code of Virginia.

d. Failing to disclose information in writing concerning the marketing, sale, or transfer of resale time-shares required by this chapter prior to accepting any consideration or with the expectation of receiving consideration from any time-share owner, seller, or buyer.

e. Making false or misleading statements concerning offers to buy or rent; the value, pricing, timing, or availability of resale time-shares; or numbers of sellers,

renters, or buyers when engaged in time-share resale activities.

f. Misrepresenting the likelihood of selling a resale time-share interest.

g. Misrepresenting the method by or source from which the reseller or lead dealer obtained the contact information of any time-share owner.

h. Misrepresenting price or value increases or decreases, assessments, special assessments, maintenance fees, or taxes or guaranteeing sales or rentals in order to obtain money or property.

i. Making false or misleading statements concerning the identity of the reseller or any of its affiliates or the time-share resale entity's or any of its affiliate's experience, performance, guarantees, services, fees, or commissions, availability of refunds, length of time in business, or endorsements by or affiliations with developers, management companies, or any other third party.

j. Misrepresenting whether or not the reseller or its affiliates, employees, or agents hold, in any state or jurisdiction, a current real estate sales or broker's license or other government-required license.

k. Misrepresenting how funds will be utilized in any time-share resale activity conducted by the reseller.

l. Misrepresenting that the reseller or its affiliates, employees, or agents have specialized education, professional affiliations, expertise, licenses, certifications, or other specialized knowledge or qualifications.

m. Making false or misleading statements concerning the conditions under which a time-share owner, seller, or buyer may exchange or occupy the resale time-share interest.

n. Representing that any gift, prize, membership, or other benefit or service will be provided to any time-share owner, seller, or buyer without providing such gift, prize, membership, or other benefit or service in the manner represented.

o. Misrepresenting the nature of any resale time-share interest or the related time-share plan.

p. Misrepresenting the amount of the proceeds, or failing to pay the proceeds, of any rental or sale of a resale time-share interest as offered by a potential renter or buyer to the time-share owner who made such resale time-share interest available for rental or sale through the reseller.

q. Failing to transfer any resale time-share interests as represented and required by this chapter or to provide written evidence to the time-share owner of the recording or transfer of such time-share owner's resale time-share interest as required by this chapter.

r. Failing to pay any annual assessments, special assessments, personal property or real estate taxes, or other fees relating to an owner's resale time-share interest as represented or required by this chapter.

VA.R. Doc. No. R20-5994; Filed October 15, 2019, 5:45 p.m.

Final Regulation

REGISTRAR'S NOTICE: The Common Interest Community Board is claiming an exemption from Article 2 of the Administrative Process Act in accordance with § 2.2-4006 A 4 a of the Code of Virginia, which excludes regulations that are necessary to conform to changes in Virginia statutory law or the appropriation act where no agency discretion is involved. The Common Interest Community Board will receive, consider, and respond to petitions by any interested person at any time with respect to reconsideration or revision.

Title of Regulation: **18VAC48-70. Common Interest Community Ombudsman Regulations (amending 18VAC48-70-10 through 18VAC48-70-50, 18VAC48-70-70, 18VAC48-70-90 through 18VAC48-70-130).**

Statutory Authority: §§ 54.1-2349 and 54.1-2354.4 of the Code of Virginia.

Effective Date: December 11, 2019.

Agency Contact: Trisha Henshaw, Executive Director, Common Interest Community Board, Department of Professional and Occupational Regulation, 9960 Mayland Drive, Suite 400, Richmond, VA 23233, telephone (804) 367-8510, FAX (866) 490-2723, or email cic@dpor.virginia.gov.

Summary:

The technical amendments update the Common Interest Community Ombudsman Regulations and associated required forms to reflect the changes to the Code of Virginia resulting from the recodification of Title 55 of the Code of Virginia pursuant to Chapter 712 of the 2019 Acts of Assembly.

Part I
General

18VAC48-70-10. Definitions.

~~Section 55-528~~ Section 54.1-2345 of the Code of Virginia provides definitions of the following terms and phrases as used in this chapter:

Association

Board

Common interest community

Declaration

~~Director~~

Governing board

Lot

~~Section 55-79.41~~ Section 55.1-1900 of the Code of Virginia provides definition of the following term as used in this chapter:

Condominium instruments

The following words, terms, and phrases, when used in this chapter, shall have the following meanings unless the context clearly indicates otherwise.

"Adverse decision" or "final adverse decision" means the final determination issued by an association pursuant to an association complaint procedure that is opposite of, or does not provide for, either wholly or in part, the cure or corrective action sought by the complainant. Such decision means all avenues for internal appeal under the association complaint procedure have been exhausted. The date of the final adverse decision shall be the date of the notice issued pursuant to subdivisions 8 and 9 of 18VAC48-70-50.

"Association complaint" means a written complaint filed by a member of the association or a citizen pursuant to an association complaint procedure. An association complaint shall concern a matter regarding the action, inaction, or decision by the governing board, managing agent, or association inconsistent with applicable laws and regulations.

"Association complaint procedure" means the written process adopted by an association to receive and consider association complaints from members and citizens. The complaint procedure shall include contact information for the Office of the Common Interest Community Ombudsman in accordance with ~~§ 55-530~~ § 54.1-2354.4 of the Code of Virginia. An appeal process, if applicable, shall be set out in an association complaint procedure adopted by the association, including relevant timeframes for filing the request for appeal. If no appeal process is available, the association complaint procedure shall indicate that no appeal process is available and that the rendered decision is final.

"Association governing documents" means collectively the applicable organizational documents, including ~~but not limited to~~ the current and effective (i) articles of incorporation, declaration, and bylaws of a property owners' association, (ii) condominium instruments of a condominium, and (iii) declaration and bylaws of a real estate cooperative, all as may be amended from time to time. Association governing documents also include, to the extent in existence, resolutions, rules and regulations, or other guidelines governing association member conduct and association governance.

"Complainant" means an association member or citizen who makes a written complaint pursuant to an association complaint procedure.

"Director" means the Director of the Department of Professional and Occupational Regulation.

"Record of complaint" means all documents, correspondence, and other materials related to a decision made pursuant to an association complaint procedure.

18VAC48-70-20. Submission of documentation.

Any documentation required to be filed with or provided to the board, director, or Office of the Common Interest Community Ombudsman pursuant to this chapter and ~~Chapter 29 (§ 55-528 et seq.) of Title 55~~ Article 2 (§ 54.1-2354.1 et seq.) of Chapter 23.3 of Title 54.1 of the Code of Virginia shall be filed with or provided to the Department of Professional and Occupational Regulation.

Part II
Association Complaint Procedure

18VAC48-70-30. Requirement for association to develop an association complaint procedure.

In accordance with ~~§ 55-530 E~~ § 54.1-2354.4 of the Code of Virginia, each association shall have a written process for resolving association complaints from members and citizens. The association complaint procedure or form shall conform with the requirements set forth in ~~§ 55-530~~ § 54.1-2354.4 of the Code of Virginia and this chapter, as well as the association governing documents, which shall not be in conflict with ~~§ 55-530~~ § 54.1-2354.4 of the Code of Virginia or this chapter.

18VAC48-70-40. Establishment and adoption of written association complaint procedure.

A. Associations filing an initial application for registration pursuant to ~~§ 55-79.93:1, 55-504.1, or 55-516.1~~ § 55.1-1835, 55.1-1980, or 55.1-2182 of the Code of Virginia must certify that an association complaint procedure has been established and adopted at the date of registering or within 90 days of registering with the board.

B. An association that has been delinquent in registering the association and filing its required annual reports is still required to have an established and adopted written association complaint procedure. At the time such an association files an application for registration, it must certify that an association complaint procedure has been established and adopted by the governing board.

C. The association shall certify with each annual report filing that the association complaint procedure has been adopted and is in effect.

18VAC48-70-50. Association complaint procedure requirements.

The association complaint procedure shall be in writing and shall include the following provisions in addition to any specific requirements contained in the association's governing documents that do not conflict with ~~§ 55-530~~ § 54.1-2354.4 of the Code of Virginia or the requirements of this chapter.

1. The association complaint must be in writing.

2. A sample of the form,if any, on which the association complaint must be filed shall be provided upon request.

3. The association complaint procedure shall include the process by which complaints shall be delivered to the association.

4. The association shall provide written acknowledgment of receipt of the association complaint to the complainant within seven days of receipt. Such acknowledgment shall be hand delivered or mailed by registered or certified mail, return receipt requested, to the complainant at the address provided, or if consistent with established association procedure, by electronic means provided the sender retains sufficient proof of the electronic delivery.

5. Any specific documentation that must be provided with the association complaint shall be clearly described in the association complaint procedure. In addition, to the extent the complainant has knowledge of the law or regulation applicable to the complaint, the complainant shall provide that reference, as well as the requested action or resolution.

6. The association shall have a reasonable, efficient, and timely method for identifying and requesting additional information that is necessary for the complainant to provide in order to continue processing the association complaint. The association shall establish a reasonable timeframe for responding to and for the disposition of the association complaint if the request for information is not received within the required timeframe.

7. Notice of the date, time, and location that the matter will be considered shall be hand delivered or mailed by registered or certified mail, return receipt requested, to the complainant at the address provided or, if consistent with established association procedure, delivered by electronic means, provided the sender retains sufficient proof of the electronic delivery, within a reasonable time prior to consideration as established by the association complaint procedure.

8. After the final determination is made, the written notice of final determination shall be hand delivered or mailed by registered or certified mail, return receipt requested, to the complainant at the address provided or, if consistent with established association procedure, delivered by electronic means, provided the sender retains sufficient proof of the electronic delivery, within seven days.

9. The notice of final determination shall be dated as of the date of issuance and include specific citations to applicable association governing documents, laws, or regulations that led to the final determination, as well as the registration number of the association. If applicable, the name and license number of the common interest community manager shall also be provided.

10. The notice of final determination shall include the complainant's right to file a Notice of Final Adverse Decision with the Common Interest Community Board via the Common Interest Community Ombudsman and the applicable contact information.

18VAC48-70-70. Maintenance of association record of complaint.

A. A record of each association complaint filed with the association shall be maintained in accordance with ~~§ 55-530 E 1~~ § 54.1-2354.4 A 1 of the Code of Virginia.

B. Unless otherwise specified by the director or his designee, the association shall provide to the director or his designee, within 14 days of receiptofthe request, any document, book, or record concerning the association complaint. The director or his designee may extend such timeframe upon a showing of extenuating circumstances prohibiting delivery within 14 days of receiving the request.

Part III
Final Adverse Decision

18VAC48-70-90. Filing of notice of final adverse decision.

A complainant may file a notice of final adverse decision in accordance with ~~§ 55-530 F~~ § 54.1-2354.4 B of the Code of Virginia concerning any final adverse decision that has been issued by an association in accordance with this chapter.

1. The notice shall be filed within 30 days of the date of the final adverse decision.

2. The notice shall be in writing on forms provided by the Office of the Common Interest Community Ombudsman. Such forms shall request the following information:

a. Name and contact information of complainant;

b. Name, address, and contact information of association;

c. Applicable association governing documents; and

d. Date of final adverse decision.

3. The notice shall include a copy of the association complaint, the final adverse decision, reference to the laws and regulations the final adverse decision may have violated, any supporting documentation related to the final adverse decision, and a copy of the association complaint procedure.

4. The notice shall be accompanied by a $25 filing fee or a request for waiver pursuant to 18VAC48-70-100.

18VAC48-70-100. Waiver of filing fee.

In accordance with ~~§ 55-530 F~~ § 54.1-2354.4 B of the Code of Virginia, the board may, for good cause shown, waive or refund the filing fee upon a finding that payment of the filing fee will cause undue financial hardship for the complainant.

18VAC48-70-110. Review of final adverse decision.

Upon receipt of the notice of final adverse decision from the complainant, along with the filing feeor a board-approved waiver of filing fee, the Office of the Common Interest Community Ombudsman shall provide written acknowledgment of receipt of the notice to the complainant and shall provide a copy of the written notice to the association that made the final adverse decision. The notice of adverse decision will not be reviewed until the filing fee has been received or a waiver of filing fee has been granted by the board.

In accordance with ~~§ 55-530 G~~ § 54.1-2354.4 C of the Code of Virginia, additional information may be requested from the association that made the final adverse decision. Upon request, the association shall provide such information to the Office of the Common Interest Community Ombudsman within a reasonable time.

18VAC48-70-120. Decision from the notice of final adverse decision.

Upon review of the notice of final adverse decision in accordance with ~~§ 55-530 G~~ § 54.1-2354.4 C of the Code of Virginia, if the director determines that the final adverse decision may be in conflict with laws or regulations governing common interest communities or interpretations thereof by the board, the director may, in his sole discretion, provide the complainant and the association with information concerning such laws or regulations governing common interest communities or interpretations thereof by the board.

The determination of whether the final adverse decision may be in conflict with laws or regulations governing common interest communities or interpretations thereof by the board shall be a matter within the sole discretion of the director. Such decision is final and not subject to further review. The determination of the director shall not be binding upon the complainant or the association that made the final adverse decision.

18VAC48-70-125. Referral for further action.

In addition to the provisions of this chapter, any matter involving a violation of applicable laws or regulations of the board may be referred for further action by the board in accordance with the provisions of Chapter 23.3 (§ 54.1-2345 et seq.) of Title 54.1; ~~Chapters 4.2 (§ 55-79.39 et seq.), 26 (§ 55-508 et et seq.), and 29 (§ 55-528 et seq.) of Title 55~~ Chapters 18 (§ 55.1-1800 et seq.), 19 (55.1-1900 et seq.), and 21 (§ 55.1-2100 et seq.) of Title 55.1 of the Code of Virginia; and the board's regulations.

Part IV
Office of the Common Interest Community Ombudsman

18VAC48-70-130. Purpose, responsibilities, and limitations.

The Office of the Common Interest Community Ombudsman shall carry out those activities as enumerated in ~~subsection C of § 55-530~~ § 54.1-2354.3 of the Code of Virginia.

NOTICE: The following forms used in administering the regulation were filed by the agency. The forms are not being published; however, online users of this issue of the Virginia Register of Regulations may click on the name of the forms with a hyperlink to access them. The forms are also available from the agency contact or may be viewed at the Office of the Registrar of Regulations, 900 East Main Street, 11th Floor, Richmond, Virginia 23219.

FORMS (18VAC48-70)

~~Common Interest Community Complaint Form, F491-CICCOMP-v2 (rev. 11/2012)~~

~~Request for Waiver of Filing Fee, F491-CICFW-v1 (eff. 10/2012)~~

~~Notice of Final Adverse Decision, F491-CICNOTE-v1 (eff. 10/2012)~~

Common Interest Community Complaint Form, F491-CICCOMP-v3 (rev. 12/2019)

Notice of Final Adverse Decision, F491-CICNOTE-v1 (eff. 12/2019)

Waiver of Filing Fee Request Form, F491-CICFW-v2 (eff. 12/2019)

VA.R. Doc. No. R20-5962; Filed October 10, 2019, 10:56 a.m.

BOARD OF FUNERAL DIRECTORS AND EMBALMERS

Forms

REGISTRAR'S NOTICE: Forms used in administering the regulation have been filed by the agency. The forms are not being published; however, online users of this issue of the Virginia Register of Regulations may click on the name of a form with a hyperlink to access it. The forms are also available from the agency contact or may be viewed at the Office of the Registrar of Regulations, 900 East Main Street, 11th Floor, Richmond, Virginia 23219.

Title of Regulation: **18VAC65-20. Regulations of the Board of Funeral Directors and Embalmers.**

Contact Information: Elaine J. Yeatts, Senior Policy Analyst, Department of Health Professions, 9960 Mayland Drive,

Suite 300, Richmond, VA 23233, telephone (804) 367-4688, or email elaine.yeatts@dhp.virginia.gov.

FORMS (18VAC65-20)

~~Funeral Service Provider Licensee Application (rev. 4/11).~~

~~Application for Reinstatement as a Funeral Service Provider Licensee (rev. 3/10).~~

~~Verification of State Licensure Form (rev. 3/10).~~

~~Courtesy Card Application (rev. 3/10).~~

~~Surface Transportation & Removal Services Application (rev. 5/10).~~

~~Crematory Registration Application (rev. 3/10).~~

~~Continuing Education Provider Application (rev. 3/10).~~

~~Continuing Education Summary Form (rev. 3/10).~~

~~Funeral Service Establishment Application (rev. 5/10).~~

~~Application for Notification of Establishment Changes (rev. 3/10).~~

~~Waiver of Full-Time Manager Application (rev. 3/10).~~

~~Application for Reinstatement Funeral Service Establishment (rev. 3/10).~~

~~Appendix I. General Price List (rev. 8/10).~~

~~Appendix II. Casket Price List, Outer Burial Container Price List (rev. 3/10).~~

~~Appendix III. Itemized Statement of Funeral Goods and Services Selected (rev. 3/10).~~

Funeral Service Licensee Application (rev. 3/2018)

Application for Reinstatement as a Funeral Service License (rev. 3/2018)

Verification of State Licensure Form (rev. 3/2018)

Courtesy Card Application (rev. 3/2018)

Surface Transportation and Removal Services Application (rev. 3/2018)

Crematory Registration Application (rev. 9/2018)

Continuing Education Provider Application (rev. 3/2018)

Continuing Education Summary Form (rev. 8/2016)

Continuing Education Provider Application for Approval of Additional Courses (rev. 3/2018)

Continuing Education Renewal Form (rev. 3/2018)

Continuing Education Credit for Volunteer Practice (rev. 2/2018)

Funeral Service Establishment Application (rev. 9/2018)

Branch Establishment Application (rev. 9/2018)

Application for Notification of Establishment Changes (rev. 9/2018)

Application for Change of Manager - Funeral Establishment (rev. 3/2018)

Request for Reinspection - Structural Change of Establishment (rev. 3/2018)

Waiver of Full-Time Manager Application (rev. 7/2019)

Application for Reinstatement Funeral Service Establishment (rev. 3/2018)

Application for Reinstatement of Courtesy Card (rev. 3/2018)

Appendix I. General Price List (rev. 10/2019)

Appendix II. Casket Price List, Outer Burial Container Price List (rev. 10/2019)

Appendix III. Itemized Statement of Funeral Goods and Services Selected (rev. 10/2019)

VA.R. Doc. No. R20-6212; Filed October 21, 2019, 2:14 p.m.

BOARD OF MEDICINE

Forms

REGISTRAR'S NOTICE: Forms used in administering the regulation have been filed by the agency. The forms are not being published; however, online users of this issue of the Virginia Register of Regulations may click on the name of a form with a hyperlink to access it. The forms are also available from the agency contact or may be viewed at the Office of the Registrar of Regulations, 900 East Main Street, 11th Floor, Richmond, Virginia 23219.

Title of Regulation: **18VAC85-50. Regulations Governing the Practice of Physician Assistants.**

Contact Information: Elaine J. Yeatts, Senior Policy Analyst, Department of Health Professions, 9960 Mayland Drive, Suite 300, Richmond, VA 23233, telephone (804) 367-4688, or email elaine.yeatts@dhp.virginia.gov.

FORMS (18VAC85-50)

~~Instructions and Physician Assistant Licensure for Completing an Application (rev. 10/09).~~

~~Form #B, Activity Questionnaire (rev. 8/07).~~

~~Form #C, Clearance from Other State Boards (rev. 8/07).~~

~~Form #L, Certificate of Physician Assistant Education (rev. 10/09).~~

~~Form #2, Physician Assistant Invasive Procedures Protocol (rev. 8/07).~~

~~Instructions and Practice Application as a Physician Assistant (rev. 10/09).~~

~~Request for Prescriptive Authority from the PA (rev. 1/11).~~

~~Alternate Supervisors Signature Form (rev. 2/09).~~

~~Form #1 A, Addendum to Practice of Physician Assistant Duties (rev. 8/07).~~

~~Application for Registration for Volunteer Practice (rev. 8/07 8/15).~~

~~Sponsor Certification for Volunteer Registration (rev. 8/08 3/18).~~

~~Physician Assistant Volunteer License Application (rev. 12/07 8/15).~~

Instructions for Completing an Application (rev. 11/2017)

Form #B, Activity Questionnaire (rev. 7/2017)

Application for a pharmacist license by endorsement or examination, online form available at: https://www.dhp.virginia.gov/medicine/medicine_forms.htm#PA

Practice Agreement (eff. 10/2019)

Application for Registration for Volunteer Practice (rev. 8/2015)

Sponsor Certification for Volunteer Registration (rev. 3/2018)

Physician Assistant Volunteer License Application (rev. 8/2015)

VA.R. Doc. No. R20-6206; Filed October 10, 2019, 3:31 p.m.

BOARD OF OPTOMETRY

Final Regulation

Title of Regulation: **18VAC105-20. Regulations Governing the Practice of Optometry (amending 18VAC105-20-5, 18VAC105-20-10, 18VAC105-20-16, 18VAC105-20-20, 18VAC105-20-40, 18VAC105-20-45, 18VAC105-20-46, 18VAC105-20-47, 18VAC105-20-60, 18VAC105-20-70; repealing 18VAC105-20-15).**

Statutory Authority: §§ 54.1-2400 and 54.1-3223 of the Code of Virginia.

Effective Date: December 11, 2019.

Agency Contact: Leslie L. Knachel, Executive Director, Board of Optometry, 9960 Mayland Drive, Suite 300, Richmond, VA 23233, telephone (804) 597-4130, FAX (804) 527-4471, or email leslie.knachel@dhp.virginia.gov.

Summary:

In addition to editorial changes, the amendments (i) delete unnecessary or unenforceable rules, (ii) add a limitation on the number of times an applicant can take and fail the licensing examination before additional education is necessary, (iii) add specificity about evidence of continued competency required for licensure by endorsement and reinstatement, (iv) clarify the expiration date that may be included on an eyeglass prescription, and (v) waive the requirement of graduation from an accredited school if an applicant was educated in a foreign country but has been actively practicing in another state.

Summary of Public Comments and Agency's Response: No public comments were received by the promulgating agency.

18VAC105-20-5. Definitions.

The following words and terms when used in this chapter shall have the following meanings unless the context clearly indicates otherwise:

"Active clinical practice" means as an average of 20 hours per week or 640 hours per year of providing patient care.

"Adnexa" is defined as the conjoined, subordinate, or immediately associated anatomic parts of the human eye, including eyelids and eyebrows.

"Board" means the Virginia Board of Optometry.

"NBEO" means the National Board of Examiners in Optometry.

"TMOD" means the treatment and management of ocular disease portion of the NBEO examination.

"TPA" means therapeutic pharmaceutical agents.

"TPA certification" means authorization by the Virginia Board of Optometry for an optometrist to treat diseases and abnormal conditions of the human eye and its adnexa and to prescribe and administer certain therapeutic pharmaceutical agents.

18VAC105-20-10. ~~Licensure by examination~~ Requirements for licensure.

A. The applicant, in order to be eligible for licensure ~~by examination~~ to practice optometry in the Commonwealth, shall meet the requirements for TPA certification in 18VAC105-20-16 and shall:

1. Be a graduate of a school of optometry accredited by the Accreditation Council on Optometric Education or other accrediting body deemed by the board to be substantially equivalent; have an official transcript verifying graduation sent to the board;

2. Request submission of an official report from the NBEO of a score received on each required part of the NBEO examination or other board-approved examination; ~~and~~

3. Submit a completed application and the prescribed fee; and

4. Sign a statement attesting that the applicant has read, understands, and will comply with the statutes and regulations governing the practice of optometry in Virginia.

B. ~~Applicants who passed the National Board Examination prior to May 1985 shall apply for licensure by endorsement as provided for in 18VAC105-20-15~~ The board may waive the requirement of graduation from an accredited school of optometry for an applicant who holds a current, unrestricted license in another United States jurisdiction and has been engaged in active clinical practice for 36 out of the 60 months immediately preceding application for licensure in Virginia.

C. Required examinations. ~~1.~~ For the purpose of § 54.1-3211 of the Code of Virginia, the board adopts all parts of the NBEO examination as its written examination for licensure. After July 1, 1997, the board shall require passage as determined by the board of Parts I, II, and III of the NBEO examination, including passage of TMOD.

~~2. As part of the application for licensure, an applicant must sign a statement attesting that he has read, understands, and will comply with the statutes and regulations governing the practice of optometry in Virginia.~~

D. If an applicant has been licensed in another jurisdiction ~~and has not been engaged in active clinical practice for at least 36 out of the last 60 months preceding application, as required for licensure by endorsement, he may apply for licensure by examination, and,~~ the following requirements shall also apply:

1. The applicant shall attest that ~~he~~ the applicant is not a respondent in a pending or unresolved malpractice claim~~; and~~.

2. Each jurisdiction in which the applicant is or has been licensed shall verify that:

a. The license is current and unrestricted, or if the license has lapsed, it is eligible for reinstatement;

b. All continuing education requirements have been completed, if applicable;

c. The applicant is not a respondent in any pending or unresolved board action; and

d. The applicant has not committed any act that would constitute a violation of § 54.1-3204 or 54.1-3215 of the Code of Virginia.

~~E.~~ 3. An applicant ~~who completed all parts of the board-approved examination more than five years prior to the date of the board's receipt of his application for licensure may be required to take up to 32 hours of board-approved continuing education~~ licensed in another jurisdiction who has not been engaged in active practice within the 12 months immediately preceding application for licensure in Virginia shall be required to complete 20 hours of continuing education as specified in 18VAC105-20-70.

4. In the case of a federal service optometrist, the commanding officer shall also verify that the applicant is in good standing.

18VAC105-20-15. ~~Licensure by endorsement.~~ (Repealed.)

~~A. An applicant for licensure by endorsement shall meet the requirements for TPA certification in 18VAC105-20-16, pay the fee as prescribed in 18VAC105-20-20, and file a completed application that certifies the following:~~

~~1. The applicant has successfully passed the examination required for licensure in optometry in any jurisdiction of the United States at the time of initial licensure.~~

~~2. The applicant has been engaged in active clinical practice for at least 36 months out of the last 60 months immediately preceding application.~~

~~3. The applicant is not a respondent in a pending or unresolved malpractice claim.~~

~~4. The applicant is currently licensed in another jurisdiction of the United States.~~

~~5. Each jurisdiction in which the applicant is or has been licensed shall verify that:~~

~~a. The license is current and unrestricted, or if the license has lapsed, it is eligible for reinstatement;~~

~~b. All continuing education requirements have been completed, if applicable;~~

~~c. The applicant is not a respondent in any pending or unresolved board action;~~

~~d. The applicant has not committed any act that would constitute a violation of § 54.1-3204 or 54.1-3215 of the Code of Virginia; and~~

~~e. The applicant has graduated from an accredited school or college of optometry.~~

~~B. The applicant shall also provide proof of competency in the use of diagnostic pharmaceutical agents (DPAs) that shall consist of a report from the national board of passing scores on all sections of Parts I and II of the NBEO examination taken in May 1985 or thereafter. If the applicant does not qualify through examination, he shall provide other proof of meeting the requirements for the use of DPA as provided in §§ 54.1-3220 and 54.1-3221 of the Code of Virginia.~~

~~C. As part of the application for licensure, an applicant must sign a statement attesting that he has read, understands, and will comply with the statutes and regulations governing the practice of optometry in Virginia.~~

~~D. In the case of a federal service optometrist, the commanding officer shall also verify that the applicant is in~~

~~good standing and provide proof of credentialing and quality assurance review to satisfy compliance with applicable requirements of subsection A of this section.~~

~~E. An optometrist previously licensed in Virginia is not eligible for licensure by endorsement but may apply for reinstatement of licensure under 18VAC105-20-60.~~

18VAC105-20-16. Requirements for TPA certification.

A. An applicant for licensure shall meet the following requirements for TPA certification:

1. Complete a full-time, postgraduate or equivalent graduate-level optometric training program that is approved by the board and that shall include a minimum of 20 hours of clinical supervision by an ophthalmologist; and

2. ~~Take and pass~~ Submit a passing score on the TPA certification examination, which shall be ~~Treatment and Management of Ocular Disease (TMOD) of the NBEO~~ TMOD or~~, if~~ be TPA-certified by ~~a state examination, provide evidence of comparability to the NBEO examination that is~~ an examination satisfactory to the board.

B. A candidate for certification by the board who fails the examination as required in subdivision A 2 of this section, following three attempts, shall complete additional postgraduate training as determined by the board to be eligible for TPA certification.

18VAC105-20-20. Fees.

A. Required fees.

Initial application and licensure (including TPA certification)	$250
~~Application for TPA certification~~	~~$200~~
Annual licensure renewal without TPA certification	$150
Annual licensure renewal with TPA certification	$200
Late renewal without TPA certification	$50
Late renewal with TPA certification	$65
Returned check	$35
Professional designation application	$100
Annual professional designation renewal (per location)	$50
Late renewal of professional designation	$20
Reinstatement application fee (including renewal and late fees)	$400
Reinstatement application after disciplinary action	$500
Duplicate wall certificate	$25
Duplicate license	$10
Licensure verification	$10

B. Unless otherwise specified, all fees are nonrefundable.

C. From October 31, 2018, to December 31, 2018, the following fees shall be in effect:

Annual licensure renewal without TPA certification	$75
Annual licensure renewal with TPA certification	$100
Annual professional designation renewal (per location)	$25

18VAC105-20-40. Standards of conduct.

