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Proposed Regulation
Agency Background Document

Agency name	Virginia Department of Health
Virginia Administrative Code (VAC) citation(s)	12 VAC5-590 *et seq.*
Regulation title(s)	*Waterworks Regulations*
Action title	Amend and update the *Waterworks Regulations*
Date this document prepared	September 13, 2018

This information is required for executive branch review and the Virginia Registrar of Regulations, pursuant to the Virginia Administrative Process Act (APA), Executive Order 14 (as amended, July 16, 2018), the Regulations for Filing and Publishing Agency Regulations (1 VAC7-10), and the *Virginia Register Form, Style, and Procedure Manual for Publication of Virginia Regulations.*

Brief Summary

Please provide a brief summary (preferably no more than 2 or 3 paragraphs) of this regulatory change (i.e., new regulation, amendments to an existing regulation, or repeal of an existing regulation). Alert the reader to all substantive matters. If applicable, generally describe the existing regulation.

The *Waterworks Regulations* establish 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 planned regulatory action is a comprehensive update of the *Waterworks Regulations*, including Part I – General Framework for Waterworks Regulations, Part II – Operation Regulations for Waterworks, and Part III - Manual of Practice for Waterworks Design. Part IV – Exceptions for Noncommunity Waterworks to Specific Sections of the Manual of Practice (Part III) – will be incorporated into Part III, and the appendices will be incorporated into the body of the regulations or, where they are no longer relevant, deleted. Many of the changes simply refine and provide further clarity to existing regulations. Significant changes include amending out-of-date regulations, incorporating technologies and procedures that have come into use since the last major revision in 1993, and reorganizing sections to make them easier to understand and follow. The updates

to Part I will include deleting some of the definitions, revising the existing definitions, and adding some new ones. Other changes to Part I address permit requirements, the Waterworks Advisory Committee, business plans, variances, exemptions, and other administrative details. Significant updates to Part II will involve reorganizing much of the content into smaller sections to improve clarity and readability, but will not change the requirements in the regulations that are necessary for the state to retain primary enforcement responsibility for waterworks in Virginia. Other changes to Part II address cross connection control, operator requirements, evaluation for groundwater under the direct influence of surface water (GUDI), and requirements for waterworks to provide notification to the commissioner and consumers if they make changes to start or stop fluoridation programs. The changes to Part II also include adding the option to reduce the monitoring frequency for bacteriological contaminants at qualified, well-operated transient noncommunity waterworks. Updates to Part III address new technology and current industry standards for waterworks design, including automated control systems and alternate power requirements and reorganizing existing content into smaller sections to improve clarity and readability.

Acronyms and Definitions

Please define all acronyms used in the Agency Background Document. Also, please define any technical terms that are used in the document that are not also defined in the "Definition" section of the regulations.

"APA" means the Virginia Administrative Process Act.
"AWWA" means the American Water Works Association.
"BAT" means best available technology
"CCCP" means cross-connection control plan.
"CFR" means the Code of Federal Regulations.
"DEQ" means Department of Environmental Quality.
"DPOR" means Department of Professional and Occupational Regulation
"EPA" means United States Environmental Protection Agency.
"gpm" means gallons per minute.
"GUDI" means groundwater under the direct influence of surface water.
"MPA" means microscopic particulate analysis.
"NTNC" means nontransient noncommunity waterworks.
"PMCL" means primary maximum contaminant level.
"ODW" means the Virginia Department of Health Office of Drinking Water.
"O&M" means operation and maintenance.
"POE" means point of entry.
"POU" means point of use.
"RIS Style Manual" refers to the Virginia Register of Regulations *Form, Style and Procedure Manual for Publication of Virginia Regulations* (April 2014).
"RTCR" means the Revised Total Coliform Rule, 40 CFR 141, Subpart Y.
"SDWA" means Safe Drinking Water Act.
"TNC" means transient non-community waterworks.
"USBC" means Uniform Statewide Building Code.
"USC" means United States Code.
"VDH" means the Virginia Department of Health.
"VOSH" means the Virginia Occupational Safety and Health Program
"WAC" means waterworks advisory committee. The WAC advises VDH and the Health Commissioner.

Mandate and Impetus

Please identify the mandate for this regulatory change, and any other impetus that specifically prompted its initiation (e.g., new or modified mandate, petition for rulemaking, periodic review, board decision, etc.).

For purposes of executive branch review, "mandate" has the same meaning as defined in Executive Order 14 (as amended, July 16, 2018), "a directive from the General Assembly, the federal government, or a court that requires that a regulation be promulgated, amended, or repealed in whole or part."

This regulatory action under the standard rulemaking process is based in large part on the fulfillment of a 2014 agency initiative to comprehensively amend the *Waterworks Regulations.* This effort is intended to address the following changes since the last significant revision in 1993:

- Development of new treatment technologies;
- Development of new monitoring and control technologies;
- Water consumption patterns resulting from shifts in consumer use and water-saving plumbing features; and
- State laws that have been passed since the 1990s governing source water supply planning and withdrawal.

The regulatory action will also:

- Remove or revise outdated requirements;
- Reorganize the *Waterworks Regulations* to improve clarity and readability;
- Correct syntax and inconsistent terminology;
- Incorporate the appendices into the main body of the *Waterworks Regulations*; and
- Allow qualified, well-operated TNCs to monitor for total coliform bacteria on an annual basis instead of quarterly.

All federal mandates associated with previously promulgated EPA drinking water rules have already been incorporated into the *Waterworks Regulations*. With the exception of adding reduced monitoring for qualified, well-operated TNCs and reorganizing sections for clarity, none of the federal mandates are being changed or amended in this regulatory action.

Legal Basis

Please identify (1) the agency or other promulgating entity, and (2) the state and/or federal legal authority for the regulatory change, including the most relevant citations to the Code of Virginia or Acts of Assembly chapter number(s), if applicable. Your citation must include a specific provision, if any, authorizing the promulgating entity to regulate this specific subject or program, as well as a reference to the agency or promulgating entity's overall regulatory authority.

§ 32.1-169 of the *Code of Virginia* provides that the Board of Health (board) 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 his capacity to comply with state and federal drinking water standards.

§ 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. These regulations shall include criteria and procedures to accomplish these purposes.

§§ 32.1-167 through 32.1-168 and §§ 32.1-171 through 32.1-176 of the *Code of Virginia* provide additional details regarding the board's authorities and responsibilities for regulating waterworks in Virginia.

Purpose

Please explain the need for the regulatory change, including a description of: (1) the rationale or justification, (2) the specific reasons the regulatory change is essential to protect the health, safety or welfare of citizens, and (3) the goals of the regulatory change and the problems it's intended to solve.

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

The 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, have been amended as needed 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). VDH completed the most recent amendment in November 2016 to incorporate the requirements in the Revised Total Coliform Rule (RTCR), 40 CFR 141.851 through 141.861, in the *Waterworks Regulations*. VDH made these amendments through "exempt" regulatory actions that were necessary for the state to retain primary enforcement responsibility for waterworks in Virginia. See § 2.2-4006 A 4 of the *Code of 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 WAC, and a Regulatory Advisory Panel consisting of waterworks stakeholders, collectively recommend that Parts I and III of the current *Waterworks Regulations* be updated in the areas of waterworks' 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 and improve the readability of the *Waterworks Regulations*, VDH also addressed consistent use of defined terms and technical terms across the entire document. 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

Please briefly identify and explain the new substantive provisions, the substantive changes to existing sections, or both. A more detailed discussion is provided in the "Detail of Changes" section below.

The proposed amendments reorganize the way information is provided; add new sections to expand or clarify existing provisions or incorporate new provisions; delete sections in whole or in part to remove obsolete information and duplication; revise references and/or citations to be current; 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:

<u>Part I – General Framework for Waterworks Regulations</u>

1. Revise, add, or delete definitions.
2. Add units of measurement.
3. Add new section on the Waterworks Advisory Committee.
4. Add a new section on relationship to the Uniform Statewide Building Code (USBC).
5. Add a new section on administrative proceedings and update enforcement requirements to be more consistent with the APA and Title 32.1 of the *Code of Virginia*.

6. Clarify and streamline the permit process, including the requirements for obtaining a construction permit.
7. Add requirements and circumstances for issuance of a temporary operation permit.

Part II - Operation Regulations for Waterworks

8. Move and consolidate all water quality standards, maximum contaminant levels, action levels, treatment techniques, and maximum disinfectant levels and goals to first section of Part II.
9. Revise and clarify the procedure for determining surface water influence of groundwater sources.
10. Reorganize and move content of five large sections (370, 410, 420, 530, and 545) into several new, smaller sections.
11. Revise and clarify the classification of waterworks, operator requirements, and operator attendance.
12. Add new sections for abandoning and reactivating wells.
13. Move and revise operation report content requirements from Appendix G to section 570.
14. Revise and clarify cross-connection control program requirements.

Part III - Manual of Practice for Waterworks Design

15. Update design water demand and waterworks capacity requirements.
16. Revise and clarify metering, building design, layout, and laboratory design requirements.
17. Revise and clarify new source development requirements for groundwater sources, including springs.
18. Clarify well construction requirements and well classification.
19. Distinguish and clarify construction, testing, and capacity requirements for wells located in designated groundwater management areas (9VAC25-600).
20. Revise and clarify water treatment processes. Add 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.
21. Clarify design requirements for pump stations and equipment.
22. Distinguish atmospheric and pressure storage tank design requirements.
23. Reorganize and move content of four sections (870, 880, 1000, and 1080) into new, smaller sections.
24. Add new section on water loading stations.

Part IV- Exceptions for Noncommunity Waterworks

25. Move content to applicable sections in Part III and repeal this part.

Appendices

26. Appendix A. [Reserved] - Repeal.
27. Appendix B. Background Used in Developing the Chemical, Physical and Radiological Limits of the Drinking Water Standards - Extract relevant content and move to Part II. Repeal appendix.
28. Appendix C. Field Office Counties and Cities Served - Repeal. Content is available on VDH website.
29. Appendix D. [Reserved] - Repeal.
30. Appendix E. [Reserved] - Repeal.
31. Appendices F. and H. were previously repealed.
32. Appendix G. Monitoring and Reporting - Revise content and move to Part II. Repeal appendix.
33. Appendix I. Suggested Outline of Contents of a Cross Connection Control Program - Revise content and move to Part II. Repeal appendix.
34. Appendices J. and K. were previously repealed.
35. Appendix L. Determination of CT - Extract relevant content and move to Part II. Repeal appendix.
36. Appendix M. Lead and Copper - Repeal.
37. Appendix N. Inorganic Compounds and Organic Chemicals - Add reference in Part III to federal regulations for Best Available Treatment of inorganic and organic compounds. Repeal appendix.
38. Appendix O. Regulated Contaminants for Consumer Confidence Reports and Public Notification - Extract relevant content and move to Part II. Repeal appendix.
39. Appendix P. Best Available Technologies for Radionuclides - Add reference in Part III to federal regulations for Best Available Treatment of radionuclides. Repeal appendix.

Issues

Please identify the issues associated with the regulatory change, including: 1) the primary advantages and disadvantages to the public, such as individual private citizens or businesses, of implementing the new or amended provisions; 2) the primary advantages and disadvantages to the agency or the Commonwealth; and 3) other pertinent matters of interest to the regulated community, government officials, and the public. If there are no disadvantages to the public or the Commonwealth, include a specific statement to that effect.

VDH intends for the majority of the proposed changes to the *Waterworks Regulations* to update and clarify the existing requirements. In many cases, the changes will reflect current practices and technologies for treatment, monitoring, and reporting; changes that waterworks have already implemented, but, because it has been over 25 years since the last significant revision, have not been incorporated in 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, there are several specific areas, described below, upon which the stakeholders, VDH, and the citizens of the Commonwealth may not be in complete agreement. They include cross connection control, source water capacity evaluation, operator classification, point of use devices, reduced monitoring for bacteriological contaminants at certain 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. The proposed changes reflect the input from stakeholders and have the advantage of being based largely on their input. However, the changes do not, and cannot, take into account all other stakeholders' concerns. VDH believes the changes provide more clarity about requirements for cross connection control programs, they 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 believe there are any disadvantages to the changes.

The 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 DEQ (based on the quantity of water that is withdrawn), and may be required to obtain 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. Section 830 (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 does not propose any amendments to Section 830 at this time. VDH will continue to work with stakeholders outside of this regulatory action to reach consensus on this topic.

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 the 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 sufficient trained, licensed operators. For the agency and the Commonwealth, having qualified operators in responsible charge of waterworks is critical to

ensuring waterworks can consistently and reliably provide drinking water that meets regulatory standards and is protective of public health.

VDH will allow point-of-use (POU) or point-of-entry (POE) devices for long-term compliance with PMCLs; 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 Revised Total Coliform Rule (a federal mandate) 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 annual. To reduce (potentially) the burden of collecting and submitting quarterly bacteriological samples at qualified well-operated TNCs, VDH will add this option to the *Waterworks Regulations*. EPA 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 and reduce dental caries, 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 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 which either initiate or permanently stop programs to provide community water fluoridation. The main advantage of the changes is that they align the recommended level of fluoridation with the U.S. Department of Health and Human Resources' guidelines and they ensure VDH and the public are notified about proposed changes in fluoridation before they take effect. Groups that 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.

Requirements More Restrictive than Federal

Please identify and describe any requirement of the regulatory change which is more restrictive than applicable federal requirements. Include a specific citation for each applicable federal requirement, and a rationale for the need for the more restrictive requirements. If there are no applicable federal requirements, or no requirements that exceed applicable federal requirements, include a specific statement to that effect.

There are two notable instances in which state authority has prescribed elements or details that are more restrictive than the federal mandate. These requirements, which are already in the *Waterworks Regulations* and have been modified to improve clarity, not to change either requirement, are:

Filtration avoidance for surface water sources.

> Federal Mandate: Federal regulation (40 CFR 141.70 adopted in 1989) requires waterworks supplied by surface water sources (*e.g.*, a river or lake) or GUDI sources, to provide filtration. However, the federal regulation allows a waterworks to avoid filtration (40 CFR 141.71) if it can demonstrate compliance with certain criteria and water quality standards. The EPA adoption of these exclusionary criteria was a concession to the largest U.S. cities, many of which do not practice filtration of their surface water sources.

Virginia Authority: In contrast, 12VAC5-590-395 A of the *Waterworks Regulations* requires all waterworks supplied by surface water or GUDI sources to provide *both* disinfection and filtration.

Rationale: VDH believes that EPA's concessions potentially compromise public health because surface water sources are often contaminated with microbiological organisms that cause disease and gastrointestinal distress. VDH's decision to require both disinfection and filtration reflects a long-standing policy (in force since the passage of Virginia's Public Water Supplies law in 1916) that both filtration and disinfection are necessary to ensure the purity of drinking water obtained from surface water sources. Many other states have taken VDH's approach by refusing to adopt the EPA criteria for avoiding filtration.

Microbial monitoring.

Federal Mandate: For groundwater systems, federal regulation (40 CFR 141.21 (a) (3) (i)) requires the noncommunity classified waterworks to monitor either monthly, *quarterly, or annually* for bacteriological contamination based on the population served. This classification includes the NTNC waterworks.

Virginia Authority: For groundwater systems, 12VAC5-590-370 A 2 of the *Waterworks Regulations* requires *monthly* monitoring for NTNC waterworks (*e.g.,* rural schools or factories with their own water supply).

Rationale: VDH requires more frequent monitoring to protect the health of persons who regularly use water from a particular waterworks, such as schoolchildren and industrial workers. More frequent use increases a person's exposure to any contaminants that may be present. Both state and federal regulations require monthly bacteriological monitoring at community waterworks, seasonal waterworks, TNC waterworks serving >1000 persons, and TNC waterworks using surface water or GUDI sources. TNC waterworks serving <1000 persons and using groundwater only may monitor annually provided they are well operated and meet certain criteria that are protective of public health.

Agencies, Localities, and Other Entities Particularly Affected

Please identify any other state agencies, localities, or other entities particularly affected by the regulatory change. "Particularly affected" are those that are likely to bear any identified disproportionate material impact which would not be experienced by other agencies, localities, or entities. "Locality" can refer to either local governments or the locations in the Commonwealth where the activities relevant to the regulation or regulatory change are most likely to occur. If no agency, locality, or entity is particularly affected, include a specific statement to that effect.

Other State Agencies Particularly Affected

The proposed changes to requirements for cross connection control codify current requirements implemented by policy; therefore, state agencies are already meeting these requirements and there are no state agencies "particularly affected".

The Department of Professional and Occupational Regulation (DPOR), Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals, has established six (6) classes of operators. The proposed revisions will make the *Waterworks Regulations* consistent with the *Waterworks and Wastewater Works Operators Licensing Regulations* at 18VAC160-30 *et seq.* The number and qualifications of persons constituting the operating staff at a waterworks depend principally upon the capacity of the waterworks, the population served by the waterworks, and the complexity of the treatment process(es). Depending on the waterworks classification (as described in 12VAC5-590-461), applications for new and updated licenses may be required. This change will potentially affect DPOR by means of increased or changed applicant workload.

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. State agencies such as the Department of Transportation, Department of Corrections and the Department of Conservation and Recreation that own and operate community and/or noncommunity waterworks that make use of groundwater sources and are required to complete a Level 3 assessment will be "particularly affected."

Allowing POU or POE devices for long-term compliance with PMCLs will provide additional flexibility to waterworks owners. State agencies that own waterworks have the option to employ POU and POE devices to meet PMCLs. No state agencies are "particularly affected" since there is no increase in regulatory burden.

Allowing qualified well-operated TNCs to reduce the monitoring frequency for bacteriological contaminants from quarterly to annual will reduce the burden of collecting and submitting quarterly bacteriological samples. This change could reduce the burden for state agencies that own and operate TNCs that make use of groundwater sources. This includes, but is not limited to the Department of Transportation, Department of Corrections and the Department of Conservation and Recreation. No state agencies are "particularly affected" since there is no increase in regulatory burden.

Waterworks that practice community water fluoridation will have a clearly defined recommended optimum fluoride level, which will serve to build confidence in fluoridation. Waterworks that either begin or end community water fluoridation programs will be required to notify the commissioner and customers at least 90 days before beginning or ending a program. No state agencies are "particularly affected" because the state does not own or operate waterworks that do or could practice fluoridation.

Localities Particularly Affected

The proposed changes to requirements for cross connection control codify current requirements implemented by policy; therefore, localities are already meeting these requirements and there are no localities "particularly affected".

All classified waterworks must have a licensed waterworks operator of equal classification or better than that of the waterworks. The attendance requirements at these waterworks by operators will vary depending particularly on the complexity of treatment. Depending on the waterworks classification (as described in 12VAC5-590-461), new and updated licensed operators may be required. This requirement has already been implemented by means of policy and the change to the regulations codifies an existing requirement. Therefore, classified waterworks have already implemented this requirement and, although certain localities (counties, cities, towns, authorities, political subdivisions, etc.) own and operate community and/or noncommunity waterworks that require a licensed waterworks operator, they are not "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 (counties, cities, town, authorities, political subdivisions, etc.) that own and operate community and/or noncommunity waterworks that make use of groundwater sources and are required to complete a Level 3 assessment will be "particularly affected."