The board has the authority to ~~deny,~~ refuse to issue or renew a license, suspend, revoke, or otherwise discipline a licensee for a violation of the following standards of conduct. A licensed optometrist shall:

1. Use in connection with the optometrist's name wherever it appears relating to the practice of optometry one of the following: the word "optometrist," the abbreviation "O.D.," or the words "doctor of optometry."

2. ~~Disclose to~~ Notify the board of any disciplinary action taken by a regulatory body in another jurisdiction.

3. Post in an area of the optometric office [~~which~~ that] is conspicuous to the public, a chart or directory listing the names of all optometrists practicing at that particular location.

4. Maintain patient records, perform procedures or make recommendations during any eye examination, contact lens examination or treatment as necessary to protect the health and welfare of the patient and consistent with requirements of 18VAC105-20-45.

5. Notify patients in the event the practice is to be terminated or relocated, giving a reasonable time period within which the patient or an authorized representative can request in writing that the records or copies be sent to any other like-regulated provider of the patient's choice or destroyed in compliance with requirements of § 54.1-2405 of the Code of Virginia on the transfer of patient records in conjunction with closure, sale, or relocation of practice.

6. Ensure his access to the practice location during hours in which the practice is closed in order to be able to properly evaluate and treat a patient in an emergency.

7. Provide for continuity of care in the event of an absence from the practice or, in the event the optometrist chooses to terminate the practitioner-patient relationship or make his services unavailable, document notice to the patient that

allows for a reasonable time to obtain the services of another practitioner.

8. Comply with the provisions of § 32.1-127.1:03 of the Code of Virginia related to the confidentiality and disclosure of patient records and related to the provision of patient records to another practitioner or to the patient or his personal representative.

9. Treat or prescribe based on a bona fide practitioner-patient relationship consistent with criteria set forth in § 54.1-3303 of the Code of Virginia. A licensee shall not prescribe a controlled substance to himself or a family member other than Schedule VI as defined in § 54.1-3455 of the Code of Virginia. When treating or prescribing for self or family, the practitioner shall maintain a patient record documenting compliance with statutory criteria for a bona fide practitioner-patient relationship.

10. Comply with provisions of statute or regulation, state or federal, relating to the diversion, distribution, dispensing, prescribing, or administration of controlled substances as defined in § 54.1-3401 of the Code of Virginia.

11. Not enter into a relationship with a patient that constitutes a professional boundary violation in which the practitioner uses his professional position to take advantage of the vulnerability of a patient or his family to include~~, but not be limited to,~~ actions that result in personal gain at the expense of the patient, a nontherapeutic personal involvement, or sexual conduct with a patient. The determination of when a person is a patient is made on a case-by-case basis with consideration given to the nature, extent, and context of the professional relationship between the practitioner and the person. The fact that a person is not actively receiving treatment or professional services from a practitioner is not determinative of this issue. The consent to, initiation of, or participation in sexual behavior or involvement with a practitioner by a patient does not change the nature of the conduct nor negate the prohibition.

12. Cooperate with the board or its representatives in providing information or records as requested or required pursuant to an investigation or the enforcement of a statute or regulation.

13. Not practice with an expired or unregistered professional designation.

14. Not violate or cooperate with others in violating any of the provisions of Chapters 1 (§ 54.1-100 et seq.), 24 (§ 54.1-2400 et seq.) or 32 (§ 54.1-3200 et seq.) of Title 54.1 of the Code of Virginia or regulations of the board.

18VAC105-20-45. Standards of practice.

A. An optometrist shall legibly document in a patient record the following:

1. During a routine or medical eye examination:

a. An adequate case history, including the patient's chief complaint;

b. The performance of appropriate testing;

c. The establishment of an assessment or diagnosis; and

d. A recommendation for an appropriate treatment or management plan, including any necessary follow up.

2. During an initial contact lens examination:

a. The requirements of a routine or medical eye examination as prescribed in subdivision 1 of this subsection;

b. Assessment of corneal curvature;

c. Evaluation of contact lens fitting;

d. Acuity through the lens; and

e. Directions for the wear, care, and handling of lenses.

3. During a follow-up contact lens examination:

a. Evaluation of contact lens fitting and anterior segment health;

b. Acuity through the lens; and

c. Such further instructions as necessary for the individual patient.

4. In addition, the record of any examination shall include the signature of the attending optometrist and, if indicated, refraction of the patient.

B. The following information shall appear on a prescription for ophthalmic goods:

1. The printed name of the prescribing optometrist;

2. The address and telephone number at which the patient's records are maintained and the optometrist can be reached for consultation;

3. The name of the patient;

4. The signature of the optometrist;

5. The date of the examination ~~and an expiration date, if medically appropriate~~; ~~and~~

6. If an expiration date is placed on a prescription for ophthalmic goods, the date shall not be less than one year unless the medical reason for a shorter expiration date is documented in the patient record; and

7. Any special instructions.

C. Contact lens.

1. Sufficient information for complete and accurate filling of an established contact lens prescription shall include ~~but~~

~~not be limited to~~ (i) the power, (ii) the material or manufacturer or both, (iii) the base curve or appropriate designation, (iv) the diameter when appropriate, and (v) medically appropriate expiration date.

2. An optometrist shall provide a patient with a copy of the patient's contact lens prescription at the end of the contact lens fitting, even if the patient does not ask for it. An optometrist may first require all fees to be paid, but only if he requires immediate payment from patients whose eye examinations reveal no need for corrective eye products.

3. An optometrist shall provide or verify the prescription to anyone who is designated to act on behalf of the patient, including contact lens sellers.

4. An optometrist shall not require patients to buy contact ~~lens~~ lenses, pay additional fees, or sign a waiver or release in exchange for a copy of the contact lens prescription.

5. An optometrist shall not disclaim liability or responsibility for the accuracy of an eye examination.

D. Spectacle lens.

1. A licensed optometrist shall provide a written prescription for spectacle lenses immediately after the eye examination is completed. He may first require all fees to be paid, but only if he requires immediate payment from patients whose eye examinations reveal no need for corrective eye products.

2. An optometrist shall not require patients to buy ophthalmic goods, pay additional fees, or sign a waiver or release in exchange for a copy of the spectacle prescription.

3. An optometrist shall not disclaim liability or responsibility for the accuracy of an eye examination.

E. Practitioners shall maintain a patient record for a minimum of ~~five~~ six years following the last patient encounter with the following exceptions:

1. Records that have previously been transferred to another practitioner or health care provider or provided to the patient or his personal representative; or

2. Records that are required by contractual obligation or federal law to be maintained for a longer period of time.

F. Practitioners shall post information or in some manner inform all patients concerning the time frame for record retention and destruction. Patient records shall only be destroyed in a manner that protects patient confidentiality.

G. For the purpose of prescribing spectacles, eyeglasses, lenses, or contact lenses to a patient, a licensee shall establish a bona fide provider-patient relationship in accordance with requirements of § 54.1-2400.01:2 of the Code of Virginia.

18VAC105-20-46. Treatment guidelines for TPA-certified optometrists.

A. TPA-certified optometrists may treat diseases and abnormal conditions of the human eye and its adnexa that may be treated with medically appropriate pharmaceutical agents as referenced in 18VAC105-20-47. ~~The adnexa is defined as conjoined, subordinate or immediately associated anatomic parts of the human eye, including eyelids and eyebrows.~~

B. In addition, the following may be treated:

1. Glaucoma (excluding the treatment of congenital and infantile glaucoma). Treatment of angle closure shall follow the definition and protocol prescribed in subsection C of this section.

2. Ocular-related post-operative care in cooperation with patient's surgeon.

3. Ocular trauma to the above tissues as in subsection A of this section.

4. Uveitis.

5. Anaphylactic shock (limited to the administration of intramuscular epinephrine).

C. The definition and protocol for treatment of angle closure glaucoma shall be as follows:

1. As used in this chapter, angle closure glaucoma shall mean a closed angle in the involved eye with significantly increased intraocular pressure, and corneal microcystic edema;

2. Treatment shall be limited to the initiation of immediate emergency care with appropriate pharmaceutical agents as prescribed by this chapter;

3. Once the diagnosis of angle closure glaucoma has been established by the optometrist, the ophthalmologist to whom the patient is to be referred should be contacted immediately;

4. If there are no medical contraindications, an oral osmotic agent may be administered as well as an oral carbonic anhydrase inhibitor and any other medically accepted, Schedule III, IV or VI, oral antiglaucomic agent as may become available; and

5. Proper topical medications as appropriate may also be administered by the optometrist.

D. An oral Schedule VI immunosuppressive agent shall only be used when (i) the condition fails to appropriately respond to any other treatment regimen; (ii) such agent is prescribed in consultation with a physician; and (iii) treatment with such agent includes monitoring of systemic effects.

18VAC105-20-47. Therapeutic pharmaceutical agents.

A. A TPA-certified optometrist, acting within the scope of his practice, may procure, administer and prescribe medically appropriate therapeutic pharmaceutical agents (or any therapeutically appropriate combination thereof) to treat diseases and abnormal conditions of the human eye and its adnexa within the following categories:

1. Oral analgesics - Schedule II controlled substances consisting of hydrocodone in combination with acetaminophen andSchedule III, IV and VI narcotic and nonnarcotic agents.

2. Topically administered Schedule VI agents:

a. Alpha-adrenergic blocking agents;

b. Anesthetic (including esters and amides);

c. Anti-allergy (including antihistamines and mast cell stabilizers);

d. Anti-fungal;

e. Anti-glaucoma (including carbonic anhydrase inhibitors and hyperosmotics);

f. Anti-infective (including antibiotics and antivirals);

g. Anti-inflammatory;

h. Cycloplegics and mydriatics;

i. Decongestants; and

j. Immunosuppressive agents.

3. Orally administered Schedule VI agents:

a. Aminocaproic acids (including antifibrinolytic agents);

b. Anti-allergy (including antihistamines and leukotriene inhibitors);

c. Anti-fungal;

d. Anti-glaucoma (including carbonic anhydrase inhibitors and hyperosmotics);

e. Anti-infective (including antibiotics and antivirals);

f. Anti-inflammatory (including steroidal and nonsteroidal);

g. Decongestants; and

h. Immunosuppressive agents.

B. Schedule I~~, II~~ and V drugs and Schedule II drugs with the exception of controlled substances consisting of hydrocodone in combination with acetaminophen are excluded from the list of therapeutic pharmaceutical agents.

C. Over-the-counter topical and oral medications for the treatment of the eye and its adnexa may be procured for administration, administered, prescribed or dispensed.

18VAC105-20-60. Renewal of licensure; reinstatement; renewal fees.

A. Every person authorized by the board to practice optometry shall, on or before December 31 of 2018, submit a completed renewal form and pay the prescribed annual licensure fee. Beginning with calendar year 2020, the renewal of licensure deadline shall be March 31 of each year. For calendar year 2019, no renewal is required.

B. It shall be the duty and responsibility of each licensee to assure that the board has the licensee's current address of record and the public address, if different from the address of record. All changes of address or name shall be furnished to the board within 30 days after the change occurs. All notices required by law or by these rules and regulations are to be deemed to be validly tendered when mailed to the address of record given and shall not relieve the licensee of the obligation to comply.

C. The license of every person who does not complete the renewal form and submit the renewal fee each year may be renewed for up to one year by paying the prescribed renewal fee and late fee, provided the requirements of 18VAC105-20-70 have been met. After the renewal deadline, a license that has not been renewed is lapsed. Practicing optometry in Virginia with a lapsed license may subject the licensee to disciplinary action ~~and additional fines by the board~~.

D. An optometrist whose license has been lapsed for more than one year and who wishes to resume practice in Virginia shall apply for reinstatement. The executive director may grant reinstatement provided that:

1. The applicant ~~can demonstrate continuing competence~~ has a current, unrestricted license in another United States jurisdiction and has been engaged in active clinical practice within the 12 months immediately preceding application for reinstatement; or

2. The applicant has satisfied current requirements for continuing education as specified in 18VAC105-20-70 for the period in which the license has been lapsed, not to exceed two years; and

3. The applicant has paid the prescribed reinstatement application fee.

~~E. The board may require an applicant who has allowed his license to expire and who cannot demonstrate continuing competency to pass all or parts of the board approved examinations.~~

18VAC105-20-70. Requirements for continuing education.

A. Each license renewal shall be conditioned upon submission of evidence to the board of 20 hours of continuing education taken by the applicant during the previous license period. A licensee who completes more than 20 hours of continuing education in a year shall be allowed to carry

forward up to 10 hours of continuing education for the next annual renewal cycle.

1. The 20 hours may include up to two hours of recordkeeping for patient care, including coding for diagnostic and treatment devices and procedures or the management of an optometry practice, provided that such courses are not primarily for the purpose of augmenting the licensee's income or promoting the sale of specific instruments or products.

2. For optometrists who are certified in the use of therapeutic pharmaceutical agents, at least 10 of the required continuing education hours shall be in the areas of ocular and general pharmacology, diagnosis and treatment of the human eye and its adnexa, including treatment with new pharmaceutical agents, or new or advanced clinical devices, techniques, modalities, or procedures.

3. At least 10 hours shall be obtained through real-time, interactive activities, including in-person or electronic presentations, provided that during the course of the presentation, the licensee and the lecturer may communicate with one another.

4. A licensee may also include up to two hours of training in cardiopulmonary resuscitation (CPR).

5. Two hours of the 20 hours required for annual renewal may be satisfied through delivery of professional services, without compensation, to low-income individuals receiving health services through a local health department or a free clinic organized in whole or primarily for the delivery of those services. One hour of continuing education may be credited for three hours of providing such volunteer services, as documented by the health department or free clinic.

B. Each licensee shall attest to fulfillment of continuing education hours on the required annual renewal form. All continuing education shall be completed prior to the renewal deadline unless an extension ~~or waiver~~ has been granted by the Continuing Education Committee. A request for an extension ~~or waiver~~ shall be received prior to the renewal deadline each year.

C. All continuing education courses shall be offered by an approved sponsor or accrediting body listed in subsection ~~G~~ H of this section. Courses that are not approved by a board-recognized sponsor in advance shall not be accepted for continuing education credit. For those courses that have a post-test requirement, credit will only be given if the optometrist receives a passing grade as indicated on the certificate.

D. Licensees shall maintain continuing education documentation for a period of not less than three years. A random audit of licensees may be conducted by the board which will require that the licensee provide evidence substantiating participation in required continuing education courses within ~~14~~ 30 days of the ~~renewal date~~ audit notification.

E. Documentation of hours shall clearly indicate the name of the continuing education provider and its affiliation with an approved sponsor or accrediting body as listed in subsection ~~G~~ H of this section. Documents that do not have the required information shall not be accepted by the board for determining compliance. Correspondence courses shall be credited according to the date ~~on which the post-test was graded as~~ indicated on the continuing education certificate.

F. A licensee shall be exempt from the continuing competency requirements for the first renewal following the date of initial licensure by examination in Virginia.

G. The board may grant an exemption for all or part of the requirements for circumstances beyond the control of the licensee, such as temporary disability, mandatory military service, or officially declared disasters.

H. An approved continuing education course or program, whether offered by correspondence, electronically or in person, shall be sponsored, accredited, or approved by one of the following:

1. The American Optometric Association and its constituent organizations.

2. Regional optometric organizations.

3. State optometric associations and their affiliate local societies.

4. Accredited colleges and universities providing optometric or medical courses.

5. The American Academy of Optometry and its affiliate organizations.

6. The American Academy of Ophthalmology and its affiliate organizations.

7. The Virginia Academy of Optometry.

8. Council on Optometric Practitioner Education (COPE).

9. State or federal governmental agencies.

10. College of Optometrists in Vision Development.

11. The Accreditation Council for Continuing Medical Education of the American Medical Association for Category 1 credit.

12. Providers of training in cardiopulmonary resuscitation (CPR).

13. Optometric Extension Program.

~~H.~~ I. In order to ~~maintain approval~~ receive credit for continuing education courses, ~~providers or sponsors~~ a licensee shall submit a certificate that shows:

1. ~~Provide a certificate of attendance that shows the~~ The date, location, presenter or lecturer, content hours of the course and contact information of the provider or sponsor for verification. The certificate of attendance shall be based on verification by the sponsor of the attendee's presence throughout the course, either provided by a post-test or by a designated monitor.

2. ~~Maintain documentation about the course and attendance for at least three years following its completion.~~ Whether the course was in real-time and interactive, including in-person or electronic presentations.

I. Falsifying the attestation of compliance with continuing education on a renewal form or failure to comply with continuing education requirements may subject a licensee to disciplinary action by the board, consistent with § 54.1-3215 of the Code of Virginia.

VA.R. Doc. No. R17-5114; Filed October 15, 2019, 3:40 p.m.

BOARD OF PHARMACY

Proposed Regulation

Title of Regulation: **18VAC110-20. Regulations Governing the Practice of Pharmacy (amending 18VAC110-20-275).**

Statutory Authority: §§ 54.1-2400 and 54.1-3307 of the Code of Virginia.

Public Hearing Information:

December 3, 2019 - 9:10 a.m. - Perimeter Center, 9960 Mayland Drive, Suite 201, Board Room 4, Richmond, VA 23233

Public Comment Deadline: January 10, 2020.

Agency Contact: Caroline Juran, RPh, Executive Director, Board of Pharmacy, 9960 Mayland Drive, Suite 300, Richmond, VA 23233-1463, telephone (804) 367-4456, FAX (804) 527-4472, or email caroline.juran@dhp.virginia.gov.

Basis: Section 54.1-2400 of the Code of Virginia provides the Board of Pharmacy the authority to promulgate regulations to administer the regulatory system. Section 54.1-3307 of the Code of Virginia authorizes the board to regulate the dispensing of prescription drugs.

Purpose: The purpose of the proposed regulatory action is to address patient safety concerns relating to brown bagging and white bagging. Specific requirements for notification and patient information to the receiving pharmacy or alternative delivery site of the shipment will better ensure appropriate coordination of patient care in white bagging. Requiring appropriate storage and security for a shipped product will protect public health and safety. The prohibition on delivering drugs to a patient's residence for administration, if the drug requires special storage, reconstitution, or compounding, will protect patients and the entities responsible for the integrity of the drug administered.

Substance: At the 2016 annual meeting of the National Association of Boards of Pharmacy (NABP), the membership authorized a study of "white bagging" and "brown bagging." A copy of the report may be viewed at https://nabp.pharmacy/wp-content/uploads/2018/04/White-Bagging-and-Brown-Bagging-Report-2018_Final.pdf.

Based on the NABP report and the expertise of pharmacist members of the board and the pharmacy benefits manager workgroup, the board proposes regulations:

1. Requiring the specialty pharmacy participating in white bagging to notify the receiving pharmacy or alternative delivery site of the shipment to ensure appropriate coordination of patient care;

2. Requiring the pharmacy to provide to the receiving pharmacy an estimated arrival date, to provide the name of the patient to whom the drug has been dispensed, and to provide the exact address where the product has been shipped;

3. Requiring appropriate storage and security for a shipped product; and

4. Prohibiting delivery to a patient's residence of any drug that requires special storage, reconstitution, or compounding prior to administration is intended and that will be subsequently transported by the patient for administration.

Issues: The advantage to the public is less risk of a drug that requires special storage or has a short shelf life will be delivered to a pharmacy or other entity without preparations in place to receive that drug. There are no disadvantages.

There are no advantages or disadvantages to this agency or the Commonwealth.

Department of Planning and Budget's Economic Impact Analysis:

Summary of the Proposed Amendments to Regulation. Under specified circumstances, the Board of Pharmacy (Board) proposes to ease burdens related to the delivery of prescription drugs from a pharmacy to an alternative delivery site. The alternative delivery site may be another pharmacy, a practitioner of the healing arts licensed to practice pharmacy or to sell controlled substances, or an authorized person or entity holding a controlled substances registration. The Board also proposes to prohibit delivering dispensed drugs to a patient's residence that are intended to be subsequently transported by the patient or patient's agent to a hospital, medical clinic, prescriber's office, or pharmacy for administration if the drugs require special storage, reconstitution or compounding prior to administration.

Result of Analysis. The benefits likely exceed the costs for one or more proposed changes. For other amendments,

whether the benefits exceed the costs depend on the policy views of the observer.

Estimated Economic Impact.

Background:

In addition to direct hand delivery to a patient or patient's agent or delivery to a patient's residence, under specified conditions a pharmacy may deliver a dispensed prescription drug order for Schedule VI controlled substances to another pharmacy, to a practitioner of the healing arts licensed to practice pharmacy or to sell controlled substances, or to an authorized person or entity holding a controlled substances registration issued for this purpose in compliance with this section and any other applicable state or federal law. Prescription drug orders for Schedule II through Schedule V controlled substances may not be delivered to an alternate delivery location, unless such delivery is authorized by federal law and regulations of the Board.

When the delivery is to another pharmacy, the two pharmacies must have the same owner, or have a written contract or agreement specifying the services to be provided by each pharmacy, the responsibilities of each pharmacy (including counseling, return of any prescription medications not delivered to the patient, etc.), and the manner in which each pharmacy will comply with all applicable federal and state law. When the delivery is to a practitioner of the healing arts licensed by the Board to practice pharmacy or to sell controlled substances or another authorized person or entity holding a controlled substances registration authorized for this purpose, there must be a written contract or agreement between the two parties describing the procedures for such a delivery system and the responsibilities of each party. According to the Department of Health Professions, sometimes this is impractical or causes delay in the delivery of a medication that a patient needs. If a specialty drug is needed, the pharmacy benefits manager or insurer may require that the drug be obtained from a specialty pharmacy or the pharmacy to which the prescription is sent may not carry that drug.

Proposals:

The Board proposes to permit deliveries from a pharmacy to an alternative delivery site without the detailed written contract or same ownership if the alternate delivery site does not routinely receive deliveries from the pharmacy and producing and agreeing to the contract and paperwork details would create a delay in delivery that may result in potential patient harm. The pharmacy would be required to notify the alternate delivery site of the anticipated arrival date of the shipment, the exact address to where the drug was shipped, the name of the patient for whom the drug was dispensed, and any special storage requirements. Similar to current requirements, 1) the pharmacy would have to provide counseling or ensure a process is in place for the patient to receive counseling, 2) prescriptions delivered to the alternate delivery site would have to be stored in a lockable room or lockable cabinet, cart, or other device that cannot be easily moved and that shall be locked at all times when not in use, and 3) the pharmacy would have to provide a procedure for the return of any prescription drugs not delivered or subsequently administered to the patient.

This proposed amendment may substantially reduce delays in some patients receiving needed medications. Consequently, it may produce large health benefits. Given the safety procedures accompanying the proposal, it seems unlikely that there would be an increase in health risk. Thus, the benefits very likely exceed the costs.

The Board also proposes to prohibit delivering dispensed drugs to a patient's residence that are intended to be subsequently transported by the patient or patient's agent to a hospital, medical clinic, prescriber's office, or pharmacy for administration if the drugs require special storage, reconstitution or compounding prior to administration. The proposed language includes an exception for patients with hemophilia who may require emergent blood factor treatment.

When drugs require special storage, reconstitution or compounding, there is increased risk that they may become ineffective or dangerous if not handled properly. Prohibiting the delivery of such drugs to a patient's residence that are intended to be subsequently transported as described above would likely reduce the occurrences where drugs that become ineffective or dangerous due to mishandling are administered to patients. This is beneficial. On the other hand, there may be circumstances where such delivery is the most practical way for certain patients to quickly receive needed treatment. The Board has recognized this by providing the exemption for patients with hemophilia. There may be other patients for which this is true who are not exempted by the proposal. In addition, some individuals may believe that they should not be prevented from taking their own informed risks.

Businesses and Entities Affected. The proposed amendments potentially affect the 1,813 pharmacies, practitioners of the healing arts licensed to practice pharmacy or to sell controlled substances, authorized persons or entities holding a controlled substances registration, and patients.

Localities Particularly Affected. The proposed amendments do not disproportionately affect particular localities.

Projected Impact on Employment. The proposed amendments are unlikely to substantially affect employment.

Effects on the Use and Value of Private Property. The proposal to permit deliveries from a pharmacy to an alternative delivery site without a detailed written contract may reduce costs for small firms involved. This may modestly increase their value.

Real Estate Development Costs. The proposed amendments do not affect real estate development costs.

Small Businesses:

Definition. Pursuant to § 2.2-4007.04 of the Code of Virginia, small business is defined as "a business entity, including its affiliates, that (i) is independently owned and operated and (ii) employs fewer than 500 full-time employees or has gross annual sales of less than $6 million."

Costs and Other Effects. The proposal to permit deliveries from a pharmacy to an alternative delivery site without a detailed written contract may reduce costs for small firms involved.

Alternative Method that Minimizes Adverse Impact. The proposed amendments do not adversely affect small businesses.

Adverse Impacts:

Businesses. The proposed amendments do not adversely affect businesses.

Localities. The proposed amendments do not adversely affect localities.

Other Entities. The proposed amendments do not adversely affect other entities.

Agency's Response to Economic Impact Analysis: The Board of Pharmacy concurs with the analysis of the Department of Planning and Budget.

Summary:

The proposed amendments (i) require the specialty pharmacy participating in white bagging to notify the receiving pharmacy or alternative delivery site of the shipment to ensure appropriate coordination of patient care; (ii) require the pharmacy to provide to the receiving pharmacy an estimated arrival date, to provide the name of the patient to whom the drug has been dispensed, and to provide the exact address where the product has been shipped; (iii) require appropriate storage and security for a shipped product; and (iv) prohibit delivery to a patient's residence of any drug that requires special storage, reconstitution, or compounding prior to administration is intended and that will be subsequently transported by the patient for administration.

18VAC110-20-275. Delivery of dispensed prescriptions.

A. Pursuant to § 54.1-3420.2 B of the Code of Virginia, in addition to direct hand delivery to a patient or patient's agent or delivery to a patient's residence, a pharmacy may deliver a dispensed prescription drug order for Schedule VI controlled substances to another pharmacy, to a practitioner of the healing arts licensed to practice pharmacy or to sell controlled substances, or to an authorized person or entity holding a controlled substances registration issued for this purpose in compliance with this section and any other applicable state or federal law. Prescription drug orders for Schedule II through Schedule V controlled substances may not be delivered to an alternate delivery location unless such delivery is authorized by federal law and regulations of the board.

B. Delivery to another pharmacy.

1. One pharmacy may fill prescriptions and deliver the prescriptions to a second pharmacy for patient pickup or direct delivery to the patient provided the two pharmacies have the same owner, or have a written contract or agreement specifying the services to be provided by each pharmacy, the responsibilities of each pharmacy, and the manner in which each pharmacy will comply with all applicable federal and state law.

2. Each pharmacy using such a drug delivery system shall maintain and comply with all procedures in a current policy and procedure manual that includes the following information:

a. A description of how each pharmacy will comply with all applicable federal and state law;

b. The procedure for maintaining required, retrievable dispensing records to include which pharmacy maintains the hard-copy prescription, which pharmacy maintains the active prescription record for refilling purposes, how each pharmacy will access prescription information necessary to carry out its assigned responsibilities, method of recordkeeping for identifying the pharmacist ~~or pharmacists~~ responsible for dispensing the prescription and counseling the patient, and how and where this information can be accessed upon request by the board;

c. The procedure for tracking the prescription during each stage of the filling, dispensing, and delivery process;

d. The procedure for identifying on the prescription label all pharmacies involved in filling and dispensing the prescription;

e. The policy and procedure for providing adequate security to protect the confidentiality and integrity of patient information;

f. The policy and procedure for ensuring accuracy and accountability in the delivery process;

g. The procedure and recordkeeping for returning to the initiating pharmacy any prescriptions that are not delivered to the patient; and

h. The procedure for informing the patient and obtaining consent for using such a dispensing and delivery process.

3. Drugs waiting to be picked up at or delivered from the second pharmacy shall be stored in accordance with subsection A of 18VAC110-20-200.

C. Delivery to a practitioner of the healing arts licensed by the board to practice pharmacy or to sell controlled substances or other authorized person or entity holding a controlled substances registration authorized for this purpose.

1. A prescription may be delivered by a pharmacy to the office of such a practitioner or other authorized person provided there is a written contract or agreement between the two parties describing the procedures for such a delivery system and the responsibilities of each party.

2. Each pharmacy using this delivery system shall maintain a policy and procedure manual that includes the following information:

a. Procedure for tracking and assuring security, accountability, integrity, and accuracy of delivery for the dispensed prescription from the time it leaves the pharmacy until it is handed to the patient or agent of the patient;

b. Procedure for providing counseling;

c. Procedure and recordkeeping for return of any prescription medications not delivered to the patient;

d. The procedure for assuring confidentiality of patient information; and

e. The procedure for informing the patient and obtaining consent for using such a delivery process.