Allowing POU or POE devices for long-term compliance with PMCLs will provide additional flexibility to owners. This will allow localities that are owners of waterworks to employ POU and POE devices to meet PMCLs. No localities are "particularly affected" since there is no increase in regulatory burden.

Allowing qualified well-operated TNCs to reduce the monitoring frequency for bacteriological contaminants from quarterly to annual will reduce the burden of collecting and submitting bacteriological samples. This change could reduce the burden for localities that that own and operate TNCs that make use of groundwater sources. This could include TNCs at local parks and recreation areas. No localities are "particularly affected" since there is no increase in regulatory burden.

Waterworks that practice fluoridation will have a clearly defined recommended optimum fluoride level, which will serve to build confidence in fluoridation. Waterworks that either begin or end community water fluoridation programs will be required to notify the commissioner and customers prior to beginning or ending a program. Waterworks that practice community water fluoridation are typically medium and large size community waterworks, meaning waterworks that serve over 3,300 persons. Localities that may be "particularly affected" include community waterworks owners that practice fluoridation or begin fluoridation, including, counties, cities, towns, water authorities, and other owners.

Other Entities Particularly Affected

The proposed changes to requirements for cross connection control codify current requirements implemented by policy; therefore, the regulated community is already meeting these requirements and there are no other entities "particularly affected".

The changes to licensed waterworks operator requirements have already been implemented by means of policy and the change to the regulations codifies an existing requirement. Therefore, classified waterworks and the regulated community have already implemented the requirements. Other entities are not "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. Other entities such as restaurants, convenience stores, recreation areas, day cares, schools, and other businesses that own and operate community and or noncommunity waterworks that make use of groundwater sources and are required to complete a Level 3 assessment will be "particularly affected."

Allowing POU or POE devices for long-term compliance with PMCLs will provide additional flexibility to owners. This will allow localities that are owners of waterworks to employ POU and POE devices to meet PMCLs. No other entities are "particularly affected" since there is no increase in regulatory burden.

Allowing qualified well-operated TNCs to reduce the monitoring frequency for bacteriological contaminants from quarterly to annual will reduce the burden of collecting and submitting bacteriological samples. This change could reduce the burden for other entities that own and operate TNCs and use groundwater sources. This could include day care facilities, restaurants, golf courses, and convenience stores. No other entities are "particularly affected" since there is no increase in regulatory burden.

Receiving water with a consistent, optimum level of fluoride will give customers a sense of confidence in the waterworks that practice community water fluoridation. The notice requirements will ensure those consumers are aware of actions to start or stop fluoridation programs, giving them an opportunity to provide feedback to the owner about the proposed change. Other entities that practice fluoridation or begin fluoridation, such as private companies that operate community waterworks, may be "particularly affected" if they propose to start or stop a fluoridation program.

Economic Impact

Pursuant to § 2.2-4007.04 of the Code of Virginia, please identify all specific economic impacts (costs and/or benefits), anticipated to result from the regulatory change. When describing a particular economic impact, specify which new requirement or change in requirement creates the anticipated economic impact. Please keep in mind that this is change versus the status quo.

Impact on State Agencies

For your agency: projected costs, savings, fees or revenues resulting from the regulatory change, including: a) fund source / fund detail; b) delineation of one-time versus on-going expenditures; and c) whether any costs or revenue loss can be absorbed within existing resources	There are negligible agency costs that will result from the implementation and enforcement of these regulatory changes. a) Not applicable. b) Not applicable. c) Any costs associated with these program activities will be absorbed by current staff and under the existing program guidelines.
For other state agencies: projected costs, savings, fees or revenues resulting from the regulatory change, including a delineation of one-time versus on-going expenditures.	The proposed changes to requirements for cross connection control codify current requirements implemented by policy; therefore, affected state agencies are already meeting these requirements and there are no additional costs or savings. The waterworks classification and operator certification requirements codify requirements that VDH has implemented by policy. As a result, state agencies that own waterworks have already assumed these costs. Proposed changes to allow POU/POE devices would give state agencies the option to meet a PMCL without installing central treatment. This provides additional flexibility to meet PMCLs at a potentially lower cost. Based on a single POU installation at a small noncommunity waterworks, capital cost saving of $21,800 per installation and O&M savings of $600 per year could be achieved in comparison to a central treatment unit. Allowing qualified well-operated TNCs to reduce the monitoring frequency for bacteriological contaminants from quarterly to annual will reduce the burden of collecting and submitting bacteriological samples. State agencies that own and operate TNCs that qualify for this reduced monitoring could save approximately $100 per year for each TNC. For the proposed changes to fluoridation requirements, there is no likely cost impact since this applies to community waterworks that practice fluoridation and state agencies do not own or operate community waterworks. The revised GUDI reevaluation protocol may require a waterworks owned by a state agency to complete a Step 3 evaluation. VDH estimates that no more than one Step 3 evaluation will be triggered per year for state owned waterworks. The cost for a Step 3 GUDI evaluation (as described in 12VAC5-590-430) is approximately $7,480.

For all agencies: Benefits the regulatory change is designed to produce.	For cross connection control, the changes clarify requirements, provide flexibility for the regulated community and codify current practices. The waterworks classification and operator certification requirements codify existing policy. Having appropriately licensed operators at waterworks will help ensure they perform as designed to produce drinking water that meets water quality standards. The proposed changes to allow POU/POE devices provide state agencies additional flexibility to meet PMCLs at a potentially lower cost than central treatment. Allowing qualified well-operated TNCs to reduce the monitoring frequency for bacteriological contaminants will reduce the burden of collecting and submitting quarterly bacteriological samples. For the proposed changes to fluoridation requirements, VDH will receive advance notification of intended changes to fluoridation practices. The revised GUDI evaluation protocol will provide VDH and the regulated community additional confidence that the GUDI evaluation results and any required level of treatment are appropriate and protective of health.

Impact on Localities

Projected costs, savings, fees or revenues resulting from the regulatory change.	For cross connection control, the regulatory change clarifies requirements, provides flexibility for the regulated community and codifies current practices. Localities generally are already meeting these requirements and there are no additional costs or savings. The waterworks classification and operator certification requirements codify requirements that VDH has implemented by policy. As a result, localities that own waterworks have already assumed these costs. The proposed changes would allow localities to use POU/POE devices to meet PMCLs. The most likely waterworks to use POUs and POEs will be very small NTNCs and TNCs, where the installation of centralized treatment is less cost-effective than the installation of the POU and POE devices. If selected, the estimated average first time installation costs to the waterworks:

	POU = $391; POE=$644. Estimated annual O&M costs per installed unit range from $20 - $100. In comparison, centralized treatment for a small noncommunity waterworks would cost approximately $22,500 based on 10 gpm treatment capacity. The O&M cost could be approximately $700 per year. At most, VDH estimates 30 waterworks owned by localities would select POU/POE devices to meet a PMCL at some time in the future. Allowing qualified well-operated TNCs to reduce the monitoring frequency for bacteriological contaminants from quarterly to annual will reduce the burden of collecting and submitting bacteriological samples. Localities that own and operate TNCs that qualify for this reduced monitoring could save approximately $100 per year for each TNC. For the proposed changes to fluoridation requirements, most localities with community waterworks would not trigger any additional costs, since very few waterworks either start or permanently stop fluoridation treatment. At most, VDH expects two or fewer waterworks per year to trigger the costs associated with public notification. The actual cost of public notification depends on the number of customers served and the method of public notification. Each community waterworks may be required to complete other public notifications and this requirement is insignificant. The revised GUDI reevaluation protocol may require a waterworks owned by locality to complete a Step 3 evaluation. VDH estimates that no more than ten Step 3 evaluations will be triggered per year for localities with waterworks. The cost for a Step 3 GUDI evaluation (as described in 12VAC5-590-430) is approximately $7,480.
Benefits the regulatory change is designed to produce.	For cross connection control, the changes clarify requirements, provide flexibility for the regulated community and codify current practices. The waterworks classification and operator certification requirements codify existing policy. Having appropriately licensed operators at waterworks will help ensure they perform as designed to produce drinking water that meets water quality standards. The proposed changes to allow POU/POE devices provide localities additional flexibility to

	meet PMCLs at a potentially lower cost than central treatment. Allowing qualified well-operated TNCs to reduce the monitoring frequency for bacteriological contaminants will reduce the burden of collecting and submitting quarterly bacteriological samples. For the proposed changes to fluoridation requirements, consumers and VDH will receive advance notification of intended changes to fluoridation practices. The revised GUDI evaluation protocol will provide VDH and the regulated community additional confidence that the GUDI evaluation results and any required level of treatment are appropriate and protective of health.

Impact on Other Entities

Description of the individuals, businesses, or other entities likely to be affected by the regulatory change. If no other entities will be affected, include a specific statement to that effect.	The changes to the cross connection control requirements are intended to clarify and codify current requirements and practices. These changes apply to all waterworks owners, but to the extent waterworks owners are in compliance with current requirements and approved practices, there are no additional impacts. The waterworks classification and operator certification requirements codify requirements that VDH has implemented by policy. As a result, other entities that own waterworks have already assumed these costs. These changes apply to all owners of classified waterworks. Use of POE and POU devices to comply with PMCLs will likely be implemented at NTNCs or TNCs as a less expensive alternative to installation of centralized treatment. This will affect a business that owns and operates a waterworks. Owners that could take advantage of this alternative include state and local governmental agencies, corporations, small businesses and nonprofit organizations. Allowing qualified well-operated TNCs to reduce the monitoring frequency for bacteriological contaminants from quarterly to annual will reduce the burden of collecting and submitting bacteriological samples. Other entities that own and operate TNCs that qualify for this reduced monitoring could save approximately $100 per year for each TNC. Owners affected include state

	and local governmental agencies, corporations, small businesses and nonprofit organizations. The proposed changes to fluoridation requirements affect owners of community waterworks. The only entities that may be affected (that have not already been addressed above) are private companies that operate community waterworks. The proposed changes to the GUDI evaluation procedure could impact owners of groundwater waterworks, including, not limited to water authorities, state agencies, county or local governments, corporations, small businesses, and nonprofit organizations.
Agency's best estimate of the number of such entities that will be affected. Please include an estimate of the number of small businesses affected. Small business means a business entity, including its affiliates, that: a) is independently owned and operated and; b) employs fewer than 500 full-time employees or has gross annual sales of less than $6 million.	VDH records of waterworks owners do not provide the information necessary to definitively classify owners as a small business as defined herein. Nevertheless, the estimates are provided below. VDH interprets "affected" to mean that the change in the *Waterworks Regulations* would apply to the small business, and not a measure of the impact. Cross connection control: Approximately 2,000 small businesses. Operator Classification: approximately 800 small businesses. POE/POU: Up to approximately 30 small businesses RTCR: Up to approximately 1,100 small businesses Fluoridation: no small businesses. GUDI protocol: up to approximately 10 small businesses per year.
All projected costs for affected individuals, businesses, or other entities resulting from the regulatory change. Please be specific and include all costs including, but not limited to: a) projected reporting, recordkeeping, and other administrative costs required for compliance by small businesses; b) specify any costs related to the development of real estate for commercial or residential purposes that are a consequence of the regulatory change; c) fees; d) purchases of equipment or services; and e) time required to comply with the requirements.	Cross connection control: No additional costs Operator Classification: No additional costs POE/POU: Cost savings – no additional costs RTCR: Cost savings – no additional costs Fluoridation: Insignificant additional cost. GUDI protocol: VDH estimates up to 10 waterworks per year may trigger the Level 3 GUDI evaluation.

	a) The cost for the Level 3 testing, if triggered, is approximately $7,480. The total cost to a business could be approximately $15,000. b) There are no specific costs related to development of real estate. c) There are no new fees. d) Any required equipment or services related to the testing is included in section a), above. e) The Level 3 testing could occur over a period of up to 12 months.
Benefits the regulatory change is designed to produce.	As a whole, VDH expects the regulatory changes will clarify requirements, codify existing requirements implemented by policy, provide options and flexibility to achieve compliance with water quality standards, improve readability, and provide enhanced public health protection.

Alternatives

Please describe any viable alternatives to the regulatory change that were considered, and the rationale used by the agency to select the least burdensome or intrusive alternative that meets the essential purpose of the regulatory change. Also, include discussion of less intrusive or less costly alternatives for small businesses, as defined in § 2.2-4007.1 of the Code of Virginia, of achieving the purpose of the regulatory change.

The no-action alternative to revising the *Waterworks Regulations* would allow waterworks permitting, operation, and design requirements to continue remaining unclear, conflicting, or unaddressed, and outdated practices would continue.

A partial revision of the *Waterworks Regulations,* to incorporate provisions that currently exist in policy or guidance, is one alternative. A partial revision would not address many of the shortcomings that the full reorganization and revision would provide, such as clarity, consistency, and better organization.

For the reasons previously stated, VDH is proposing to update or clarify all sections of the *Waterworks Regulations* where needed, and to re-organize the overall content in three parts.

Regulatory Flexibility Analysis

Pursuant to § 2.2-4007.1B of the Code of Virginia, please describe the agency's analysis of alternative regulatory methods, consistent with health, safety, environmental, and economic welfare, that will accomplish the objectives of applicable law while minimizing the adverse impact on small business. Alternative regulatory methods include, at a minimum: 1) establishing less stringent compliance or reporting requirements; 2) establishing less stringent schedules or deadlines for compliance or reporting requirements; 3) consolidation or simplification of compliance or reporting requirements; 4) establishing performance standards for small businesses to replace design or operational standards required in the proposed regulation; and 5) the exemption of small businesses from all or any part of the requirements contained in the regulatory change.

The Commonwealth of Virginia, through VDH, has primary enforcement responsibility (or "primacy") for the Safe Drinking Water Act (SDWA) granted by the EPA. Primacy is predicated on the requirement that the Commonwealth's *Waterworks Regulations* will be no less stringent than the federal drinking water regulations (40 CFR Parts 141 and 142). Federal regulations that EPA promulgated pursuant to the SDWA have mandatory water quality standards and compliance requirements that include recordkeeping and reporting by the waterworks to the state. VDH has not pursued alternative regulatory methods to evaluate less stringent water quality standards, and/or reporting standards or schedules in order to maintain primacy. Although the SDWA and federal regulations contain provisions allowing variances and exemptions to the compliance and reporting requirements, which are included in the *Waterworks Regulations* at 12VAC5-590-140 and 12VAC5-590-150, VDH can only use these on a case-by-case basis and only for a limited period of time.

However, allowing certain well-operated TNCs to reduce the monitoring frequency for bacteriological contaminants from quarterly to annual will reduce the burden of collecting and submitting quarterly bacteriological samples. This option, which is part of EPA's Reduced Total Coliform Rule, establishes less stringent compliance requirements and less stringent compliance schedules for qualified TNCs, many of which are owned by small businesses. In addition, allowing POU/POE devices to meet PMCLs provides owners of NTNCs and TNCs additional flexibility to use this technology to meet a PMCL. VDH expects this to be a lower-cost option than providing treatment at the waterworks' treatment facility. Many owners of NTNCs and TNCs are small businesses.

Periodic Review and Small Business Impact Review Report of Findings

If you are using this form to report the result of a periodic review/small business impact review that is being conducted as part of this regulatory action, and was announced during the NOIRA stage, please indicate whether the regulatory change meets the criteria set out in Executive Order 14 (as amended, July 16, 2018), e.g., is necessary for the protection of public health, safety, and welfare; minimizes the economic impact on small businesses consistent with the stated objectives of applicable law; and is clearly written and easily understandable.

In addition, as required by § 2.2-4007.1 E and F of the Code of Virginia, include a discussion of the agency's consideration of: (1) the continued need for the regulation; (2) the nature of complaints or comments received concerning the regulation from the public; (3) the complexity of the regulation; (4) the extent to the which the regulation overlaps, duplicates, or conflicts with federal or state law or regulation; and (5) the length of time since the regulation has been evaluated or the degree to which technology, economic conditions, or other factors have changed in the area affected by the regulation.

These regulatory changes are necessary for the protection of public health, safety, and welfare. They include changes to the *Waterworks Regulations* to document requirements that have already been implemented by means of policy or codify current practices (operator classification, GUDI protocol, cross connection control). Other changes (POE/POU devices, reduced monitoring) increase regulatory flexibility for small businesses or generally do not have an impact on small businesses (fluoridation). Consequently, the changes will not impose any new regulatory requirements on existing small businesses that operate waterworks and may have a positive impact on the small business that provide products and services needed by waterworks.

The *Waterworks Regulations* are needed in order for the Commonwealth to retain primary enforcement authority for implementation of the SDWA and National Primary Drinking Water Regulations in Virginia and they must be no less stringent than the federal requirements. Loss of primacy would mean EPA would assume enforcement responsibility for water quality standards in Virginia and the state would lose

millions of federal dollars it currently receives for operating the public water system supervision program and drinking water state revolving loan fund program. As such, the *Waterworks Regulations* do not conflict, duplicate, or overlap with federal requirements.

VDH incorporated federal requirements into the *Waterworks Regulations* using "exempt" regulatory actions, but has not completed a comprehensive revision to the non-federal requirements since 1993. This revision addresses a range of items including development of new treatment technologies, development of new monitoring and control technologies, water consumption patterns resulting from shifts in consumer use and water-saving plumbing features, and state laws that the legislature has passed since the 1990s governing source water supply planning and withdrawal.

VDH has received comments from the regulated community about the need to update the *Waterworks Regulations* and has included stakeholders in the process of reviewing and developing amendments. VDH worked with a Regulatory Advisory Panel stakeholder group and the WAC to identify issues to be addressed during the update and develop consensus on the proposed changes.

Although the water quality standards in the *Waterworks Regulations* are complex, they are based on the federal regulations. As EPA continues to develop new standards for water quality and implement federal regulations, and industry standards continue to evolve, it will be necessary for VDH to review the *Waterworks Regulations* periodically to keep the requirements current.

To improve readability and understanding by the regulated community, VDH has reorganized nine sections of the *Regulations* into smaller, more readable sections.

Public Comment

Please summarize all comments received during the public comment period following the publication of the previous stage, and provide the agency response. Ensure to include all comments submitted: including those received on Town Hall, in a public hearing, or submitted directly to the agency or board. If no comment was received, enter a specific statement to that effect.