3. Prescriptions waiting to be picked up by a patient at the alternate site shall be stored in a lockable room or lockable cabinet, cart, or other device that cannot be easily moved and that shall be locked at all times when not in use. Access shall be restricted to the licensed practitioner of the healing arts or the responsible party listed on the application for the controlled substances registration, or either person's designee.

D. The contracts or agreements and the policy and procedure manuals required by this section for alternate delivery shall be maintained both at the originating pharmacy as well as the alternate delivery site.

E. A controlled substances registration as an alternate delivery site shall only be issued to an entity without a prescriber or pharmacist present at all times the site is open if there is a valid patient health or safety reason not to deliver dispensed prescriptions directly to the patient and if compliance with all requirements for security, policies, and procedures can be reasonably assured.

F. The pharmacy and alternate delivery site shall be exempt from compliance with subsections B through E of this section if (i) the alternate delivery site is a pharmacy, a practitioner of healing arts licensed by the board to practice pharmacy or sell controlled substances, or other entity holding a controlled substances registration for the purpose of delivering controlled substances; (ii) the alternate delivery site does not routinely receive deliveries from the pharmacy; and (iii) compliance with subsections B through E of this section would create a delay in delivery that may result in potential patient harm. However, the pharmacy and alternate delivery site shall comply with following requirements:

1. To ensure appropriate coordination of patient care, the pharmacy shall notify the alternate delivery site of the anticipated arrival date of the shipment, the exact address to where the drug was shipped, the name of the patient for whom the drug was dispensed, and any special storage requirements.

2. The pharmacy shall provide counseling or ensure a process is in place for the patient to receive counseling.

3. Prescriptions delivered to the alternate delivery site shall be stored in a lockable room or lockable cabinet, cart, or other device that cannot be easily moved and that shall be locked at all times when not in use. Access shall be restricted to the licensed prescriber, pharmacist, or either person's designee.

4. The pharmacy shall provide a procedure for the return of any prescription drugs not delivered or subsequently administered to the patient.

G. A pharmacy shall not deliver dispensed drugs to a patient's residence that are intended to be subsequently transported by the patient or patient's agent to a hospital, medical clinic, prescriber's office, or pharmacy for administration and that require special storage, reconstitution or compounding prior to administration. An exception to this requirement may be made for patients with hemophilia who may require emergent blood factor treatment.

VA.R. Doc. No. R18-5376; Filed October 23, 2019, 11:42 a.m.

BOARD OF PHARMACY

Final Regulation

REGISTRAR'S NOTICE: The Board of Pharmacy is claiming an exemption from Article 2 of the Administrative Process Act in accordance with § 2.2-4006 A 13 of the Code of Virginia, which exempts amendments to regulations of the board to schedule a substance in Schedule I or II pursuant to subsection D of § 54.1-3443 of the Code of Virginia. The board will receive, consider, and respond to petitions by any interested person at any time with respect to reconsideration or revision.

Title of Regulation: **18VAC110-20. Regulations Governing the Practice of Pharmacy (amending 18VAC110-20-322).**

Statutory Authority: §§ 54.1-2400 and 54.1-3433 of the Code of Virginia.

Effective Date: December 11, 2019.

Agency Contact: Caroline Juran, RPh, Executive Director, Board of Pharmacy, 9960 Mayland Drive, Suite 300,

Richmond, VA 23233-1463, telephone (804) 367-4456, FAX (804) 527-4472, or email caroline.juran@dhp.virginia.gov.

Summary:

The amendments add nine compounds into Schedule I of the Drug Control Act as recommended by the Department of Forensic Science pursuant to § 54.1-3443 of the Code of Virginia. The compounds added by regulatory action will remain in effect for 18 months or until the compounds are placed in Schedule I by legislative action of the General Assembly.

18VAC110-20-322. Placement of chemicals in Schedule I.

~~A. Pursuant to subsection D of § 54.1-3443 of the Code of Virginia, the Board of Pharmacy places the following in Schedule I of the Drug Control Act:~~

~~1. 2-(methylamino)-2-phenyl-cyclohexanone (other name: Deschloroketamine), its optical, position, and geometric isomers, salts, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.~~

~~2. 2-methyl-1-(4-(methylthio)phenyl)-2-morpholinopropiophenone (other name: MMMP), its optical, position, and geometric isomers, salts, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.~~

~~3. Alpha-ethylaminohexanophenone (other name: N-ethylhexedrone), its optical, position, and geometric isomers, salts, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.~~

~~4. N-ethyl-1-(3-methoxyphenyl)cyclohexylamine (other name: 3-methoxy-PCE), its optical, position, and geometric isomers, salts, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.~~

~~5. 4-fluoro-alpha-pyrrolidinohexiophenone (other name: 4-fluoro-alpha-PHP), its optical, position, and geometric isomers, salts, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.~~

~~6. N-ethyl-1,2-diphenylethylamine (other name: Ephenidine), its optical, position, and geometric isomers, salts, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.~~

~~7. Synthetic opioids:~~

~~a. N-phenyl-N-[1-(2-phenylethyl)-4-piperidinyl]-1,3-benzodioxole-5-carboxamide (other name: Benzodioxole fentanyl), its isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, unless specifically excepted, whenever the existence of these isomers, esters, ethers, and salts is possible within the specific chemical designation.~~

~~b. 3,4-dichloro-N-[2-(diethylamino)cyclohexyl]-N-methylbenzamide (other name: U-49900), its isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, unless specifically excepted, whenever the existence of these isomers, esters, ethers, and salts is possible within the specific chemical designation.~~

~~c. 2-(2,4-dichlorophenyl)-N-[2-(dimethylamino) cyclohexyl]-N-methylacetamide (other name: U-48800), its isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, unless specifically excepted, whenever the existence of these isomers, esters, ethers, and salts is possible within the specific chemical designation.~~

~~8. Central nervous system stimulants:~~

~~a. Methyl-2-(4-fluorophenyl)-2-(2-piperidinyl)acetate (other name: 4-fluoromethylphenidate), including its salts, isomers, and salts of isomers.~~

~~b. Isopropyl-2-phenyl-2-(2-piperidinyl)acetate (other name: Isopropylphenidate), including its salts, isomers, and salts of isomers.~~

~~The placement of drugs listed in this subsection shall remain in effect until August 21, 2019, unless enacted into law in the Drug Control Act.~~

~~B. Pursuant to subsection D of § 54.1-3443 of the Code of Virginia, the Board of Pharmacy places the following in Schedule I of the Drug Control Act:~~

~~1. Research chemicals:~~

~~a. 2-(ethylamino)-2-phenyl-cyclohexanone (other name: deschloro-N-ethyl-ketamine), its optical, position, and geometric isomers, salts, and salts of isomers, whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.~~

~~b. 3,4-methylenedioxy-N-tert-butylcathinone, its optical, position, and geometric isomers, salts, and salts of isomers, whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.~~

~~c. 4-fluoro-N-ethylamphetamine, its optical, position, and geometric isomers, salts, and salts of isomers, whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.~~

~~d. Beta-keto-4-bromo-2,5-dimethoxyphenethylamine (other name: bk-2C-B), its optical, position, and geometric isomers, salts, and salts of isomers, whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.~~

2. Synthetic opioids:

a. N phenyl N [1 (2 phenylethyl) 4 piperidinyl] 2butenamide (other name: Crotonyl fentanyl), its isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, unless specifically excepted, whenever the existence of these isomers, esters, ethers, and salts is possible within the specific chemical designation.

b. 2 (3,4 dichlorophenyl) N [2 (dimethylamino) cyclohexyl] N methylacetamide (other name: U 51754), its isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, unless specifically excepted, whenever the existence of these isomers, esters, ethers, and salts is possible within the specific chemical designation.

c. N phenyl N [4 phenyl 1 (2 phenylethyl) 4piperidinyl] propanamide (other name: 4phenylfentanyl), its isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, unless specifically excepted, whenever the existence of these isomers, esters, ethers, and salts is possible within the specific chemical designation.

The placement of drugs listed in this subsection shall remain in effect until December 12, 2019, unless enacted into law in the Drug Control Act.

C. Pursuant to subsection D of § 54.1 3443 of the Code of Virginia, the Board of Pharmacy places the following in Schedule I of the Drug Control Act:

1. 2,5 dimethoxy 4 chloroamphetamine (other name: DOC), its optical, position, and geometric isomers, salts, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.

2. Synthetic opioids:

a. N (2 fluorophenyl) 2 methoxy N [1 (2 phenylethyl) 4 piperidinyl] acetamide (other name: Ocfentanil), its isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, unless specifically excepted, whenever the existence of these isomers, esters, ethers, and salts is possible within the specific chemical designation.

b. N (4 methoxyphenyl) N [1 (2 phenylethyl) 4 piperidinyl] butanamide (other name: 4 methoxybutyrylfentanyl), its isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, unless specifically excepted, whenever the existence of these isomers, esters, ethers, and salts is possible within the specific chemical designation.

c. N phenyl 2 methyl N [1 (2 phenylethyl) 4 piperidinyl] propanamide (other name: Isobutyryl fentanyl), its isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, unless specifically excepted, whenever the existence of these isomers, esters, ethers, and salts is possible within the specific chemical designation.

d. N phenyl N [1 (2 phenylethyl) 4 piperidinyl] cyclopentanecarboxamide (other name: Cyclopentyl fentanyl), its isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, unless specifically excepted, whenever the existence of these isomers, esters, ethers, and salts is possible within the specific chemical designation.

e. N phenyl N (1 methyl 4 piperidinyl) propanamide (other name: N methyl norfentanyl), its isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, unless specifically excepted, whenever the existence of these isomers, esters, ethers, and salts is possible within the specific chemical designation.

3. Cannabimimetic agent: 1 (4 cyanobutyl) N (1 methyl 1 phenylethyl) 1H indazole 3 carboxamide (other name: 4 cyano CUMYL BUTINACA), its salts, isomers, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.

4. Benzodiazepine: Flualprazolam, its salts, isomers, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.

The placement of drugs listed in this subsection shall remain in effect until March 4, 2020, unless enacted into law in the Drug Control Act.

D. Pursuant to subsection D of § 54.1 3443 of the Code of Virginia, the Board of Pharmacy places the following in Schedule I of the Drug Control Act:

1. Synthetic opioid: N [2 (dimethylamino)cyclohexyl] N methyl 1,3 benzodioxole 5 carboxamide (other names: 3,4 methylenedioxy U 47700 or 3,4 MDO U 47700), its isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, unless specifically excepted, whenever the existence of these isomers, esters, ethers, and salts is possible within the specific chemical designation.

2. Cannabimimetic agent: N (adamantanyl) 1 (5 chloropentyl) indazole 3 carboxamide (other name: 5 chloro AKB48), its salts, isomers, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.

The placement of drugs listed in this subsection shall remain in effect until May 27, 2020, unless enacted into law in the Drug Control Act.

E. A. Pursuant to subsection D of § 54.1-3443 of the Code of Virginia, the Board of Pharmacy places the following in Schedule I of the Drug Control Act:

1. Synthetic opioid: N-phenyl-N-[1-(2-phenylethyl)-4-piperidinyl]-benzamide (other names: Phenyl fentanyl, Benzoyl fentanyl), its isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, unless specifically excepted, whenever the existence of these isomers, esters, ethers, and salts is possible within the specific chemical designation.

2. Research chemicals:

a. 4-acetyloxy-N,N-diallyltryptamine (other name: 4-AcO-DALT), its optical, position, and geometric isomers, salts, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.

b. 4-chloro-N,N-dimethylcathinone, its optical, position, and geometric isomers, salts, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.

c. 4-hydroxy-N,N-methylisopropyltryptamine (other name: 4-hydroxy-MiPT), its optical, position, and geometric isomers, salts, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.

d. 3,4-Methylenedioxy-alpha-pyrrolidinohexanophenone (other name: MDPHP), its optical, position, and geometric isomers, salts, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.

3. Cannabimimetic agent: Methyl 2-[1-(5-fluoropentyl)-1H-indole-3-carboxamido]-3,3-dimethylbutanoate (other name: 5-Fluoro-MDMB-PICA), its salts, isomers, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.

The placement of drugs listed in this subsection shall remain in effect until October 2, 2020, unless enacted into law in the Drug Control Act.

~~F.~~ B. Pursuant to subsection D of § 54.1-3443 of the Code of Virginia, the Board of Pharmacy places the following in Schedule I of the Drug Control Act:

1. 3,4-dichloro-N-[2-(dimethylamino)cyclohexyl]-N-isopropyl-benzamide (other name: Isopropyl U-47700), its isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, unless specifically excepted, whenever the existence of these isomers, esters, ethers, and salts is possible within the specific chemical designation.

2. Alpha-pyrrolidinoisohexiophenone (other name: alpha-PiHP), its optical, position, and geometric isomers, salts, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.

3. 1-[1-(3-hydroxyphenyl)cyclohexyl]piperidine (other name: 3-hydroxy PCP), its optical, position, and geometric isomers, salts, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.

The placement of drugs listed in this subsection shall remain in effect until December 25, 2020, unless enacted into law in the Drug Control Act.

C. Pursuant to subsection D of § 54.1-3443 of the Code of Virginia, the Board of Pharmacy places the following in Schedule I of the Drug Control Act:

1. Synthetic opioids.

a. N-[2-(dimethylamino)cyclohexyl]-N-phenylfuran-2-carboxamide (other name: Furanyl UF-17), its isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, unless specifically excepted, whenever the existence of these isomers, esters, ethers, and salts is possible within the specific chemical designation.

b. N-[2-(dimethylamino)cyclohexyl]-N-phenylpropionamide (other name: UF-17), its isomers, esters, ethers, salts, and salts of isomers, esters, and ethers, unless specifically excepted, whenever the existence of these isomers, esters, ethers, and salts is possible within the specific chemical designation.

2. Research chemicals.

a. 5-methoxy-N,N-dibutyltryptamine (other name: 5-methoxy-DBT), its optical, position, and geometric isomers, salts, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.

b. 1-(1,3-benzodioxol-5-yl)-2-(ethylamino)-1-butanone (other name: Eutylone, bk-EBDB), its optical, position, and geometric isomers, salts, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.

c. 1-(1,3-benzodioxol-5-yl)-2-(butylamino)-1-pentanone (other name: N-butylpentylone), its optical, position, and geometric isomers, salts, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.

d. N-benzyl-3,4-dimethoxyamphetamine (other name: N-benzyl-3,4-DMA), its optical, position, and geometric isomers, salts, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.

e. 3,4-methylenedioxy-N-benzylcathinone (other name: BMDP), its optical, position, and geometric isomers, salts, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.

3. Cannabimimetic agents.

a. Ethyl 2-({1-[(4-fluorophenyl)methyl]-1H-indazole-3-carbonyl}amino)-3-methylbutanoate (other name: EMB-FUBINACA), its salts, isomers, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.

b. Methyl 2-[1-4-fluorobutyl)-1H-indazole-3-carboxamido]-3,3-dimethylbutanoate (other name: 4-fluoro-MDMB-BUTINACA), its salts, isomers, and salts of isomers whenever the existence of such salts, isomers, and salts of isomers is possible within the specific chemical designation.

The placement of drugs listed in this subsection shall remain in effect until June 10, 2021, unless enacted into law in the Drug Control Act.

VA.R. Doc. No. R20-6087; Filed October 18, 2019, 1:39 p.m.

Final Regulation

Titles of Regulations: **18VAC110-15. Regulations for Delegation to an Agency Subordinate (adding 18VAC110-15-10).**

18VAC110-20. Regulations Governing the Practice of Pharmacy (amending 18VAC110-20-10, 18VAC110-20-20, 18VAC110-20-25, 18VAC110-20-110, 18VAC110-20-140, 18VAC110-20-150, 18VAC110-20-180, 18VAC110-20-200, 18VAC110-20-211, 18VAC110-20-220, 18VAC110-20-240, 18VAC110-20-270, 18VAC110-20-280, 18VAC110-20-290, 18VAC110-20-355, 18VAC110-20-390, 18VAC110-20-425, 18VAC110-20-470, 18VAC110-20-490, 18VAC110-20-530, 18VAC110-20-550, 18VAC110-20-580, 18VAC110-20-680; adding 18VAC110-20-112; repealing 18VAC110-20-15, 18VAC110-20-21, 18VAC110-20-22, 18VAC110-20-30 through 18VAC110-20-106).

18VAC110-21. Regulations Governing the Licensure of Pharmacists and Registration of Pharmacy Technicians (adding 18VAC110-21-10 through 18VAC110-21-180).

18VAC110-50. Regulations Governing Wholesale Distributors, Manufacturers, and Warehousers (amending 18VAC110-50-40, 18VAC110-50-60, 18VAC110-50-80).

Statutory Authority: §§ 54.1-2400 and 54.1-3307 of the Code of Virginia.

Effective Date: December 11, 2019.

Agency Contact: Caroline Juran, RPh, Executive Director, Board of Pharmacy, 9960 Mayland Drive, Suite 300, Richmond, VA 23233-1463, telephone (804) 367-4456, FAX (804) 527-4472, or email caroline.juran@dhp.virginia.gov.

Summary:

The amendments (i) move the provision regarding the delegation of informal fact-finding proceedings from Regulations Governing the Practice of Pharmacy (18VAC110-20) into a new chapter, Regulations for Delegation to an Agency Subordinate (18VAC110-15); (ii) move the provisions relating to the licensure of pharmacists and registration of pharmacy technicians from 18VAC110-20 into a new regulatory chapter, Regulations Governing the Licensure of Pharmacists and Registration of Pharmacy Technicians (18VAC110-21); (iii) incorporate provisions currently found in guidance documents into 18VAC110-20 and into Regulations Governing Wholesale Distributors, Manufacturers, and Warehousers (18VAC-110-50); and (iv) clarify practice requirements.

Changes to the proposed regulation modify several provisions in 18VAC20-110, reduce the required number of live continuing education hours for a pharmacist in 18VAC110-21-120, and update forms for each chapter.

Summary of Public Comments and Agency's Response: A summary of comments made by the public and the agency's response may be obtained from the promulgating agency or viewed at the office of the Registrar of Regulations.

CHAPTER 15
REGULATIONS FOR DELEGATION TO AN AGENCY SUBORDINATE

18VAC110-15-10. Criteria for delegation of informal fact-finding proceeding to an agency subordinate.

A. Decision to delegate. In accordance with subdivision 10 of § 54.1-2400 of the Code of Virginia, the board may delegate an informal fact-finding proceeding to an agency subordinate upon determination that probable cause exists that a practitioner or an entity may be subject to a disciplinary action.

B. Criteria for delegation. Cases that may not be delegated to an agency subordinate, except as may be approved by a committee of the board, include those that involve:

1. Intentional or negligent conduct that causes or is likely to cause injury to a patient;

2. Drug diversion;

3. Impairment with an inability to practice with skill and safety;

4. Indiscriminate dispensing; and

5. Medication error in administration or dispensing.

C. Criteria for an agency subordinate.

1. An agency subordinate authorized by the board to conduct an informal fact-finding proceeding may include board members and professional staff or other persons deemed knowledgeable by virtue of their training and experience in administrative proceedings involving the regulation and discipline of health professionals.

2. The executive director shall maintain a list of appropriately qualified persons to whom an informal fact-finding proceeding may be delegated.

3. The board may delegate to the executive director the selection of the agency subordinate who is deemed appropriately qualified to conduct a proceeding based on the qualifications of the subordinate and the type of case being heard.

Part I
General Provisions

18VAC110-20-10. Definitions.

In addition to words and terms defined in §§ 54.1-3300 and 54.1-3401 of the Code of Virginia, the following words and terms when used in this chapter shall have the following meanings, unless the context clearly indicates otherwise:

~~"ACPE" means the Accreditation Council for Pharmacy Education.~~

"Acquisition" of an existing entity permitted, registered, or licensed by the board means (i) the purchase or transfer of all or substantially all of the assets of the entity or of any corporation that owns or controls the entity; (ii) the creation of a partnership by a sole proprietor or change in partnership composition; (iii) the acquiring of 50% or more of the outstanding shares of voting stock of a corporation owning the entity or of the parent corporation of a wholly owned subsidiary owning the entity, except that this shall not apply to any corporation the voting stock of which is actively traded on any securities exchange or in any over-the-counter market; or (iv) the merger of a corporation owning the entity~~,~~ or of the parent corporation of a wholly owned subsidiary owning the entity~~,~~ with another business or corporation.

"Actively reports" means reporting all dispensing errors and analyses of such errors to a patient safety organization as soon as practical or at least within 30 days of identifying the error.

"Alternate delivery site" means a location authorized in 18VAC110-20-275 to receive dispensed prescriptions on behalf of and for further delivery or administration to a patient.

"Analysis" means a review of the findings collected and documented on each dispensing error, assessment of the cause and any factors contributing to the dispensing error, and any recommendation for remedial action to improve pharmacy systems and workflow processes to prevent or reduce future errors.

"Authorized collector" means a narcotic treatment program, hospital~~,~~ or clinic with an on-site pharmacy, or pharmacy that is authorized by the U.S. Drug Enforcement Administration to receive drugs ~~from an ultimate user, a person lawfully entitled to dispose of an ultimate user decedent's property, or a long term care facility on behalf of an ultimate user who resides or has resided at that facility~~ for the purpose of destruction.

"Beyond-use date" means the date beyond which the integrity of a compounded, repackaged, or dispensed drug can no longer be assured and as such is deemed to be adulterated or misbranded as defined in §§ 54.1-3461 and 54.1-3462 of the Code of Virginia.

"Board" means the Virginia Board of Pharmacy.

~~"CE" means continuing education as required for renewal of licensure by the Board of Pharmacy.~~

~~"CEU" means a continuing education unit awarded for credit as the equivalent of 10 contact hours.~~

"Chart order" means a lawful order for a drug or device entered on the chart or in a medical record of a patient by a prescriber or the prescriber's designated agent.

"Compliance packaging" means packaging for dispensed drugs that is comprised of a series of containers for solid oral dosage forms and designed to assist the user in administering or self-administering the drugs in accordance with directions for use.

~~"Contact hour" means the amount of credit awarded for 60 minutes of participation in and successful completion of a continuing education program.~~

"Correctional facility" means any prison, penitentiary, penal facility, jail, detention unit, or other facility in which persons are incarcerated by government officials.

"DEA" means the U.S. Drug Enforcement Administration.

"Dispensing error" means one or more of the following discovered after the final verification by the pharmacist, regardless of whether the patient received the drug:

1. Variation from the prescriber's prescription drug order, including:

a. Incorrect drug;

b. Incorrect drug strength;

c. Incorrect dosage form;

d. Incorrect patient; or

e. Inadequate or incorrect packaging, labeling, or directions.

2. Failure to exercise professional judgment in identifying and managing:

a. Known therapeutic duplication;

b. Known drug-disease contraindications;

c. Known drug-drug interactions;

d. Incorrect drug dosage or duration of drug treatment;

e. Known drug-allergy interactions;

f. A clinically significant, avoidable delay in therapy; or

g. Any other significant, actual, or potential problem with a patient's drug therapy.

3. Delivery of a drug to the incorrect patient.

4. Variation in bulk repackaging or filling of automated devices, including:

a. Incorrect drug;

b. Incorrect drug strength;

c. Incorrect dosage form; or

d. Inadequate or incorrect packaging or labeling.

"Drug donation site" means a permitted pharmacy that specifically registers with the board for the purpose of receiving or redispensing eligible donated prescription drugs pursuant to § 54.1-3411.1 of the Code of Virginia.

"Electronic prescription" means a written prescription that is generated on an electronic application and is transmitted to a pharmacy as an electronic data file; Schedules II through V prescriptions shall be transmitted in accordance with 21 CFR Part 1300 ~~and is transmitted to a pharmacy as an electronic data file~~.

"EMS" means emergency medical services.

"Expiration date" means that date placed on a drug package by the manufacturer or repacker beyond which the product may not be dispensed or used.

~~"Facsimile (FAX)~~ "Faxed prescription" means a written prescription or order that is transmitted by an electronic device that sends over telephone lines the exact image to the receiver (pharmacy) in a hard copy form.

"FDA" means the U.S. Food and Drug Administration.

"Floor stock" means a supply of drugs that have been distributed for the purpose of general administration by a prescriber or other authorized person pursuant to a valid order of a prescriber.

~~"Foreign school of pharmacy" means a school outside the United States and its territories offering a course of study in basic sciences, pharmacology, and pharmacy of at least four years in duration resulting in a degree that qualifies a person to practice pharmacy in that country.~~

"Forgery" means a prescription that was falsely created, falsely signed, or altered.

~~"FPGEC certificate" means the certificate given by the Foreign Pharmacy Equivalency Committee of NABP that certifies that the holder of such certificate has passed the Foreign Pharmacy Equivalency Examination and a credential review of foreign training to establish educational equivalency to board approved schools of pharmacy, and has passed approved examinations establishing proficiency in English.~~

"Generic drug name" means the nonproprietary name listed in the United States Pharmacopeia-National Formulary (USP-NF) or in the United States Adopted Names (USAN) and the USP Dictionary of Drug Names.

"Hospital" or "nursing home" means those facilities as defined in Title 32.1 of the Code of Virginia or as defined in regulations by the Virginia Department of Health.

~~"Inactive license" means a license that is registered with the Commonwealth but does not entitle the licensee to practice, the holder of which is not required to submit documentation of CE necessary to hold an active license.~~

"Initials" means the first letters of a person's name or other unique personal identifier.

"Long-term care facility" means a nursing home, retirement care, mental care, or other facility or institution that provides extended health care to resident patients.

"NABP" means the National Association of Boards of Pharmacy.

"Nuclear pharmacy" means a pharmacy providing radiopharmaceutical services.

"On duty" means that a pharmacist is on the premises at the address of the permitted pharmacy and is available as needed.

"On-hold prescription" means a valid prescription that is received and maintained at the pharmacy for initial dispensing on a future date.

"Patient safety organization" means an organization that has as its primary mission continuous quality improvement under the Patient Safety and Quality Improvement Act of 2005 (P.L. 109-41) and is credentialed by the Agency for Healthcare Research and Quality.

"Permitted physician" means a physician who is licensed pursuant to § 54.1-3304 of the Code of Virginia to dispense drugs to persons to whom or for whom pharmacy services are not reasonably available.

"Perpetual inventory" means an ongoing system for recording quantities of drugs received, dispensed, or otherwise distributed by a pharmacy.

"Personal supervision" means the pharmacist must be physically present and render direct, personal control over the entire service being rendered or act being performed. Neither prior nor future instructions shall be sufficient nor shall supervision rendered by telephone, written instructions, or by any mechanical or electronic methods be sufficient.

"Pharmacy closing" means that the permitted pharmacy ceases pharmacy services or fails to provide for continuity of pharmacy services or lawful access to patient prescription records or other required patient records for the purpose of continued pharmacy services to patients.

~~"Pharmacy technician trainee" means a person who is currently enrolled in an approved pharmacy technician training program and is performing duties restricted to pharmacy technicians for the purpose of obtaining practical experience in accordance with § 54.1-3321 D of the Code of Virginia.~~

"PIC" means the pharmacist-in-charge of a permitted pharmacy.

"Practice location" means any location in which a prescriber evaluates or treats a patient.

"Prescription department" means any contiguous or noncontiguous areas used for the compounding, dispensing, and storage of all ~~Schedule~~ Schedules II through VI drugs and devices and any Schedule I investigational ~~drugs~~ drug.

~~"PTCB" means the Pharmacy Technician Certification Board, co-founded by the American Pharmaceutical Association and the American Society of Health-System Pharmacists, as the national organization for voluntary examination and certification of pharmacy technicians.~~

"Quality assurance plan" means a plan approved by the board for ongoing monitoring, measuring, evaluating, and, if necessary, improving the performance of a pharmacy function or system.

"Radiopharmaceutical" means any drug that exhibits spontaneous disintegration of unstable nuclei with the emission of nuclear particles or photons and includes any nonradioactive reagent kit or radionuclide generator that is intended to be used in the preparation of any such substance~~,~~ but does not include drugs such as carbon-containing compounds or potassium-containing salts that include trace quantities of naturally occurring radionuclides. The term also includes any biological product that is labeled with a radionuclide or intended solely to be labeled with a radionuclide.

"Repackaged drug" means any drug removed from the manufacturer's original package and placed in different packaging.

"Robotic pharmacy system" means a mechanical system controlled by a computer that performs operations or activities relative to the storage, packaging, compounding, labeling, dispensing, or distribution of medications~~,~~ and collects, controls, and maintains all transaction information.

"Safety closure container" means a container that meets the requirements of the federal Poison Prevention Packaging Act of 1970 (15 USC §§ 1471-1476), that is, in testing such containers, that 85% of a test group of 200 children of ages 41-52 months are unable to open the container in a five-minute period and that 80% fail in another five minutes after a demonstration of how to open it and that 90% of a test group of 100 adults must be able to open and close the container.

"Satellite pharmacy" means a pharmacy that is noncontiguous to the centrally permitted pharmacy of a hospital but at the location designated on the pharmacy permit.

"Special packaging" means packaging that is designed or constructed to be significantly difficult for children younger than five years of age to open to obtain a toxic or harmful amount of the drug contained therein within a reasonable time and not difficult for normal adults to use properly~~,~~ but does not mean packaging that all such children cannot open or obtain a toxic or harmful amount within a reasonable time.

"Special use permit" means a permit issued to conduct a pharmacy of a special scope of service that varies in any way from the provisions of any board regulation.

"Storage temperature" means those specific directions stated in some monographs with respect to the temperatures at which pharmaceutical articles shall be stored, where it is considered that storage at a lower or higher temperature may produce undesirable results. The conditions are defined by the following terms:

1. "Cold" means any temperature not exceeding 8°C (46°F). A refrigerator is a cold place in which temperature is maintained thermostatically between 2° and 8°C (36° and 46°F). A freezer is a cold place in which the temperature is controlled between -25° and -10°C (-13° and 14°F). In those instances in which articles may have a recommended storage condition below -20°C (-4°F), the temperature of the storage location should be controlled to plus or minus 10 degrees.

2. "Room temperature" means the temperature prevailing in a working area.

3. "Controlled room temperature" means a temperature maintained thermostatically that encompasses the usual and customary working environment of 20° to 25°C (68° to 77°F); that results in a mean kinetic temperature calculated to be not more than 25°C (77°F); and that allows for excursions between 15° and 30°C (59° and 86°F) that are experienced in pharmacies, hospitals, and warehouses.

4. "Warm" means any temperature between 30° and 40°C (86° and 104°F).

5. "Excessive heat" means any temperature above 40°C (104°F).

6. "Protection from freezing" means where, in addition to the risk of breakage of the container, freezing subjects a product to loss of strength or potency~~,~~ or to the destructive alteration of its characteristics, the container label bears an appropriate instruction to protect the product from freezing.

7. "Cool" means any temperature between 8° and 15°C (46° and 59°F).

"Terminally ill" means a patient with a terminal condition as defined in § 54.1-2982 of the Code of Virginia.

"Ultimate user" means a person who has lawfully obtained, and who possesses, a controlled substance for his own use or for the use of a member of his household or for an animal owned by him or a member of his household.

"Unit dose container" means a container that is a single-unit container, as defined in United States Pharmacopeia-National Formulary, for articles intended for administration by other than the parenteral route as a single dose, direct from the container.

"Unit dose package" means a container that contains a particular dose ordered for a patient.

"Unit dose system" means a system in which multiple drugs in unit dose packaging are dispensed in a single container, such as a medication drawer or bin, labeled only with patient name and location. Directions for administration are not provided by the pharmacy on the drug packaging or container but are obtained by the person administering directly from a prescriber's order or medication administration record.

"USP-NF" means the United States Pharmacopeia-National Formulary.

"Well-closed container" means a container that protects the contents from extraneous solids and from loss of the drug under the ordinary or customary conditions of handling, shipment, storage, and distribution.

18VAC110-20-15. ~~Criteria for delegation of informal fact-finding proceedings to an agency subordinate.~~ (Repealed.)

~~A. Decision to delegate. In accordance with § 54.1-2400 (10) of the Code of Virginia, the board may delegate an informal fact-finding proceeding to an agency subordinate upon determination that probable cause exists that a practitioner may be subject to a disciplinary action.~~

~~B. Criteria for delegation. Cases that may not be delegated to an agency subordinate, except as may be approved by a committee of the board, include those that involve:~~

~~1. Intentional or negligent conduct that causes or is likely to cause injury to a patient;~~

~~2. Drug diversion;~~

~~3. Impairment with an inability to practice with skill and safety;~~

~~4. Indiscriminate dispensing; and~~

~~5. Medication error in administration or dispensing.~~

~~C. Criteria for an agency subordinate.~~

~~1. An agency subordinate authorized by the board to conduct an informal fact-finding proceeding may include board members and professional staff or other persons deemed knowledgeable by virtue of their training and experience in administrative proceedings involving the regulation and discipline of health professionals.~~

~~2. The executive director shall maintain a list of appropriately qualified persons to whom an informal fact-finding proceeding may be delegated.~~

~~3. The board may delegate to the executive director the selection of the agency subordinate who is deemed appropriately qualified to conduct a proceeding based on the qualifications of the subordinate and the type of case being heard.~~

18VAC110-20-20. Fees.

A. Unless otherwise provided, fees listed in this section shall not be refundable.

~~B. Unless otherwise provided, any fees for taking required examinations shall be paid directly to the examination service as specified by the board.~~

~~C.~~ B. Initial application fees.

~~1. Pharmacist license~~	~~$180~~
~~2. Pharmacy intern registration~~	~~$15~~
~~3. Pharmacy technician registration~~	~~$25~~
~~4.~~ 1. Pharmacy permit	$270
~~5.~~ 2. Permitted physician licensed to dispense drugs	$270
~~6.~~ 3. Medical equipment supplier permit	$180
~~7. Humane society permit~~	~~$20~~
~~8.~~ 4. Outsourcing facility permit	$270
~~9.~~ 5. Nonresident pharmacy registration	$270
~~10.~~ 6. Nonresident outsourcing facility registration	$270
~~11.~~ 7. Controlled substances registrations	$90
~~12.~~ 8. Innovative program approval.	$250

If the board determines that a technical consultant is required in order to make a decision on approval, any consultant fee, not to exceed the actual cost, shall also be paid by the applicant in addition to the application fee.

~~13. Approval of a pharmacy technician training program~~ ~~$150~~

~~14. Approval of a continuing education program~~ ~~$100~~

~~15.~~ 9. Approval of a repackaging training program $50

~~D.~~ C. Annual renewal fees.

~~1. Pharmacist active license – due no later than December 31~~ ~~$90~~

~~2. Pharmacist inactive license – due no later than December 31~~ ~~$45~~

~~3. Pharmacy technician registration – due no later than December 31~~ ~~$25~~

~~4.~~ 1. Pharmacy permit – due no later than April 30 $270

~~5.~~ 2. Physician permit to practice pharmacy – due no later than February 28 $270

~~6.~~ 3. Medical equipment supplier permit – due no later than February 28 $180

~~7. Humane society permit – due no later than February 28~~ ~~$20~~

~~8.~~ 4. Outsourcing facility permit – due no later than April 30 $270

~~9.~~ 5. Nonresident pharmacy registration – due no later than the date of initial registration $270

~~10.~~ 6. Nonresident outsourcing facility registration – due no later than the date of initial registration $270

~~11.~~ 7. Controlled substances registrations – due no later than February 28 $90

~~12.~~ 8. Innovative program continued approval based on board order not to exceed $200 per approval period.

~~13. Approval of a pharmacy technician training program~~ ~~$75 every two years~~

~~14. Approval of a repackaging~~ 9. Repackaging training program $30 every two years

~~E.~~ D. Late fees. The following late fees shall be paid in addition to the current renewal fee to renew an expired ~~license~~ permit or registration within one year of the expiration date ~~or within two years in the case of a pharmacy technician training program~~. In addition, engaging in activities requiring a ~~license,~~ permit~~,~~ or registration after the expiration date of such ~~license,~~ permit~~,~~ or registration shall be grounds for disciplinary action by the board.

~~1. Pharmacist license~~ ~~$30~~

~~2. Pharmacist inactive license~~ ~~$15~~

~~3. Pharmacy technician registration~~ ~~$10~~

~~4.~~ 1. Pharmacy permit $90

~~5.~~ 2. Physician permit to practice pharmacy $90

~~6.~~ 3. Medical equipment supplier permit $60

~~7. Humane society permit~~ ~~$5~~

~~8.~~ 4. Outsourcing facility permit $90

~~9.~~ 5. Nonresident pharmacy registration $90

~~10.~~ 6. Nonresident outsourcing facility registration $90

~~11.~~ 7. Controlled substances registrations $30

~~12. Approval of a pharmacy technician training program~~ ~~$15~~

~~13. Approval of a repackaging~~ 8. Repackaging training program $10

~~F.~~ E. Reinstatement fees.

1. Any person or entity attempting to renew a ~~license,~~ permit~~,~~ or registration more than one year after the expiration date~~, or more than two years after the expiration date in the case of a pharmacy technician training program,~~ shall submit an application for reinstatement with any required fees. Reinstatement is at the discretion of the board and, except for reinstatement following ~~license~~ revocation or suspension, may be granted by the executive director of the board upon completion of an application and payment of any required fees.

~~1. Pharmacist license~~ ~~$210~~

~~2. Pharmacist license after revocation or suspension~~ ~~$500~~

~~3. Pharmacy technician registration~~ ~~$35~~

~~4. Pharmacy technician registration after revocation or suspension~~ ~~$125~~

~~5.~~ 2. Facilities or entities that cease operation and wish to resume shall not be eligible for reinstatement but shall apply for a new permit or registration. Facilities or entities

that failed to renew and continued to operate for more than one renewal cycle shall pay the current and all back renewal fees for the years in which they were operating plus the following reinstatement fees:

a. Pharmacy permit	$240
b. Physician permit to practice pharmacy	$240
c. Medical equipment supplier permit	$210
~~d. Humane society permit~~	~~$30~~
~~e.~~ d. Outsourcing facility permit	$240
~~f.~~ e. Nonresident pharmacy registration	$115
~~g.~~ f. Nonresident outsourcing facility registration	$240
~~h.~~ g. Controlled substances registration	$180
~~i. Approval of a pharmacy technician training program~~	~~$75~~
~~j. Approval of a repackaging~~ h. Repackaging training program	$50

~~C.~~ F. Application for change or inspection fees for facilities or other entities.

1. Change of pharmacist-in-charge	$50
2. Change of ownership for any facility	$50
3. Inspection for remodeling or change of location for any facility	$150
4. Reinspection of any facility	$150
5. Board-required inspection for a robotic pharmacy system	$150
6. Board-required inspection of an innovative program location	$150
7. Change of pharmacist responsible for an approved innovative program	$25

~~H.~~ G. Miscellaneous fees.

~~1. Duplicate wall certificate~~	~~$25~~
~~2.~~ 1. Returned check	$35
~~3.~~ 2. Duplicate ~~license~~ permit or registration	$10
~~4.~~ 3. Verification of ~~licensure~~ permit or registration	$25

18VAC110-20-21. ~~Public address.~~ (Repealed.)

~~An individual licensed by or registered with the board who has provided the board with a public address that is different from the address of record shall notify the board in writing if there is a change in the address.~~

[18VAC110-20-22. ~~Application to include e-profile number.~~ (Repealed.)

~~An application for licensure as a pharmacist by examination or endorsement or for registration as a pharmacy intern or pharmacy technician shall include an e-profile number issued by NABP.~~]

18VAC110-20-25. Unprofessional conduct.

The following practices shall constitute unprofessional conduct within the meaning of § 54.1-3316 of the Code of Virginia:

1. Failing to comply with provisions of § 32.1-127.1:03 of the Code of Virginia related to the confidentiality and disclosure of patient records or related to provision of patient records to another practitioner or to the patient or ~~his~~ the patient's personal representative;

2. Willfully or negligently breaching the confidentiality of a patient unless otherwise required or permitted by applicable law;

3. Failing to maintain confidentiality of information received from the Prescription Monitoring Program, obtaining such information for reasons other than to assist in determining the validity of a prescription to be filled, or misusing information received from the program;

~~4. Engaging in disruptive or abusive behavior in a pharmacy or other health care setting that interferes with patient care or could reasonably be expected to adversely impact the quality of care rendered to a patient;~~

~~5. Engaging or attempting to engage in a relationship with a patient that constitutes a professional boundary violation in which the practitioner uses his professional position to take advantage of the vulnerability of a patient or his family, including but not limited to sexual misconduct with a patient or a member of his family or other conduct that results or could result in personal gain at the expense of the patient;~~

~~6.~~ 4. Failing to maintain adequate safeguards against diversion of controlled substances;

~~7.~~ 5. Failing to appropriately respond to a known dispensing error in a manner that protects the health and safety of the patient;

~~8.~~ 6. Delegating a task within the practice of pharmacy to a person who is not adequately trained to perform such a task;

~~9.~~ 7. Failing by the PIC to ensure that pharmacy interns and pharmacy technicians working in the pharmacy are registered and that such registration is current; ~~or~~

~~10. Failing to exercise professional judgment in determining whether a prescription meets requirements of law before dispensing~~

8. Obtaining money or property of a patient or client by fraud or misrepresentation;

9. Providing false information or failing to cooperate with an employee of the Department of Health Professions in the conduct on an investigation or inspection;

10. Violating any provision of this chapter or Chapter 33 (§ 54.1-3300 et seq.) or 34 (§ 54.1-3400 et seq.) of Title 54.1 of the Code of Virginia;

11. Performing any act likely to deceive, defraud, or harm the public; or

12. Having a restriction of a license, permit, or registration to practice in another jurisdiction in the United States.

~~Part II~~
~~Licensure Requirements for Pharmacists~~ (Repealed)

18VAC110-20-30. ~~Requirements for pharmacy practical experience.~~ (Repealed.)

~~A. Each applicant for licensure as a pharmacist shall have gained practical experience in the practice of pharmacy as set forth in this section and 18VAC110-20-40.~~

~~B. An applicant for licensure as a pharmacist shall attain a minimum of 1,500 hours of practical experience.~~

~~C. Practical experience that is gained within an ACPE-accredited school of pharmacy, that conforms to the current ACPE standards, and that allows the student to gain at least 1,500 hours of practical experience, shall meet the board's practical experience requirements for licensure as a pharmacist.~~

~~D. All practical experience credit gained outside of an ACPE-accredited school of pharmacy program shall only be gained after successful completion of the equivalent of at least two semesters in an ACPE-accredited school of pharmacy. Credit shall not be given for more than 50 hours in one week and not less than an average of 20 hours per week averaged over a month. The board may grant an exception to the minimum number of hours for good cause shown.~~

~~E. In accordance with § 54.1-3312 of the Code of Virginia, all practical experience required by this section shall be gained within the United States.~~

18VAC110-20-40. ~~Procedure for gaining practical experience.~~ (Repealed.)

~~A. Each person desiring to gain practical pharmacy experience in Virginia shall first register with the board as a pharmacy intern on a form provided by the board prior to becoming so engaged as a pharmacy intern. This requirement shall apply to any person gaining practical experience within the Commonwealth whether for licensure in Virginia or in another state.~~

~~B. In order to be eligible to register as a pharmacy intern, an applicant shall meet at least one of the following criteria:~~

~~1. The applicant shall be enrolled in and have started course work in a professional degree program of a board-approved school of pharmacy. Such registration is only valid while the student is enrolled in the school of pharmacy and is satisfactorily progressing toward meeting the requirements for licensure as a pharmacist. An expiration date shall be assigned to the registration to cover the estimated time period for the student to complete the school program and pass the required examinations. If the student is no longer enrolled in the school program, takes a voluntary break from the program, or is otherwise not actively participating in the school program, except for regularly scheduled school breaks, the registration is no longer valid and shall be returned to the board immediately;~~

~~2. The applicant is a graduate of a board approved school of pharmacy or a graduate of a foreign school of pharmacy, has established educational equivalency and proficiency in English by obtaining the FPGEC certificate, and desires to gain required practical experience required for licensure as a pharmacist. Such applicant shall provide documentation on a board approved form of current employment or an employment start date within 90 days in a pharmacy in Virginia with approval by the supervising pharmacist. An expiration date shall be assigned to cover the estimated time period needed to obtain the required practical experience hours and take the required examinations to become licensed as a pharmacist;~~

~~3. The applicant has already gained the required practical experience, but is an otherwise qualified applicant awaiting examination for licensure. A three month expiration date shall be assigned to allow the applicant time to take required examinations; or~~

~~4. The applicant is an applicant for reactivation or reinstatement of a previously issued pharmacist license and is meeting board requirements for relicensure. An expiration date shall be assigned to reasonably cover the period of time necessary to meet the board requirements.~~

~~C. For documented, good cause shown, the executive director of the board may extend the expiration date of the intern registration upon submission of an application form approved by the board and payment of the initial application fee.~~

~~D. A pharmacy intern shall be supervised by a pharmacist who holds a current, unrestricted license and assumes full responsibility for the training, supervision and conduct of the intern.~~

E. The intern registration of a pharmacy student shall be valid only while the student is enrolled in a school of pharmacy. The registration card issued by the board shall be returned to the board upon failure to be enrolled.

F. Practical experience gained within any other state must be registered with and certified by the board of that state in order to be accepted or certified by this board. In the event that a state relies on the pharmacy school to certify the hours of experience, an affidavit from the pharmacy school certifying the hours of experience gained in the United States may be accepted in lieu of board certification.

G. All practical experience of the pharmacy intern shall be evidenced by an affidavit approved by the board, which shall be filed prior to or with the application for examination for licensure.

H. An applicant for licensure by endorsement may provide verification acceptable to the board of practical experience hours worked as a pharmacist in another state within the United States in lieu of prelicensure intern hours in order to meet the practical experience requirement.

I. A pharmacy intern shall notify the board in writing of any change in address of record within 14 days of such change.

18VAC110-20-50. Curriculum and approved schools of pharmacy. (Repealed.)

A. The following minimum educational requirements for the specified periods shall be recognized by the board for the purpose of licensure.

1. On and after June 1, 1936, but before June 1, 1964, the applicant for licensure shall have been graduated from a four year course of study with a Bachelor of Science degree in pharmacy awarded.

2. On and after June 1, 1964, the applicant for licensure shall have been graduated from at least a five year course of study with a Bachelor of Science degree in pharmacy or a Doctorate of Pharmacy degree awarded.

B. In order to be licensed as a pharmacist within this Commonwealth, the applicant shall have been granted the first professional degree from a program of a school of pharmacy which meets the requirements of § 54.1-3312 of the Code of Virginia.

18VAC110-20-60. Content of the examination and grades required; limitation on admittance to examination. (Repealed.)

A. Prior to admission to any examination required for licensure, the applicant shall have met all other requirements to include education and practical experience requirements, but in no case shall the applicant be admitted if grounds exist to deny licensure under § 54.1-3316 of the Code of Virginia.

B. The applicant shall achieve a passing score as determined by the board on the licensure examination which is approved by the board and which shall consist of an integrated examination of pharmacy practice, pharmacology, pharmacy mathematics, and such other subjects as are necessary to assure that the candidate possesses the necessary knowledge and skills to practice pharmacy.

C. When an applicant for licensure by examination fails to meet the passing requirements of the board approved integrated pharmacy examination on three occasions, he shall not be readmitted to the examination until he has completed an additional 1,000 hours of practical experience as a pharmacy intern as set forth in 18VAC110-20-40.

D. The applicant shall also achieve a passing score as determined by the board on an examination that tests the candidate's knowledge of federal and state laws related to pharmacy practice.

E. When an applicant fails to pass the law examination, he shall not be allowed to retake it for a period of 30 days.

F. If an applicant requests a testing accommodation for either examination based on a physical or mental impairment that substantially limits one or more major life activities, subject to the Americans with Disabilities Act, the board may approve a reasonable accommodation that does not compromise the security or integrity of the examination.

1. Supporting documentation shall be provided by the applicant to include the following to be considered for review:

a. A letter of request from the candidate that specifies the testing accommodation requested;

b. A written report of an evaluation (educational, psychological, or physical) within the preceding two years from a qualified professional that states a diagnosis of the disability, describes the disability, recommends specific accommodations, and provides justification that the accommodation is appropriate and necessary for the diagnosed disability. If the comprehensive evaluation was done more than two years ago and the condition is one that is not subject to change, the original evaluation report may be submitted along with a current letter from the qualified professional stating that there has been no change in the condition since the time of the evaluation; and

c. A written statement from the appropriate person at the applicant's school of pharmacy that describes any testing accommodations made while the student was enrolled, if applicable.

2. The applicant will be notified in writing of the decision. If the request for accommodation is granted, the approval information will be forwarded to the examination

~~contractor and the form of the accommodation will be coordinated with the contractor.~~

18VAC110-20-70. ~~Requirements for foreign-trained applicants.~~ (Repealed.)

~~A. Applicants for licensure who were trained in foreign schools of pharmacy shall obtain the FPGEC certificate prior to being allowed to register as a pharmacy intern and gain required practical experience in Virginia.~~

~~B. After obtaining the FPGEC certificate, the applicant may apply for a pharmacy intern registration and shall fulfill the requirements for practical experience set forth in 18VAC110-20-30 and 18VAC110-20-40 before being admitted to examinations required by 18VAC110-20-60.~~

~~C. Applicants for licensure who were trained in foreign schools of pharmacy shall also complete and achieve passing scores on the examinations set forth in 18VAC110-20-60 before being licensed as a pharmacist.~~

18VAC110-20-75. ~~Registration for voluntary practice by out-of-state licensees.~~ (Repealed.)

~~Any pharmacist who seeks registration to practice on a voluntary basis pursuant to subdivision 12 of § 54.1-3301 of the Code of Virginia under the auspices of a publicly supported, all volunteer, nonprofit organization that sponsors the provision of health care to populations of underserved people shall:~~

~~1. File a complete application for registration on a form provided by the board at least five business days prior to engaging in such practice;~~

~~2. Provide a complete list of each state in which he has held a pharmacist license and a copy of any current license;~~

~~3. Provide the name of the nonprofit organization and the dates and location of the voluntary provision of services;~~

~~4. Pay a registration fee of $10; and~~

~~5. Provide a notarized statement from a representative of the nonprofit organization attesting to its compliance with the provisions of subdivision 12 of § 54.1-3301 of the Code of Virginia.~~

18VAC110-20-80. ~~Renewal and reinstatement of license.~~ (Repealed.)

~~A. Pharmacist licenses expire on December 31 and shall be renewed annually prior to that date by the submission of a renewal fee, renewal form, and statement of compliance with continuing education requirements.~~

~~B. A pharmacist newly licensed on or after October 1 shall not be required to renew that license until December 31 of the following year.~~

~~C. A pharmacist who fails to renew his license by the expiration date may renew his license at any time within one year of its expiration by submission of the renewal fee and late fee, renewal form, and statement of compliance with continuing education requirements.~~

~~D. A pharmacist who fails to renew his license for more than one year following expiration and who wishes to reinstate such license shall submit an application for reinstatement, pay the current renewal fee and a reinstatement fee, and submit documentation showing compliance with continuing education requirements. Reinstatement is at the discretion of the board and may be granted by the executive director of the board provided no grounds exist to deny said reinstatement.~~

~~E. A pharmacist who has been registered as inactive for more than one year must apply for reinstatement, submit documentation showing compliance with continuing education requirements, and pay the current year active renewal fee in order to resume active licensure.~~

~~F. In order to reactivate or reinstate a license to active status, a pharmacist who holds an inactive license, who has allowed his license to lapse, or who has had his license suspended or revoked must submit evidence of completion of CEU's or hours equal to the requirements for the number of years in which his license has not been active, not to exceed a total of 60 hours of CE.~~

~~G. A pharmacist whose license has been lapsed, in inactive status, or suspended or revoked for more than five years shall, as a condition of reinstatement in addition to 60 hours CE, take and receive a passing score on the board approved law examination and furnish acceptable documentation of one of the following:~~

~~1. Active pharmacy practice within the past five years as a properly licensed pharmacist in another state; or~~

~~2. Practical experience as a pharmacy intern registered with the board of at least 160 hours within six months immediately prior to being reinstated.~~

~~H. The practice of pharmacy without a current, active pharmacist license is unlawful and shall constitute grounds for disciplinary action by the board.~~

~~I. It shall be the duty and responsibility of each licensee to inform the board of his current address. A licensee shall notify the board within 14 days in writing or electronically of any change of an address of record. Properly updating address of record directly through the board's web-based application or other approved means shall constitute lawful notification. All notices required by law or by these rules and regulations are deemed to be legally given when mailed to the address of record and shall not relieve the licensee of the obligation to comply.~~

18VAC110-20-90. ~~Requirements for continuing education.~~ (Repealed.)

~~A. A pharmacist shall be required to have completed a minimum of 1.5 CEUs or 15 contact hours of continuing pharmacy education in an approved program for each annual renewal of licensure. CEUs or hours in excess of the number required for renewal may not be transferred or credited to another year.~~

~~B. A pharmacy education program approved for continuing pharmacy education is:~~

~~1. One that is approved by the Accreditation Council for Pharmacy Education (ACPE);~~

~~2. One that is approved as a Category I Continuing Medical Education (CME) course, the primary focus of which is pharmacy, pharmacology, or drug therapy; or~~

~~3. One that is approved by the board in accordance with the provisions of 18VAC110-20-100.~~

~~C. The board may grant an extension pursuant to § 54.1-3314.1 E of the Code of Virginia. Any subsequent extension shall be granted only for good cause shown.~~

~~D. Up to two hours of the 15 hours required for annual renewal may be satisfied through delivery of pharmacy services as a pharmacist, without compensation, to low-income individuals receiving health services through a local health department or a free clinic organized in whole or primarily for the delivery of those services. One hour of continuing education may be credited for three hours of providing such volunteer services, as documented by the health department or free clinic.~~

~~E. Pharmacists are required to attest to compliance with CE requirements in a manner approved by the board at the time of their annual license renewal. Following each renewal period, the board may conduct an audit of the immediate past two years' CE documents to verify compliance with requirements. Pharmacists are required to maintain, for two years following renewal, the original certificates documenting successful completion of CE, showing date and title of the CE program or activity, the number of CEUs or contact hours awarded, and a certifying signature or other certification of the approved provider. Pharmacists selected for audit must provide these original documents to the board by the deadline date specified by the board in the audit notice.~~

18VAC110-20-100. ~~Approval of continuing education programs.~~ (Repealed.)

~~A. The board will approve without application or further review any program offered by an ACPE approved provider and will accept for credit certificates bearing the official ACPE logo and program number.~~

~~B. The board may approve an individual CE program under the following provisions:~~

~~1. An approved individual program is a course, activity, or lecture which includes subject matter related to the competency of the practice of pharmacy and which has been approved for CE credit by the board.~~

~~2. In order to receive approval for an individual program, the sponsor or provider must apply prior to the program offering on a form provided by the board. The information which must be provided shall include but not be limited to: name of provider, location, date and time of program, charges to participants, description of program content and objectives, credentials of speaker or author, method of delivery, evaluation procedure, evidence of a post assessment, credits requested, mechanism for recordkeeping, and any such information as the board deems necessary to assure quality and compliance.~~

~~3. The sponsor applying for board approval of an individual program must pay a fee as required in 18VAC110-20-20 C 12.~~

~~4. The board shall notify the provider or sponsor within 60 days following the receipt of a completed application of approval or disapproval of a program and the number of credits which may be awarded. The board shall also assign an expiration date for approval of the program not to exceed two years from the date of approval.~~

~~5. The provider of an approved program shall provide to each participant who completes the required hours and passes the post-test a certification with the name of the provider, name of the participant, description of course and method of delivery, number of hours credited, date of completion, and program identification number.~~

~~6. The provider of an approved program shall maintain all records on that program, its participants, and hours awarded for a period of five years and shall make those records available to the board upon request.~~

~~7. The board shall periodically review and monitor programs. The provider of a CE program shall waive registration fees for a representative of the board for that purpose.~~

~~8. Any changes in the information previously provided about an approved program or provider must be submitted or the board may withdraw its approval. If a provider wants to give a live program more than once, all program dates must either be submitted on the original application or provided to the board in subsequent correspondence at least five days prior to giving the program.~~

~~Part III~~
~~Requirements for Pharmacy Technician Registration~~
(Repealed)

18VAC110-20-101. ~~Application for registration as a pharmacy technician.~~ (Repealed.)

~~A. Any person wishing to apply for registration as a pharmacy technician shall submit the application fee and an application on a form approved by the board.~~

~~B. In order to be registered as a pharmacy technician, an applicant shall provide evidence of the following:~~

~~1. Satisfactory completion of an approved training program; and~~

~~2. A passing score on a board-approved examination.~~

~~C. In lieu of the requirements of subsection B of this section, an applicant may provide evidence of current PTCB certification.~~

~~D. A pharmacy technician trainee may perform tasks restricted to pharmacy technicians for no more than nine months without becoming registered as a pharmacy technician.~~

18VAC110-20-102. ~~Criteria for approval for training programs.~~ (Repealed.)