Commenter	Comment	Agency response
Thomas G. Fauber, The Virginia Chapter of the ABPA (American Backflow Prevention Association)	Letter dated 11/14/2017 to VDH expressing primary interest on protecting drinking water from contamination through cross connections on both sides of the service connection, with specific comments: • Some guidance between the USBC and the proposed regulations have been removed by the Regulatory Advisory Panel. • The proposed changes would require many municipalities to walk back their programs thus providing less safety for our water systems. • The owner and responsible party for the distribution system should continue to have the	To address these concerns, VDH, in concurrence with the WAC, assembled a workgroup with stakeholders familiar with the USBC and cross-connection/backflow prevention issues. The workgroup met on 4/13/2018 to consider Sections 55, and 585 through 630, which contain the requirements for using the USBC and cross-connection control programs. WAC members discussed the workgroup's recommendations at subsequent meetings on 5/17/2018, 7/24/2018, and 9/5/2018 and incorporated them into the proposed regulations.

	authority and the ability to decide whether a containment backflow prevention assembly is required. • The owner should always have the authority to decide whether a containment backflow assembly is required, or whether an isolation point-of-use device or assembly complying with the provisions of the USBC can substitute for containment. • Recommendations were provided to Sections 12VAC5-590-580, 12VAC5-590-600, 12VAC5-590-610, 12VAC5-590-630.	
Charles M. Murray, General Manager, Fairfax Water	Letter dated 11/28/2017 to VDH with specific comments: • Add regulations regarding ozone and other advanced oxidation treatment processes. • Clarify requirements regarding backflow and cross-connection programs. • Consider potential economic consequences of the proposed updates to surface water source and waterworks capacity. • Nomination of Gregory Prelewicz to serve as the Fairfax Water's stakeholder representative.	• The ozone regulations are addressed in 12VAC5-590-1004. • VDH and the WAC established a workgroup to consider issues with cross-connection control programs. The subgroup met and provided recommendations to the WAC that VDH incorporated into the amendments to the regulations. • VDH and the WAC established a workgroup to discuss the issues about surface water withdrawals and safe yield as they affect past and future surface water availability and withdrawal permitting. The group met several times during 2018 but could not come to consensus on how to amend 12VAC5-590-830. Consequently, VDH does not propose any amendments to the section at this time.
Andrea W. Wortzel, Troutman Sanders LLP for Mission H2O Virginia	Letter dated 11/29/2017 to VDH with comments: • Request to be part of the informal stakeholder interest in the management of Virginia's water resources as it affects water supply and water availability, including the Eastern Virginia Groundwater Management Area. • Proposed changes regarding the definition and use of the term "safe yield".	Mission H2O has similar issues regarding the "safe yield" and its impact on past and future surface water availability and withdrawal permitting. VDH included representatives from Mission H2O, Fairfax Water, Prince William County Service Authority, and others in the workgroup that considered regulatory language, a framework for evaluating surface water withdrawal capacity, and a way to balance differing requirements of law for DEQ and VDH, as they relate to 12VAC5-590-830. The group met several times during 2018 but could not come to consensus on how to amend 12VAC5-590-830.

	• Nomination of Dean Dickey to serve as the Prince William County Service Authority's representative with Andrea Wortzel as alternate.	Consequently, VDH does not propose any amendments to the section at this time.

Public Participation

Please include a statement that in addition to any other comments on the regulatory change, the agency is seeking comments on the costs and benefits of the regulatory change and the impacts of the regulated community. Also, indicate whether a public hearing will be held to receive comments.

In addition to any other comments, the Virginia Department of Health is seeking comments on the costs and benefits of the proposal and the potential impacts of this regulatory proposal. The agency is seeking information on impacts on small businesses as defined in § 2.2-4007.1 of the *Code of Virginia*. Information may include: 1) projected reporting, recordkeeping and other administrative costs; 2) probable effect of the regulation on affected small businesses; and 3) description of less intrusive or costly alternative methods of achieving the purpose of the regulation.

Anyone wishing to submit written comments for the public comment file may do so through the Public Comment Forums feature of the Virginia Regulatory Town Hall web site at: https://townhall.virginia.gov. Written comments must include the name and address of the commenter. Comments may also be submitted by mail, email or fax to Nelson Daniel, 109 Governor Street, Room 629, Richmond, Virginia 23219, phone: 804-864-7210, fax: 804-864-7521, nelson.daniel@vdh.virginia.gov. In order to be considered, comments must be received by 11:59 pm on the last day of the public comment period.

A public hearing will be held following the publication of this stage, and notice of the hearing will be posted on the Virginia Regulatory Town Hall website (https://townhall.virginia.gov) and on the Commonwealth Calendar website (https://commonwealthcalendar.virginia.gov/). Both oral and written comments may be submitted at that time.

Detail of Changes

Please list all regulatory changes and the consequences of the changes. Explain the new requirements and what they mean rather than merely quoting the text of the regulation.

The following sections include amendments to replace “commissioner,” “district engineer,” “field office,” “ODW,” and “division” with “department” to ensure consistency in terminology: 10, 40, 110, 200, 210, 220, 240, 250, 270, 290, 300, 330, 350, 370, 372, 373, 374, 375, 376, 378, 379, 380, 382, 383, 384, 385, 392, 395, 401, 405, 415, 421, 430, 440, 490, 530, 540, 545, 550, 610, 830, 875, and 1180. However, in many sections, VDH did not amend or change the use of the word “commissioner” to validate that the context of its usage was more appropriate than “department.”

The following sections include amendments to replace “division” with “commissioner” to ensure the appropriate level of authority and because the “division” no longer exists within the Department of Health: 210, 220, 270, 290, 300, 840, 860, 910, 920, 930, and 990.

The following sections include amendments to replace “disinfectant residual” with “residual disinfectant” to ensure consistency in terminology: 10, 374, 376, 380, 395, 411, 440, 500, 550, and 1000.

The following sections include amendments to replace “in lieu” with “instead” to represent a more common meaning and be consistent with the RIS Style Manual: 290, 300, 374, 375, 376, 378, 405, 411, 500, 531, 545, and 680.

The following sections include amendments to replace “in order to” with “to” since the words “in order” are insignificant and do not affect the meaning of the sentence: 375, 392, 405, 540, 545, 570, 830, and 880.

The following sections include amendments to replace “owners” with “owner” because the singular term is more appropriate to the context of the regulations: 350, 370, 372, 373, 374, 375, 376, 378, 379, 380, 392, 401, 405, 421, 500, 530, 531, 540, 545, and 550.

The following sections include amendments to replace “prior to” with “before” to represent a more common meaning and to be consistent with the RIS Style Manual: 10, 40, 50, 210, 370, 375, 379, 395, 401, 405, 530, 540, 610, 840, 860, 940, and 1210.

The following sections include amendments to replace “water purveyor” or “purveyor” with “waterworks owner” or “owner” because the term “water purveyor” is being deleted from the definitions: 10, 600, and 610.

The following sections include amendments to replace “residual chlorine” with “chlorine residual” to ensure consistency in terminology: 10, 900, 960, and 1001.

The following sections include amendments to replace ““surface water” with “surface water source” to differentiate between reference to the “source” versus the “type” and to ensure uniformity in terminology: 374, 376, 380, 401, 411, 531, 830, 883, and 1001.

The following sections include amendments to replace “taken” with “collected” to more appropriately represent the act of “sample collection” rather than “sample taken:” 375, 379, 380, 405, and 550.

The following sections include amendments to replace “water supply” with “source water” to differentiate among other usage of the term and to clarify its proper context: 140, 150, 220, 360, 375, 405, 830, 840, and 860.

Current section number	New section number, if applicable	Current requirement	Change, intent, rationale, and likely impact of new requirements
Article 1		Article 1 title is "Definitions"	Eliminate article number and title for simplicity.
12VAC5-590-10	N/A	Section title is “Definitions” Action level, Air gap separation, Auxiliary water system, Backflow, Backflow prevention device, Bag filters, Bank filtration, Best available technology, Commissioner, Compliance cycle, Compliance period, Consecutive waterworks, Consumer, Cross-connection, Disinfectant, Disinfection, Disinfection profile, Distribution main, Double gate-double check valve assembly, Dual sample set, Entry point, Exemption, Finished water, Free available chlorine, Groundwater, Groundwater system, Groundwater under the direct influence of surface water, Haloacetic acids (five), Halogen, Hypochlorite, Initial compliance period, Karst geology, Lake/reservoir, Lead free, Lead service line, Log inactivation, Maximum contaminant level, Maximum contaminant level goal, Maximum residual disinfectant level, Maximum total trihalomethane potential, Membrane filtration, Method detection limit, Most probable number,	Intent – Change section title to “Definitions and units of measurement.” The definitions for the terms listed in column three will be amended. Rationale – The changes reflect current use of the terms, changes in technology, corrections of typographical errors, changes to ensure consistent use of terms throughout the regulations, changes in terminology, and/or using easier to understand definitions. Impact – the regulations and the use of the terms throughout the regulations will be more straightforward and easier to understand.

		Nontransient noncommunity waterworks, One hundred year flood elevation, Operator, Optimal corrosion control treatment, Owner, Point of disinfectant application, Point-of-entry device, Point-of-use device, Pollution, Practical quantitation level, Prechlorination, Presedimentation, Process fluids, Pure water, Reduced pressure principle backflow prevention assembly, REM, Residual disinfectant concentration, Sanitary survey, Service connection, Sewer, Significant deficiency, Slow sand filtration, SUVA, Synthetic organic chemical, Too numerous to count, Total organic carbon, Total trihalomethanes, Transient noncommunity waterworks, Treatment technique, Used water, Variance, Virus, Volatile organic chemical, Water supply, Waterworks, and Wholesale waterworks.	
12VAC5-590-10	N/A	Annual daily water demand, Approved, Breakpoint chlorination, Chlorine, Chlorine gas, Chlorine solution (chlorine water), Chronically noncompliant waterworks, Coliform bacteria group, Comprehensive performance evaluation, CT,	Intent – The definitions for the terms listed in column three will be deleted. Rationale – Many of the terms are no longer used in the regulations and are not needed for historical purposes (*e.g.*, "health regulations"). Other terms are used in only one section and are defined in that section. An example is "first draw sample" which is only used in 12VAC5-590-375 and is defined in

		Daily fluid intake, Dechlorination, Degree of hazard, Disinfectant contact time, District engineer, Domestic or other nondistribution system plumbing problem, Effective corrosion inhibitor residual, Equivalent residential connection, Exception First draw sample, GAC10, GAC20, Governmental entity, Health regulations, Interchangeable connection, Large waterworks, Liquid chlorine, Manmade beta particle and photon emitters, Maximum daily water demand, Medium waterworks, Office or ODW, Plant intake, Pollution hazard, Postchlorination, Raw water main, Responsible charge, Sanitary facilities, Secondary water source, Service line sample, Small waterworks, Standard sample, Terminal reservoir, Total effective storage volume, Transmission main, Two-stage lime softening, Water purveyor, Water supply main, Water well completion report, and Waterworks with a single service connection.	subsection B 2 b, Sample collection methods. Impact – Improved understanding and application of the regulations by removing unnecessary content.
12VAC5-590-10	N/A	None	Intent – Add new definitions: Administrative process act, ANSI, ASME, ASTM, AWWA, Backflow elimination method, Backflow prevention assembly, Backpressure backflow, Backsiphonage,

			Boil water advisory and boil water notice, BSSP, CAP, Case decision, CCCP, CCR, CDC, CFE, CFR, Clean compliance history, Comprehensive business plan, Confirmation sample, Consolidated, Containment, DBPPs, DBPs, DCLS, Department, DEQ, Distribution system, DOC, DPOR, Drawdown, EDR, EPA, GAC, GWMA, HPC, Isolation, Leakage, Log removal, Membrane module, Membrane technologies, Membrane unit, Microfiltration, MPA, Nanofiltration, ND, NSF, Operating staff, Optimum fluoride ion concentration, PAC, PCBs, PER, Permit, Permitted capacity, Person, pH, Physical disconnection, PMCL, Pressure vacuum breaker assembly, Primary disinfection, Process water, Project documents, QCRV, RAA, Regulations, Reverse osmosis, SDWA, Secondary disinfection, Site visit, SMCL, SOP, Source water, Supervisory control and data acquisition, TDS, TMF, Treatment, Ultrafiltration, Unconsolidated, USBC, UV, VOSH

			Waiver, Water treatment plant, and Waterworks business operation plan. Add new subsection B, “Units of measurement”. Rationale – Definitions for terms, acronyms, and units of measure will enhance reader understanding and provide consistency throughout the regulations. Impact – Improved understanding and application of the regulations.
Article 2		Article title is "General Information"	Eliminate article number and title for simplicity.
12VAC5-590-20	N/A	Section title is "Authority for regulations."	Intent – Repeal section. Rationale – Section is unnecessary. Impact – None.
12VAC5-590-30	N/A	Section title is "Purpose of the regulations."	Intent – Repeal section. Rationale – Section is unnecessary. Impact – None.
None	12VAC5-590-35	None	Intent & Rationale – Add new section with title "Delegation of authority.” Commissioner can act on behalf of the Board of Health, with limitation. Impact – none.
12VAC5-590-40	N/A	Section title is "Administration of regulations." 1. Board of Health is responsible for promulgating, amending, and repealing regulations. 2. Commissioner is the executive officer of the Board of Health. 3. Division of Water Supply Engineering is designed the primary reviewing agent for administrating this chapter. 4. Central and field offices locations, 5. Waterworks Advisory Committee membership and role is defined,	Intent – Clarify and update to reflect organization changes. Change section title to "Administration of this chapter." Change subsection 1 to subsection A. Change subsection 2 to subsection B. Change to subsection 3 to subsection C; change "Division of Water Supply Engineering" to “department”. Delete subsection 4 describing central and field offices. Delete subsection 5 and create new section 45 for the Waterworks Advisory Committee. Rationale – Office of Drinking Water name and organization has changed and may change in future. Impact – Improved understanding and application of the regulations.

None	12VAC5-590-45	None	Intent – Create new section 45 titled "Waterworks Advisory Committee (WAC)." Provide clarification about committee membership, meetings, and the term of membership. Rationale – Changes reflect current and future purpose of the WAC. Impact – None, this is not a new requirement.
12VAC5-590-50	N/A	Section title is "Application of regulations to waterworks and water supplies in operation or planned prior to the effective date of the regulations." A. Waterworks must comply with Part II of this chapter. B. Compliance with Part III and IV is required for waterworks modification and construction. C. Compliance with Part III and IV is necessary for all repair to pipes, tanks, pumps and appurtenances part of a waterworks. D. VOC and unregulated contaminants regulations in accordance with times schedule presented. E. Lead and Copper regulations in accordance with time schedule presented.	Intent – Change section title to "Application of regulations to waterworks in operation or planned before the effective date of the regulations." Remove "water supplies" from title. Water supplies may be misinterpreted. The regulation does not apply to the source of water before the point of intake at a waterworks. A. Delete reference to variance and exemption sections and simplify wording. B. Delete reference to Part IV (to be repealed). Clarify that existing facilities are not required to conform to Part III design requirements if they are not modified. C. Delete reference to Part IV (to be repealed.) Delete subsections D and E. Remove outdated regulations and timetables. Clarify that existing facilities are not required to upgrade to current design requirements unless modifications are proposed. Rationale – Advancements in design cannot be imposed on existing facilities without excessive cost; and is not the intent of the regulations. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-55	None	Intent – Create new section titled "Relationship of this chapter to the USBC. Clarify the jurisdictions of two state government agencies.

			Rationale – Clearer regulations are preferable to the current interagency agreement between VDH and the Department of Housing and Community Development. This change will eliminate the need for the interagency agreement. Impact – None.
Article 3		Article title is “Procedures”	Eliminate article number and title for simplicity.
12VAC5-590-60	N/A	Section title is "Compliance with the Administrative Process Act (APA)." “All procedures outlined below…”	Intent – Repeal section. Rationale – Section is unnecessary. Impact – None.
12VAC5-590-70	N/A	Section title is "Powers and procedures". The Board of Health reserves the right to authorize any procedure … that is consistent with the provisions set forth herein and the … Title 32.1 of the *Code of Virginia*.	Intent – Delete qualifying phrase “that is consistent with…” Clarify regulation and remove unnecessary text. Rationale – Simple language conveys meaning directly. Impact – Improved understanding and application of the regulations.
12VAC5-590-80	N/A	Section title is "Procedure." Regulations are established in accordance with the Administrative Process Act	Intent – Repeal section. Rationale – Section is unnecessary Impact – Improved understanding and application of the regulations.
12VAC5-590-90	N/A	[Reserved]	Intent – Remove section. Rationale – No content in section. Impact – None.
12VAC5-590-100	N/A	Section title is "Exception; emergency regulations." The Board of Health may promulgate regulations by complying with procedures in §32.1-13 of the *Code of Virginia*.	Intent – Add reference to APA procedures set forth in § 2.2-4011 of the *Code of Virginia* and clarify authority of the commissioner to act when the Board of Health is not in session. Rationale – APA procedures must be followed. Clarifies the commissioner’s authority to act in an emergency situation. Impact – Improved understanding and application of the regulations.
12VAC5-590-110	N/A	Section title is "Enforcement." 1. Notifying the alleged violator.	Intent – Renumber subsections and subdivisions. Add references to §§ 32.1-174 and 32.1-27 of the *Code*

		2. Orders requiring owner to comply. 3. Enforcement of orders. 4. Voluntary compliance. 5. Hearing as a matter of right.	*of Virginia*, where appropriate. Also, clarify regulation and remove unnecessary text and cross references. 1 becomes subsection A, "Notice" to alleged violator. 2 becomes subsection B, "Orders" requiring owner to comply. 3 becomes subsection C, "Compliance with effective orders and this chapter". 4 becomes subsection D, "Special order", voluntary compliance information relocated to new subsection E, "Graduated enforcement actions". Remove 5. Hearing as a matter of right. Rationale – Consistency needed with enforcement terminology and practices found in §§ 32.1-26, 32.1-27, and 32.1-174 of the *Code of Virginia*. Information in 5 is provided in new section 115. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-115	None	Intent – Create a new section titled "Administrative proceedings". Incorporate information from sections 160, 170, and 180 into this new section, consolidating information on topic. Rationale – Related information presented together improves understanding. Impact – Improved understanding and application of the regulations.
12VAC5-590-120	N/A	Section title is "Emergency orders." Commissioner may issue emergency orders in case where there is imminent danger to public health from a waterworks. Emergency order may be communicated by the best practical notice and is effective immediately upon receipt. Violation of an Emergency Order. Emergency orders shall be effective for a period determined by the	Intent – Add subsection letters A through E and organize text into subsections. Revise subsection B to be consistent with § 32.1-175 A of the *Code of Virginia*. Rationale – Conform to RIS Style Manual. Impact – Improved understanding and application of the regulations.

		commissioner. Emergency orders may be appealed in accordance of the APA.	
12VAC5-590-125	N/A	Section title is "Chronically noncompliant waterworks." A. Identification of chronically noncompliant waterworks (CNC). B. Bringing a CNC into compliance. C. Owner shall provide commissioner a copy of notice sent to each consumer within 5 calendar days of receiving the order. D. The commissioner shall send copy of order to chief administrative officer of the locality. E. Civil penalties statues.	Intent – Delete text in subsection A. Incorporate text from section B into new subsections A and B. Delete text in subsection C. Renumber subsection D to subsection C. Renumber subsection E to subsection D. Reference definition of chronically noncompliant contained in §32.1-167 of the *Code of Virginia*. Eliminate list of reasons for determination of chronically noncompliant, and refer to Code definition instead. Rationale – The Code language is more comprehensive than the existing regulations. Impact – Improved understanding and application of the regulations.
12VAC5-590-130	N/A	Section title is "Suspension." In case of disaster, the commissioner may suspend the application of the chapter until the disaster is abated.	Intent – Change section title to "Suspension of this chapter." Change "localities" to "waterworks" and clarify that enforcement may be suspended. Clarify that the commissioner may suspend enforcement of the regulations in the event of a man-made or natural disaster. Rationale –The existing phrase "application of the chapter" is unclear. Impact – Improved understanding and application of the regulations.
12VAC5-590-140	N/A	Section title is "Variances." Content is based on National Primary Drinking Water Regulations, 40 CFR 141.4, and section 1415 of the SDWA with no substantial changes.	Intent – Minor word changes. Change "application" to "request," "raw water" to "source water." Correct reference citations. Correct wording and references. Revise subsection F to specify due process rights. Set up text into subsections A through J. Rationale – Conform to RIS Style Manual. Impact – Improved understanding and application of the regulations.
12VAC5-590-150	N/A	Section title is "Exemptions."	Intent – Minor word changes.