~~A. Any person wishing to apply for approval of a pharmacy technician training program shall submit the application fee and an application on a form approved by the board and meet the criteria established in this section.~~

~~B. The curriculum of a training program for pharmacy technicians shall include instruction in applicable, current laws and regulations and in the tasks that may be performed by a pharmacy technician to include the following or any other task restricted to pharmacy technicians in regulation:~~

~~1. The entry of prescription information and drug history into a data system or other recordkeeping system;~~

~~2. The preparation of prescription labels or patient information;~~

~~3. The removal of the drug to be dispensed from inventory;~~

~~4. The counting, measuring, or compounding of the drug to be dispensed;~~

~~5. The packaging and labeling of the drug to be dispensed and the repackaging thereof;~~

~~6. The stocking or loading of automated dispensing devices or other devices used in the dispensing process; and~~

~~7. The acceptance of refill authorization from a prescriber or his authorized agent provided there is no change to the original prescription.~~

~~C. Each program shall have a program director who shall be either (i) a pharmacist with a current license in any jurisdiction and who is not currently suspended or revoked in any jurisdiction in the United States; (ii) a pharmacy technician with at least one year of experience performing technician tasks who holds a current registration in Virginia or current PTCB certification and who is not currently suspended or revoked as a pharmacy technician in any jurisdiction; or (iii) other person approved and deemed qualified by the board to be a program director.~~

~~D. Instructors for the core components listed in subsection B of this section shall meet the requirements for the program director listed in subsection C of this section. The program director may serve as an instructor.~~

~~E. The length of the program shall be sufficient to prepare a program participant to sit for the board-approved examination and demonstrate entry-level competency.~~

~~F. The program shall maintain records of program participants either on site or at another location where the records are readily retrievable upon request for inspection. A program shall provide a certificate of completion to participants who successfully complete the program and provide verification of completion of the program for a participant upon request by the board. Records shall be maintained for two years from date of completion or termination of program.~~

~~G. The program shall report within 14 days any substantive change in the program to include a change in program name, program director, instructors, name of institution or business if applicable, address, program content, length of program, or location of records.~~

~~H. A pharmacy technician training program approval expires after two years, after which the program may apply for renewal. For continued approval, the program shall submit the renewal application, renewal fee, and a self-evaluation report on a form provided by the board at the time of renewal notification. Renewal of a program's approval is at the discretion of the board, and the decision to renew shall be based on documentation of continued compliance with the criteria set forth in this section.~~

18VAC110-20-103. ~~Examination.~~ (Repealed.)

~~A. The board shall approve one or more examinations to test entry-level competency for pharmacy technicians. In order to be approved, a competency examination shall be developed in accordance with and meet the recognized acceptable test measurement standards of the Joint Technical Standards for Education and Psychological Testing (American Psychological Association, current edition), and shall be administered by an independent third party.~~

~~B. The board may contract with an examination service for the development and administration of a competency examination.~~

~~C. The board shall determine the minimum passing standard on the competency examination.~~

~~D. Any requests for testing accommodations under the Americans with Disabilities Act shall be in accordance with the provisions of 18VAC110-20-60 F.~~

18VAC110-20-104. ~~Address of record; maintenance of certificate.~~ (Repealed.)

~~A. It shall be the duty and responsibility of each pharmacy technician to inform the board of his current address. A pharmacy technician shall notify the board in writing or electronically of any change of an address of record within 14 days. Properly updating address of record directly through the board's web-based application or other approved means shall constitute lawful notification. All notices required by law or by these rules and regulations are deemed to be legally given when mailed to the address of record and shall not relieve the registrant of the obligation to comply.~~

~~B. A pharmacy technician shall maintain his current registration certificate at his principal place of practice available for inspection upon request. A pharmacy technician who does not have a principal place of practice may maintain it at any pharmacy in which he practices or his address of record.~~

18VAC110-20-105. ~~Renewal and reinstatement of registration.~~ (Repealed.)

~~A. Pharmacy technician registrations expire on December 31 and shall be renewed annually prior to that date by the submission of a renewal fee and renewal form. A pharmacy technician newly registered on or after July 1 shall not be required to renew that registration until December 31 of the following year. Failure to receive the application for renewal shall not relieve the pharmacy technician of the responsibility for renewing the registration by the expiration date.~~

~~B. A pharmacy technician who fails to renew his registration by the expiration date may renew his registration at any time within one year of its expiration by submission of the renewal fee and late fee, renewal form, and attestation of having obtained required continuing education.~~

~~C. A pharmacy technician who fails to renew his registration for more than one year following expiration and who wishes to reinstate such registration shall submit an application for reinstatement, pay the current renewal fee and a reinstatement fee, and submit documentation showing compliance with continuing education requirements. Reinstatement is at the discretion of the board and may be granted by the executive director of the board provided no grounds exist to deny said reinstatement. Conducting tasks associated with a pharmacy technician with a lapsed registration shall be illegal and may subject the registrant to disciplinary action by the board.~~

~~D. A person who fails to reinstate a pharmacy technician registration within five years of expiration, shall not be eligible for reinstatement and shall repeat an approved training program and repeat and pass the examination, or hold current PTCB certification, before applying to be reregistered.~~

18VAC110-20-106. ~~Requirements for continued competency.~~ (Repealed.)

~~A. A pharmacy technician shall be required to have completed a minimum of 0.5 CEUs or five contact hours of approved continuing education for each annual renewal of registration. Hours in excess of the number required for renewal may not be transferred or credited to another year.~~

~~B. An approved continuing education program shall meet the requirements as set forth in subsection B of 18VAC110-20-90 or subsection B of 18VAC110-20-100.~~

~~C. Upon written request of a pharmacy technician, the board may grant an extension of up to one year in order for the pharmacy technician to fulfill the continuing education requirements for the period of time in question. The granting of an extension shall not relieve the pharmacy technician from complying with current year requirements. Any subsequent extension shall be granted for good cause shown.~~

~~D. Up to one hour of the five hours required for annual renewal may be satisfied through delivery of pharmacy services as a pharmacy technician, without compensation, to low-income individuals receiving health services through a local health department or a free clinic organized in whole or primarily for the delivery of those services. One hour of continuing education may be credited for three hours of providing such volunteer services, as documented by the health department or free clinic.~~

~~E. Original certificates showing successful completion of continuing education programs shall be maintained by the pharmacy technician for a period of two years following the renewal of his registration. The pharmacy technician shall provide such original certificates to the board upon request in a manner to be determined by the board.~~

Part ~~IV~~ II
Pharmacies

18VAC110-20-110. Pharmacy permits generally.

A. A pharmacy permit shall not be issued to a pharmacist to be simultaneously in charge of more than two pharmacies.

B. Except in an emergency, a permit holder shall not require a pharmacist to work longer than 12 continuous hours in any work day and shall allow at least six hours of off-time between consecutive shifts. A pharmacist working longer than six continuous hours shall be allowed to take a 30-minute break.

C. The ~~pharmacist-in-charge (PIC)~~ PIC or the pharmacist on duty shall control all aspects of the practice of pharmacy. Any decision overriding such control of the PIC or other pharmacist on duty shall be deemed the practice of pharmacy and may be grounds for disciplinary action against the pharmacy permit.

D. A pharmacist shall not be eligible to serve as PIC until after having obtained a minimum of two years of experience practicing as a pharmacist in Virginia or another jurisdiction in the United States. The board may grant an exception to the minimum number of years of experience for good cause shown.

~~D.~~ E. When the PIC ceases practice at a pharmacy or no longer wishes to be designated as PIC, he shall immediately return the pharmacy permit to the board indicating the effective date on which he ceased to be the PIC.

~~E.~~ F. Although not required by law or regulation, an outgoing PIC shall have the opportunity to take a complete and accurate inventory of all ~~Schedule~~ Schedules II through V controlled substances on hand on the date he ceases to be the PIC, unless the owner submits written notice to the board showing good cause as to why this opportunity should not be allowed.

~~F.~~ G. A PIC who is absent from practice for more than 30 consecutive days shall be deemed to no longer be the PIC. Pharmacists-in-charge having knowledge of upcoming absences for longer than 30 days shall be responsible for notifying the board and returning the permit. For unanticipated absences by the PIC, which exceed 15 days with no known return date within the next 15 days, the owner shall immediately notify the board and shall obtain a new PIC.

~~G.~~ H. An application for a permit designating the new PIC shall be filed with the required fee within 14 days of the original date of resignation or termination of the PIC on a form provided by the board. It shall be unlawful for a pharmacy to operate without a new permit past the 14-day deadline unless the board receives a request for an extension prior to the deadline. The executive director for the board may grant an extension for up to an additional 14 days for good cause shown.

~~H.~~ I. Only one pharmacy permit shall be issued to conduct a pharmacy occupying the same designated prescription department space. A pharmacy shall not engage in any other activity requiring a license or permit from the board, such as manufacturing or wholesale-distributing, out of the same designated prescription department space.

~~I.~~ J. Before any permit is issued, the applicant shall attest to compliance with all federal, state, and local laws and ordinances. A pharmacy permit shall not be issued to any person to operate from a private dwelling or residence after September 2, 2009.

18VAC110-20-112. Supervision of pharmacy technicians.

A. A pharmacist shall determine the number of pharmacy interns, pharmacy technicians, and pharmacy technician trainees he can safely and competently supervise at one time; however, no pharmacist shall supervise more than four persons performing the duties of a pharmacy technician at one time.

B. In addition to the acts restricted to a pharmacist in § 54.1-3320 A of the Code of Virginia, a pharmacist shall provide personal supervision of compounding of extemporaneous preparations by pharmacy technicians.

18VAC110-20-140. New pharmacies, acquisitions, and changes to existing pharmacies.

A. Any person wishing to open a new pharmacy, engage in the acquisition of an existing pharmacy, change the location of an existing pharmacy, move the location or make structural changes to an existing prescription department, or make changes to a previously approved security system shall file an application with the board.

B. In the acquisition of an existing pharmacy, if prescription records are to be accessible to anyone for purposes other than for continuity of pharmacy services at substantially the same level offered by the previous owner or for the necessary transfer of prescription records, the owner of the pharmacy acquiring the records shall disclose such information in writing to each patient 14 days prior to the acquisition. Such release of prescription records shall be allowed only to the extent authorized by § 32.1-127.1:03 of the Code of Virginia.

C. Although a closing inventory is not required, a complete and accurate inventory shall be taken of all Schedules II through V controlled substances on hand in accordance with § 54.1-3404 of the Code of Virginia on the date the pharmacist first engages in business under the new ownership. Inventories associated with any change in PIC shall also be performed in accordance with 18VAC110-20-110.

~~C.~~ D. The proposed location or structural changes shall be inspected by an authorized agent of the board prior to issuance of a permit.

1. Pharmacy permit applications that indicate a requested inspection date~~,~~ or requests that are received after the application is filed~~,~~ shall be honored provided a 14-day notice is allowed prior to the requested inspection date.

2. Requested inspection dates that do not allow a 14-day notice to the board may be adjusted by the board to provide 14 days for the scheduling of the inspection.

3. At the time of the inspection, the dispensing area shall comply with 18VAC110-20-150, 18VAC110-20-160, 18VAC110-20-170, 18VAC110-20-180, and 18VAC110-20-190.

4. If an applicant substantially fails to meet the requirements for issuance of a permit and a reinspection is required~~,~~ or if the applicant is not ready for the inspection on the established date and fails to notify the inspector or the board at least 24 hours prior to the inspection, the applicant shall pay a reinspection fee as specified in 18VAC110-20-20 prior to a reinspection being conducted.

~~D.~~ E. Drugs shall not be stocked within the proposed pharmacy or moved to a new location until approval is granted by the inspector or board staff.

~~E.~~ F. Once the permit is issued, prescription drugs may not be stocked earlier than two weeks prior to the designated opening date. Once prescription drugs have been placed in the pharmacy, a pharmacist shall be present on a daily basis to ensure the safety and integrity of the drugs. If there is a change in the designated opening date, the pharmacy shall notify the board office, and a pharmacist shall continue to be on site on a daily basis.

G. If the pharmacy is not operational within 90 days from the date the permit is issued, the board shall rescind the pharmacy permit unless an extension is granted for good cause shown.

18VAC110-20-150. Physical standards for all pharmacies.

A. The prescription department shall not be less than 240 square feet. The patient waiting area or the area used for counseling, devices, cosmetics, and proprietary medicines shall not be considered a part of the minimum 240 square feet. The total area shall be consistent with the size and scope of the services provided.

B. Access to stock rooms, rest rooms, and other areas other than an office that is exclusively used by the pharmacist shall not be through the prescription department. A rest room in the prescription department, used exclusively by pharmacists and personnel assisting with dispensing functions, may be allowed provided there is another rest room outside the prescription department available to other employees and the public. This subsection shall not apply to prescription departments in existence prior to November 4, 1993.

C. The pharmacy shall be constructed of permanent and secure materials. Trailers or other moveable facilities or temporary construction shall not be permitted.

D. The entire area of the location of the pharmacy practice, including all areas where drugs are stored, shall be well lighted and well ventilated; the proper storage temperature shall be maintained to meet USP-NF specifications for drug storage.

E. The prescription department counter work space shall be used only for the compounding and dispensing of drugs and necessary ~~record keeping~~ recordkeeping.

F. A sink with hot and cold running water shall be within the prescription department. A pharmacy issued a limited-use permit that does not stock prescription drugs as part of its operation is exempt from this requirement.

G. Adequate refrigeration facilities equipped with a monitoring thermometer for the storage of drugs requiring cold storage temperature shall be maintained within the prescription department~~,~~ if the pharmacy stocks such drugs.

H. A pharmacy stocking drugs requiring cold storage temperature shall record the temperature daily and adjust the thermostat as necessary to ensure an appropriate temperature range. The record shall be maintained manually or electronically for a period of two years.

18VAC110-20-180. Security system.

A. A device for the detection of breaking shall be installed in each prescription department of each pharmacy. The installation and the device shall be based on accepted alarm industry standards~~,~~ and shall be subject to the following conditions:

1. The device shall be a sound, microwave, photoelectric, ultrasonic, or any other generally accepted and suitable device.

2. The device shall have at least one hard-wired communication method, be monitored in accordance with accepted industry standards, maintained in operating order, have an auxiliary source of power, and be capable of sending an alarm signal to the monitoring entity when breached if the communication line is not operational.

3. The device shall fully protect the prescription department and shall be capable of detecting breaking by any means when activated.

4. Access to the alarm system for the prescription department area of the pharmacy shall be restricted to the pharmacists working at the pharmacy, except for access by other persons in accordance with 18VAC110-20-190 B 2, and the system shall be activated whenever the prescription department is closed for business.

5. The alarm system shall include a feature by which any breach in the alarm shall be communicated by the monitoring entity to the PIC or a pharmacist working at the pharmacy.

B. Exceptions to provisions in this section:

1. Alarm systems approved prior to November 4, 1993, will be deemed to meet the requirements of subdivisions A 1, A 2, and A 3 of this section, provided that no structural changes are made in the prescription department, that no changes are made in the security system, that the prescription department is not closed while the rest of the business remains open, and that a breaking and loss of drugs does not occur. If a breaking with a loss of drugs

occurs, the pharmacy shall upgrade the alarm to meet the current standards and shall file an application with the board in accordance with 18VAC110-20-140 A within 14 days of the breaking.

2. If the prescription department was located in a business with extended hours prior to November 4, 1993, and had met the special security requirements by having a floor to ceiling enclosure, a separately activated alarm system shall not be required.

3. This section shall not apply to pharmacies ~~which~~ that are open and staffed by pharmacists 24 hours a day. If the pharmacy changes its hours or if it must be closed for any reason, the PIC or owner must immediately notify the board, file an application in accordance with 18VAC110-20-140 A, and have installed prior to closing~~,~~ a security system that meets the requirements of subdivisions A 1 through A 4 of this section.

18VAC110-20-200. Storage of drugs, devices, and controlled paraphernalia; expired drugs.

A. Prescriptions awaiting delivery. Prescriptions prepared for delivery to the patient may be placed in a secured area outside of the prescription department, not accessible to the public, where access to the prescriptions is restricted to individuals designated by the pharmacist. With the permission of the pharmacist, the prepared prescriptions may be transferred to the patient at a time when the pharmacist is not on duty. If a prescription is delivered at a time when the pharmacist is not on duty, written procedures shall be established and followed by the pharmacy ~~which~~ that detail security of the dispensed prescriptions and a method of compliance with counseling requirements of § 54.1-3319 of the Code of Virginia. Additionally, a log shall be made and maintained of all prescriptions delivered to a patient when a pharmacist is not present to include the patient's name, prescription ~~number(s)~~ number, date of delivery, and ~~the~~ signature of the person receiving the prescription. Such log shall be maintained for a period of one year.

B. Dispersion of Schedule II drugs. Schedule II drugs shall either be dispersed with other schedules of drugs or shall be maintained within a securely locked cabinet, drawer, or safe or maintained in a manner that combines the two methods for storage. The cabinet, drawer, or safe may remain unlocked during hours that the prescription department is open and a pharmacist is on duty.

C. Safeguards for controlled paraphernalia and Schedule VI medical devices. Controlled paraphernalia and Schedule VI medical devices shall not be placed in an area completely removed from the prescription department whereby patrons will have free access to such items or where the pharmacist cannot exercise reasonable supervision and control.

D. Expired, or otherwise adulterated or misbranded drugs; security. Any drug ~~which~~ that has exceeded the expiration date~~,~~ or is otherwise adulterated or misbranded~~,~~ shall not be dispensed or sold; it shall be separated from the stock used for dispensing. Expired prescription drugs shall be maintained in a designated area within the prescription department until proper disposal.

18VAC110-20-211. Disposal of drugs by authorized collectors.

Any narcotic treatment program, hospital~~,~~ or clinic with an on-site pharmacy, or pharmacy ~~wishing to accept for return~~ that accepts a previously dispensed drug for the purpose of destruction shall first be authorized by the DEA as a collector. A collector so authorized may receive drugs from an ultimate user, a person lawfully entitled to dispose of an ultimate user decedent's property, or a long-term care facility on behalf of an ultimate user who resides or has resided at that facility ~~shall first be authorized by the DEA as a collector~~. The process used to collect and destroy drugs, along with any required recordkeeping, shall comply with applicable federal and state law.

1. Prior to collecting drugs, an authorized collector shall submit in writing to the board:

a. The name, address, and license number, if applicable, of the facility;

b. The intended method or methods of collection (i.e., collection receptacle or mail-back program); and

c. Signature of PIC or medical director of a narcotic treatment program.

2. If an authorized collector chooses to cease acting as a collector, the PIC or medical director shall notify the board within 30 days.

3. A narcotic treatment program that does not have an in-house pharmacy shall obtain a controlled substance registration.

Part ~~V~~ III
Nuclear Pharmacies

18VAC110-20-220. General requirements for pharmacies providing radiopharmaceutical services.

A. Nuclear pharmacies shall comply with standards and requirements of the Nuclear Regulatory Commission ~~(NRC)~~ and the Virginia Department of Health related to the staffing and operation of the facility.

B. Radiopharmaceuticals are to be dispensed only upon an order from a prescriber authorized to possess, use, and administer radiopharmaceuticals.

1. Orders shall originate at an institution or ~~healthcare~~ health care facility licensed to receive and possess radiopharmaceuticals~~,~~ and must contain all necessary information relative to the radiopharmaceutical, activity,

time of calibration, and any special preparation or delivery instructions.

2. Orders for radiopharmaceuticals may be transmitted orally, by ~~fax~~ facsimile (fax), or by electronic transmission by an authorized agent of the prescriber. If the fax or electronic transmission of the authorized agent is pursuant to an oral order from the prescriber, the transmitted document need not include the prescriber's signature~~,~~ but must include the name of the agent.

C. The immediate outside container of a radioactive drug to be dispensed shall also be labeled in accordance with requirements of § 54.1-3410.1 B of the Code of Virginia.

D. The immediate inner container shall be labeled with~~:~~ (i) the standard radiation symbol~~;~~, (ii) the words "Caution--Radioactive Material,"~~;~~ and (iii) the serial number assigned to the order.

E. Nuclear pharmacies may redistribute approved radioactive drugs if the pharmacy does not process the radioactive drugs in any manner nor violate the product packaging.

Part ~~VI~~ IV
Drug Inventory and Records

18VAC110-20-240. Manner of maintaining records, prescriptions, inventory records.

A. Each pharmacy shall perform and maintain the inventories and records of drugs as follows:

1. Inventories and records of all drugs listed in Schedules I and II shall be maintained separately from all other records of the pharmacy. Inventories of drugs in Schedules I and II shall be performed by physically counting the drugs. Each pharmacy shall maintain a perpetual inventory of all Schedule II drugs received and dispensed~~, with~~ that accurately indicates the physical count of each Schedule II drug "on-hand" at the time of performing the inventory. The perpetual inventory shall include a reconciliation of each Schedule II drug at least monthly with a written explanation for any difference between the physical count and the theoretical count. Electronic monitoring at the pharmacy or by another entity that provides alerts for discrepancies between drugs received and drugs dispensed is acceptable provided such alerts are reviewed at least monthly.

2. Inventories and records of drugs listed in Schedules III, IV, and V may be maintained separately or with records of Schedule VI drugs but shall not be maintained with other records of the pharmacy. Inventories of drugs in Schedules III, IV, and V may be performed by estimating the count of drugs in Schedules III, IV, and V unless the container contains greater than 1,000 tablets or capsules or there has been a theft or any other unusual loss of drug and the exact kind and quantity of the drug loss is unknown.

3. All executed order forms, prescriptions, and inventories of ~~Schedule~~ Schedules II through V drugs shall be maintained at the same address as the stock of drugs to which the records pertain. If authorized by DEA, other records pertaining to ~~Schedule~~ Schedules II through V drugs, such as invoices, may be maintained in an off-site database or in secured storage. All records in off-site storage shall be retrieved and made available for inspection or audit within 48 hours of a request by the board or an authorized agent.

4. All inventories required by § 54.1-3404 of the Code of Virginia shall be signed and dated by the person taking the inventory and shall indicate whether the inventory was taken prior to the opening of business or after close of business. A 24-hour pharmacy with no opening or closing of business shall clearly document whether the receipt or distribution of drugs on the inventory date occurred before or after the inventory was taken.

5. Invoices or other records showing receipts of Schedule VI drugs shall be maintained~~,~~ but may be stored in an electronic database or record as an electronic image that provides an exact, clearly legible~~,~~ image of the document or in secured storage either on site or off site. All records in off-site storage or database shall be retrieved and made available for inspection or audit within 48 hours of a request by the board or an authorized agent.

6. All records required by this section shall be filed chronologically and maintained for a period of not less than two years from the date of transaction.

B. Prescriptions.

1. A hard copy prescription shall be placed on file for every initial prescription dispensed and be maintained for two years from the date of last refill. All prescriptions shall be filed chronologically by date of initial dispensing or by date of initial entry into the automated data processing system in compliance with 18VAC110-20-250 if such a system is employed by the pharmacy.

2. Schedule II drugs. Prescriptions for Schedule II drugs shall be maintained in a separate prescription file.

3. ~~Schedule~~ Schedules III ~~through~~, IV, and V drugs. Prescriptions for ~~Schedule~~ Schedules III ~~through~~, IV, and V drugs shall be maintained either in a separate prescription file for drugs listed in Schedules III, IV, and V only or in such form that they are readily retrievable from the other prescriptions of the pharmacy. Prescriptions will be deemed readily retrievable if, at the time they are initially filed, the face of the prescription is stamped in red ink in the lower right corner with the letter "C" no less than one inch high and filed in the prescription file for drugs listed in the usual consecutively numbered prescription file for Schedule VI drugs. However, if a pharmacy employs an automated data processing system or other electronic

recordkeeping system for prescriptions ~~which~~ that permits identification by prescription number and retrieval of original documents by prescriber's name, patient's name, drug dispensed, and date filled, then the requirement to mark the hard copy prescription with a red "C" is waived.

C. Chart orders.

1. A chart order written for a patient in a hospital or long-term care facility, a patient receiving home infusion services, or a hospice patient pursuant to § 54.1-3408.01 A of the Code of Virginia shall be exempt from having to contain all required information of a written prescription provided:

a. This information is contained in other readily retrievable records of the pharmacy; and

b. The pharmacy maintains and complies with a current policy and procedure manual that sets out where this information is maintained ~~and~~, how to retrieve it, and the minimum requirements for chart orders consistent with state and federal law and accepted standard of care.

2. A chart order may serve as the hard copy prescription for those patients listed in subdivision 1 of this subsection. When a chart order is intended for out-patient dispensing, it shall comply with requirements for a prescription in 18VAC110-20-286.

3. Requirements for filing of chart orders.

a. Chart orders shall be filed chronologically by date of initial dispensing with the following exception: If dispensing data can be produced showing a complete audit trail for any requested drug for a specified time period and each chart order is readily retrievable upon request, chart orders may be filed using another method. Such alternate method shall be clearly documented in a current policy and procedure manual.

b. If a single chart order contains both an order for a Schedule II drug and one or more orders for a drug in another schedule, where the Schedule II drug is not floor stocked~~,~~ but is dispensed from the pharmacy pursuant to this order for the specific patient, the original order must be filed with records of dispensing of Schedule II drugs and a copy of the order placed in the file for other schedules.

Part ~~VII~~ V

Prescription Order and Dispensing Standards

18VAC110-20-270. Dispensing of prescriptions; certification of completed prescriptions~~; supervision of pharmacy technicians~~.

A. In addition to the ~~acts restricted to a pharmacist in § 54.1-3320 A of the Code of Virginia, a pharmacist shall provide personal supervision of compounding of extemporaneous preparations by pharmacy technicians. B. A pharmacist shall determine the number of pharmacy interns, pharmacy technicians, and pharmacy technician trainees he can safely and competently supervise at one time; however, no pharmacist shall supervise more than four persons acting as pharmacy technicians at one time~~ requirements in § 54.1-3408.01 of the Code of Virginia for an oral prescription or written prescription, including those transmitted via facsimile or electronically, a prescription shall include a quantity or duration of the order by which the pharmacist can calculate the authorized quantity using directions for use. Except for prescriptions transmitted electronically in compliance with 18VAC110-20-285, written prescriptions shall also include the prescriber's manual signature. [In cases of failed electronic prescriptions, Schedule VI prescriptions transmitted electronically may be routed to the pharmacy's facsimile machine and may bear an electronic signature].

~~C.~~ B. After the prescription has been prepared and prior to the delivery of the order, a pharmacist shall inspect the prescription product to verify its accuracy in all respects~~,~~ and place his initials on the record of dispensing as a certification of the accuracy of~~,~~ and the responsibility for~~,~~ the entire transaction. If more than one pharmacist is involved in verifying the accuracy of the prescription product, a record shall be maintained identifying the date of dispensing, each pharmacist involved in the process, and the individual task for which ~~he~~ each pharmacist is responsible for verifying the accuracy. Such record showing verification of accuracy shall be maintained on a pharmacy record and, if necessary, an alternate record consistent with 18VAC110-20-255 for the required time period of two years~~,~~ unless otherwise specified in regulation. If the dispensing involves central or remote processing, records of pharmacist verification shall be maintained in a manner consistent with 18VAC110-20-276 and 18VAC110-20-515.

~~D.~~ C. If a pharmacist declines to fill a prescription for any reason other than the unavailability of the drug prescribed, he shall record on the back of the prescription the word "declined"; the name, address, and telephone number of the pharmacy; the date filling of the prescription was declined; and the signature of the pharmacist.

~~E.~~ D. If a pharmacist determines from a prescriber or by other means, including the use of his professional judgment, that a prescription presented for dispensing is a forgery, the pharmacist ~~shall not~~ may refuse to return the forged prescription to the person presenting it. The forged prescription may be given to a law-enforcement official investigating the forgery~~;~~, or it shall be retained for a minimum of 30 days before destroying it~~,~~ in the event it is needed for an investigative or other legitimate purpose.

~~F.~~ E. An on-hold prescription shall be entered into the automated data processing system if such system is employed by the pharmacy, and [~~the~~ a] pharmacist [~~on duty~~] shall verify the accuracy of the data entry at that time. The

pharmacist subsequently dispensing the on-hold prescription on a future date shall, at a minimum, conduct a prospective drug review consistent with § 54.1-3319 A of the Code of Virginia. If an on-hold prescription is returned to a patient prior to the initial dispensing of the drug, the pharmacist shall delete the entry in the automated data processing system.

F. A pharmacy may use a drop box for the collection of written prescriptions and refill requests. The drop box shall be located in a visible area within the permitted facility and shall be locked at all times with access to the items placed in the drop box restricted to pharmacists practicing at the pharmacy or an authorized pharmacy technician practicing at the pharmacy when a pharmacist is on duty. The drop box shall be constructed in a manner to prevent the theft or loss of a written prescription or confidential information and shall be bolted to the floor or a fixed structure. Pharmacists shall in some manner inform the public that containers left in a drop box for refill should not contain unused drugs.

18VAC110-20-280. Transmission of a prescription order by facsimile ~~machine~~ device.

A. Unless otherwise prohibited by federal law, prescription orders for ~~Schedule~~ Schedules III through VI drugs may be transmitted to pharmacies by facsimile (fax) device ~~(FAX)~~ upon the following conditions:

1. The prescription shall be faxed only to the pharmacy of the patient's choice.

2. A valid faxed prescription shall contain all required information for a prescription. A written prescription shall include the prescriber's signature.

3. An authorized agent, as defined in § 54.1-3408.01 C of the Code of Virginia, may transmit an oral prescription by facsimile and shall record on the faxed prescription the agent's full name and wording that clearly indicates that the prescription being transmitted is an oral prescription.

4. A faxed prescription shall be valid only if faxed from the prescriber's practice location, except in the following situations:

a. Forwarding a faxed chart order from a long-term care facility or from a hospice, including a home hospice;

b. Faxing an oral prescription by authorized agent under the conditions set forth in subdivision 3 of this subsection; or

c. Forwarding a written prescription by an authorized agent from a long-term care facility, provided the provider pharmacy maintains written procedures for such transactions~~,~~ and provided the original prescription is obtained by the provider pharmacy within seven days of dispensing. The original prescription shall be attached to the faxed copy.

5. The following additional information shall be recorded on the faxed prescription:

a. The date that the prescription was faxed;

b. The printed name, address, phone number, and fax number of the authorized prescriber; and

c. The institution, if applicable, from which the prescription was faxed, including address, phone number, and fax number.

B. Prescription orders for Schedule II drugs may only be faxed for information purposes and may not serve as the original written prescription authorizing dispensing, except for orders to be administered to long-term care facility and home infusion patients in accordance with § 54.1-3408.01 B of the Code of Virginia and except for prescriptions written for a Schedule II narcotic substance for patients residing in a hospice certified by Medicare under Title XVIII or licensed by the state, which may include home hospice. The prescriber shall note on the prescription if the patient is a hospice patient, and the prescription shall meet all requirements for a written prescription, including the prescriber's manual signature.

C. If the faxed prescription is of such quality that the print will fade and not remain legible for the required retention period, the receiving pharmacist shall copy or transcribe the faxed prescription on paper of permanent quality.

D. Authorizations for refills may be faxed by the prescriber to the pharmacy provided the authorization includes patient name, address, drug name and strength, quantity, directions for use, prescriber's name, prescriber's manual signature or agent's name, and date of authorization.

18VAC110-20-290. Dispensing of Schedule II drugs.

A. A prescription for a Schedule II drug shall be dispensed in good faith but in no case shall it be dispensed more than six months after the date on which the prescription was issued.

B. A prescription for a Schedule II drug shall not be refilled except as authorized under the conditions for partial dispensing as set forth in 18VAC110-20-310.

C. In case of an emergency situation, a pharmacist may dispense a drug listed in Schedule II upon receiving oral authorization of a prescribing practitioner~~,~~ provided that:

1. The quantity prescribed and dispensed is limited to the amount adequate to treat the patient during the emergency period;

2. The prescription shall be immediately reduced to writing by the pharmacist and shall contain all information required in § 54.1-3410 of the Drug Control Act, except for the signature of the prescribing practitioner;

3. If the pharmacist does not know the practitioner, ~~he~~ the pharmacist shall make a reasonable effort to determine that the oral authorization came from a practitioner using ~~his~~ the practitioner's phone number as listed in the telephone directory or other good-faith efforts to ensure ~~his~~ the practitioner's identity; and

4. Within seven days after authorizing an emergency oral prescription, the prescribing practitioner shall cause a written prescription for the emergency quantity prescribed to be delivered to the dispensing pharmacist. In addition to conforming to the requirements of § 54.1-3410 of the Drug Control Act, the prescription shall have written on its face "Authorization for Emergency Dispensing" and the date of the oral order. The written prescription may be delivered to the pharmacist in person or by mail postmarked within the seven-day period~~,~~ or transmitted as an electronic prescription in accordance with federal law and regulation to include annotation of the electronic prescription with the original authorization and date of the oral order. Upon receipt, the dispensing pharmacist shall attach the paper prescription to the oral emergency prescription, which had earlier been reduced to writing. The pharmacist shall notify the nearest office of the Drug Enforcement Administration and the board if the prescribing practitioner fails to deliver a written prescription to ~~him~~ the pharmacist. Failure of the pharmacist to do so shall void the authority conferred by this subdivision to dispense without a written prescription of a prescribing practitioner.

D. When presented a prescription written for a Schedule II controlled substance, a pharmacist may add or correct the patient's address upon verification, correct the patient's name upon verification, or add the prescriber's DEA registration number to the prescription. The pharmacist may add or change the dosage form, drug strength, directions for use, drug quantity, or issue date only after oral consultation directly with and agreement of the prescriber. Such consultations and corresponding changes shall be noted by the pharmacist on the prescription. The pharmacist shall not add or change the prescriber's signature or make changes to the controlled substance prescribed, except for dispensing therapeutically equivalent drugs as permitted by law.

Part ~~VIII~~ VI
Labeling and Packaging Standards for Prescriptions

18VAC110-20-355. Pharmacy repackaging of drug; records required; labeling requirements.

A. Pharmacies in which bulk reconstitution of injectable, bulk compounding, or the repackaging or prepackaging of drugs is performed shall maintain adequate control records for a period of one year or until the expiration, whichever is greater. The records shall show the name of the ~~drug(s)~~ drugs used; strength, if any; date repackaged; quantity prepared; initials of the pharmacist verifying the process; the assigned lot or control number; the manufacturer's or distributor's name and lot or control number; and an expiration date.

B. The drug name; strength, if any; the assigned lot or control number or the manufacturer's or distributor's name and lot or control number; and an appropriate expiration date determined by the pharmacist in accordance with USP guidelines shall appear on any subsequently repackaged or reconstituted units.

C. Repackaging of drugs shall be performed in compliance with USP-NF standards.

~~C.~~ D. Pharmacies using automated counting devices or dispensers in which drugs are removed from manufacturer's original packaging and placed in bulk bins shall comply with the following requirements:

1. A bin filling record shall be maintained~~,~~ manually or in a computerized record for a period of one year from date of filling from which information can be readily retrieved~~,~~ for each bin including:

a. The drug name and strength, if any;

b. The name of the manufacturer or distributor;

c. Manufacturer's control or lot ~~number(s)~~ numbers and expiration date for all lots placed into the bin at the time of filling;

d. Any assigned lot number;

e. An expiration date determined according to USP guidelines for repackaging;

f. The date of filling; and

g. The pharmacist's initials verifying the accuracy of the process.

2. If more than one lot is added to a bin at the same time, the lot ~~which~~ that expires first shall be used to determine the expiration date if shorter than a calculated date based on USP guidelines.

3. Each bin shall be labeled in such a manner as to cross-reference the information on the filling record with the correct expiration date.

4. If only one lot is added to a bin at one time, but a subsequent lot may be added before the first has cleared, the automated device shall be constructed to reasonably dispense the first lot before the second lot is dispensed, and the expiration date on the bin's label shall reflect the expiration date assigned to the earlier lot.

5. In the event of a drug recall involving one of multiple lots placed in a bin of an automated counting device in the last three months or if a recalled drug is known to remain in the bin, all drugs shall be removed from the bin and not used for patient care. The removal of drugs from the bin is not required if:

a. The technology of the automated counting device can ensure drugs in a particular lot have been cleared; or

b. The bin has been "run dry," with a record made of the "run dry" date, since the addition of the recalled lot number in which all drugs were completely removed prior to filling with a subsequent lot number.

6. An automated counting device shall be cleaned and maintained in accordance with recommended manufacturer guidelines and specifications.

~~D.~~ E. A pharmacy may return a dispensed drug to stock for redispensing that has never left the pharmacy premises or the control of the pharmacy delivery agent pursuant to § 54.1-3411.1 A 3 of the Code of Virginia under the following conditions:

1. An expiration date shall be placed on the label prior to returning the drug to stock. In the absence of stability data to the contrary, the date on the label may not exceed the expiration date on the manufacturer's container or one year from the date the drug was originally dispensed and placed in the prescription vial, whichever date is earlier.

2. The restocked drug shall be used to fill the next prescription received for that product. In the event that the drug is not dispensed prior to the new assigned expiration date, it shall be removed from working stock as expired~~,~~ and disposed of in accordance with 18VAC110-20-210.

3. If there is no lot number on the label of a drug returned to stock or on the prescription records that can be cross-referenced from the prescription label, the drug shall be removed from stock upon any recall of that drug product and returned to the manufacturer or otherwise disposed of in accordance with 18VAC110-20-210.

Part ~~IX~~ VII
Standards for Prescription Transactions

18VAC110-20-390. Kickbacks, fee-splitting, interference with supplier.

A. A ~~pharmacist~~ pharmacy shall not solicit or foster prescription practice with a prescriber of drugs or any other person providing for rebates, ~~"~~kickbacks,~~"~~ fee-splitting, or special charges in exchange for prescription orders ~~unless fully disclosed in writing to the patient and any third-party payor~~.

B. A ~~pharmacist~~ pharmacy shall not interfere with the patient's right to choose his supplier of medication or cooperate with any person ~~or persons~~ in denying a patient the opportunity to select his supplier of prescribed medications.

Part ~~X~~ VIII
Unit Dose Dispensing Systems

18VAC110-20-425. Robotic pharmacy systems.

A. Consistent with 18VAC110-20-420, a pharmacy providing services to a hospital or a long-term care facility and operating a robotic pharmacy system that dispenses drugs in ~~bar-coded~~ barcoded unit dose or compliance packaging is exempted from 18VAC110-20-270 C, provided the accuracy of the final dispensed prescription product complies with a written quality assurance plan and requirements of this chapter. The following requirements for operation of a robotic pharmacy system shall apply:

1. Pharmacists shall review for accuracy and appropriateness of therapy all data entry of prescription orders into the computer operating the system.

2. The packaging, repackaging, stocking~~,~~ and restocking of the robotic pharmacy system shall be performed by pharmacy technicians or pharmacists.

3. Pharmacists shall verify and check for the accuracy of all drugs packaged or repackaged for use by the robot by a visual check of both labeling and contents prior to stocking the drugs in the robotic pharmacy system. A repackaging record shall be maintained in accordance with 18VAC110-20-355 A, and the verifying pharmacist shall initial the record. Packaging and labeling, including the appropriate beyond-use date, shall conform to requirements of this chapter and current USP-NF standards.

4. A written policy and procedure must be maintained and complied with and shall include at a minimum~~,~~ procedures for ensuring:

a. Accurate packaging and repackaging of all drugs for use in the robotic pharmacy system, to include properly labeled barcodes, and method for ensuring pharmacist verification of all packaged and repacked drugs compliant with this chapter and assigned barcodes;

b. Accurate stocking and restocking of the robotic pharmacy system;

c. Removing expired drugs;

d. Proper handling of drugs that may be dropped by the robotic pharmacy system;

e. Performing routine maintenance of robotic pharmacy system as indicated by manufacturer's schedules and recommendations;

f. Accurate dispensing of drugs via robotic pharmacy system for cart fills, first doses, and cart fill updates during normal operation and during any scheduled or unscheduled downtime;

g. Accurate recording of any scheduled or unanticipated downtime with an explanation of the problem to include the time span of the downtime and the resolution;

~~g.~~ h. Appropriately ~~investigating, identifying and correcting~~ performing [~~a root cause~~ an] analysis to investigate, identify, and correct sources of discrepancies or errors associated with the robotic pharmacy system; and

~~h.~~ i. Maintaining quality assurance reports.

~~5. Pharmacists shall perform a daily random check of medications or compliance packaging picked by the robot for 5.0% of all patients' bins and 5.0% of all first doses or cart updates. Documentation of this check shall include the pharmacist's initials for each medication checked and a description of all discrepancies found.~~

~~6.~~ 5. All manual picks shall be checked by pharmacists.

~~7.~~ 6. If [it is identified that] the robot [~~picks~~ selected] an incorrect medication, the pharmacy shall [~~immediately institute a 100% check of all~~ affected ~~doses or compliance packages and~~] ~~shall immediately report the error to the board. The 100% check procedure shall continue until such time as the pharmacy provides documentation to the board showing that the cause of the error has been determined and addressed and that the robot is no longer making errors, and the board allows the pharmacy to return to a reduction in checking~~ [~~perform a root cause analysis to investigate.~~] identify [~~,~~] and correct the source of discrepancy or error in compliance with the pharmacy's policies and procedures prior to resuming full operations of the robot. [An investigation of the cause of the event shall be completed, and the outcome of the corrective action plan shall be summarized and documented in a readily retrievable format.]

~~8.~~ 7. Quarterly quality assurance reports demonstrating the accuracy of the robot shall be maintained. At a minimum, these reports shall include~~: a. A~~ a summary indicating the date and description of all discrepancies that include ~~but are not limited to~~ discrepancies involving the packaging, repackaging, and dispensing of drugs via the robotic pharmacy system found during that quarter plus a cumulative summary since initiation of the robotic pharmacy system.

~~b. The total number of doses packaged or compliance packages prepared for the robotic pharmacy system and total number of doses or compliance packages picked by the robot during the quarter.~~

~~c. The total number of doses or compliance packages picked by the robot that were checked in conducting the 5.0% checks.~~

~~d. Dates and time associated with any scheduled or unanticipated downtime with an explanation of the problem to include the time span of the downtime and the resolution.~~

~~9. All unanticipated downtime shall be immediately reported to the board.~~

~~10.~~ 8. All records required by this section shall be maintained at the address of the pharmacy for a minimum of two years. Records may be maintained in offsite storage or as an electronic image that provides an exact image of the document that is clearly legible provided such offsite or electronic storage is retrievable and made available for inspection or audit within 48 hours of a request by the board or an authorized agent.

B. Intravenous admixture robotics may be utilized to compound drugs in compliance with § 54.1-3410.2 of the Code of Virginia and 18VAC110-20-321; however, a pharmacist shall verify the accuracy of all compounded drugs pursuant to 18VAVC110-20-270 B.

Part ~~XI~~ IX
Pharmacy Services to Hospitals

18VAC110-20-470. Emergency room.

All drugs in the emergency department shall be under the control and supervision of the PIC and shall be subject to the following additional requirements:

1. All drugs kept in the emergency room shall be in a secure place from which unauthorized personnel and the general public are excluded.

2. Oral orders for medications shall be reduced to writing and shall be signed by the ~~practitioner~~ prescriber.

3. A medical practitioner may dispense drugs to his patients if in a bona fide medical emergency or when pharmaceutical services are not readily available and if permitted to do so by the hospital; the drug container and the labeling shall comply with the requirements of this chapter and the Drug Control Act.

4. A record shall be maintained of all drugs administered in the emergency room.

5. A separate record shall be maintained on all drugs, including drug samples, dispensed in the emergency room. The records shall be maintained for a period of two years showing:

a. Date and time dispensed;

b. Patient's name;

c. Prescriber's name; [and]

d. Name of drug dispensed, strength, dosage form, quantity dispensed, and dose.

18VAC110-20-490. Automated devices for dispensing and administration of drugs.

A. A hospital may use automated devices for the dispensing and administration of drugs pursuant to § 54.1-3301 of the Code of Virginia and §§ 54.1-3401 and 54.1-3434.02 of the Drug Control Act and in accordance with 18VAC110-20-270, 18VAC110-20-420, or 18VAC110-20-460 as applicable.

B. Policy and procedure manual; access codes.

1. Proper use of the automated dispensing devices and means of compliance with requirements shall be set forth in the pharmacy's policy and procedure manual, which shall include provisions for granting and terminating user access.

2. Personnel allowed access to an automated dispensing device shall have a specific access code that records the identity of the person accessing the device. The device may verify access codes using biometric identification or other coded identification after the initial log-on in order to eliminate sharing or theft of access codes.

C. Distribution of drugs from the pharmacy.

1. Prior to removal of drugs from the pharmacy, a delivery record shall be generated for all drugs to be placed in an automated dispensing device ~~which~~. The delivery record shall include the date; drug name, dosage form, and strength; quantity; hospital unit and a unique identifier for the specific device receiving the drug; initials of the person loading the automated dispensing device; and initials of the pharmacist checking the drugs to be removed from the pharmacy and the delivery record for accuracy.

2. At the time of loading any ~~Schedule~~ Schedules II through V drug, the person loading will verify that the count of that drug in the automated dispensing device is correct. Any discrepancy noted shall be recorded on the delivery record and immediately reported to the pharmacist in charge, who shall be responsible for ensuring reconciliation of the discrepancy or properly reporting of a loss.

D. Distribution of drugs from the device.

1. Automated dispensing devices in hospitals shall be capable of producing a hard-copy record of distribution ~~which~~ that shall show patient name, drug name and strength, dose withdrawn, date and time of withdrawal from the device, and identity of person withdrawing the drug. The record shall be filed in chronological order from date of issue or maintained electronically.

2. If an automated dispensing device is used to obtain drugs for dispensing from an emergency room, a separate dispensing record is not required provided the automated record distinguishes dispensing from administration and records the identity of the physician who is dispensing.

E. Discrepancy reports. A discrepancy report for all Schedules II through V drugs and any drugs of concern, as defined in § 54.1-3456.1 of the Code of Virginia, shall be generated for each discrepancy in the count of a drug on hand in the device. Each such report shall be initiated or resolved by the PIC or his designee within 72 hours of the time the discrepancy was discovered or, if determined to be a theft or an unusual loss of drugs, shall be immediately reported to the board in accordance with § 54.1-3404 E of the Drug Control Act.

F. Reviews and audits.

1. The PIC or his designee shall conduct at least a monthly review for compliance with written policy and procedures that are consistent with § 54.1-3434.02 A of the Drug Control Act for security and use of the automated dispensing devices, to include procedures for timely termination of access codes when applicable, accuracy of distribution from the device, and proper recordkeeping.

2. The PIC or his designee shall conduct at least a monthly audit to review distribution of ~~Schedule~~ Schedules II through V drugs from each automated dispensing device as follows:

a. The audit shall reconcile records of all quantities of ~~Schedule~~ Schedules II through V drugs dispensed from the pharmacy with records of all quantities loaded into each device to detect whether any ~~drugs~~ drug recorded as removed from the pharmacy ~~were~~ was diverted rather than ~~being~~ placed in the proper device.

b. If a pharmacy has an ongoing method for perpetually monitoring drugs in ~~Schedule~~ Schedules II through V to ensure drugs dispensed from the pharmacy have been loaded into the device and not diverted, such as with the use of perpetual inventory management software, then the audit required in this subsection may be limited to the discrepancies or exceptions as identified by the method for perpetually monitoring the drugs.

3. The PIC or his designee shall conduct at least a monthly audit to review the dispensing and administration records of ~~Schedule~~ Schedules II through V drugs from each automated dispensing device as follows:

a. The audit shall include a review of administration records ~~from~~ for each device per month for possible diversion by fraudulent charting. The review shall include all ~~Schedule~~ Schedules II through V drugs administered for a time period of not less than 24 consecutive hours during the audit period.

b. The hard-copy distribution and administration records printed out and reviewed in the audit shall be initialed and dated by the person conducting the audit. If nonpharmacist personnel conduct the audit, a pharmacist

shall review the record and shall initial and date the record.

c. The PIC or his designee shall be exempt from requirements of this audit if reconciliation software that provides a statistical analysis is used to generate reports at least monthly. The statistical analysis shall be based on:

(1) Peer-to-peer comparisons of use for that unit or department; and

(2) Monitoring of overrides and unresolved discrepancies.

d. The report shall be used to identify suspicious activity, which includes~~, but is not limited to,~~ usage beyond three standard deviations in peer-to-peer comparisons. A focused audit of the suspicious activity and individuals associated with the activity shall be performed whenever suspicious activity is identified from the reports.

4. The PIC or his designee shall maintain a record of compliance with the reviews and audits in accordance with subsection H of this section.

G. Inspections. Automated dispensing devices shall be inspected monthly by pharmacy personnel to verify proper storage, proper location of drugs within the device, expiration dates, the security of drugs, and validity of access codes. The PIC or his designee shall maintain documentation of the inspection in accordance with subsection H of this section. With the exception of a monthly physical review of look-alike and sound-alike drugs stored within matrix drawers or open access areas within the device, such monthly inspection shall not require physical inspection of the device if the device is capable of and performs the following:

1. At least daily monitoring of refrigerator or freezer storage with documented temperature ranges, variances, and resolutions;

2. Automatic identification and isolation of the location of each drug within the device using a machine readable product identifier, such as barcode technology, and generation of a report verifying the applicable settings;

3. Electronic tracking of drug expiration dates and generation of proactive reports allowing for the replacement of drugs prior to their expiration date; and

4. Electronic detection of the opening of the device, identification of the person accessing the device, automatic denial of access to the device during malfunctions and mechanical errors, and generation of reports of any malfunction and mechanical error.

H. Records.

1. All records required by this section shall be maintained for a period of not less than two years. Records shall be maintained at the address of the pharmacy providing services to the hospital except manual Schedule VI distribution records, reports auditing for indications of suspicious activity, and focused audits, all of which may be maintained in offsite storage or electronically as an electronic image that provides an exact image of the document that is clearly legible provided such offsite or electronic records are retrievable and made available for inspection or audit within 48 hours of a request by the board or an authorized agent.

2. Distribution and delivery records and required initials may be generated or maintained electronically provided:

a. The system being used has the capability of recording an electronic signature that is a unique identifier and restricted to the individual required to initial or sign the record.

b. The records are maintained in a read-only format that cannot be altered after the information is recorded.

c. The system used is capable of producing a hard-copy printout of the records upon request.

3. ~~Schedule~~ Schedules II through V distribution and delivery records may also be stored ~~offsite~~ off site or electronically in compliance with requirements of subdivision 1 of this subsection and if authorized by DEA or in federal law or regulation.

4. Hard-copy distribution and administration records that are printed and reviewed in conducting required audits may be maintained at an off-site location or electronically provided they can be readily retrieved upon request; provided they are maintained in a read-only format that does not allow alteration of the records; and provided a separate log is maintained for a period of two years showing dates of audit and review, the identity of the automated dispensing device being audited, the time period covered by the audit and review, and the initials of all reviewers.

Part ~~XII~~ X

Pharmacy Services to Long-Term Care Facilities

18VAC110-20-530. Pharmacy's responsibilities to long-term care facilities.

A. The pharmacy serving a long-term care facility shall:

1. Receive a valid order prior to the dispensing of any drug.

2. Ensure that personnel administering the drugs are trained in using the dispensing system provided by the pharmacy.

3. Ensure that the drugs for each patient are kept and stored in the originally received containers and that the

medication of one patient shall not be transferred to another patient.

4. Ensure that each cabinet, cart, or other area utilized for the storage of drugs is locked and accessible only to authorized personnel.

5. Ensure that the storage area for patients' drugs is well lighted, of sufficient size to permit storage without crowding, and is maintained at appropriate temperature.

6. Ensure that poison and drugs for "external use only" are kept in a cabinet and separate from other medications.

7. Provide for the disposition of discontinued drugs under the following conditions:

a. Discontinued drugs may be returned to the pharmacy for resale or transferred to another pharmacy for redispensing to the indigent if authorized by § 54.1-3411.1 of the Code of Virginia and 18VAC110-20-400, or disposed of by appropriate means in compliance with 18VAC110-20-210 and with any applicable local, state, and federal laws and regulations.

b. Drug destruction at the pharmacy shall be witnessed by the PIC and by another pharmacy employee. The pharmacy may transfer the drugs for destruction to an entity appropriately licensed to accept returns for destruction. Drug destruction at the facility shall be witnessed by the director of nursing or, if there is no director, then by the facility administrator and by a pharmacist providing pharmacy services to the facility or by another employee authorized to administer medication.

c. A complete and accurate record of the drugs returned or destroyed or both shall be made. The original of the record of destruction shall be signed and dated by the persons witnessing the destruction and maintained at the long-term care facility for a period of two years. A copy of the destruction record shall be maintained at the provider pharmacy for a period of two years.

d. Long-term care facilities shall destroy discontinued or unused drugs or return them to the pharmacy within 30 days of the date the drug was discontinued.

8. Ensure that appropriate drug reference materials are available in the facility units.

9. Ensure that a monthly review of drug therapy by a pharmacist is conducted for each patient in long-term care facilities except those licensed under Title 63.2 of the Code of Virginia. Such review shall be used to determine any irregularities, which may include ~~but not be limited to~~ drug therapy, drug interactions, drug administration, or transcription errors. The pharmacist shall sign and date the notation of the review. All significant irregularities shall be brought to the attention of the attending practitioner or other party having authority to correct the potential problem.

B. [~~The~~ A pharmacist employed by or contracted with a] pharmacy providing services to [~~the~~ a] long-term care facility may share a copy of a Schedule VI prescription or order with [a pharmacist at] another pharmacy for the purpose of dispensing an immediate supply of drugs, not to exceed a seven-day supply, without transferring the prescription pursuant to 18VAC110-20-360 [~~if the following conditions are satisfied:~~

~~1. The pharmacy providing services to the long-term care facility has a written contract with the other pharmacy outlining services to be provided, the recordkeeping associated with the dispensing, and the responsibilities of each pharmacy; and~~

~~2. The pharmacy providing services to the long-term care facility provides a valid oral or written prescription or order to the other pharmacy~~].

18VAC110-20-550. Stat-drug box.

A. An additional drug box called a stat-drug box may be prepared by a pharmacy to provide for initiating therapy prior to the receipt of ordered drugs from the pharmacy. Access to the stat-drug box is restricted to a licensed nurse, pharmacist, or prescriber and only these licensed individuals may administer a drug taken from the stat-drug box. Additionally, a valid prescription or lawful order of a prescriber must exist prior to the removal of any drug from the stat-drug box. A stat-drug box shall be subject to the following conditions:

1. The box is sealed in such a manner that will preclude the loss of drugs.

a. The dispensing pharmacy must have a method of sealing such boxes so that once the seal is broken, it cannot be reasonably resealed without the breach being detected.

b. If a seal is used, it shall have a unique numeric or alphanumeric identifier to preclude replication or resealing, or both. The pharmacy shall maintain a record of the seal identifiers when placed on a box and maintain the record until such time as the seal is replaced.

c. In lieu of seals, a box with a built-in mechanism preventing resealing or relocking once opened except by the provider pharmacy is also acceptable.

2. The box shall have a form to be filled out upon opening the box and removing contents to write the name of the person opening the box, the date, the time, and the name and quantity of items removed. When the stat-drug box has been opened, it is returned to the pharmacy.

3. There shall be a listing of the contents of the box maintained in the pharmacy and also attached to the box in the facility. This same listing shall become a part of the

policy and procedure manual of the facility served by the pharmacy.

4. The drug listing on the box shall bear an expiration date for the box. The expiration date shall be the day on which the first drug in the box will expire.

5. The contents of the box shall be limited to those drugs in which a delay in initiating therapy may result in harm to the patient.

a. The listing of drugs contained in the stat-drug box shall be determined by the provider pharmacist in consultation with the medical and nursing staff of the long-term care facility.

b. The stat-drug box shall contain no more than 20 solid dosage units per schedule of Schedules II through V drugs except that one unit of liquid, not to exceed 30 ml, may be substituted for a solid dosage unit in each drug schedule. If the unit of a liquid that may contain more than one dose is removed from the stat-drug box pursuant to a patient order, the remainder shall be stored with that patient's other drugs, may be used for subsequent doses administered to that patient, and shall not be administered to any other patient.

B. Drugs that would be stocked in a stat-drug box, pursuant to this section, may be stocked in an automated drug dispensing system in a nursing home in accordance with 18VAC110-20-555, except that the quantity of drugs in Schedules II through V stocked in the system shall be determined by the provider pharmacist in consultation with the medical and nursing staff of the nursing home.

C. The pharmacy may provide more than one stat-drug box to a long-term care facility. Contents of the multiple boxes are not required to be uniform.

Part ~~XIII~~ XI
Other Institutions and Facilities

18VAC110-20-580. ~~Humane societies and animal~~ Animal shelters.

~~A humane society or~~ An animal shelter, after having obtained the proper registrations pursuant to state and federal laws, may purchase, possess and administer controlled substances in accordance with provisions of § 54.1-3423 of the Code of Virginia provided that these procedures are followed:

1. Drugs ordered by a ~~humane society~~ public or private animal shelter, as defined in § 3.2-6500 of the Code of Virginia, shall only be stored and administered at the address of the ~~humane society or~~ shelter.

2. A veterinarian shall provide general supervision for the facility and shall provide and certify training in accordance with guidelines set forth by the State Veterinarian to the ~~person(s)~~ persons responsible for administration of the drugs. Certification of training signed by the veterinarian providing the training shall be maintained at the facility for each person administering drugs and must be retained for not less than two years after the person ceases administering.

3. The person in charge of administration of drugs for the facility shall obtain the required permit and controlled substances registration from the board and shall be responsible for maintaining proper security and required records of all controlled substances obtained and administered.

a. If that person ceases employment with the facility or relinquishes his position, he shall immediately return the registration to the board and shall take a complete and accurate inventory of all drugs in stock.

b. An application for a new registration shall be filed with the required fee within 14 days on a form provided by the board. At that time, the new responsible person shall take a complete and accurate inventory of all drugs in stock.

4. Drugs shall be stored in a secure, locked place and only the ~~person(s)~~ person responsible for administering may have access to the drugs.

5. All invoices and order forms shall be maintained for a period of two years.

6. Complete and accurate records shall be maintained for two years on the administration of the drug. The record shall show the name and strength of the drug, date of administration, the species of the animal, the weight of animal, the amount of drug administered and the signature of the person administering the drug.

Part ~~XV~~ XIII
Medical Equipment Suppliers

18VAC110-20-680. Medical equipment suppliers.

A. A medical equipment supplier's location shall be inspected by the board prior to engaging in business. The location shall be clean and sanitary and shall have a system of temperature control to provide for specified storage conditions for any Schedule VI drug or device.