		Content is based on National Primary Drinking Water Regulations, 40 CFR 141.4, and section 1416 of the SDWA with no substantial changes.	Change “application” to “request”. Correct reference citations. Correct wording and references in subsections D and H. Revise subsection D to specify due process rights. Rationale – Conform to RIS Style Manual. Impact – Improved understanding and application of the regulations.
12VAC5-590-160	N/A	Section title is "Type of hearings." 1. Informal hearing 2. Adjudicatory hearing 3. Regulatory hearing	Intent – Repeal section. Move and consolidate information to new section 115. Consolidate information on topic. Rationale – Related information presented together improves understanding. Impact – Improved understanding and application of the regulations.
12VAC5-590-170	N/A	Section title is "Request for hearing."	Intent – Repeal section. Move and consolidate information to new section 115. Consolidate information on topic. Rationale – Related information presented together improves understanding. Impact – Improved understanding and application of the regulations.
12VAC5-590-180	N/A	Section title is "Hearing as a matter of right."	Intent – Repeal section. Move and consolidate information to new section 115. Consolidate information on topic. Rationale – Related information presented together improves understanding. Impact – Improved understanding and application of the regulations.
12VAC5-590-190	N/A	Section title is "Permits." Written construction permit required from commissioner. Written operation permit required from commissioner. Conditions may be imposed on issuance of any permit.	Intent – Add subsection letters A through E to text: A. Written operation permit required for waterworks to operate. B. No construction changes without written construction

			permit or general permit for distribution mains. C. Construction permit not required for waterline extension projects meeting § 32.1-172 A of the *Code of Virginia*. Add exemption specified in the *Code* for ease of reference. D. Individual construction permits not required for distribution main projects when a general permit has been issued to a waterworks. E. Conditions may be imposed on issuance of any permit. Include reference to the general permit for distribution mains and the limited permit exemption. Rationale – Clarify requirement for a permit and the types of permits. General permits are described later in the regulations (section 300) and need to be included here also. Impact – Potential increase in general permits issued to waterworks instead of requiring standard construction permits, thereby reducing effort and costs to utilities and state government.
12VAC5-590-200	None	Section title is "Procedure for obtaining a construction permit." Construction permits are issued by the Commissioner. The section outlines the requirements for a construction permit: A. Submit an application to establish, construct, expand, modify and/or operate a waterworks; B. Participate in a preliminary engineering conference; C. Submit plan data and applicable information that may include: the engineer's report and preliminary plans with general information, extent of waterworks system, alternative plans, soil, groundwater conditions, and foundation problems, water consumption, fire flow requirements, sewerage system available,	Intent – Revise with subsection letters A through G and re-organize text. Add requirements for business plans and records to demonstrate property rights where wells are located. A. Revise permit procedures, outlining 6 steps, including the waterworks business operation plan, required by § 32.1-772 B of the *Code of Virginia*. B. Delete preliminary conference requirements and replace with well site inspection (for groundwater sources only). C. Delete subsection C outlining content of engineer's report, and replace subsection D as the new subsection C "Plans for waterworks construction…" Remove requirement to provide boundaries of the municipality or area to be served, remove imprint of professional engineer's seal, remove legible

		source of water supply, proposed treatment processes, waste disposal, automatic equipment, project sites, financing, future extensions. D. Plans for waterworks improvements shall provide the following: a general layout and detailed plans. E. Submit complete, detailed, technical specifications for the proposed project. F. Submit a summary of complete design criteria.	prints suitable for microfilming with size not to exceed 30 inches by 42 inches. Add requirement to submit completed Form GW-2, and schematic drawings of well constructions. Change the requirement to locate all potential sources of pollution from 250 ft to 1000 ft of drilled wells. D. Replace subsection E with new subsection D "Specifications for waterworks construction…" E. Replace subsection F with new subsection E "Design criteria". Remove design criteria requirement for reservoir surface area and area of watershed, and replace "yield of source of supply" with "water supply withdrawal capacity." F. New subsection on requirement for copy of well lot plat plans and dedication document duly recorded with clerk of the circuit court. Clarify that well lot plat plans and dedication documents are required for community waterworks only; G. New subsection on non-community waterworks indicating that the commissioner may require a copy of a duly recorded plat plan of a well lot and a dedication document on a case-by-case basis. Consolidate and update procedures and submittal requirements in one location of the regulations. Refer to new standard well completion form. <u>Rationale</u> – Business plan requirements added to state law since last revision to this section. Conference and report requirements listed are outdated and may inhibit communication. Use of one universal well completion form for both State agencies (VDH and DEQ) needed to obtain complete and accurate well construction data.

			Impact – Potential reduction of time and expense to waterworks owners and VDH for small waterworks design and construction projects. Short-term increase in time spent by water well systems providers to transition to new form and provide business plan. This should be offset by owner's assessment of and planning for the technical, managerial, and financial requirements to operate a waterworks successfully.
12VAC5-590-210	N/A	Section title is "Formal requirements for the submission of engineering data." All drawings, specifications, and engineer's reports submitted for approval shall be prepared by or under the supervision of a licensed professional engineer qualified to practice in Virginia. The front cover of each report shall bear the signed imprint of the seal of the licensed professional engineer and signed with original signature. If plans and specifications are found to be incomplete or inadequate, they will be returned to the submitting party with a letter outlining the necessary revisions.	Intent – Change section title to "Requirements for the submission of engineering data." Add subsection letters A through D to the text. A. Preparation of drawings, specifications, and engineer's reports submitted for approval under the supervision of a VA licensed professional engineer. Add reference to §54.1-408 of the *Code of Virginia* for land surveyors. B. Substitute requirements describing specific seal and signature specifications for engineering reports with "The quantity, format, and method of submission shall meet the evaluation needs of the commissioner and shall be consistent with the requirements in Chapter 42.1 of Title 59.1 of the *Code of Virginia*." C. Submittals to department at least 60 days prior to desired action by commissioner. D. Returning submittals for incompleteness or inadequacy, or when revisions are necessitated. Revise "letter" to "notified in writing". Delete recommendation to submit preliminary plans and engineer's report prior to preparation of final plans. Allow submission of electronic documents. Include professional engineer exemption as allowed by Code.

			Rationale – Allow more efficient submission and management of documents. Impact – Negligible, as changes have already been implemented and cost savings to owners, consultants, and state agency have been realized.
12VAC5-590-220	N/A	Section title is "Compliance with Manual of Practice." A. Design guidelines are provided in the Manual of Practice but the commissioner may impose more stringent standards or requirements when required to meet critical areas, special conditions, special standards, or federal mandates. B. Designs must demonstrate that a system will adequately safeguard public health. C. Plans and specifications will be reviewed by the division. One set of approved plans and specifications will be stamped by the division and returned to the owner.	Intent – Change section title to "Compliance with the Manual of Practice." A. Reword to allow the "commissioner," not the division, to impose more stringent standards or requirements than those contained in the Manual of Practice (Part III) when required to meet drinking water quality standards. B. State that design submissions must be in substantial compliance with the Manual of Practice or additional requirements established by the commissioner. Reword last sentence to state, "For each deviation, the commissioner may issue a design exception or require compliance with the criteria." C. Remove requirement for VDH to stamp and return one set of approved plans and specification to owner. Change division to "department" and specify that plans will be approved if they demonstrate substantial compliance with the Manual of Practice and any design criteria established by the commissioner. D. Create new subsections (D & E. E) for exceptions from Part III for transient noncommunity waterworks. Allow design exceptions to Part III when appropriate. Allow for exceptions granted by DPOR for transient noncommunity waterworks meeting specific conditions. Delete paper requirements.

			Rationale – Design flexibility and innovation are acceptable when conditions warrant. More efficient submission and management of documents will result. Division is no longer applicable. Impact – Negligible, as changes have already been implemented and cost savings to owners, consultants, and state government have been realized.
12VAC5-590-230	N/A	Section title is "Issuance of the construction permit." Upon approval of the plans and specifications, the commissioner will issue a construction permit.	Intent – Add subsection letters A through C to the text. A. Commissioner issues construction permit following approval of plans and specifications. B. Construction permit shall be valid for period of 5 years. C. Construction permit may include conditions for securing equipment certifications and performance validations. Clarify the time limits of the construction permit and allow conditions to be added to the construction permit. Rationale – Construction must be started in order to provide reasonable assurance that design conditions have not changed. Documentation may be required for installed equipment to meet the performance or certification requirements of the design. Impact – Reduces the potential for constructing waterworks incorrectly, thereby saving the owner's time and cost.
12VAC5-590-240	N/A	Section title is "Revisions of approved plans." Any deviations from approved plans and specifications must be approved. Revised plans and specifications shall be submitted in time to permit the review and approval before construction work is begun.	Intent – Add subsection letters A and B to the text and replace "division" with "department" and other minor wording changes to improve grammar and accuracy of wording. Rationale – Division is no longer applicable. Impact – Improved understanding and application of the regulations.

12VAC5-590-250	N/A	Section title is "Statement required upon completion of construction." Upon completion of the construction or modification of the waterworks, the owner shall submit a statement signed by a licensed professional engineer stating that the construction work was completed in accordance with the approved plans and specifications.	Intent – Add subsection letters A and B to the text. A. Clarify "statement of completion of construction". B. Add that project documents may require a performance verification report and operator training. Rationale – Improve receipt of deliverables from contractor after construction is completed. Contract documents may specify verification of performance and operator training for proprietary equipment in order to assure acceptable operation. Impact – Operation and performance of new process equipment may be improved.
12VAC5-590-260	N/A	Section title is "Issuance of the operation permit." Upon receipt of the 12VAC5-590-250 statement, the commissioner will issue an operating permit.	Intent – Clarify procedures, requirements for a permit, and the content of a permit. Add subsection letters A through C. A. Issuing the operation permit following receipt of all required documentation, results, and inspection. B. An owner shall not operate a waterworks without first having obtained an operation permit except as provided in section 290. An owner shall not operate a substantially modified waterworks without first obtaining an amended operation permit. C. The commissioner shall establish the type, classification, 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. Rationale – This is current procedure and the details are missing from the regulations. Impact – Waterworks will be permitted and operated by properly qualified operators.
12VAC5-590-270	N/A	Section title is “Inspection and correction.” A. Within 30 days after placing a new or modified waterworks	Intent – Clarify owner's responsibilities to notify and test prior to operating new facilities.

		into operation, the owner shall test the water. B. The commissioner has a right to inspect any waterworks and be present for any testing.	Change title to “Startup testing and inspections.” A. Startup testing to be performed at new or modified waterworks following construction before being placed into operation. Replace “division” with “department.” B. Remove "a member of the board or a member of the division." Rationale – Existing language is unclear. Impact – Improved understanding and application of the regulations.
12VAC5-590-280	N/A	Section title is "Procedure for obtaining a construction permit for well sources." The following procedures for well sources shall be used: 1. Submit Application. 2. Preliminary engineering conference. 3. Tentative well lot approval letter issued by VDH. 4. Submit engineer's report and preliminary plans. 5. Submit plans and specifications as per Section 200 D, E, and F, Section 210, and Section 840. 6. Compliance with Sections 220 through 270 required.	Intent – Repeal section and move relevant content to subsections 200 B, C, and D. Combine well development procedures with permit procedures. Rationale – Source development is integral to the construction permit process and procedures need clarification. Impact – Improved understanding and application of the regulations.
12VAC5-590-290	N/A	Section title is "Procedure for issuance of special permits for new or nonconventional methods, processes, and equipment." A. Water treatment methods, processes or equipment which are not covered by the design criteria of Part III or IV, and which in principle or application are new or nonconventional, are subject to special permit application procedure in lieu of that set forth in Section 200. B. New or nonconventional developments shall have been thoroughly tested in a full-scale or representative pilot-plant installation before approval of a plant utilizing this process and equipment can be employed.	Intent – Change title to "Issuance of a temporary operation permit." Replace "Special" and "Provisional" permits with "Temporary" permits and clarify requirements. Remove equipment requirements for surface water treatment. A. Change "special permit" to "temporary permit". B. Minor word changes. Remove testing requirement guideline for treating surface waters. For certain types of source water, continuous monitoring is required. C. Minor word changes on the submission of plans. D. Minor word changes on the issuance of a construction permit.

		Testing guidelines are provided. C. Detailed plans shall be submitted showing how, in case of disapproval, the plant or unit will be converted to, or replaced with, a proven process. Financial assurance is required. D. Commissioner will issue a construction permit if he is satisfied that the method, process, or equipment will efficiently produce water that will meet the operation standards of Part II, and that the method, process, or equipment may be converted to a conventional technique, if necessary. E. A provisional 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 permit will be granted during the evaluation period. Provisional permits requirements are listed. F. The commissioner will issue an operation permit upon lapse of the provisional permit if he finds that the waterworks meets the operation standards of Part II. If standards are not met, an order will be issued to require standards to be met.	E. Issuance of temporary operation permit. Change "provisional permit" to "temporary permit". Minor word changes. F. Delete existing requirements in subsection F and replace with "The commissioner may issue a temporary operation permit if the waterworks is not in compliance with the regulations and public health will not be jeopardized. The temporary permit may be issued for such period of time and subject to conditions as the commissioner may deem appropriate for the owner to achieve compliance with this chapter." Rationale – *Code of Virginia* § 32.1-172 E provides for issuance of a temporary permit. Design requirements for treatment are in Part III of the Regulations. Impact – Improved understanding and application of the regulations.
12VAC5-590-300	N/A	Section title is "Procedure for obtaining a general permit for distribution mains." Instead of obtaining a permit for each distribution main project, an owner may elect to obtain a general permit for distribution mains. 1. The owner shall develop, adopt, and have division approval of general specifications and plan details covering water main design and construction. 2. The owner shall enter into a memorandum of understanding with the division. System-specific requirements are listed.	Intent – Change title to "Issuance of a general permit for construction of distribution mains." Clarify meaning of a general permit, and the requirements and procedures for its issuance. Add subsection letter A and minor corrections. Add subsection letter B and minor corrections. Clarify that general specifications shall be at least as stringent as the requirements contained in this chapter. Add new subsection 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."

			Add new subsection D. "The general permit allows for the construction of distribution mains. The duration for the general permit is five years." Rationale – Clear requirements and procedures are needed to ensure that the owner is qualified to assume the responsibilities for design and construction of water distribution mains. Impact – Improved understanding and application of the regulations.
12VAC5-590-310	N/A	Section title is "Amendment or reissuance of permits." The commissioner may amend or reissue a permit.	Intent – Change title to "Amendment or reissuance of operation permits." Substitute "water supply" for "source of supply" and "potable" for "pure". Use correct terms. Add subsection letters A and B to the text. A, Minor word changes to be consistent with § 32.1-173 of the *Code of Virginia*. Add new subsection B. "The commissioner may require submission of a business operation plan. Rationale – Defined words need to be used consistently. Regulatory requirements need to be consistent with state law. Impact – Improved understanding and application of the regulations.
12VAC5-590-320	N/A	Section title is "Revocation or suspension of a permit." A. The commissioner may suspend or revoke a permit for listed reasons. B. When revoking or suspending permits, the commissioner shall send a written notice of intent to the owner stating the reasons for the proposed suspension or revocation and provide at least 30 days advance notice of the hearing. C. The owner has the right to a hearing.	Intent – Change title to "Revocation of an operation permit." Delete "suspension" of a permit throughout this section. Clarify the procedure for revoking an operation permit. A. List of reasons when the commissioner may revoke an operation permit. The list is consistent with § 32.1-174 of the *Code of Virginia*. B. Add subsection title "Procedure for revocation of operation permit, and correct language to refer to new section 115 for administrative proceedings. Delete subsection C. Rationale – Operation permits are not suspended, but may be revoked for specific reasons listed in § 32.1-

			174 of the *Code of Virginia*, following procedures consistent with the APA. Impact – Improved understanding and application of the regulations.
12VAC5-590-330	N/A	Section title is "Monitoring, records, and reporting." The commissioner may require the owner to install, use, and maintain equipment for the control and testing of water flowing through the plant. Sampling and testing shall be by methods approved by the division. Test results shall be recorded, compiled, and reported to the field office in a format approved by the division.	Intent – Stipulate the conditions when monitoring equipment in a treatment plant may be required by the state. Add subsection letter A and add list of reasons for requiring water treatment process monitoring equipment. Add subsection letter B and correct references to commissioner and department. Rationale – The imposition of additional requirements by the state must be justified by explaining the basis for them, with the overall goal of protecting public health. Impact – Improved understanding and application of the regulations.
Article 1		Article 1 title is “General.”	Eliminate article number and title for simplicity.
12VAC5-590-340	N/A	Section title is “General.” All physical, chemical, bacteriological or radiological tests to determine compliance must be performed by DCLS or labs certified by DCLS.	Intent – Change title to “Compliance standards." Move and consolidate all water quality standards, Maximum Contaminant Levels, Action Levels, Treatment Techniques, and Maximum Disinfectant Levels and Goals to first section. Number 1st paragraph subsection A. Additional sampling and testing may also be required by the commissioner. Move content about “Specific limits” of 390 B into new subsection 340 B. Add subsection C explaining how compliance is determined. Add subsection D addressing increasing residual disinfectant levels. Move section 440 Tables 2.2 - 2.5 and renumber as Tables 340.1 - 340.4. Create new Table 340.5 Microbial Contaminants, from EPA (see http://water.epa.gov/drink/contaminants/). Move section 440 Table 2.13 and renumber as Table 340.6.

			Move section 440 Table 2.12 and renumber as Table 340.7. Rationale – The drinking water standards need to be easily identified and located by the reader. Compliance tables are derived from National Primary Drinking Water Regulations at 40 CFR 143.3, 141.80, 141.23, 141.13, 141.61 - 141.66, 141.130, with no substantial changes. Impact – Improved understanding and application of the regulations.
12VAC5-590-350	N/A	Section title is "Sanitary surveys." A. Frequent assessments shall be made by owners. B. Commissioner may perform sanitary surveys. C. Eight components of the sanitary survey D. Significant deficiencies - notification and correction procedures.	Intent – Change title to "Assessments and sanitary surveys." Clarify that the ODW conducts sanitary surveys and why. A. Change "supply source" to "supplies". B. Clarify that sanitary surveys are conducted by the department, who has right of entry with owners consent, and reasons for the survey. C. Minor technical corrections. D. Address significant deficiencies. Rationale – Existing Regulations appear to suggest that sanitary surveys by the commissioner are optional. Content is based on National Primary Drinking Water Regulations 40 CFR 141.401, with no substantial changes. Impact – Improved understanding and application of the regulations.
12VAC5-590-360	N/A	Section title is "Responsibility; owner." A. General description of waterworks owner responsibilities. B. Delineates extent of waterworks to the customer's service connection.	Intent – Change title to "Responsibilities of the owners." Distinguishes the authority of the waterworks owner and the property owner (consumer) with respect to water lines. A. Minor technical corrections. B. Clarifies that waterworks may not have ownership or responsibilities for service lines in some cases where local agreements prevail. Add new subsection C describing extent of property owner's control. Rationale –The service connection may not always be located at the customer's property line; in some

			locations the waterworks may agree to maintain the water service pipe from the water distribution main. Impact – Improved understanding and application of the regulations.
Article 2		Article 2 title is “General Information.”	Eliminate article number and title for simplicity.
12VAC5-590-370	Break section 370 into 7 smaller sections: 12VAC5-590-370 12VAC5-590-372 12VAC5-590-373 12VAC5-590-374 12VAC5-590-376 12VAC5-590-377 12VAC5-590-378	Section title is "Sampling frequency." Content includes detailed monitoring requirements (sampling and testing) for bacteriological, chemical, physical and radiological parameters. Content is based on National Primary Drinking Water Regulations 40 CFR 141.21, 141.23, 143.4, 141.24, 141.132, 141.621, 141.623, 141.625, 141.72, 141.73, 141.74, 141.173, 141.174, 141.550 - 141.564, 141.26, and 141.851 - 141.858, with no substantial changes.	Intent – Rename section 370 "Monitoring requirements". Retain federal requirements unchanged, but break one large section into smaller ones, organized by water quality characteristic. In the revised section 370, move opening section paragraph to new subsection C to describe limits for consecutive waterworks monitoring. Add provisions in subsection A to allow qualified, well-operated TNCs to reduce the bacteriological monitoring frequency from quarterly to annually and provide requirements for reduced monitoring, increased monitoring, and returning to annual monitoring for these TNCs. Retain subsection B (1st paragraph) and rename “Chemical monitoring”. Enumerate text. Move subdivision B 1 to new section 372 “Inorganic chemicals monitoring." Move subdivision B 2 to new section 373 “Organic chemicals monitoring." Move subdivision B 3 to new section 374 “Residual disinfectant, DBPs, and DBPPs monitoring." Delete subdivision B 4, Unregulated contaminants, and associated Tables 2.6 and 2.7. Contaminants listed are now regulated disinfection byproducts and are addressed elsewhere in the regulations. Move subdivision B 7 to new section 376 “Surface water or GUDI sources treatment monitoring" and renumber Table 2.5 to Table 376.1 "Grab Sample Monitoring Frequency". Move subsection C to new section 377 “Physical constituent monitoring."

			Move subsection D to new section 378 “Radiological monitoring." Add new subsection D to refer to other sections where new source monitoring requirements are given. Rationale – Existing section is too large to navigate easily. "Sampling" is not accurate description of content. Allowing reduced monitoring at qualified, well-operated TNCs will lower the regulatory burden on these waterworks. Impact – Improved understanding and application of the regulations. Less regulatory burden on certain TNCs.
None	12VAC5-590-372	See 12VAC5-590-370 B 1	Intent – Moved 12VAC5-590-370 B 1 to new section 372 “Inorganic chemicals monitoring." The monitoring requirements have not changed. Minor revisions to change “commissioner” to “department,” “owners” to “the owner” and use defined acronyms. Rationale – Existing section 370 is too large to navigate easily. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-373	See 12VAC5-590-370 B 2	Intent – Moved 12VAC5-590-370 B 2 to new section 373 “Organic chemicals monitoring." The monitoring requirements have not changed. Minor revisions to change “commissioner” to “department,” “owners” to “the owner” and use defined acronyms. Rationale – Existing section 370 is too large to navigate easily. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-374	See 12VAC5-590-370 B 3	Intent – Moved 12VAC5-590-370 B 3 to new section 374 “Residual disinfectant, DBPs, and DBPPs monitoring."

			The monitoring requirements have not changed. Minor revisions to change “commissioner” to “department,” “owners” to “the owner” and use defined acronyms. Rationale – Existing section 370 is too large to navigate easily. Impact – Improved understanding and application of the regulations.
12VAC5-590-375	N/A	Section title is "Lead and copper monitoring." Lead monitoring waiver - materials criteria: requires owner to demonstrate that all distribution system, service lines and service plumbing shall meet lead-free materials criteria pursuant to 42 USC § 300g-6(e). Content is based on National Primary Drinking Water Regulations 40 CFR 141.86, with no substantial changes.	Intent – Correct references within section. Update lead content criteria to reflect Public Law 111-380, Reduction of Lead in Drinking Water Act. Added requirement that first-draw samples shall be collected without flushing the tap. (a) Modify lead monitoring waiver materials criteria: owners shall demonstrate that distribution system, service lines and plumbing connected to the waterworks, meets the lead material content criteria. (b) Solders and flux shall contain no more than 0.2% lead; and (c) The weighted average of wetted surface of pipes, pipe fittings, plumbing fittings, and plumbing fixtures shall contain no more than 0.25% lead. Minor revisions to change “commissioner” to “department,” “owners” to “the owner” and use defined acronyms. Rationale – Existing citation is no longer applicable. Impact – None. The new law went into effect on Jan 4, 2014 and has been implemented.
None	12VAC5-590-376	See 12VAC5-590-370 B 7	Intent – Moved 12VAC5-590-370 B 7 to new section 376 “Surface water or GUDI sources treatment monitoring" and renumbered Table 2.5 to Table 376.1 "Grab Sample Monitoring Frequency." The monitoring requirements have not changed. Minor revisions to change “commissioner” to “department,” “owners” to “the owner” and use defined acronyms.

			Rationale – Existing section 370 is too large to navigate easily. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-377	See 12VAC5-590-370 C	Intent – Moved 12VAC5-590-370 C to new section 377 “Physical constituent monitoring." The monitoring requirements have not changed. Rationale – Existing section 370 is too large to navigate easily. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-378	See 12VAC5-590-370 D	Intent – Moved 12VAC5-590-370 D to new section 378 “Radiological monitoring." The monitoring requirements have not changed. Minor revisions to change “commissioner” to “department,” “owners” to “the owner” and use defined acronyms. Rationale – Existing section 370 is too large to navigate easily. Impact – Improved understanding and application of the regulations.
12VAC5-590-379	N/A	Section title is "Groundwater waterworks monitoring." Content is based on National Primary Drinking Water Regulations 40 CFR 141.402, with no substantial changes.	Intent – Change section title to “Groundwater system monitoring.” Consolidate all groundwater monitoring requirements into one section. Correct references within subsections A and B. Moved content of 12VAC5-590-425 A - D into new subsection 379 C. Rationale – Specific requirements in subsection 425 may be overlooked as presently organized. Impact – Improved understanding and application of the regulations.
12VAC5-590-380	N/A	Section title is "Bacteriological quality." Content includes determination of compliance with the PMCL and treatment technique requirements for microbial contaminants. Content is based on National Primary Drinking Water	Intent – Rename section 380 "Bacteriological compliance." Consolidate all bacteriological compliance requirements for groundwater monitoring into one section. Eliminate subdivisions A.1, A.3, A.4 and A.5 and convert A.2 to A. Revise subsection G to describe follow-up requirements for

		Regulations 40 CFR 141.63, 141.21, and 141.402, with no substantial changes.	groundwater source monitoring specified in sections 379, 430, and 840. Rationale – Specific requirements in sections 379, 425, and 840 may be overlooked as presently organized. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-382	See 12VAC5-590-410 B	Intent – Moved 12VAC5-590-410 B to new section 382 “Inorganic chemicals compliance." The methods to determine compliance have not changed. Rationale – Group compliance determination sections together. Existing sections are too large to navigate, understand easily. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-383	See 12VAC5-590-410 C 1	Intent – Moved 12VAC5-590-410 C 1 to new section 383 “Organic chemicals compliance." The methods to determine compliance have not changed. Rationale – Group compliance determination sections together. Existing sections are too large to navigate, understand easily. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-384	See 12VAC5-590-410 C 2	Intent – Moved 12VAC5-590-410 C 2 to new section 384 “Residual disinfectant, DBPs, and DBPPs compliance." The methods to determine compliance have not changed. Rationale – Group compliance determination sections together. Existing sections are too large to navigate, understand easily. Impact – Improved understanding and application of the regulations.
12VAC5-590-385	N/A	Lead and copper action level compliance Content based on National Primary Drinking Water Regulations 40 CFR 141.80.	Intent – Substitute defined acronym (AL) for “action level,” change “commissioner” to “department” and make minor wording changes to improve clarity.

			Rationale, & Impact – Improved understanding and application of the regulations.
None	12VAC5-590-388	See 12VAC5-590-400 and 12VAC5-590-410 D	Intent – Create new section 388 “Radiological compliance” (see below from 12VAC5-590-400). Move last sentence of subdivision 410 D to 388 C 2, and delete remaining text. The methods to determine compliance have not changed. Rationale – Group compliance determination sections together. Existing sections are too large to navigate, understand easily. Impact – Improved understanding and application of the regulations.
12VAC5-590-390	N/A	Section title is "Chemical and physical quality." A 1 through A 3. Action required for noncompliance with chemicals and turbidity. A 4. Action required for exceeding SMCL. B. General statement concerning contaminants and specific limits.	Intent – Rename section 390 "Physical constituent compliance." Identify specific physical constituents, how many samples are required and how compliance with SMCL is determined. The physical constituents listed in this section are color, odor, pH and total dissolved solids. Delete A 1 through A 3, and replace with confirmation sample and compliance determination requirements. Correct A 4 and renumber to A 3. Move subsection B to subdivision 340 B. Add new subsection B listing turbidity standards for groundwater sources that are not required to filter. Rationale – Necessary, specific information is missing from the existing regulations. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-391	See 12VAC5-590-420, first paragraph.	Intent – Moved 1st paragraph of 12VAC5-590-420 to new section 391 “Treatment technique requirements," and expand explanation. Rationale – Group treatment technique sections together. Existing section (420) is too large to navigate, understand easily.

			Impact – Improved understanding and application of the regulations.
12VAC5-590-392	N/A	Section title is “Coliform treatment technique triggers and assessment requirements.” A. Treatment technique triggers and assessments. B. Completing Level 1 and Level 2 assessments. C. Requirement for corrective actions. D. Consultation between owner and department. E. Determining violations. Content is based on National Primary Drinking Water Regulations 40 CFR 141.859.	Intent – Ensure less ambiguous terminology and direction. Minor wording changes: Replace references to “a review” with “an evaluation”, and references to ODW or ODW field staff with “department”. Rationale – Improved understanding of the regulations. Impact – Increased public health protection.
None	12VAC5-590-395	See 12VAC5-590-420	Intent – Moved 12VAC5-590-420 A to new section 395 “Surface water and GUDI sources, polymer, and recycle treatment techniques", subdivision A. Moved 12VAC5-590-420 B 1 and B 2 to new subdivision 395 A 2. Content is essentially unchanged, except for new requirements for declared GUDI sources prior to installation of filtration treatment – added in subdivision 395 A 3, listing requirements for newly- declared GUDI sources during the interim period until filtration and disinfection treatment is installed and in operation. The requirements include: issuance of a continuous boil water notice, provide disinfection treatment to achieve a 4-log inactivation of viruses, and increase bacteriological sampling in the distribution system. Moved 12VAC5-590-420 G to new subdivision 395 B. Moved 12VAC5-590- 420 K to new subdivision 395 C. Rationale – Group treatment technique sections together. Existing section (420) is too large to navigate, understand easily. Impact – Improved understanding and application of the regulations.
12VAC5-590-400	12VAC5-590-388	Section title is "Radiological quality." Content is based on National Primary Drinking Water	Intent – Repeal section 400. Create new section 388 “Radiological compliance". Move 400 A and B to new subsections

		Regulations 40 CFR 141.66, with no substantial changes.	388 A, 388 B, and subdivision 388 C 1. Organize all radiological compliance requirements into one section before the treatment techniques sections. Rationale – Specific requirements may be overlooked as presently written. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-401	See 12VAC5-590-420 B 3 a	Intent – Moved 12VAC5-590-420 B 3 a. to new section 401 “Enhanced filtration and disinfection for Cryptosporidium treatment techniques" and reorganized content. Rationale – Group treatment technique sections together. Existing section (420) is too large to navigate, understand easily. Impact – Improved understanding and application of the regulations.
12VAC5-590-405		Section title is "Lead and copper treatment techniques." Content is based on National Primary Drinking Water Regulations 40 CFR 141.81 - 141.85, with no substantial changes.	Intent, Rationale & Impact – Minor technical corrections and wording changes only.
12VAC5-590-410	Break section 410 into four smaller sections: 12VAC5-590-382 12VAC5-590-383 12VAC5-590-384 12VAC5-590-388	Section title is “Determination of compliance.” Content includes compliance determination details for chemical and radiological parameters, turbidity, and disinfectant residuals, disinfection byproducts, and disinfection byproduct precursors. Content is based on National Primary Drinking Water Regulations 40 CFR 141.23, 141.11, 141.24, and 141.133, with no substantial changes.	Intent – Repeal section 410. Break large sections into smaller ones, organized by water quality characteristic. Content is essentially unchanged. Move subdivision 410 B to new section 382 “Inorganic chemicals compliance." Move subdivision 410 C 1 to new section 383 “Organic chemicals compliance." Move subdivision 410 C 2 to new section 384 “Residual disinfectant, DBPs, and DBPPs compliance." Move last sentence of subdivision Create new section 388 “Radiological compliance” (see above from section 400). Move 410 D to 388 C 2, and delete remaining text. Rationale – Existing sections too large to navigate easily.

			Impact – Improved understanding and application of the regulations.
None	12VAC5-590-411	See 12VAC5-590-420, subdivisions H, I, and J	Intent – Moved 12VAC5-590-420 H, I, and J to new section 411 “DBPPs, DBPs, and MRDLs treatment techniques." Rationale – Group treatment technique sections together. Existing section (420) is too large to navigate, understand easily. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-415	See 12VAC5-590-420, subdivision L	Intent – Moved 12VAC5-590-420 L to new section 415 “Uncovered finished water storage." Rationale – Group treatment technique sections together. Existing section (420) is too large to navigate, understand easily. Impact – Improved understanding and application of the regulations.
12VAC5-590-420	Break section 420 into five smaller sections: 12VAC5-590-391 12VAC5-590-395 12VAC5-590-401 12VAC5-590-411 12VAC5-590-415	Section title is "Treatment technique requirement." Content includes treatment techniques for surface water or groundwater source under the direct influence of surface water. Requirements are described for disinfection, filtration, and enhanced filtration. Content is based on National Primary Drinking Water Regulations 40 CFR 141.71, 141.70 -141.73, 141.111, 141,76, 141.700- 141.703, 141.707, 141.708, 141.710, 141.711, 141.713, 141.715 - 141.720, 141.130, 141.135, 141.64, 141.65, 141.510, and 141.511, with no substantial changes.	Intent – Repeal section 420. Break large sections into smaller ones. Content is essentially unchanged, except for new requirements for declared GUDI sources prior to installation of filtration treatment. Move 1st paragraph to new section 391 “Treatment technique requirements," and expand explanation. Move subdivision 420 A to new section 395 “Surface water and GUDI sources, polymer, and recycle treatment techniques", subdivision A. Move subdivision 420 B 1 and 420 B 2 to new subdivision 395 A 2. Move subdivision 420 B 3 a. to new section 401 “Enhanced filtration and disinfection for Cryptosporidium treatment techniques." Move subdivision 420 B 3 b (1) to new subdivision 500 H. Move subdivision 420 B 3 b (2) to new subdivisions 500 D, E and F. Delete 'reserved' subdivisions 420 C, D, E, and F. Move subdivision 420 G to new subdivision 395 B. Move subdivisions 420 H, I, and J to new section 411 “DBPPs, DBPs,

			and MRDLs treatment techniques." Move subdivision 420 K to new subdivision 395 C. Move subdivision 420 L to new section 415 “Uncovered finished water storage." Rationale – Existing sections too large to navigate easily. Public health protection will be ensured when GUDI sources must remain in service prior to filter installation Impact – Increased public health protection.
12VAC5-590-421	N/A	Section title is "Groundwater system treatment techniques." A. Sources that have confirmed E. coli contamination or a significant deficiency must take specific actions. B. Existing and new sources providing 4-log virus treatment of viruses must monitor. C. Monitoring requirements to demonstrate treatment effectiveness. D. Discontinuing compliance monitoring or treatment. Content is based on National Primary Drinking Water Regulations 40 CFR 141.403, with no substantial changes.	Intent – Rename section “Groundwater source treatment techniques.” Clearly distinguish monitoring requirements for groundwater sources that have confirmed 4-log virus treatment by the ODW. Delete the categories "existing" and "new". Rationale – If a groundwater source is in operation, it is "existing"; the language is confusing. Impact – Improved understanding and application of the regulations.
12VAC5-590-425	N/A	Section title is "Raw water monitoring requirements for groundwater sources." Content is based on National Primary Drinking Water Regulations 40 CFR 141.402, with no substantial changes.	Intent – Repeal section 425. Consolidate groundwater monitoring requirements into 12VAC5-590-379 and 380: move subsections A through D to 379 C. Move subsections E and F to section 380 G. Rationale – Specific requirements may be overlooked as presently organized. Impact – Improved understanding and application of the regulations.
12VAC5-590-430	N/A	Section title is “Determination of surface water influence of groundwater sources.” All groundwater sources utilized by waterworks such as wells, springs, and infiltration galleries, shall be evaluated by the division to determine surface water influence. The	Intent – Allow microscopic particulate analysis (MPA) testing to determine the influence of surface water on groundwater, require interim actions if the waterworks is currently serving consumers with the GUDI source, allow owner to pursue corrective actions and mitigation plans when a source is declared to be GUDI, and

		source shall be evaluated in stepwise fashion. Step 1 source history. Step 2 source physiology and geology. Step 3 water quality.	require groundwater sources to be re-evaluated, as necessary. Add subsection letter A. All groundwater sources shall be evaluated to determine surface water influence using a three step process. Add subsection letter B. All groundwater sources shall be evaluated to the criteria in a stepwise fashion. Combined Steps 1 and 2 into Step 1 - source history, construction, and location. Change Step 2 to testing microbiological water quality using the conventional 20 Total Coliform and E. Coli samples collected on weekly frequency. Add new Step 3 allowing MPA testing along with physical parameter monitoring to determine surface water influence. Add new subsection C. If the GUDI determination process has reached Step 3, then disinfection treatment is required. Boil Water Advisory shall be required until the disinfection treatment is installed. Add new subsection D. If the source is declared to be GUDI, the owner may propose mitigation measures and/or a plan to correct deficiencies. The commissioner will then re-evaluate and make a GUDI determination. Add new subsection E. Commissioner may require groundwater sources to be re-evaluated for surface water influence. Rationale – In 1992, EPA issued the Consensus Method (EPA 910-9-92-029, Oct. 1992) which relies on MPA testing as one level of evidence when surface water is influencing groundwater. Interim measures for potential GUDI wells are critical to protect public health because it can take several months to install treatment. Impact – The current procedure for evaluating if a groundwater well is a GUDI source stops at Step 2. By adding an additional step, the owner will incur additional cost from the Step 3 testing but will acquire increased certainty that the well is a