B. Hypodermic needles and syringes and Schedule VI drugs shall not be placed on open display or in an open area where patrons will have access to such items. No Schedule VI devices shall be placed in an area where responsible parties cannot exercise reasonable supervision and control.

C. A medical equipment supplier shall receive a valid order from a practitioner prior to dispensing and shall maintain this order on file on the premises for a period of two years from date of last dispensing. The original order may be kept at a centralized office as long as it is readily retrievable within 48 hours and a copy of the order is kept on the premises of the

dispensing supplier. In lieu of a hard copy, an electronic image of an order may be maintained in an electronic database provided it preserves and provides an exact image of the order that is clearly legible and made available within 48 hours of a request by a person authorized by law to have access to prescription information.

D. Medical equipment suppliers shall make a record at the time of dispensing. This record shall be maintained on the premises for two years from date of dispensing and shall include:

1. Name and address of patient;

2. Item dispensed and quantity, if applicable; and

3. Date of dispensing.

E. A valid order authorizing the dispensing of drugs or devices may be transferred from one medical equipment supplier to another medical equipment supplier provided the order can be filled or refilled. The transfer shall be communicated either orally by direct communication between an individual at the transferring medical equipment supplier and the receiving medical equipment supplier, by facsimile machine, or by electronic transmission.

1. The transferring medical equipment supplier shall:

a. Record the word "VOID" on the face of the invalidated order;

b. Record on the reverse side of the invalidated order the name and address of the medical equipment supplier to which it was transferred, the date of the transfer, and for an oral transfer, the name of the individual receiving the prescription information and the name of the individual transferring the information.

2. The receiving medical equipment supplier shall:

a. Write the word "TRANSFER" on the face of the transferred prescription;

b. Provide all information required to be on a valid order to include:

(1) Date of issuance of original order;

(2) Original number of refills authorized on the original order;

(3) Date of original dispensing if applicable;

(4) Number of valid refills remaining and date of last dispensing;

(5) Medical equipment supplier name and address from which the order information was transferred; and

(6) Name of transferring individual if transferred orally.

3. Both the original and transferred order shall be maintained for a period of two years from the date of last refill.

In lieu of recording the required information on the hard copy of a valid order, a medical equipment supplier may record all required information in an automated data processing system used for the storage and retrieval of dispensing information.

~~E.~~ F. A nonresident medical equipment supplier shall register and practice in accordance with § 54.1-3435.3:1 of the Code of Virginia.

NOTICE: Forms used in administering the regulation have been filed by the agency. The forms are not being published; however, online users of this issue of the Virginia Register of Regulations may click on the name of a form with a hyperlink to access it. The forms are also available from the agency contact or may be viewed at the Office of the Registrar of Regulations, 900 East Main Street, 11th Floor, Richmond, Virginia 23219.

[FORMS (18VAC110-20)

~~Application for Registration as a Pharmacy Intern (rev. 8/07)~~

~~Affidavit of Practical Experience, Pharmacy Intern (rev. 8/07)~~

~~Application for Licensure as a Pharmacist by Examination (rev. 11/09)~~

~~Instructions for Reinstating or Reactivating a Pharmacist License (rev. 3/11)~~

~~Application for Approval of a Continuing Education Program (rev. 8/07)~~

~~Application for Approval of ACPE Pharmacy School Course(s) for Continuing Education Credit (rev. 6/09)~~

~~Application for License to Dispense Drugs (rev. 8/07)~~

~~Application for a Pharmacy Permit (rev. 12/2015)~~

~~Application for a Non-Resident Pharmacy Registration (rev. 12/2015)~~

~~Application for a Non-Resident Outsourcing Facility Registration (12/2015)~~

~~Application for an Outsourcing Facility Permit (12/2015)~~

~~Application for a Permit as a Medical Equipment Supplier (rev. 3/09)~~

~~Application for a Controlled Substances Registration Certificate (rev. 4/09)~~

~~Application for Registration as a Pharmacy Intern for Graduates of a Foreign College of Pharmacy (rev. 8/07).~~

~~Closing of a Pharmacy (rev. 8/07)~~

~~Application for Approval of an Innovative (Pilot) Program (rev. 8/07)~~

~~Pharmacy Technician Registration Instructions and Application (rev. 3/09)~~

~~Instructions for Reinstating a Pharmacy Technician Registration (rev. 3/11)~~

~~Application for Approval of a Pharmacy Technician Training Program (rev. 8/07)~~

~~Application for Registration for Volunteer Practice (rev. 8/07)~~

~~Sponsor Certification for Volunteer Registration (rev. 8/08)~~

~~Application for Reinstatement of Registration as a Pharmacy Intern (eff. 9/07)~~

~~Affidavit for Limited Use Pharmacy Technician (rev. 8/07)~~

~~Limited Use Pharmacy Technician Registration Instructions and Application (rev. 7/08)~~

~~Registration for a Pharmacy to be a Collection Site for Donated Drugs (eff. 4/09)~~

~~Application for Approval of Repackaging Training Program (eff. 12/10)~~

Application for a Pharmacy Permit (rev. 5/2018)

Application for a Nonresident Pharmacy Registration (rev. 7/2018)

Application for a Nonresident Outsourcing Facility Registration (rev. 7/2018)

Application for an Outsourcing Facility Permit (rev 6/2018)

Application for a Permit as a Medical Equipment Supplier (rev. 7/2018)

Application for a Permit as a Nonresident Medical Equipment Supplier (rev. 7/18)

Application for a Controlled Substances Registration Certificate (rev. 7/2018)

Closing of a Pharmacy (rev. 5/2018)

Application for Approval of an Innovative (Pilot) Program (rev. 5/2018)

Registration for a Pharmacy to be a Collection Site for Donated Drugs (rev. 5/2018)

Application for Approval of Repackaging Training Program (rev. 5/2018)

Registration for a Facility to be an Authorized Collector for Drug Disposal (rev. 5.2018)

Application for Re-Inspection of a Facility (rev. 8/2019)

Notification of Distribution Cessation due to Suspicious Orders (rev. 5/2018)]

CHAPTER 21
REGULATIONS GOVERNING THE LICENSURE OF PHARMACISTS AND REGISTRATION OF PHARMACY TECHNICIANS

Part I General Provisions

18VAC110-21-10. Definitions.

In addition to words and terms defined in §§ 54.1-3300 and 54.1-3401 of the Code of Virginia, the following words and terms when used in this chapter shall have the following meanings, unless the context clearly indicates otherwise:

"ACPE" means the Accreditation Council for Pharmacy Education.

"Board" means the Virginia Board of Pharmacy.

"CE" means continuing education as required for renewal of licensure by the board.

"CEU" means a continuing education unit awarded for credit as the equivalent of 10 contact hours.

"Contact hour" means the amount of credit awarded for 60 minutes of participation in and successful completion of a continuing education program.

"Foreign school of pharmacy" means a school outside the United States and its territories offering a course of study in basic sciences, pharmacology, and pharmacy of at least four years in duration resulting in a degree that qualifies a person to practice pharmacy in that country.

"FPGEC certificate" means the certificate given by the Foreign Pharmacy Equivalency Committee of NABP that certifies that the holder of such certificate has passed the Foreign Pharmacy Equivalency Examination and a credential review of foreign training to establish educational equivalency to board approved schools of pharmacy and has passed approved examinations establishing proficiency in English.

"Inactive license" means a license that is registered with the Commonwealth but does not entitle the licensee to practice, and the holder of which is not required to submit documentation of CE necessary to hold an active license.

"NABP" means the National Association of Boards of Pharmacy.

"Pharmacy technician trainee" means a person who is currently enrolled in an approved pharmacy technician training program and is performing duties restricted to pharmacy technicians for the purpose of obtaining practical experience in accordance with § 54.1-3321 D of the Code of Virginia.

"PTCB" means the Pharmacy Technician Certification Board, co-founded by the American Pharmaceutical

Association and the American Society of Health System Pharmacists, as the national organization for the voluntary examination and certification of pharmacy technicians.

18VAC110-21-20. Fees.

A. Unless otherwise provided, fees listed in this section shall not be refundable.

B. Unless otherwise provided, any fees for taking required examinations shall be paid directly to the examination service as specified by the board.

C. Initial application fees.

1. Pharmacist license	$180
2. Pharmacy intern registration	$15
3. Pharmacy technician registration	$25
4. Approval of a pharmacy technician training program	$150
5. Approval of a continuing education program	$100

D. Annual renewal fees.

1. Pharmacist active license – due no later than December 31	$90
2. Pharmacist inactive license – due no later than December 31	$45
3. Pharmacy technician registration – due no later than December 31	$25
4. Pharmacy technician training program	$75 every two years

E. Late fees. The following late fees shall be paid in addition to the current renewal fee to renew an expired license or registration within one year of the expiration date or within two years in the case of a pharmacy technician training program. In addition, engaging in activities requiring a license or registration after the expiration date of such license or registration shall be grounds for disciplinary action by the board.

1. Pharmacist license	$30
2. Pharmacist inactive license	$15
3. Pharmacy technician registration	$10
4. Pharmacy technician training program	$15

F. Reinstatement fees. Any person or entity attempting to renew a license or registration more than one year after the expiration date, or more than two years after the expiration date in the case of a pharmacy technician training program, shall submit an application for reinstatement with any required fees. Reinstatement is at the discretion of the board and, except for reinstatement following revocation or suspension, may be granted by the executive director of the board upon completion of an application and payment of any required fees.

1. Pharmacist license	$210
2. Pharmacist license after revocation or suspension	$500
3. Pharmacy technician registration	$35
4. Pharmacy technician registration after revocation or suspension	$125
5. A pharmacy technician training program that failed to renew and continued to operate for more than one renewal cycle shall pay the current and all back renewal fees for the years in which they were operating plus a reinstatement fee of $75. A pharmacy technician training program that ceases operation and wishes to resume shall not be eligible for reinstatement but shall apply for a new registration.	

G. Miscellaneous fees.

1. Duplicate wall certificate	$25
2. Returned check	$35
3. Duplicate license or registration	$10
4. Verification of licensure or registration	$25

18VAC110-21-30. Current name and address.

A. It shall be the duty and responsibility of each licensee and registrant to inform the board of his current name and address. A licensee or registrant shall notify the board within 14 days in writing or electronically of a name change or a change of an address of record. Properly updating a name or an address of record directly through the board's web-based application or other approved means shall constitute lawful notification.

B. All notices required by law or by this chapter are deemed to be received by the licensee or registrant when sent to the address of record and shall not relieve the licensee or registrant of the obligation to comply.

C. An individual licensed by or registered with the board who has provided the board with a public address that is different from the address of record shall notify the board in writing if there is a change in the address.

[18VAC110-21-31. Application to include e-profile number.

An application for licensure as a pharmacist by examination or endorsement or for registration as a pharmacy intern or pharmacy technician shall include an e-profile number issued by NABP.]

18VAC110-21-40. Unprofessional conduct.

The following practices shall constitute unprofessional conduct within the meaning of § 54.1-3316 of the Code of Virginia:

1. Failing to comply with provisions of § 32.1-127.1:03 of the Code of Virginia related to the confidentiality and disclosure of patient records or related to providing patient records to another practitioner or to the patient or the patient's personal representative;

2. Willfully or negligently breaching the confidentiality of a patient unless otherwise required or permitted by applicable law;

3. Failing to maintain the confidentiality of information received from the Prescription Monitoring Program, obtaining such information for reasons other than to assist in determining the validity of a prescription to be filled, or misusing information received from the program;

4. Engaging in disruptive or abusive behavior in a pharmacy or other health care setting that interferes with patient care or could reasonably be expected to adversely impact the quality of care rendered to a patient;

5. Engaging or attempting to engage in a relationship with a patient that constitutes a professional boundary violation in which the practitioner uses his professional position to take advantage of the vulnerability of a patient or the patient's family, including sexual misconduct with a patient or a member of the patient's family or other conduct that results or could result in personal gain at the expense of the patient;

6. Failing to maintain adequate safeguards against the diversion of controlled substances;

7. Failing to appropriately respond to a known dispensing error in a manner that protects the health and safety of the patient;

8. Delegating a task within the practice of pharmacy to a person who is not adequately trained to perform such a task;

9. Failing by the pharmacist in charge to ensure that pharmacy interns and pharmacy technicians working in the pharmacy are registered and that such registration is current;

10. Failing to exercise professional judgment in determining whether a prescription meets the requirements of law before dispensing;

11. Obtaining money or property of a patient or client by fraud or misrepresentation;

12. Providing false information or failing to cooperate with an employee of the Department of Health Professions in the conduct on an investigation or inspection;

13. Violating any provision of this chapter, 18VAC110-20, or Chapter 33 (§ 54.1-3300 et seq.) or 34 (§ 54.1-3400 et seq.) of Title 54.1 of the Code of Virginia;

14. Performing any act likely to deceive, defraud, or harm the public; or

15. Having a restriction of a license to practice pharmacy or a registration as a pharmacy technician in another jurisdiction in the United States.

18VAC110-21-45. Kickbacks, fee-splitting, interference with supplier.

A. A pharmacist shall not solicit or foster prescription practice with a prescriber of drugs or any other person providing for rebates, kickbacks, fee-splitting, or special charges in exchange for prescription orders.

B. A pharmacist shall not interfere with the patient's right to choose his supplier of medication or cooperate with any person or persons in denying a patient the opportunity to select his supplier of prescribed medications.

Part II
Licensure Requirement for Pharmacists

18VAC110-21-50. Requirements for pharmacy practical experience.

A. Each applicant for licensure as a pharmacist shall have gained practical experience in the practice of pharmacy as set forth in this section and 18VAC110-21-60.

B. An applicant for licensure as a pharmacist shall attain a minimum of 1,500 hours of practical experience.

C. Practical experience that is gained within an ACPE-accredited school of pharmacy, that conforms to the current ACPE standards, and that allows the student to gain at least 1,500 hours of practical experience shall meet the board's practical experience requirements for licensure as a pharmacist.

D. All practical experience credit gained outside of an ACPE-accredited school of pharmacy program shall only be gained after successful completion of the equivalent of at least two semesters in an ACPE-accredited school of pharmacy. Credit shall not be given for more than 50 hours in one week and not less than an average of 20 hours per week

averaged over a month. The board may grant an exception to the minimum number of hours for good cause shown.

E. In accordance with § 54.1-3312 of the Code of Virginia, all practical experience required by this section shall be gained within the United States.

18VAC110-21-60. Procedure for gaining practical experience.

A. Each person desiring to gain practical pharmacy experience in Virginia shall first register with the board as a pharmacy intern on a form provided by the board prior to becoming so engaged as a pharmacy intern. This requirement shall apply to any person gaining practical experience within the Commonwealth whether for licensure in Virginia or in another state.

B. In order to be eligible to register as a pharmacy intern, an applicant shall meet at least one of the following criteria:

1. The applicant shall be enrolled in and have started course work in a professional degree program of a board-approved school of pharmacy. Such registration is only valid while the student is enrolled in the school of pharmacy and is satisfactorily progressing toward meeting the requirements for licensure as a pharmacist. An expiration date shall be assigned to the registration to cover the estimated time period for the student to complete the school program and pass the required examinations. If the student is no longer enrolled in the school program, takes a voluntary break from the program, or is otherwise not actively participating in the school program, except for regularly scheduled school breaks, the registration is no longer valid and shall be returned to the board immediately;

2. The applicant is a graduate of a board-approved school of pharmacy or a graduate of a foreign school of pharmacy, has established educational equivalency and proficiency in English by obtaining the FPGEC certificate, and desires to gain required practical experience required for licensure as a pharmacist. Such applicant shall provide documentation on a board-approved form of current employment or an employment start date within 90 days in a pharmacy in Virginia with approval by the supervising pharmacist. An expiration date shall be assigned to cover the estimated time period needed to obtain the required practical experience hours and take the required examinations to become licensed as a pharmacist;

3. The applicant has already gained the required practical experience but is an otherwise qualified applicant awaiting examination for licensure. A three-month expiration date shall be assigned to allow the applicant time to take required examinations; or

4. The applicant is an applicant for reactivation or reinstatement of a previously issued pharmacist license and is meeting board requirements for relicensure. An expiration date shall be assigned to reasonably cover the period of time necessary to meet the board requirements.

C. For documented good cause shown, the executive director of the board may extend the expiration date of the intern registration upon submission of an application form approved by the board and payment of the initial application fee.

D. A pharmacy intern shall be supervised by a pharmacist who holds a current, unrestricted license and assumes full responsibility for the training, supervision, and conduct of the intern.

E. The intern registration of a pharmacy student shall be valid only while the student is enrolled in a school of pharmacy. The registration card issued by the board shall be returned to the board upon failure to be enrolled.

F. Practical experience gained within any other state must be registered with and certified by the board of that state in order to be accepted or certified by the board. In the event that a state relies on the pharmacy school to certify the hours of experience, an affidavit from the pharmacy school certifying the hours of experience gained in the United States may be accepted in lieu of board certification.

G. All practical experience of the pharmacy intern shall be evidenced by an affidavit approved by the board, which shall be filed prior to or with the application for examination for licensure.

H. An applicant for licensure by endorsement may provide verification acceptable to the board of practical experience hours worked as a pharmacist in another state within the United States in lieu of prelicensure intern hours in order to meet the practical experience requirement.

I. A pharmacy intern shall notify the board in writing of any change in address of record within 14 days of such change.

18VAC110-21-70. Curriculum and approved schools of pharmacy.

A. The following minimum educational requirements for the specified periods shall be recognized by the board for the purpose of licensure.

1. On and after June 1, 1936, but before June 1, 1964, the applicant for licensure shall have been graduated from a four-year course of study with a Bachelor of Science degree in pharmacy awarded.

2. On and after June 1, 1964, the applicant for licensure shall have been graduated from at least a five-year course of study with a Bachelor of Science degree in pharmacy or a Doctorate of Pharmacy degree awarded.

B. In order to be licensed as a pharmacist within this Commonwealth, the applicant shall have been granted the

first professional degree from a program of a school of pharmacy that meets the requirements of § 54.1-3312 of the Code of Virginia or shall satisfy the requirements of 18VAC110-21-90.

18VAC110-21-80. Content of the examination and grades required; limitation on admittance to examination.

A. Prior to admission to any examination required for licensure, the applicant shall have met all other requirements to include education and practical experience requirements, but in no case shall the applicant be admitted if grounds exist to deny licensure under § 54.1-3316 of the Code of Virginia.

B. The applicant shall achieve a passing score as determined by the board on the licensure examination that is approved by the board and that shall consist of an integrated examination of pharmacy practice, pharmacology, pharmacy mathematics, and such other subjects as are necessary to assure that the candidate possesses the necessary knowledge and skills to practice pharmacy.

C. When an applicant for licensure by examination fails to meet the passing requirements of the board-approved integrated pharmacy examination on three occasions, the applicant shall not be readmitted to the examination until he has completed an additional 1,000 hours of practical experience as a pharmacy intern as set forth in 18VAC110-21-60.

D. The applicant shall also achieve a passing score as determined by the board on an examination that tests the candidate's knowledge of federal and state laws related to pharmacy practice. If an applicant has not subsequently been issued a license by any jurisdiction in the United States within three years of achieving a passing score, the applicant shall retake the examination in order to be licensed in Virginia.

E. When an applicant fails to pass the law examination, the applicant shall not be allowed to retake it for a period of 30 days.

F. If an applicant requests a testing accommodation for either examination based on a physical or mental impairment that substantially limits one or more major life activities, subject to the Americans with Disabilities Act, the board may approve a reasonable accommodation that does not compromise the security or integrity of the examination.

1. Supporting documentation shall be provided by the applicant to include the following to be considered for review:

a. A letter of request from the candidate that specifies the testing accommodation requested;

b. A written report of an evaluation (educational, psychological, or physical) within the preceding two years from a qualified professional that states a diagnosis of the disability, describes the disability, recommends specific accommodations, and provides justification that the accommodation is appropriate and necessary for the diagnosed disability. If the comprehensive evaluation was done more than two years ago and the condition is one that is not subject to change, the original evaluation report may be submitted along with a current letter from the qualified professional stating that there has been no change in the condition since the time of the evaluation; and

c. A written statement from the appropriate person at the applicant's school of pharmacy that describes any testing accommodations made while the student was enrolled, if applicable.

2. The applicant will be notified in writing of the decision. If the request for accommodation is granted, the approval information will be forwarded to the examination contractor and the form of the accommodation will be coordinated with the contractor.

18VAC110-21-90. Requirements for foreign-trained applicants.

A. Applicants for licensure who were trained in foreign schools of pharmacy shall obtain the FPGEC certificate prior to being allowed to register as a pharmacy intern and gain the required practical experience in Virginia.

B. After obtaining the FPGEC certificate, the applicant may apply for a pharmacy intern registration and shall fulfill the requirements for practical experience set forth in 18VAC110-21-50 and 18VAC110-21-60 before being admitted to examinations required by 18VAC110-21-80.

C. Applicants for licensure who were trained in foreign schools of pharmacy shall also complete and achieve passing scores on the examinations set forth in 18VAC110-21-80 before being licensed as a pharmacist.

D. Applicants for licensure who were trained in foreign schools of pharmacy, but who subsequently have been granted a professional degree from a program of a school of pharmacy that meets the requirements of § 54.1-3312 of the Code of Virginia, as specified in 18VAC110-21-70, shall be exempt from the requirement for a FPGEC certificate but shall fulfill the requirements for practical experience set forth in 18VAC110-21-50 and 18VAC110-21-60 before being admitted to examinations required by 18VAC110-21-80.

18VAC110-21-100. Registration for voluntary practice by out-of-state licensees.

Any pharmacist who seeks registration to practice on a voluntary basis pursuant to subdivision 12 of § 54.1-3301 of the Code of Virginia under the auspices of a publicly supported, all volunteer, nonprofit organization that sponsors the provision of health care to populations of underserved people shall:

1. File a complete application for registration on a form provided by the board at least five business days prior to engaging in such practice;

2. Provide a complete list of each state in which the pharmacist has held a pharmacist license and a copy of any current license;

3. Provide the name of the nonprofit organization and the dates and location of the voluntary provision of services;

4. Pay a registration fee of $10; and

5. Provide a notarized statement from a representative of the nonprofit organization attesting to its compliance with the provisions of subdivision 12 of § 54.1-3301 of the Code of Virginia.

Part III
Requirements for Renewal or Reinstatement of Licensure

18VAC110-21-110. Renewal and reinstatement of license.

A. Pharmacist licenses expire on December 31 and shall be renewed annually prior to that date by the submission of a renewal fee, renewal form, [an e-profile number issued by NABP], and statement of compliance with continuing education requirements.

B. A pharmacist newly licensed on or after October 1 shall not be required to renew that license until December 31 of the following year.

C. A pharmacist who fails to renew his license by the expiration date may renew his license at any time within one year of its expiration by submission of the renewal fee and late fee, renewal form, and statement of compliance with continuing education requirements.

D. A pharmacist who fails to renew his license for more than one year following expiration and who wishes to reinstate such license shall submit an application for reinstatement, pay the current renewal fee and a reinstatement fee, and submit documentation showing compliance with continuing education requirements. Reinstatement is at the discretion of the board and may be granted by the executive director of the board provided no grounds exist to deny said reinstatement.

E. A pharmacist who has been registered as inactive for more than one year must apply for reactivation, submit documentation showing compliance with continuing education requirements, and pay the difference between the inactive fee and the current year active renewal fee in order to resume active licensure.

F. In order to reactivate or reinstate a license to active status, a pharmacist who holds an inactive license, who has allowed his license to lapse, or who has had his license suspended or revoked must submit evidence of completion of CEUs or hours equal to the requirements for the number of years in which his license has not been active, not to exceed a total of 60 hours of CE.

G. A pharmacist whose license has been lapsed, is in inactive status, or has been suspended or revoked for more than five years shall, as a condition of reinstatement or reactivation in addition to 60 hours CE, take and receive a passing score on the board-approved law examination and furnish acceptable documentation of one of the following:

1. Active pharmacy practice within the past five years as a properly licensed pharmacist in another state; or

2. Practical experience as a pharmacy intern registered with the board of at least 160 hours within six months immediately prior to being reinstated or reactivated.

H. The practice of pharmacy without a current, active pharmacist license is unlawful and shall constitute grounds for disciplinary action by the board.

18VAC110-21-120. Requirements for continuing education.

A. A pharmacist shall be required to have completed a minimum of 1.5 CEUs or 15 contact hours of continuing pharmacy education in an approved program for each annual renewal of licensure. CEUs or hours in excess of the number required for renewal may not be transferred or credited to another year.

B. A pharmacy education program approved for continuing pharmacy education is:

1. One that is approved by the ACPE;

2. One that is approved as a Category I continuing medical education course, the primary focus of which is pharmacy, pharmacology, or drug therapy; or

3. One that is approved by the board in accordance with the provisions of 18VAC110-21-130.

C. Of the 15 contact hours required for annual renewal, at least [~~five~~ three] hours shall be obtained in courses or programs that are live or real-time interactive. Included in the [~~five~~ three] hours, the following may be credited:

1. A maximum of one hour for attendance at a board meeting or formal hearing; or

2. A maximum of one hour for serving as a preceptor for a pharmacy student or resident in an accredited school or program or for a foreign-trained student obtaining hours of practical experience.

D. Up to two hours of the 15 hours required for annual renewal may be satisfied through delivery of pharmacy services as a pharmacist, without compensation, to low-income individuals receiving health services through a local health department or a free clinic organized in whole or primarily for the delivery of those services. One hour of

continuing education may be credited for three hours of providing such volunteer services, as documented by the health department or free clinic.

E. The board may grant an extension pursuant to § 54.1-3314.1 E of the Code of Virginia. Any subsequent extension shall be granted only for good cause shown.

F. Pharmacists are required to attest to compliance with the CE requirements in a manner approved by the board at the time of their annual license renewal. Following each renewal period, the board may conduct an audit of the immediate past two years CE documents to verify compliance with the requirements. Pharmacists are required to maintain for two years following renewal the original certificates documenting successful completion of CE, showing the date and title of the CE program or activity, the number of CEUs or contact hours awarded, and a certifying signature or other certification of the approved provider. Pharmacists selected for audit must provide these original documents to the board by the deadline date specified by the board in the audit notice.

18VAC110-21-130. Approval of continuing education programs.

A. The board will approve without application or further review any program offered by an ACPE-approved provider and will accept for credit certificates bearing the official ACPE logo and program number.

B. The board may approve an individual CE program under the following provisions:

1. An approved individual program is a course, activity, or lecture that includes subject matter related to the competency of the practice of pharmacy and that has been approved for CE credit by the board.

2. In order to receive approval for an individual program, the sponsor or provider must apply prior to offering the program on a form provided by the board. The information that must be provided shall include:

a. Name of provider;

b. Location;

c. Date and time of program;

d. Charges to participants;

e. Description of program content and objectives;

f. Credentials of speaker or author;

g. Method of delivery;

h. Evaluation procedure;

i. Evidence of a post assessment;

j. Credits requested;

k. Mechanism for recordkeeping; and

l. Any such information as the board deems necessary to assure quality and compliance.

3. The sponsor applying for board approval of an individual program shall pay a fee as required in 18VAC110-21-20 C 5.

4. The board shall notify the provider or sponsor within 60 days following the receipt of a completed application of approval or disapproval of a program and the number of credits that may be awarded. The board shall also assign an expiration date for approval of the program not to exceed two years from the date of approval.

5. The provider of an approved program shall provide to each participant who completes the required hours and passes the post-test a certification with the name of the provider, name of the participant, description of course and method of delivery, number of hours credited, date of completion, and program identification number.

6. The provider of an approved program shall maintain all records on that program, program participants, and hours awarded for a period of five years and shall make those records available to the board upon request.

7. The board shall periodically review and monitor programs. The provider of a CE program shall waive registration fees for a representative of the board for that purpose.

8. Any changes in the information previously provided about an approved program or provider shall be submitted, or the board may withdraw its approval. If a provider wants to give a live program more than once, all program dates shall either be submitted on the original application or provided to the board in subsequent correspondence at least five days prior to giving the program.

Part IV
Requirements for Pharmacy Technician Registration

18VAC110-21-140. Application for registration as a pharmacy technician.

A. Any person wishing to apply for registration as a pharmacy technician shall submit the application fee and an application on a form approved by the board.

B. To be registered as a pharmacy technician, an applicant shall provide evidence of the following:

1. Satisfactory completion of a board-approved training program; and

2. A passing score on a board-approved examination.

C. In lieu of the requirements of subsection B of this section, an applicant may provide evidence of current PTCB certification.

D. A pharmacy technician trainee enrolled in an approved pharmacy technician training program pursuant to § 54.1-3321 D of the Code of Virginia may perform tasks restricted to pharmacy technicians for no more than nine consecutive months from the date the trainee begins performing duties restricted to a pharmacy technician without becoming registered as a pharmacy technician.

18VAC110-21-150. Criteria for approval for training programs.

A. Any person wishing to apply for approval of a pharmacy technician training program shall submit the application fee, a sample certificate, and an application on a form approved by the board and meet the criteria established in this section.

B. The curriculum of a training program for pharmacy technicians shall include instruction in applicable current laws and regulations and in the tasks that may be performed by a pharmacy technician to include the following or any other task restricted to pharmacy technicians in regulation:

1. The entry of prescription information and drug history into a data system or other recordkeeping system;

2. The preparation of prescription labels or patient information;

3. The removal of the drug to be dispensed from inventory;

4. The counting, measuring, or compounding of the drug to be dispensed;

5. The packaging and labeling of the drug to be dispensed and the repackaging thereof;

6. The stocking or loading of automated dispensing devices or other devices used in the dispensing process; and

7. The acceptance of refill authorization from a prescriber or the prescriber's authorized agent provided there is no change to the original prescription.

C. Each program shall have a program director who shall be either (i) a pharmacist with a current license in any jurisdiction and who is not currently suspended or revoked in any jurisdiction in the United States; (ii) a pharmacy technician with at least one year of experience performing technician tasks who holds a current registration in Virginia or current PTCB certification and who is not currently suspended or revoked as a pharmacy technician in any jurisdiction; or (iii) other person approved and deemed qualified by the board to be a program director.

D. Instructors for the core components listed in subsection B of this section shall meet the requirements for the program director listed in subsection C of this section. The program director may serve as an instructor.

E. The length of the program shall be sufficient to prepare a program participant to sit for the board-approved examination and demonstrate entry-level competency.

F. The program shall maintain records of program participants either on site or at another location where the records are readily retrievable upon request for inspection. A program shall provide a certificate of completion, including the program approval number, to participants who successfully complete the program and provide verification of completion of the program for a participant upon request by the board. Records shall be maintained for two years from date of completion or termination of program.

G. The program shall report within 14 days any substantive change in the program to include a change in program name, program certificate, program director, instructors, name of institution or business if applicable, address, program content, length of program, or location of records.

H. A pharmacy technician training program approval expires after two years, after which the program may apply for renewal. For continued approval, the program shall submit the renewal application, renewal fee, and a self-evaluation report on a form provided by the board at the time of renewal notification. Renewal of a program's approval is at the discretion of the board, and the decision to renew shall be based on documentation of continued compliance with the criteria set forth in this section.

18VAC110-21-160. Examination.

A. The board shall approve one or more examinations to test entry-level competency for pharmacy technicians. In order to be approved, a competency examination shall be developed in accordance with and meet the recognized acceptable test measurement standards of the Joint Technical Standards for Education and Psychological Testing (American Psychological Association, current edition), and shall be administered by an independent third party.

B. The board may contract with an examination service for the development and administration of a competency examination.

C. The board shall determine the minimum passing standard on the competency examination.

D. Any requests for testing accommodations under the Americans with Disabilities Act shall be in accordance with the provisions of 18VAC110-21-80 F.

18VAC110-21-170. Renewal and reinstatement of registration.

A. Pharmacy technician registrations expire on December 31 and shall be renewed annually prior to that date by the submission of a renewal fee [~~and,~~] renewal form, [and an e-profile number issued by NABP]. A pharmacy technician newly registered on or after July 1 shall not be required to renew that registration until December 31 of the following year. Failure to receive the application for renewal shall not relieve the pharmacy technician of the responsibility for renewing the registration by the expiration date.

B. A pharmacy technician who fails to renew his registration by the expiration date may renew his registration at any time within one year of its expiration by submission of the renewal fee and late fee, renewal form, and attestation of having met the continuing education requirements.

C. A pharmacy technician who fails to renew his registration for more than one year following expiration and who wishes to reinstate such registration shall submit an application for reinstatement, pay the current renewal fee and a reinstatement fee, and submit documentation showing compliance with continuing education requirements. Reinstatement is at the discretion of the board and may be granted by the executive director of the board provided no grounds exist to deny said reinstatement. Practicing as a pharmacy technician with a lapsed registration shall be illegal and may subject the registrant to disciplinary action by the board.

D. A person who fails to reinstate a pharmacy technician registration within five years of expiration shall not be eligible for reinstatement and shall repeat an approved training program and repeat and pass the examination or hold current PTCB certification before applying to be reregistered.

18VAC110-21-180. Requirements for continued competency.

A. A pharmacy technician shall be required to have completed a minimum of 0.5 CEUs or five contact hours of approved continuing education for each annual renewal of registration. Hours in excess of the number required for renewal may not be transferred or credited to another year.

B. An approved continuing education program shall meet the requirements as set forth in 18VAC110-21-120 B or 18VAC110-21-130 B.

C. Upon written request of a pharmacy technician, the board may grant an extension of up to one year in order for the pharmacy technician to fulfill the continuing education requirements for the period of time in question. The granting of an extension shall not relieve the pharmacy technician from complying with current year requirements. Any subsequent extension shall be granted for good cause shown.

D. Up to one hour of the five hours required for annual renewal may be satisfied through delivery of pharmacy services as a pharmacy technician, without compensation, to low-income individuals receiving health services through a local health department or a free clinic organized in whole or primarily for the delivery of those services. One hour of continuing education may be credited for three hours of providing such volunteer services, as documented by the health department or free clinic.

E. Original documentation showing successful completion of continuing education programs shall be maintained by the pharmacy technician for a period of two years following the renewal of his registration. The pharmacy technician shall provide such documentation to the board upon request in a manner to be determined by the board.

NOTICE: Forms used in administering the regulation have been filed by the agency. The forms are not being published; however, online users of this issue of the Virginia Register of Regulations may click on the name of a form with a hyperlink to access it. The forms are also available from the agency contact or may be viewed at the Office of the Registrar of Regulations, 900 East Main Street, 11th Floor, Richmond, Virginia 23219.

[FORMS (18VAC110-21)

Application for a Pharmacist license by endorsement or examination, online form available at https://www.dhp.virginia.gov/Pharmacy/pharmacy_forms.htm#Pharmacists

Application and Instructions for Reinstatement of a Pharmacist License (rev. 4/2018)

Application for registration as a Pharmacy Technician, online form available at https://www.dhp.virginia.gov/Pharmacy/pharmacy_forms

Application and Instructions for Reinstatement of a Pharmacy Technician Registration (rev. 4/2018)

Application for Registration as a Limited-use Pharmacy Technician (rev. 4/2018)

Affidavit for Free Clinic Director for Limited-use Pharmacy Technician (rev. 4/2018)

Application for Approval of a Pharmacy Technician Training Program (rev. 3/2019)

Application for registration as a Pharmacy Intern, online form available at https://www.dhp.virginia.gov/Pharmacy/pharmacy_forms

Affidavit of practical Experience as a Pharmacy Intern (rev. 3/2019)

Name Change Form for Individuals (rev. 3/2018)

Application for Board Approval of a Continuing Education Program for CE credit (rev. 5/2018)

Application for Approval of ACPE Pharmacy School Course for Continuing Education Credit (rev. 5/2018)

Volunteer Practice Sponsor Form (rev. 4/2018)

Application for Registration for Volunteer Practice (rev. 4/2018)

Continuing Education (CE) Credit Form for Volunteer Practice (rev. 4/2018)]

CHAPTER 50
REGULATIONS GOVERNING WHOLESALE DISTRIBUTORS, MANUFACTURERS, THIRD-PARTY LOGISTICS PROVIDERS, AND WAREHOUSERS

18VAC110-50-40. Safeguards against diversion of drugs.

A. The holder of the license as a wholesale distributor or permit as a manufacturer, warehouser, or third-party logistics provider, or registration as a nonresident wholesale distributor, nonresident warehouser, nonresident third-party logistics provider, or nonresident manufacturer shall restrict access to all areas in which prescription drugs are stored or kept for sale to only those persons specifically designated as necessary for the manufacture, receipt, storage, distribution, or quality control of the controlled substance inventory and shall provide reasonable security measures to include appropriate locking devices on all access doors to these areas and adequate lighting both inside and outside the facility to deter unauthorized entry and diversion.

B. The holder of the license, permit, or registration, except for those distributors of only medical gases other than nitrous oxide, shall install a device for the detection of breaking subject to the following conditions:

1. The device shall be a sound, microwave, photoelectric, ultrasonic, or any other generally accepted and suitable device.

2. ~~The~~ One communication line installation shall be hardwired and both the installation and device shall be based on accepted burglar alarm industry standards to include wireless motion sensors.

3. The device shall be maintained in operating order ~~and,~~ shall have an auxiliary source of power, and shall be capable of sending an alarm signal to the monitoring entity when breached if the communication line is not operational.

4. The device shall fully protect all areas where prescription drugs are stored and shall be capable of detecting breaking by any means when activated.

5. Access to the alarm system shall be restricted to the person named on the application as the responsible party or to persons specifically designated in writing in a policy and procedure manual.

6. The system shall be activated whenever the drug storage areas are closed for business.

C. Distribution or delivery of prescription drugs shall be accomplished in a manner to prevent diversion or possession of drugs by unauthorized persons.

1. The holder of the license, permit, or registration shall only deliver prescription drugs to a person authorized to possess such drugs at a location where the person is authorized to possess such drugs~~,~~ and only at a time when someone authorized to possess such drugs is in attendance.

2. The holder of the license, permit, or registration shall affirmatively verify that the person to whom prescription drugs are delivered is authorized by law to receive such drugs.

3. Prescription drugs may be transferred to an authorized agent of a person who may lawfully possess prescription drugs, provided the transfer occurs on the premises of the wholesale distributor, manufacturer, warehouser, third-party logistics provider, nonresident wholesale distributor, nonresident warehouser, nonresident third-party logistics provider, or nonresident manufacturer and provided the identity and authorization of the agent is verified, and such transfer is only used to meet the immediate needs of a patient.

Part II
Wholesale Distributors and Third-Party Logistics Providers

18VAC110-50-60. Special or limited-use licenses.

The board may issue a limited-use wholesale distributor license, limited-use nonresident wholesale distributor registration, limited-use manufacturer, limited-use nonresident manufacturer, limited-use third-party logistics provider permit, or limited-use nonresident third-party logistics provider registration to entities that do not engage in the wholesale distribution of prescription drugs or in the acts of a third-party logistics provider except medical gases and may waive certain requirements of regulation based on the limited nature of such distribution. The issuance of such a license shall be subject to continuing compliance with the conditions set forth by the board.

18VAC110-50-80. Minimum licensure and permitting qualifications and eligibility; responsible party.

A. The board shall use the following factors in determining the eligibility for licensure of wholesale distributors, registration of nonresident wholesale distributors or nonresident third-party logistics providers, and permitting of third-party logistics providers:

1. The existence of grounds to deny an application as set forth in § 54.1-3435.1 of the Code of Virginia;

2. The applicant's past experience in the manufacture or distribution of drugs or devices;

3. Compliance with the recordkeeping requirements;

4. Prior disciplinary action by a regulatory authority, prior criminal convictions, or ongoing investigations related to the manufacturing, distribution, prescribing, or dispensing of drugs by the responsible party or immediate family members of the responsible party, and owners, directors, or officers; and

5. The responsible party's credentials as set forth in subsection B of this section.

B. Requirements for the person named as the responsible party.

1. The responsible party shall be the primary contact person for the board as designated by the wholesale distributor, nonresident wholesale distributor, third-party logistics provider, or nonresident third-party logistics provider, who shall be responsible for managing the wholesale distribution operations at that location;

2. The responsible party shall have a minimum of two years of verifiable experience in a pharmacy or wholesale distributor or third-party logistics provider licensed, registered, or permitted in Virginia or another state where the person's responsibilities included managing or supervising the recordkeeping, storage, and shipment for drugs or devices;

3. A person may only serve as the responsible party for one wholesale distributor license, nonresident wholesale distributor registration, third-party logistics provider permit, or nonresident third-party logistics provider registration at any one time;

4. The responsible party shall be employed full time in a managerial position and actively engaged in daily operations of the wholesale distributor, nonresident wholesale distributor, third-party logistics provider, or nonresident third-party logistics provider;

5. The responsible party shall be present on a full-time basis at the location of the wholesale distributor, nonresident wholesale distributor, third-party logistics provider, or nonresident third-party logistics provider during normal business hours, except for time periods when absent due to illness, family illness or death, vacation, or other authorized absence; and

6. The responsible party shall be aware of, and knowledgeable about, all policies and procedures pertaining to the operations of the wholesale distributor, nonresident wholesale distributor, third-party logistics provider, or nonresident third-party logistics provider and all applicable state and federal laws related to wholesale distribution of prescription drugs or the legal acts of a third-party logistics provider.

C. The person named as the responsible party on the application shall submit the following with the application:

1. A passport size and quality photograph taken within 30 days of submission of the application;

2. A resume listing employment, occupations, or offices held for the past seven years including names, addresses, and telephone numbers of the places listed;

3. An attestation disclosing whether the person has a criminal conviction or is the subject of any pending criminal charges within or outside the Commonwealth;

4. A federal criminal history record check ~~through the Central Criminal Records Exchange~~; and

5. A description of any involvement by the person with any business, including any investments, other than the ownership of stock in a publicly traded company or mutual fund, during the past seven years, which manufactured, administered, prescribed, distributed, or stored drugs and devices and any lawsuits, regulatory actions, or criminal convictions related to drug laws or laws concerning third-party logistics providers or wholesale distribution of prescription drugs in which such businesses were named as a party.

D. Responsibilities of the responsible party.

1. Ensuring that any employee engaged in operations is adequately trained in the requirements for the lawful and appropriate wholesale distribution of prescription drugs or the legal acts of a third-party logistics provider;

2. Requiring any employee who has access to prescription drugs to attest that the employee has not been convicted of a violation of any federal or state drug law or any law relating to third-party logistics providers or to the manufacture, distribution, or dispensing of prescription drugs;

3. Maintaining current working knowledge of requirements for wholesale distributors or third-party logistics providers and assuring continued training for employees;

4. Maintaining proper security, storage, and shipping conditions for all prescription drugs; and

5. Maintaining all required records.

E. Each nonresident wholesale distributor or nonresident third-party logistics provider shall designate a registered agent in Virginia for service of any notice or other legal document. Any nonresident wholesale distributor or nonresident third-party logistics provider that does not designate a registered agent shall be deemed to have designated the Secretary of the Commonwealth to be its true and lawful agent, upon whom may be served all legal process in any action or proceeding against such nonresident wholesale distributor or nonresident third-party logistics provider. A copy of any such service of legal documents shall be mailed to the nonresident wholesale distributor or nonresident third-party logistics provider by the board by certified mail at the address of record.

NOTICE: Forms used in administering the regulation have been filed by the agency. The forms are not being published; however, online users of this issue of the Virginia Register of Regulations may click on the name of a form with a hyperlink

to access it. The forms are also available from the agency contact or may be viewed at the Office of the Registrar of Regulations, 900 East Main Street, 11th Floor, Richmond, Virginia 23219.

FORMS (18VAC110-50)

~~Application for a Permit as a Restricted Manufacturer (rev. 3/09)~~

~~Application for a Permit as a Nonrestricted Manufacturer (rev. 3/09)~~

~~Application for a Permit as a Warehouser (rev. 3/09)~~

~~Application for a License as a Wholesale Distributor (rev. 3/09)~~

~~Application for a Nonresident Wholesale Distributor Registration (rev. 9/08)~~

Application for a License as a Wholesale Distributor - Limited Use for Distribution of Medical Gases Only (rev. 3/2010)

Application for a Permit as a Restricted Manufacture (rev. 6/2018)

Application for a Permit as a Nonrestricted Manufacturer (rev. 6/2018)

Application for a Permit as a Nonresident Manufacturer (rev. 6/2018)

Application for a Permit as a Warehouser (rev. 6/2018)

Application for a Permit as a Nonresident Warehouser (rev. 6/2018)

Application for a License as a Wholesale Distributor (rev. 6/2018)

Application for a License as a Nonresident Wholesale Distributor Registration (rev. 6/2018)

Application for a Permit as a Third-Party Logistics Provider (rev. 6/2018)

Application for a Permit as a Nonresident Third-Party Logistics Provider (rev. 2/2019)

Application for Reinspection of a Facility (rev. 8/2019)

VA.R. Doc. No. R16-4673; Filed October 15, 2019, 3:41 p.m.

GUIDANCE DOCUMENTS

Pursuant to § 2.2-4002.1 of the Code of Virginia, a certified guidance document is subject to a 30-day public comment period after publication in the Virginia Register of Regulations and prior to the guidance document's effective date. During the public comment period, comments may be made through the Virginia Regulatory Town Hall website (http://www.townhall.virginia.gov) or sent to the agency contact. Under subsection C of § 2.2-4002.1, the effective date of the guidance document may be delayed for an additional period. The guidance document may also be withdrawn.

The following guidance documents have been submitted for publication by the listed agencies for a public comment period. Online users of this issue of the Virginia Register of Regulations may click on the name of a guidance document to access it. Guidance documents are also available on the Virginia Regulatory Town Hall (http://www.townhall.virginia.gov) or from the agency contact or may be viewed at the Office of the Registrar of Regulations, 900 East Main Street, Richmond, Virginia 23219.

BOARD OF ACCOUNTANCY

Titles of Documents:

VBOA Policy #4: Continuing Professional Education Guidelines for CPAs.

VBOA Policy #9: Inactive Status Procedure for Approval/Denial/Appeal.

VBOA Policy #10: Electronic Participation in Virginia Board of Accountancy Meetings.

Public Comment Deadline: December 11, 2019.

Effective Date: December 12, 2019.

Agency Contact: Elizabeth Marcello, Information and Policy Advisor, Board of Accountancy, 9960 Mayland Drive, Suite 402, Richmond, VA 23233, telephone (804) 367-2006, or email elizabeth.marcello@boa.virginia.gov.

DEPARTMENT FOR AGING AND REHABILITATIVE SERVICES

Title of Document: Pre-Employment Transition Services Manual.

Public Comment Deadline: December 11, 2019.

Effective Date: December 12, 2019.

Agency Contact: Leah Mills, Policy Analyst, Department for Aging and Rehabilitative Services, 8004 Franklin Farms Drive, Richmond, VA 23229, telephone (804) 662-7610, or email leah.mills@dars.virginia.gov.

BOARD OF MEDICAL ASSISTANCE SERVICES

Title of Document: Transitioning from the Commonwealth Coordinated Care Plus (CCC Plus) Waiver to a Developmental Disabilities Waiver.

Public Comment Deadline: December 11, 2019.

Effective Date: December 12, 2019.

Agency Contact: Emily McClellan, Policy and Research, 600 East Broad Street, Suite 1300, Richmond, VA 23219, telephone (804) 371-6043, or email emily.mcclellan@dmas.virginia.gov.

BOARD OF MEDICINE

Title of Document: Guidance Document on the Practice of Conversion Therapy.

Public Comment Deadline: December 11, 2019.

Effective Date: December 12, 2019.

Agency Contact: Elaine J. Yeatts, Agency Regulatory Coordinator, 9960 Mayland Drive, Suite 300, Richmond, VA 23233, telephone (804) 367-4688, or email elaine.yeatts@dhp.virginia.gov.

STATE BOARD OF SOCIAL SERVICES

Title of Document: FACT's Framework for Building and Maintaining a Trauma-Informed Community Network.

Public Comment Deadline: December 11, 2019.

Effective Date: December 12, 2019.

Agency Contact: Nicole Poulin, Executive Director, State Board of Social Services, 801 East Main Street, Richmond, VA 23141, telephone (804) 726-7604, or email nicole.poulin@dss.virginia.gov.

STATE WATER CONTROL BOARD

Title of Document: Storage Tank Program Compliance Manual Volume V - AST Guidance.

Public Comment Deadline: December 11, 2019.

Effective Date: December 12, 2019.

Agency Contact: Jennifer LaCroix, AST Program Coordinator, State Water Control Board, 5636 Southern Boulevard, Virginia Beach, VA 23462, telephone (757) 518-2026, or email jennifer.lacroix@deq.virginia.gov.

DEPARTMENT OF ENVIRONMENTAL QUALITY

2018 Fish Tissue Monitoring Data

Purpose of notice: The Virginia Department of Environmental Quality (DEQ) announces the availability of the 2018 fish tissue monitoring data.

Background: The Virginia Department of Environmental Quality conducts routine studies of fish tissue and sediment samples in state waters to assess the human health risks for individuals who may consume fish from state waters and to identify impaired aquatic ecosystems. Results are made available to the public each year on the agency's website.

In 2018, DEQ collected fish tissue samples from sites located in the Rappahannock, Potomac, James, Chowan, and Roanoke River basins. Samples were analyzed for polychlorinated biphenyls and a suite of 17 metals, including mercury. 2018 monitoring results are available on the agency's website at http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/WaterQualityMonitoring/FishTissueMonitoring/FishTissueResults.aspx.

Additional information: The Virginia Department of Health (VDH) uses the data generated by DEQ's fish tissue monitoring program to determine the need for fish consumption advisories. More information on VDH fish consumption advisories is available at http://www.vdh.virginia.gov/environmental-health/public-health-toxicology/fish-consumption-advisory/.

Contacts for more information: Questions on DEQ's fish tissue monitoring program can be directed to Rick Browder at telephone (804) 698-4134, or email at richard.browder@deq.virginia.gov, or Gabriel Darkwah at telephone (804) 698-4127, or email at gabriel.darkwah@deq.virginia.gov. Additional information is also available on the DEQ Water Quality Monitoring website at http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/WaterQualityMonitoring.aspx.

Contact Information: Richard Browder, Department of Environmental Quality, P.O. Box 1105, Richmond, VA 23218, telephone (804) 698-4134, or email richard.browder@deq.virginia.gov.

Fort Powhatan Solar LLC Withdrawal of Notice of Intent for Small Renewable Energy Project (Solar) - Prince George County

Fort Powhatan Solar LLC has withdrawn the notice of intent to submit the necessary documentation for a permit by rule for a small renewable energy project (solar) to be located in Disputanta in Prince George County. The original notice of intent was published in the Virginia Register of Regulations on May 14, 2018.

Contact Information: Mary E. Major, Department of Environmental Quality, 1111 East Main Street, Suite 1400, P.O. Box 1105, Richmond, VA 23218, telephone (804) 698-4423, FAX (804) 698-4319, or email mary.major@deq.virginia.gov.

Maplewood Solar I LLC Withdrawal of Notice of Intent for Small Renewable Energy Project (Solar) - Pittsylvania County

Maplewood Solar I LLC, an affiliate of Open Road Renewables LLC, has withdrawn the notice of intent to submit the necessary documentation for a permit by rule for a small renewable energy project (solar) in Pittsylvania County. The notice of intent was originally published in the Virginia Register of Regulations on August 21, 2017.

Contact Information: Mary E. Major, Department of Environmental Quality, 1111 East Main Street, Suite 1400, P.O. Box 1105, Richmond, VA 23218, telephone (804) 698-4423, FAX (804) 698-4319, or email mary.major@deq.virginia.gov.

Moody Creek Solar LLC Notice of Intent for Small Renewable Energy Project (Solar) - Charlotte County

Moody Creek Solar LLC (Moody Creek) has provided the Department of Environmental Quality a notice of intent to submit the necessary documentation for a permit by rule for a small renewable energy project (solar) in Charlotte County. The project is an approximately 149.5 megawatts alternating current solar photovoltaic generating facility, consisting of approximately 550,000 solar panels. The project is located on approximately 1,655 acres of privately-owned land in southeastern Charlotte County, south of Kings Highway and west of Craftons Gate Highway. Approximate coordinates are 36°52'15.0"N, 78°31'50.9"W.

Contact Information: Mary E. Major, Department of Environmental Quality, 1111 East Main Street, Suite 1400, P.O. Box 1105, Richmond, VA 23218, telephone (804) 698-4423, FAX (804) 698-4319, or email mary.major@deq.virginia.gov.

TWE Myrtle Solar Project LLC Amended Notice of Intent for Small Renewable Energy Project (Solar) - City of Suffolk

TWE Myrtle Solar Project LLC has provided notice to the Department of Environmental Quality of their intent to submit the necessary documentation for a modification to the TWE Myrtle Solar Project located in the City of Suffolk. The modification consists of a change in the vegetative cover used for final stabilization underneath the solar arrays. Specifically, the project site will be revegetated with a mixture of grasses, consistent with accepted best management practices, to facilitate stabilization of the area. The original notice of intent was published in the Virginia Register of Regulations on May 2, 2016.

Contact Information: Mary E. Major, Department of Environmental Quality, 1111 East Main Street, Suite 1400, P.O. Box 1105, Richmond, VA 23218, telephone (804) 698-4423, FAX (804) 698-4319, or email mary.major@deq.virginia.gov.

Windsor PV1 LLC Notice of Intent for Small Renewable Energy Project (Solar) - Isle of Wight County

Windsor PV1 LLC has provided the Department of Environmental Quality of a notice of intent to submit the necessary documentation for a permit by rule for a small renewable energy project (solar) in Isle of Wight County. The project is to be located in south-central Isle of Wight County, approximately 0.5 mile to the west of the Town of Windsor. The project is located on approximately 573 acres and has an approximate rated capacity of 85 megawatts alternating current.

Contact Information: Mary E. Major, Department of Environmental Quality, 1111 East Main Street, Suite 1400, P.O. Box 1105, Richmond, VA 23218, telephone (804) 698-4423, FAX (804) 698-4319, or email mary.major@deq.virginia.gov.

STATE WATER CONTROL BOARD

Proposed Consent Special Order for Kondakor Excavation Incorporated

An enforcement action has been proposed for Kondakor Excavation Incorporated for violations at the property located at 1644 Mahixon Road in King William County, Virginia. The State Water Control Board proposes to issue a special order by consent to Kondakor Excavation Incorporated to address noncompliance with the State Water Control Law and Regulations. A description of the proposed action is available at the Department of Environmental Quality office named below or online at www.deq.virginia.gov. Carla Pool will accept comments by email at carla.pool@deq.virginia.gov, FAX (804) 698-4234, or postal mail at Department of Environmental Quality, Central Office, P.O. Box 1105, Richmond, VA 23218, from November 11, 2019, to December 11, 2019.

Proposed Consent Order for Polycor Virginia Inc.

An enforcement action has been proposed for Polycor Virginia Inc. for violations at the Polycor Virginia Inc soapstone mining facility in Schuyler, Virginia. The State Water Control Board proposes to issue a consent order with penalty to Polycor Virginia Inc to address noncompliance with State Water Control Law. A description of the proposed action is available at the Department of Environmental Quality office listed or online at www.deq.virginia.gov. Tiffany Severs will accept comments by email at tiffany.severs@deq.virginia.gov, FAX (540) 574-7878, or postal mail at Department of Environmental Quality, Valley Regional Office, 4411 Early Road, P.O. Box 3000, Harrisonburg, VA 22801, from November 11, 2019, to December 11, 2019.

VIRGINIA CODE COMMISSION

Notice to State Agencies

Contact Information: *Mailing Address:* Virginia Code Commission, Pocahontas Building, 900 East Main Street, 8th Floor, Richmond, VA 23219; *Telephone:* (804) 698-1810; *Email:* varegs@dls.virginia.gov.

Meeting Notices: Section 2.2-3707 C of the Code of Virginia requires state agencies to post meeting notices on their websites and on the Commonwealth Calendar at https://commonwealthcalendar.virginia.gov.

Cumulative Table of Virginia Administrative Code Sections Adopted, Amended, or Repealed: A table listing regulation sections that have been amended, added, or repealed in the *Virginia Register of Regulations* since the regulations were originally published or last supplemented in the print version of the Virginia Administrative Code is available at http://register.dls.virginia.gov/documents/cumultab.pdf.

Filing Material for Publication in the *Virginia Register of Regulations*: Agencies use the Regulation Information System (RIS) to file regulations and related items for publication in the *Virginia Register of Regulations*. The Registrar's office works closely with the Department of Planning and Budget (DPB) to coordinate the system with the Virginia Regulatory Town Hall. RIS and Town Hall complement and enhance one another by sharing pertinent regulatory information.

ERRATA

BOARD OF PHARMACY

Title of Regulation: **18VAC110-21. Regulations Governing the Licensure of Pharmacists and Registration of Pharmacy Technicians.**

Publication: 35:9 VA.R. 1152-1190, December 24, 2018.

Corrections to Proposed Regulation:

Page 1186, 18VAC110-21-120, after subsection C, insert the following text as subsection D and change the lettering of the next two subsections from "D." to "E." and "E." to "F.":

"D. Up to two hours of the 15 hours required for annual renewal may be satisfied through delivery of pharmacy services as a pharmacist, without compensation, to low-income individuals receiving health services through a local health department or a free clinic organized in whole or primarily for the delivery of those services. One hour of continuing education may be credited for three hours of

providing such volunteer services, as documented by the health department or free clinic."

Page 1188, 19VAC110-21-180, after subsection C, insert the following text as subsection D and change the lettering of the next subsection from "D." to "E.":

"D. Up to one hour of the five hours required for annual renewal may be satisfied through delivery of pharmacy services as a pharmacy technician, without compensation, to low-income individuals receiving health services through a local health department or a free clinic organized in whole or primarily for the delivery of those services. One hour of continuing education may be credited for three hours of providing such volunteer services, as documented by the health department or free clinic."

VA.R. Doc. No. R16-4673; Filed October 28, 2019, 11:00 a.m.