			GUDI source. The owner can always stop at Step 2 and forego Step 3 testing if it is clear that the water source is a GUDI source. Groundwater sources determined to be GUDI require significantly more treatment, monitoring, and reporting.
12VAC5-590-440	N/A	Section title is "Analytical methods." Analytical methods shall comply with National Primary Drinking Water Regulations 40 CFR Parts 141 and 143. Labs shall comply with DCLS regulations for certification of drinking water analyses. Tests for alkalinity, calcium, conductivity, disinfectant residual, orthophosphate, pH, silica, temperature and turbidity may be performed by any person acceptable to the commissioner.	Intent – Confine subject matter to analytical methods; relocate other relevant content or delete irrelevant text. Add subsection letter A and include "40 CFR Part 136, if applicable." Insert subsection B to clarify laboratory certification requirements by DCLS and refer to 1VAC30-41. Add subsection letter C and include additional parameters: total organic carbon (TOC), dissolved organic carbon (DOC), specific ultraviolet absorption (SUVA) and UV254 (ultraviolet absorption at 254 nanometers); add requirement that all tests meet EPA-approved methods in 40 CFR Part 141. Move Tables 2.2, 2.3, 2.4, 2.5, 2.12, and 2.13 to section 340 and renumber them. Delete Tables 2.6 through 2.11. Rationale – Current drinking water quality standards in tables should be located in separate section. Tables 2.6 through 2.11 are outdated. Impact – Improved understanding and application of the regulations.
Article 3		Article 3 title is “Operation of Waterworks.”	Eliminate article number and title for simplicity.
12VAC5-590-450	N/A	Section title is “General.” Waterworks operation comprises the constant operation and management of facilities and personnel.	Intent – Change title to “Facility and personnel management.” Minor word changes with clarification to include drinking water standards. Improve grammar. Rationale – Existing text is awkward. Impact – Improved understanding and application of the regulations.
12VAC5-590-460	12VAC5-590-461	Section title is “Personnel.” A. Waterworks operators in responsible charge must possess a valid waterworks	Intent – Repeal section 460. Create new section 461 titled “Classification of waterworks, operator requirements, and

		operator license issued by the Board for Waterworks and Wastewater Works Operators and Onsite Sewage Professionals, Department of Professional and Occupational Regulations in accordance with 18VAC160-20-10 *et seq.* and Chapters 1, 2, 3 and 23 of Title 54.1 of the *Code of Virginia*. B. The number and class of operators in attendance are specified and personnel must conform with Table 2.9 - Minimum classification for waterworks operations additional operating personnel.	operator attendance." Update operator requirements consistent with DPOR's regulations, and clarify minimum operator attendance based on waterworks classification. A. Classification of Waterworks. Describe Class 1 through 6 waterworks, consistent with requirements in 18VAC160-20-10 (DPOR regulations). B. Operator requirements. Describe general requirements for licensed operators of classified and unclassified waterworks. C. Specify minimum operator attendance for each class of waterworks. D. Allow operator attendance alternatives; increased and reduced staffing attendance from those specified in subsection C based on specific-site conditions. <u>Rationale</u> – Existing operator classification regulations are outdated. Currently operator attendance is inconsistent throughout the state; minimum attendance requirements are needed to assure proper performance of all waterworks. <u>Impact</u> – Waterworks with membrane filtration will have increased operator requirements. For other waterworks, negligible, as changes have already been implemented and costs to owners, have already been realized.
12VAC5-590-470	N/A	Section title is "Waterworks appearance." 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 may resort to the use of water from questionable or polluted sources; therefore, the waterworks must be maintained in a clean and orderly condition to achieve this goal.	<u>Intent</u> – Change title to "Waterworks condition". The waterworks shall be maintained in a clean and orderly condition. Remove text on influence of public opinion and confidence. <u>Rationale</u> – Language is subjective and unenforceable. <u>Impact</u> – None.

None	12VAC5-590-475	See 12VAC5-590-840 B 14	Intent – Create new section 475 titled "Removal of wells from service." Clarify requirements for temporary inactivation and permanent abandonment of wells. Relocate requirements from 12VAC5-590-840 B 14 and update content as follows: A. Temporary inactivation. Require maintenance of well lot and routine inspections of wells that are taken out of service temporarily. B. Permanent abandonment. Add requirement for a certified water well systems provider to supervise well abandonment. Add requirement to submit documentation form to VDH. Add requirement to seal groundwater wells that are not in use by methods that will restore to the fullest extent possible the controlling geological conditions that existed before the well(s) were constructed. Rationale – Maintenance of inactive wells is needed to assure acceptable performance when it is returned to service. Integrity of the groundwater resource is protected when a well is properly abandoned by qualified personnel. Impact – Some waterworks may incur increased operating cost for quarterly inspection and documentation of wells that are temporarily inactivated.
None	12VAC5-590-476	None	Intent – Create new section 476 titled "Reactivation of wells." Add new requirements for bringing a well back into service. Establish minimum requirements for reactivating a well that has been taken out of service. A. Owner shall notify ODW of the intent to reactivate well. B. Well shall be pumped to waste for minimum of 5 well volumes and no less than 30 minutes. C. Water quality samples shall be collected.

			D. Well yield and drawdown test may be required by the commissioner. E. A well may be activated for emergency use prior to receipt of satisfactory monitoring results, even if public health and safety are at risk, under special circumstances. Rationale – Water quality of an unused well may deteriorate over time, therefore specific mitigation procedures are needed. Impact – Some waterworks may incur a one-time cost for pumping and testing of inactivated wells prior to bringing them back in service.
12VAC5-590-480	N/A	Section title is “Analytical laboratory control.” A. Operational testing is required to present evidence that water has been properly prepared for each major key step in the treatment process, each key process is effective, and the finished product is clean, free from taste and odor, free from undesirable chemical characteristics, and is safe for human consumption. B. Laboratory analyses shall conform to the most current edition available of Standard Methods for the Examination of Water and Wastewater or analytical methods approved by the division. Ample laboratory space shall be provided for chemical and bacteriological testing.	Intent – Change title to “Operational control testing and monitoring.” Consolidate requirements into one section, correct analytical method references, update minimum tests required for key treatment processes, and require proper calibration and maintenance. A. Add purpose of analyses is for ensuring compliance, other grammatical changes. B. Delete test method references and replace with EPA approved methods found in 40 CFR Parts 141 and 143. Add requirement to calibrate instruments. Add subsection C. Remove specific laboratory space requirements and replace with a reference to Section 760. Create new subsection D titled "Require waterworks on-site laboratory analyses." Move minimum on-site testing capabilities for selected types of treatment from subsection B and update content. Create new subsection E. “Process control instruments, monitors, gauges, and controllers …shall be maintained fully operational and calibrated …” Rationale – Existing information is outdated. UV and ozone treatment are acceptable and minimum process control requirements need to be specified.

			Impact – Acceptable treatment operation will be assured by accurate and reliable test results and controls.
12VAC5-590-490	N/A	Section title is “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 water consistently meeting the requirements of the chapter. B. All waterworks shall provide adequate treatment and pure water.	Intent – Change of "pure" water to "potable" water; change "division" to "department." Use correct terms where applicable and appropriate. Rationale – Consistent terms and references should be used throughout Regulations. Impact – None.
12VAC5-590-500 & Appendix L	N/A	Section 500 title is "Disinfection by chlorination." Content includes A. Chlorine residual shall be maintained. B. Surface water plants must prechlorinate. C. GUDI sources shall be disinfected. D. Groundwater systems shall meet CT requirements for virus inactivation. E. Disinfection profile and benchmark requirements. Content is based on National Primary Drinking Water Regulations 40 CFR 141.72, with no substantial changes. Appendix L is entitled "Determination of CT." It includes: • Disinfection criteria • Determination of compliance with Inactivation • Determination of Disinfection Contact Time • Disinfection Profile and Benchmark • CT values (Tables) for inactivation of Giardia and Virus for disinfectants. Content is based on National Primary Drinking Water Regulations 40 CFR 141.74	Intent – Change section title to "Disinfection criteria, determination of CT, disinfection profiles, and disinfection benchmarks for Giardia and virus inactivation." Eliminate requirement to chlorinate surface water prior to filtration. Consolidate microbial inactivation and disinfection profile requirements into one section. Move content to appropriate sections and correct references. A. Delete requirement deadlines that have expired. B. Delete existing subsection B. Move and expand subsection C requirements to new subsections 430 C and 430 D. Renumber subsection D to B. C. Disinfection criteria. Insert context of 1st paragraph from Appendix L. Move Table L-1 and rename as “Table 500.1. D. Developing the disinfection profile: Insert content from 500 E, 420 B 3 b (2) and Appendix L. E. Calculating the total inactivation ratio: Insert content from 420 H 3. F. Calculating the disinfection benchmark: Insert content from 420 B 3 b (2) and Appendix L G. Waterworks shall retain disinfection profile: Insert content from 500 E 1. H. Prior to making significant change: Insert content from 500 E 2 a and 420 B 3 b.

		and 141.709, with no substantial changes.	Copy Tables 1.1 through 1.6 in 40 CFR 141.74 as Tables 500.2 through 500.7 (CT Values for 3-Log Inactivation of Giardia lamblia by Free Chlorine.) Copy Table 3.1 in 40 CFR 141.74 as Table 500.12 (CT Values for Inactivation of Viruses by Chloramines.) Copy Table 2.1 from 40 CFR 141.74 as Tables 500.8 and 500.13 (CT Values for Inactivation of Giardia lamblia by Chlorine Dioxide and Ozone), respectively. Move content from Appendix L, Table L- 8 Baffling Classification, and renumber as Table 500.15. Rationale – Pre-chlorination may cause disinfection byproducts and is no longer recommended. Disinfection profiles are developed using the microbial inactivation tables, so the information is best presented together. RIS Style Manual discourages use of Appendices. Impact – Improved water quality provided to consumers. Improved understanding and application of the regulations.
12VAC5-590-505	N/A	Section title is “Emergency management plan for extended power outages.” A. Each community waterworks shall develop and maintain an emergency management plan for extended power outage. B. Each plan shall be kept current and readily accessible. C. Each community waterworks shall certify in writing that the plan is completed. D. List of items to include in the plan.	Intent – Maintain content; minor corrections to use of terms. Rationale – Improve clarity of text. Impact – Improved readiness of waterworks towards continuous operation.
12VAC5-590-510	N/A	Section title is “Acceptable operating practices.” A. This section is not intended to be all inclusive. B. Waterworks designed for bacteria and turbidity removal shall not be operated without adequate chemical coagulation. C. Waterworks utilizing filtration in the treatment process shall	Intent – Replace "treatment plant" with "waterworks" in subsection A. Delete subsections B through D. Clarify gravity flow filtration operation requirements and add membrane filtration integrity test requirements. Create new subsection B titled "Filter operation." Update content for gravity filter operation requiring

		not vary the rate of filtration through any single unit above its design capacity. D. Filtering units equipped with rewash facilities shall not be returned to service after backwashing until being thoroughly rewashed. E. All waterworks shall provide a minimum working pressure of 20 psi at all service connections.	chemical coagulation, constant hydraulic loading rate, and filter-to-waste operations. Add new requirement for microfiltration and ultrafiltration direct integrity test for pathogen removal credit. Re-number subsection E to C and clarify gauge pressure (psig) measurement. Add new subsections D and E on fluoridation practices. Rationale – Requirements for pathogen removal credits for membranes must be consistent with federal Enhanced Surface Water Treatment Rules. The Board of Health recognizes the public health benefit of community water fluoridation and recommends that community water systems provide the optimum fluoride ion concentration in the water they provide to their consumers. Impact – owners that add fluoride to drinking water are required to provide notice to the commissioner and consumer if they intend to permanently stop the fluoridation program. They are also required to provide notice if they intend to start a fluoridation program. The notice requirements mean owners cannot make a change during the 90-day notice period. Other changes are negligible because; requirements have already been implemented.
None	12VAC5-590-515	None	Intent – Create new section 515 titled “Use of chemicals.” Adopt current industry standards for chemical used in water treatment. A. Chemicals shall be certified to ANSI/NSF standard 60. B. Chemicals shall bear the proper certification mark. C. Owner shall have documentation of their certification. Rationale – ANSI/NSF Standard 60 is currently cited in Part III, section 860 and need to be moved here. Impact – Negligible; requirements have already been implemented.

12VAC5-590-520	N/A	Section title is "Waterworks expansion." 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.	Intent – Change title to "Waterworks capacity." Expand options for meeting water demands when waterworks are near their design capacity, consistent with Local and Regional Water Supply Planning regulation (9VAC25-780). Delete text in subsection A and replace with requirement for community waterworks that reach 80% of capacity to prepare and submit a written plan to address capacity needs within 30 days of notification by the department. Delete subsection B and replace with new text stipulating that the commissioner may require the owner to reevaluate a well source capacity when the well has demonstrated declining yield. Rationale – Not all waterworks that reach 80% of rated capacity need to design for expansion. Other measures may be appropriate, such as reducing potable water demand through reduction of leakage or reclamation/reuse of water for nonpotable needs. Provide authority to require an owner to reevaluate a well yield when it has demonstrated declining yield. Impact – Reduced demand on natural water supplies and potential capital, operation and maintenance cost savings to waterworks and their customers.
12VAC5-590-530	Break section 530 into three smaller sections: 12VAC5-590-530 12VAC5-590-531 12VAC5-590-532	Section title is "Reporting." A. The results of required monitoring shall be reported by the owner (or authorized agent) to ODW by dates specified in this subsection. B. Report to the ODW. C. Reporting for Coliform TT violations. D. Seasonal waterworks start-up certification. E. Reporting for filtration and disinfection treatment. F. Reporting for lead and copper. G. Reporting for disinfection byproducts.	Intent – Break up large section into smaller ones. A. Add that the results shall be reported in a format and method prescribed by the commissioner. B. Delete requirement for telephone and mail reporting and replace with method acceptable to the department. Convert subdivision B.1 to new subsection "C. Bacteriological examination reporting". Convert subdivision B.2 to new subsection "D. Turbidity reporting". Move subdivisions B.3 through B.5 into new subsection "E. PMCL exceedance".

		H. Reporting for disinfectants. I. Reporting for disinfection byproduct precursors and enhanced coagulation or enhanced softening. J. Reporting of results to the district engineer. K. Recycle flow reporting requirements. L. Reporting for enhanced treatment for cryptosporidium. M. Reporting for groundwater waterworks. Content is based on National Primary Drinking Water Regulations 40 CFR 141.31, 141.21, 141.75, 141.175, 141.706, 141.721, 141.629, 141.134, 141.861, and 141.90, with no substantial changes.	Convert subdivision B.6 to new subsection F “Failure to comply with Sanitary Survey corrective actions”. Convert subdivision B.7 to new subsection G. “Failure to comply with variance or exemption requirements”. Convert subdivision B.8 to new subsection H. “Reporting a Tier 1 violation”. Move subdivision B.9 into new section 531. “Reporting requirements for filtration treatment and disinfection treatment." Change subsection letter “C” to subsection “I”. Change subsection letter “D” to “J”. Move subsections E, G, H, and I to new section "531. Reporting requirements for filtration treatment and disinfection treatment." Move subsection F to new section 532 “Reporting requirements for lead and copper." Delete existing subsection J. Delete existing subsection K. (These have expired. On-going requirements are given in 12VAC5-590-550 B 16). Move subsection L to new section “531. Reporting requirements for filtration treatment and disinfection treatment.” Change subsection letter “M” to “K”. Delete subsection N. <u>Rationale</u> – Too much information is provided in one section, which is too large and complex to navigate easily and comprehend requirements. <u>Impact</u> – Improved understanding and application of the regulations.
None	12VAC5-590-531	See 12VAC5-590-530 B.9 and 12VAC5-590-530 E, G, H, I, & L	<u>Intent</u> – Moved 12VAC5-590-530 B.9 and E, G, H, I, and L to new section 531 titled “Reporting requirements for filtration treatment and disinfection treatment." The reporting requirements have not changed. <u>Rationale</u> – Keep the relevancy of the information in one section, more

			easily to navigate and comprehend requirements. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-532	See 12VAC5-590-530 F "Reporting requirements for lead and copper."	Intent – Move subsection F to new section 532 titled "Reporting requirements for lead and copper." The reporting requirements have not changed. Rationale – Keep the relevancy of the information in one section, more easily to navigate and comprehend requirements. Impact – Improved understanding and application of the regulations.
12VAC5-590-540	N/A	Section title is "Public notices." Content is based on National Primary Drinking Water Regulations 40 CFR 141.201-141.211, Part 141 Appendix A to Subpart Q, 141.403, 141.31, 141.33, with no substantial changes.	Intent – Improve readability and clarity. Add public notice requirements for consecutive waterworks to subsection A. Updated NSF International telephone number & web address. Include missing information & correct errors. Rationale – Many waterworks purchase finished water and are required to notify customers under specific circumstances. Text must conform with RIS Style Manual. Impact – Improved understanding and application of the regulations.
12VAC5-590-545 & Appendix O	N/A	Section title is "Consumer confidence reports." Content is based on National Primary Drinking Water Regulations 40 CFR 141.151 - 141.155, Part 141 Appendix A to Subpart O, Part 141 Appendix B to Subpart Q, and 141.52, with no substantial changes.	Intent – Correct references. Update report content requirements in this section and eliminate Appendix O, placing it in new section 12VAC5-590-546. Rationale – Group related sections together for easier navigation. Appendices will be eliminated in accordance with RIS Style Manual. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-546	See Appendix O, "Regulated Contaminants for Consumer Confidence Reports and Public Notification".	Intent – Move content from Appendix O into new section 546 titled "Regulated contaminants for the consumer confidence reports and public notification" and renumber Table 546.1. Add information to indicate use of mandatory language for public

			notification and consumer confidence reports. Rationale – Improve accessibility of information. Impact – Improved understanding.
12VAC5-590-550	N/A	Section title is "Recordkeeping." Content is based on National Primary Drinking Water Regulations 40 CFR 141.33, 141.75, 141.91, 141.134, 141.155, 141.175, 141.405, 141.571, 141.629, 141.722, and 141.861 with no substantial changes.	Intent – Insert new subsection A: All waterworks owners shall maintain 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. Reformat remaining section. Add specific retention requirements for: recycle flow, plant operational records, organization/staffing chart, record drawings and specifications, equipment manufacturer's manuals, lab test schedule, preventative maintenance schedule, and specific requirements for waterworks with groundwater sources. Consolidate list of recordkeeping requirements in one location. Rationale – Reduce possibility of owner/operator overlooking or misplacing documents that demonstrate compliance with the regulations. Impact – Improved documentation and compliance with operational regulations.
12VAC5-590-560	N/A	Section title is "Safety." The waterworks' most important asset is a trained workforce. The protection of personnel through an active safety program is important. It is strongly recommended that every waterworks institute a safety program.	Intent – Revise to require a safety program for the operation of the waterworks in accordance with VOSH requirements. Change recommendation to a requirement. Rationale – Worker safety is necessary to assure reliable production of drinking water. Impact – Waterworks will incur cost to develop and implement safety program, however, this should be offset by savings in employee absences, workmen's compensation, claims, etc.
None	12VAC5-590-565	None	Intent – Create new section 565 titled "Source water protection." Prevent source water quality

			deterioration by encouraging waterworks to protect their water sources. A. Counties, cities, and towns that are waterworks owners may exercise their authority pursuant to §15.2-2109 of the *Code of Virginia* to protect their waterworks from pollution or injury. B. Any 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 waterworks and the department. C. Waterworks should develop source water protection plans for all their sources and report ongoing or completed protection initiatives to the department. Rationale – A proactive approach to protecting source water quality will reduce incidents that could have a harmful impact on drinking water quality. Impact - ODW provides technical and financial assistance to waterworks to assess and protect their sources; the potential cost to treat polluted source water may be reduced or eliminated.
12VAC5-590-570	N/A	Section title is "Operational report forms." All waterworks required to report information to the department shall use approved forms.	Intent – Rename section "Operational reporting requirements". Delete opening sentence. Move and update Monthly Operation Report requirements for the type of water treatment from Appendix G to Tables 570.1 through 570.13. Create new subsection B – Reporting incidents within 24 hours. Specify minimum operation report content in Regulations and eliminate suggested content listed in Appendix G. Rationale – Reporting consistency among waterworks with similar treatment facilities will be achieved with standardized content.

			Appendices will be eliminated in accordance with RIS Style Manual. Impact – Consistent monitoring and reporting of waterworks operations, leading to improved enforcement of the regulations and water quality provided to consumers.
Article 4		Article 4 title is "Cross Connection Control and Backflow Prevention in Waterworks."	Eliminate article number and title for simplicity.
12VAC5-590-580	N/A	Section title is "General" Each owner is required to establish and enforce a program of cross connection control and backflow prevention for each waterworks. The program shall be approved by the division prior to issuance of the operation permit (See Appendix I).	Intent – Change title to "General requirements for cross-connection control and backflow prevention." Add subsection letters A – D. Consolidate general requirements and clarify what installations are prohibited. A. Add reference to 12VAC5-590-360. Delete reference to Appendix I (to be repealed). B. The owner shall not install or allow to be installed a water service connection to any premises, consumer's water system, or auxiliary water system where cross connection is known to exist unless adequately safeguarded. C. Move text from 590 and summarize to this subsection. D. The owner shall maintain acceptable working pressure in the distribution system. Rationale – Comply with RIS Style Manual. Impact – Improved understanding and application of the regulations.
12VAC5-590-590	N/A	Section title is "Cross connections." A. The purveyor shall not install, maintain, or allow to be installed a water service connection to any premise where cross connections may exist unless it is abated or controlled. 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 unless the auxiliary	Intent – Repeal section. Move content to section 580 B and summarize as noted above. Rationale – Organization of content will improve understanding. Impact – Improved understanding and application of the regulations.

		water system is approved by purveyor and the division.	
12VAC5-590-600	N/A	Section title is "Responsibilities." A. General information B. Water Purveyor is required to establish and operate a cross-connection control program. Suggested elements are listed in Appendix I.	Intent – Change title to "CCCP Responsibilities." Delete reference to Appendix I (to be repealed). Consolidate specific requirements in one section. A. Owner shall have a CCCP, with 1 designated individual to manage it. B. Owner shall establish procedures. C. Owner shall have tests conducted. D. In lieu of annual assessments, owner may have a public education program. E. Discontinuing service is required for specified conditions. F. Corrective action and report to department G. Owner is required to maintain an inventory and records of testing, repairs, and maintenance. H. Owner is required to maintain records of CCCP implementation. Rationale – Organization of content will improve understanding. Comply with RIS Style Manual. Impact – Increased flexibility for owners to have and implement the CCCP. Improved understanding and application of the regulations.
12VAC5-590-610	N/A	Section title is "Containment policy." A. Backflow prevention required at the service connection. B. If necessary, backflow prevention may be installed downstream of the service connection. C. Conditions requiring backflow prevention. D. Premises with booster pumps. E. List of facilities requiring backflow prevention.	Intent – Change title to "Containment of backflow." Combine subsections A and B as subsection A. Update to include overlooked conditions and delete inappropriate ones; be consistent with USBC. A. Installation of approved assemblies, devices, and methods. B. New subsection. Allows POU isolation. C. Installation under special conditions. D. Low pressure cutoffs at pumps. E. Installation at specially identified facilities. F. Protection at temporary and emergency connections.

			Rationale – Eliminate conflicts between regulations and plumbing code. Impact – Consistent standards improve public health protection.
12VAC5-590-620	N/A	Section title is "Type of protection required."	Intent – Repeal section. Rationale – Relevant content is contained in sections 610 and 630. Impact – Improved understanding and application of the regulations.
12VAC5-590-630	N/A	Section title is "Backflow prevention devices." A. Devices shall comply with USBC. B. Installation shall comply with USBC. Table 2.10 "Determination of degree of Hazard": High, Moderate and Low Hazard. C. Existing backflow prevention assemblies may be excluded.	Intent – Change title to "Backflow prevention assemblies, devices, and backflow elimination methods for containment." Update requirements to agree with USBC. A. Compliance with USBC. B. Describe safeguards and relate to degree of hazard (high or low). Delete Table 2.10 & replace with Table 630.1 "Determination of Degree of Hazard" (High & Low Hazard only.) C. Do not install devices to operate or open during backflow prevention. D. Backflow device testers shall be certified. Rationale – Eliminate conflicts between regulations and plumbing code. Impact – Consistent standards improve public health protection.
Article 1		Article title is “General”	Eliminate article number and title for simplicity.
12VAC5-590-640	N/A	Section title is “General.” The engineer shall confer with the division before proceeding with the detailed designs. The engineering report and preliminary plan shall include plant site selection. Operation and maintenance manuals are required for treatment facilities and pumping facilities.	Intent – Change title to “General design considerations.” Modify title to improve accuracy and accessibility of content. Add new subsections A-D. Eliminate redundant language. Require sound engineering basis for design. A. Clarify that community waterworks shall be designed for future water demand. B. Clarify design basis, including maximum daily and peak hour water demands, effective storage requirements for community and noncommunity waterworks. C. Clarify minimum residual pressure requirements for water demands including fire protection.

			D. Include reference to NSF/ANSI Standard 61 for materials in contact with product water. <u>Rationale</u> – Title needs to convey subject matter. Delete requirement for engineer conference, engineering report, and preliminary plan. These procedures are described in Part I, Section 200. Delete requirement for operation and maintenance manuals. Other options exist for obtaining the information and using it. Ensure consistency with industry best practices. <u>Impact</u> – Administrative cost savings for the waterworks owner and others by providing improved information exchange. Assure reliability and performance of waterworks to produce safe drinking water.
12VAC5-590-650	N/A	Section title is "Objectives of a waterworks." A. Objectives listed are the production of pure water; and the production of water appealing to the consumer. B. To reach the objectives of a waterworks, finished water quality shall conform to Part II of this chapter.	<u>Intent</u> – Repeal section. Compliance with the water quality standards is stated in Part II and does not need to be repeated. <u>Rationale</u> – Terms "Pure" and "appealing" do not assist in applying design requirements that follow. <u>Impact</u> – None.
12VAC5-590-660	N/A	Section title is "Site location." A. Location of wells and treatment plants above the 100-year flood elevation, or lower elevations considered if flood protection is shown. B. Waterworks shall be readily accessible in all seasons. C. Consideration should be given to transportation and electrical service.	<u>Intent</u> – Insure adequate protection from potential contaminants due to surface runoff and identify other features that may be in close proximity. Clarify access requirements. Clarify that considerations apply to more than just the plant, and backup power source does not have to be external. A. Add requirement to grade site for adequate drainage, and add reference to section 840 E for other well location requirements. B. Change general statement to specify pumping and treatment facilities will be accessible, and access roads provided. C. Reword to require consideration of functional

			aspects of the site, including transportation and electrical service. Rationale – There are other important locational considerations besides flooding that may harm water quality. Not all types of facilities need to be accessible at all times to insure reliable and safe water service. Onsite power generation is acceptable as a secondary supply. Accessibility and reliable electrical service are needed at pump stations as well as treatment works. Impact – Improve reliability of waterworks.
12VAC5-590-670	N/A	Section title is "Site size." A. Refers to other sections for reserve area required around well and spring sites. B. Plant site shall be adequate for expansion and disposal of plant wastes. C. Refers to VA Code for disposal of treatment plant wastes.	Intent – Improve accuracy and eliminate potential negative connotation of terminology. A. Change reference section numbers as appropriate. B. Change "disposal" to "handling" and change "wastes to "residuals". C. Change "wastes" to "residuals." Rationale – Residuals are not always waste products that must be disposed of; beneficial uses exist. Impact – None.
12VAC5-590-680	N/A	Section title is "Treatment process selection." Considerations are listed: A. Source water quality and quantity. B. Source water quality changes. C. Water quality goals and public desire for better water. D. Removal of contaminants using BAT. E. Established treatment techniques must be used for PMCLs. F. POE or POU devices cannot be used for long-term compliance with PMCLs; only short-term, interim use as a condition of a variance or exemption issued by the commissioner.	Intent – Change title to "Treatment process selection and BAT." Clarify and consolidate content. Allow POU & POE devices for short-term use. A. Combine subsections A and B into one subsection. B. Add reference to BAT in federal regulations for Inorganic compounds (40 CFR 141.62) and Organic compounds (40 CFR 141.61). C. Delete general language and replace with references to BAT in federal regulations for Radionuclides (40 CFR 141-66). D. Add the option of approving alternate treatment technology. E. Include treatment techniques for Action Levels, and clarify that design shall employ these requirements.

			F. Restrict the use of POU devices for treating microbiological contaminants. G. Add new subsection allowing the use of reverse osmosis and nanofiltration technology. Rationale – Consolidation of text improves message. POU & POE devices have proven effective for short-term compliance with water quality standards, which is the objective. Impact – Potential reduction is in capital and operation costs for use of POU and POE devices in place of centralized treatment; and allowing the use of membrane technology for certain treatment applications.
Appendix N, Appendix P	N/A	Best available treatment technology (BAT) is listed for inorganic compounds in Table I, and organic compounds in Table II, of Appendix N. BATs for radionuclides is listed in Tables I, II and III of Appendix P. Content is based on National Primary Drinking Water Regulations 40 CFR Part 142 Subpart G, with no substantial changes.	Intent – Repeal Appendix N and Appendix P. Incorporate by reference the Best Available Treatment Technologies listed in the federal regulations in section 680. Consolidate treatment information and eliminate appendices in compliance with RIS Style Manual. Rationale – Table formats are inconsistent with RIS, and information is available in the federal regulations. Impact – Improved water quality provided to consumers.
12VAC5-590-690	N/A	Section title is "Capacity of waterworks." Design capacity of a waterworks shall exceed the maximum daily water demand of the system; design on the basis of water consumption provided in table (subsection A). A. Annual daily water consumption rates (annual daily water demand): table. B. Minimum water storage of 200 gallons per equivalent residential connection at minimum pressure required. C. Minimum working pressure described; selection of fire flow described; formula	Intent – Repeal section. Revise and relocate corrected content as follows: Delete first paragraph, and remove conflicting language. Eliminate outdated design values. Increase the capacity of the second well from 20% to 30% of water demand, for systems with only 2 wells. Eliminate maximum hour flow design formula, and the existing storage requirement. A. Delete subsection. B. Delete subsection. Revise storage requirement in new subsection 640 B 3. C. Delete subsection. Move minimum working pressure requirement and fire flow

		provided for estimating maximum hour domestic flow. D. Well source capacity of 0.5 gpm/equivalent residential connection required. E. Waterworks using only groundwater sources with 50+ residential connections are required to have at least 2 wells; 2nd well capacity must be at least 20% of waterworks capacity. F. Waterworks using only groundwater sources with fewer than 50 residential connections must have an auxiliary well pump or 48 hours of effective storage.	selection to new subsection 640 C. D. Delete subsection. E. Move subsection to new subsection 840 R, and increase minimum required capacity of 2nd well to 30%. F. Move subsection to new subsection 840 S, and clarify requirement for access to a replacement pump and related equipment. Rationale – Tabulated water consumption rates are outdated and produce inaccurate estimates of water demands and design basis. Formula is outdated and produces inaccurate results. Existing language is unclear whether to design for the maximum daily water demand or for the annual daily water demand. Minimum acceptable storage and well capacity refer to concept of "equivalent residential connections" (ERC), which ignores effects of non-residential water demands and results in excess storage requirements for large waterworks. Failure of the primary well will require 2nd well to supply all water needs, so increased capacity of 2nd well is needed. Insure that the pump will be available and able to be put into operation when needed. Impact – Improve design and reliability of waterworks.
12VAC5-590-700	N/A	Section title is "Metering total water production." Waterworks that chlorinate and remove iron or manganese shall meter the water prior to treatment. Waterworks that soften by ion exchange shall meter water treated and delivered. Waterworks that remove turbidity shall meter prior and subsequent to treatment.	Intent – Require all community waterworks to meter total water produced, instead of specific treatment facilities. Provide clarification on metering for noncommunity waterworks. Recommend the provision of metering of total water production. Expand metering requirement to all waterworks that provide treatment. Rationale – Existing regulation excludes several treatment processes that use water, and makes no provision for new technologies in future.

			Impact – Metering will improve accountability of water use and will likely improve waterworks efficiency and reduce waste.
12VAC5-590-710	N/A	Section title is "Site layout." Requires site grading, adequate drainage, walks, access roads, and driveways. Requires consideration of function.	Intent – Repeal section. Requirements are covered elsewhere. Rationale – No need for a separate section. Impact – None.
12VAC5-590-720	N/A	Section title is "Building layout." Provide adequate lighting, ventilation, heat, drainage, dehumidification, and equipment accessibility. Consider operator safety, convenience, and separate rooms for storing chemicals. Provide sanitary facilities at all waterworks.	Intent – Change title to "Building design and construction." Include reference to applicable building codes for building design and layout for purposes listed. Delete sections A-L, and add new sections A-F. Delete requirement for sanitary facilities. Modify title to improve accuracy and accessibility of content. Provide relevant references. Rationale – Title needs to convey subject matter. Design requirements are given in building codes and should not be included in this regulation. Impact – Waterworks design will be more consistent in compliance with applicable building codes and potential conflicts eliminated.
None	12VAC5-590-725	None	Intent – Add new section 725 titled "Automated monitoring and control systems." Specify design requirements for (1) data security, (2) equipment protection, (3) data displaying and recording, & (4) manual operation and backup controls. Add requirement for automated monitors and controls. Rationale – Technology is widely used and continues to evolve; minimum requirements must be established to assure compliance with water quality standards, data quality and reporting. Impact – Improved reliability of waterworks operation.
12VAC5-590-730	N/A	Section title is "Standby power capability."	Intent – Change title to "Alternate power sources." Add reference to emergency management plan for

		Standby power may be required for treatment or pumping in order to maintain a minimum level of service during an emergency.	extended power outages (section 505), to maintain a minimum level of service. Clarify requirements; improve accuracy, and accessibility of content. Rationale – Allows more options to be considered for providing power during outages. Impact – Potential reduction in capital costs and improved waterworks reliability.
12VAC5-590-740	N/A	Section title is "Maintenance and servicing of equipment." Provide adequate facilities for servicing & maintaining automatic equipment.	Intent – Repeal section and move content to section 720 A. Consolidate related text into one section. Rationale – Design features should be addressed in one place to improve accessibility of content. Impact – Improved facility design and operation.
12VAC5-590-750	N/A	Section title is "Shop space and storage." Include adequate facilities for shop space & storage.	Intent – Repeal section and move content to section 720 E. Consolidate related text into one section. Rationale – Design features should be addressed in one place to improve accessibility of content. Impact – Improved facility design and operation.
12VAC5-590-760	N/A	Section title is "Laboratory." A. Testing equipment must be adequate for purpose intended and recognized procedures shall be used. B. Lab floor and bench space is specified for plants treating for iron removal, manganese removal, softening by ion exchange, turbidity removal or softening by precipitation. C. Bacteriological testing must be in a separate lab room.	Intent – Change title to "Laboratory facilities." Delete minimum floor and bench space requirements for treatment processes specified. Refer to DCLS regulations. Provide general design requirements only. Rationale – Analytical laboratories are regulated by the DCLS and should not be included in this regulation. Impact – Lab design will be more consistently in compliance with applicable DCLS certification requirements and potential conflicts eliminated.
12VAC5-590-770	N/A	Section title is "Sample taps." Water sample taps from each water source are required. Sample taps running to a lab	Intent – Change title to "Sampling and monitoring equipment." Clarify sampling locations required for all

		sink are required for each unit treatment process. Taps shall be consistent with sampling needs. Petcock type taps are prohibited.	types of waterworks; address continuous monitoring. A. Clarify that taps are required to sample source water and water at entry point (to distribution system), and at each unit treatment process. B. Add subsection for continuous monitoring equipment requirements. Rationale – Waterworks other than those using conventional filtration had not beennot addressed; continuous monitoring equipment is often used and had not been addressed. Impact – Improved facility design and operation.
12VAC5-590-780	N/A	Section title is "Wall castings." Consider providing extra wall castings in concrete for piping required if facility is expanded.	Intent – Repeal section and move content to subsection 720 F. Consolidate related text into one section. Rationale – Design features should be addressed in one place to improve accessibility of content. Impact – Improved facility design.
12VAC5-590-790	N/A	Section title is "Water supply service." Water used for treatment facilities shall be taken from a point after thorough chemical mixing.	Intent – Change title to "Process water." Clarify that water used in treatment processes or equipment must be taken from the finished water after all chemicals are added and mixed, and that backflow or backsiphonage will be prevented. Rationale – Potentially contaminated water could be introduced into the treatment process, compromising the water quality produced. Impact – Improved water quality provided to consumers.
12VAC5-590-800	N/A	Section title is "Disinfection." Pipes, tanks, and equipment conveying or storing potable water must be disinfected prior to placing in service. Plans & specifications shall outline disinfection procedures. Forms of chlorine are described. Disinfection methods other than chlorination will be considered.	Intent – Repeal section and move portion of text to subsection 1000 C. Consolidate related text into one section. Eliminate chlorine form and solution details and refer to AWWA standards. Rationale – Disinfection should be addressed in one place to improve accessibility of content. Chemical

		Required testing following disinfection and acceptance criteria is described.	solution details are current in AWWA standards. Impact – Improved water quality provided to consumers.
12VAC5-590-810	N/A	Section title is "Paintings, coatings, sealers, or liners." Paints, coatings, sealers, and liners in contact with raw, partially treated or potable water shall be approved prior to use.	Intent – Change title to "Components, materials, and products." Delete specific approval requirement and refer to national standard. Rationale – VDH does not approve specific materials used in water treatment individually; adherence to appropriate national standards is required. Impact – Improved understanding and application of the regulations.
Article 2		Article title is "Source Development"	Eliminate article number and title for simplicity.
12VAC5-590-820	N/A	Section title is "General." Source preference shall be given to water with minimal risk of contamination from wastewater. Engineer must prove that the proposed water source will comply with PMCLs for bacteriological, chemical, physical, and radiological qualities.	Intent – Change title to "New source water selection and sampling." Change "wastewater" to "point and nonpoint pollution sources". Refer to all water quality standards listed in section 340. Add correct reference section numbers. Rationale – Title needs to convey subject matter; references need to be accurate and complete. Impact – Improved understanding and application of the regulations.
12VAC5-590-830	N/A	Section title is "Surface water sources; quantity; quality; development structures." A. General description of quantity requirements, including reasonable surplus and compensation for losses; definition of safe yield for simple and complex intakes. B. Owner required to conduct a sanitary survey of watershed. C. Intake structure design features listed. D. Detention reservoir defined as pretreatment structures. Development restrictions &	Intent – No changes Rationale – Stakeholders could not agree on revisions to subsection A regarding how to determine safe yield, the capacity of surface water sources, or appropriate roles and authority of the executive branch agencies with responsibility for oversight of natural resources in Virginia. Impact – VDH will continue to work with stakeholders outside this regulatory action to reach a consensus on this topic.

		construction requirements listed. E. Terminal reservoirs prohibited from body contact recreation or boats powered by gasoline.	
12VAC5-590-840	N/A	Section title is “Groundwater sources.” A. Requirements for water quality testing, well lot, well location, class I and II construction B. General well development requirements, including water used, steel and plastic casing, packers, screens, pumping test, chemical conditioning, grouting, plumbness and alignment, temporary capping, bacteriological quality, water quality sampling, observation wells, well abandonment. C. Gravel packing, radial collectors, flowing artesian wells, springs.	Intent – Update groundwater supply development requirements. A. Replace “public water supply wells" to “wells intended to serve a waterworks”. Change “registered contractor” to “certified water well system provider” to be consistent with DPOR classifications. B. Add new subsection B describing well construction requirements for wells in Eastern Virginia or Eastern Shore Groundwater Management Areas. C. Add new subsection C. Eliminate description of bacteriological tests and refer to subsection K for water quality testing. D. Create new subsection D and revise minimum well lot requirements. Delete descriptions of plat plan and dedication document and refer to section 200. E. Create new subsection E. Add protection from animal feed lots, cemetery, and geothermal wells. Add minimum separation requirements for onsite storage of fuel. F. Create new subsection F for construction of Class I and II wells, completion of GW-2 form. Eliminate Class IIA and IIB well classifications. G. Change subsection B to subsection G and re-title to “Well construction materials and development.” Update requirements for plastic well casing and delete maximum allowable depths table for PVC well casing. Delete water well completion report description. Delete requirements for chemical conditioning specifications. Update grouting requirements. Delete

			plumbness and alignment testing. Modify temporary well abandonment to temporary capping requirements. H. Add new subsection H for well yield and drawdown tests. Add alternative test methods considerations, coordination with DEQ aquifer tests in groundwater management areas (GWMAs). I. Create new subsection I for well appurtenances including sanitary seal, vent, and pitless well units. J. Create new subsection J and add disinfection requirement after placement of well pump. K. Create new subsection K for water quality sampling and analysis, including bacteriological, chemical, physical, and radiological tests. L. Create new subsection L for observation wells and reword existing text to refer to DEQ construction requirements if located in GWMA, otherwise constructed in accordance with 12VAC5-630 (Private Well Regulations). M. Create new subsection M for sealing of select zones. [Delete permanent well abandonment subsection and create new section 475-Removal of wells from service and section 476-Reactivation of wells in Part II.] N. Create new subsection N for gravel packed wells. Add reference to construction requirements in subsection B for wells located in GWMAs. O. Create new subsection O for radial collector systems. Delete text on multiple aquifer wells. P. Create new subsection P for flowing artesian wells. Add requirements for pitless adapters. Q. Create new subsection Q for well capacity requirements of community waterworks. Capacity shall meet maximum daily demands. Define

			sustainable yield for wells in consolidated rock formations. R. Create new subsection R for waterworks serving 50 or more residential connections. Require at least 2 wells; if only 2 provided then 2nd well rated for at least 30% of total design capacity. S. Create new subsection S for waterworks serving less than 50 residential connections. Require ready access to replacement equipment or 48 hours of finished water storage. T. Create new subsection T for springs. Rationale – Update requirements to reflect current law and resolve conflicts with DEQ's regulations for Water Supply Planning, Groundwater Management Areas and Surface Water Withdrawals. These have been issued or amended since the last amendments to this section of the regulations. Impact – Eliminate potential regulatory and jurisdictional conflicts when developing a groundwater source.
Article 3		Article title is "Processes and Devices"	Eliminate article number and title for simplicity.
12VAC5-590-850	N/A	Section title is "General." Design shall depend on source water quality and potable water standards. All surface waters shall be treated by conventional filtration and disinfection unless otherwise approved. Pre-sedimentation may be required. Operation and maintenance manuals are required.	Intent – Change title to "Appropriate treatment". Refer to section 680 for treatment process selection and delete other regulation references. Delete required surface water treatment processes. Delete pre-sedimentation possibility. Refer to safety considerations in section 560. Delete requirement for O&M manuals. Delete requirement for conventional treatment of all surface water and refer to appropriate sections for treatment process selection. Rationale – Alternatives to conventional treatment are available. O&M Manual requirements also deleted in section 640.

			Impact – Potential reduction in capital and operation costs to waterworks if alternative treatments are used.
12VAC5-590-860	N/A	Section title is "Chemical application." A. Plans and specification requirements listed. B. Chemical shall be applied to maximize efficiency, consumer protection, operator safety, operation flexibility, prevent backflow, & provide for pH adjustment to the raw water. C. Feed equipment requirements listed, including: quantity, design, capacity, location, controls, solution tank features, material of construction, weighing scales, feed lines, & service water supply for dissolving chemicals. D. Chemicals. E. Housing. F. Operator safety.	Intent – Clarify chemical feed design requirements and delete operation requirements. A. Minor wording changes. B. Minor wording changes to ensure consistent use of terms. C. Delete minimum of 2 feeders; require feed capacity with largest feeder out of service. Delete redundant backflow protection details. Clarify control features. Prohibit burial of chemical storage tanks. D. Delete chemical labeling details. Clarify chemical storage requirements based on dose. Include specific requirements for activated carbon because it is a combustible material. E. Delete floor slope requirement. F. Include reference to VOSH requirements. Add reference to chlorine section. Clarify operator protective equipment. Rationale – Chemical labeling is specified in section 515. Chemical storage is based on average consumption to arrive at a reasonable supply onsite. Activated carbon is combustible and special safety precautions are required. Operations are covered in Part II of the regulations. Impact – Excess chemical storage and consequent deterioration of chemical quality is reduced. Operator safety will be improved. Potential undetected leaks of buried chemicals will be avoided.
None	12VAC5-590-865	See 12VAC5-590-870 A and B	Intent – Clarify requirements. New section 865 titled "Conventional filtration treatment." Content moved from 870 A and 870 B: A. What comprises conventional filtration treatment. B. Designing for continuous operation. C. Added new presedimentation subsection.

			Rationale – Improve accessibility of information Impact – Improved understanding and application of the regulations.
12VAC5-590-870	Break section 870 into three smaller sections: 12VAC5-590-871 12VAC5-590-872 12VAC5-590-873	Section title is "Mixing and sedimentation." A. Surface water treatment process configuration B. Pretreatment for high turbidity or high coliform C. Flash (rapid) mixing design D. Flocculation mixing design E. Sedimentation design F. Combined softening - clarification units	Intent – Move content of existing subsections A – F to new sections noted and repeal section 870. Break large sections into smaller ones, organized by unit process. Content is essentially unchanged. Remove content from 870 A and 870 B and summarize to new section 865. Rationale – Large body of information on distinct process design is more easily located with separate sections and titles. Combined softening-clarification units are not used in Virginia. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-871	See 12VAC5-590-870 C and D	Intent – Create new section 871 titled "Coagulation and flocculation." Add in-line static mixers. Move content from subsection 870 C and 870 D and summarize requirements for rapid mixing and flocculation. Separate section for these treatment processes. Rationale – Improve accessibility of information. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-872	See 12VAC5-590-870 E	Intent – Create new section 872 titled "Sedimentation," and move content from subsection 870 E and summarize requirements for sedimentation. Allow consideration of sedimentation loading rates exceeding 0.5 gpm/ft^2 and reduced settling times. Separate section for this treatment process. Rationale – Improve accessibility of information.

			Impact – Improved understanding and application of the regulations.
None	12VAC5-590-873	See 12VAC5-590-870 F	Intent – Create new section 873 titled "Solids contact treatment units," and move content from 870 F and summarize requirements. Eliminate references to softening. Separate section for this treatment process. Rationale – Improve accessibility of information. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-874	See 12VAC5-590-880 A	Intent – Create new section 874 titled "Gravity filtration," and move content from 880 A and summarize requirements. Allow consideration of filter loading rates exceeding 4.0 gpm/ft^2. Include provision for air scour. Separate section for this treatment process. Rationale – Improve accessibility of information. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-875	See 12VAC5-590-880 E	Intent – Create new section 875 titled "Direct filtration," and move content from 880 E and summarize requirements. Separate section for this treatment process. Rationale – Improve accessibility of information. Impact – Improved understanding and application of the regulations.
12VAC5-590-880	Break section 880 into four smaller sections: 12VAC5-590-880 12VAC5-590-874 12VAC5-590-875 12VAC5-590-881	Section title is "Filtration." A. Rapid rate gravity filters B. High rate gravity filters C. Slow sand gravity filters D. Diatomaceous filters E. Direct filtration F. Rapid rate pressure filters	Intent – Change section 880 title to "Diatomaceous earth filtration" and retain content from subsection D only. Eliminate source restrictions for avoiding pretreatment. Retain pilot plant study but delete specific requirements. Break large sections into smaller ones, organized by water quality characteristic. Content is essentially unchanged. Rationale – Existing sections too large to navigate easily. "Sampling" is not accurate description of content. Site-specific water quality should dictate study parameters.

			Impact – Improved understanding and application of the regulations.
None	12VAC5-590-881	See 12VAC5-590-880 C	Intent – Create new section 881 titled "Slow sand filtration," and move content from 880 C and summarize requirements. Separate section for this treatment process. Rationale – Improve accessibility of information. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-882	None	Intent – Create new section 882 titled "Membrane filtration." Add application of membranes and disinfection removal credits. Refer to section 401.E.6. b. Add membrane design detail requirements, including configuration, materials, instrumentation, alarms, and sampling taps. Rationale – Membranes may be successfully applied in water treatment. This treatment technology was not included in previous amendments to the regulations. Impact – Potential reduction in capital and operation costs to waterworks if membrane treatment is used instead of conventional filtration.
None	12VAC5-590-883	None	Intent – Create new section 883 titled "Bag and cartridge filtration". Require pilot study. Add disinfection removal credits. Refer to section 401.E.6.a. Add filter design detail requirements, including instrumentation and alarms. Require O&M documents and operator training. Rationale – Bag and cartridge filters may be successfully applied in water treatment. Impact – Potential reduction in capital and operation costs to waterworks if bag and cartridge filtration is used instead of conventional filtration.

12VAC5-590-890	N/A	Section title is "High rate treatment processes." A. General characteristics B. Instrumentation required C. Unit treatment process design requirements	Intent – Repeal section and move applicable text to sections 874 "Gravity filtration" and 872 "Sedimentation". Improve accessibility of content. Rationale – Information is more easily located with a separate section and title. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-895	None	Intent – Create new section 895 titled "Pre-engineered package treatment units." Include pre-designed & factory-built treatment equipment in the regulations. Rationale – This equipment may be successfully applied in water treatment. Impact – Potential reduction in capital and operation costs to waterworks if packaged treatment is used instead of conventional filtration.
12VAC5-590-900	N/A	Section title is "Softening." A. Lime, excess lime, excess lime soda process requirements. B. Cation exchange process.	Intent – Change title to "Cation exchange softening." Delete subsection A. Delete section B catchline and reorganize text into new subsections A - P with minor revisions. Limit content to ion exchange softening process. Rationale – Lime softening is not used in Virginia. Process is costly to operate and maintain, and is unlikely to be employed in future. Impact – None.
12VAC5-590-910	N/A	Section title is "Aeration." A. Natural draft aeration. B. Forced or induced draft aeration. C. Pressure aeration. D. Other methods of aeration. E. Aerators that discharge through the atmosphere. F. Aerators used for oxidation or removal of dissolved gases. G. Ventilation in buildings. H. Bypass.	Intent – Consolidate related text and clarify requirements. Expand and update this section. Delete subsections A through H, and reorganize content into new subsections A through E. A. General design requirements. B. Natural, forced or induced draft aeration. C. Pressure aeration. D. Packed Tower Aeration (Air Stripping). E. Other methods.

			Rationale – Terminology needs to be simplified and conform to current usage. Impact – Improved understanding and application of the regulations, and attainment of water quality standards.
12VAC-590-920	N/A	Section title is "Iron and manganese control." A. Removal by oxidation, detention and filtration. B. Removal by lime soda process. C. Removal by continuous potassium permanganate regeneration. D. Removal by ion exchange. E. Sequestering. F. Sampling taps. G. Testing equipment.	Intent – Consolidate related text into new sections and clarify requirements. Consolidate and update subsections A, C, and D into one new subsection A. Eliminate subsection B on the lime soda process design. Update other design details into new subsections B through G. Rationale – Lime softening is not used in Virginia. Process is costly to operate and maintain, and is unlikely to be employed in future. Impact – None.
12VAC5-590-930	N/A	Section title is "Fluoridation." A. Plans, specifications. Operation and supervision required. B. Fluoride compounds. C. Fluoride compound storage. D. Chemical feed installations. E. Protective equipment. F. Dust control equipment. G. Measuring equipment.	Intent – Update fluoridation requirements. A. The Board of Health recommends optimal fluoridation level to follow US Dept. of HHS guidelines B. Revise fluoride chemical names and include reference to standards. C. Add isolation of fluoride chemicals. D. Clarify chemical metering pump requirements, saturators. Allow fluoride feed to filtered water. E. No change to protective equipment. F. No change to dust control equipment. G. No change to fluoride ion measurement. Rationale – Agree with current federal recommendations, industry nomenclature, and best practices. Impact – Negligible; the reduced dose and changes to point of application have already been instituted by most waterworks that fluoridate.
12VAC5-590-940	N/A	Section title is "Fluoride removal."	Intent – Improve grammar. Minor wording changes. Reorganize

			subsections A and B into new subsections A through C. Rationale – Rewording facilitates understanding. Impact – Improved understanding and application of the regulations.
12VAC5-590-950	N/A	Section title is "Stabilization." A. Carbon dioxide addition. B. Sulfuric acid. C. Removal of free CO_2. D. Deposition of calcium carbonate film. E. Polyphosphates. F. Split treatment. G. Residual chlorine may be used to prevent corrosion. H. Cathodic protection. I. Laboratory equipment.	Intent – Change title to "Corrosion control or stabilization" to improve accuracy and accessibility of content. Delete subsections A through C and E through G. Reorganize content into new subsections A through E, re-lettering subsection D to B, H to D, and I to E. Remove irrelevant text. Excess lime softening, split treatment, and chlorine residual are not satisfactory corrosion control methods in Virginia and are not used. Rationale – Title needs to convey subject matter. Impact – Improved water quality provided to consumers.
12VAC5-590-960	N/A	Section title is "Taste and odor control." A. Source treatment - T&O causes, copper sulfate addition to reservoirs, other chemicals B. Treatment methods - addition of chlorine, chlorine dioxide, potassium permanganate, aeration, powdered activated carbon.	Intent – Update and clarify acceptable methods for controlling typical taste and odors. Intent – Update and clarify acceptable methods for controlling typical taste and odors. Revise source treatment in new subsection A and delete subsection B. Create new subsection B for aeration, C for chemical oxidation, and D for powdered activated carbon; E for GAC; move and update text. Delete text no longer relevant. Add subsection F for ozonation. Replace "raw water" with "source water." Rationale – Ozone is effective in controlling taste and odors. Effective chemical dosages are case-specific. Provides more options and flexibility for waterworks. Impact – Improved effectiveness in treating taste and odor-causing compounds.

12VAC5-590-970	N/A	Section title is "Removal of volatile synthetic organic chemicals (VOCs)." Refers to Appendix N for Best Available Technology; perform pilot studies unless 2 studies or prototype plants demonstrate feasibility. A. GAC. B. Packed tower aeration.	Intent – Repeal section. Consolidate related text into one section. Rationale – GAC is addressed in new section 985. Packed tower aeration is addressed in section 910. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-975	None	Intent – Create new section 975 titled "Removal of radionuclides." Establish acceptable design considerations for removal of radionuclides. A. Refer to BAT technologies list. B. Manganese greensand filtration. C. Waste handling. D. Occupational exposure. E. Control monitoring. Rationale – Critical process design requirements are missing from the regulations. Impact – Improved safety and effectiveness of treatment technology.
12VAC5-590-980	N/A	Section title is "Microscreening."	Intent – Repeal section. Remove material no longer relevant Rationale – Technology is not appropriate and is not used in potable water treatment in Virginia. Impact – Improved water quality provided to consumers.
None	12VAC5-590-985	See 12VAC5-590-970	Intent – Create new section titled "GAC contactors." Incorporate applicable content from existing section 970. Clarify GAC treatment process design requirements. Rationale – Information is more easily located in a separate section. Impact – Improved understanding and application of the regulations.
12VAC5-590-990	N/A	Section title is "Waterworks waste."	Intent – Use correct nomenclature. Substitute "residuals" and "settled solids" for "sludges." Substitute "DEQ" for the "State Water Control Board" and specify that the owner will need to satisfy DEQ's waste disposal requirements.

			Rationale – Eliminate potential association with sewage or sanitary waste. DEQ regulates discharges to surface waters and disposal of waste. Impact – Improved understanding and application of the regulations.
12VAC5-590-1000	Break section 1000 into two sections: 12VAC5-590-1000 12VAC5-590-1001	Section title is "Disinfection." A. Objective. B. Methods. C. Equipment. D. Engineering design. E. Respiratory protection. F. Application of chlorine. G. Evaluation of effectiveness.	Intent – Delete subsection B text and replace with new description of primary disinfection. Add new subsection C for disinfection of pipes, tanks and equipment prior to being placed in service, and refer to AWWA Standards. Relocate and update subsections C through G in new section 1001 titled "Chlorination" and relabel as subsections A through C. Distinguish objectives of primary disinfection and expand treatment options. Separate chlorination as one process type. Rationale – Chlorine is no longer the sole disinfectant used; other processes are available that do not generate potentially harmful disinfection byproducts. Impact – Improved water quality provided to consumers.
None	12VAC5-590-1001	See 12VAC5-590-1000 C through G	Intent – Create new section 1001 titled "Chlorination," with text relocated from section 1000. Include details on the chlorine treatment as a separate process. A. General design requirements. B. Gas chlorine feed systems. C. Calcium hypochlorite & sodium hypochlorite feed systems. Rationale – May be successfully applied in potable water treatment. Impact – Improved understanding and application of the regulations, with improved water quality provided to consumers.
None	12VAC5-590-1002	None	Intent – Create new section 1002 titled "Chloramination." A. Acceptability of chloramines. B. Controlling the process. C. pH adjustment. D. Lead leaching considered.

			E. Public notification before initiating chloramination. Include details on the chloramine treatment as a separate process. Rationale – May be successfully applied in potable water treatment. Impact – Improved understanding and application of the regulations, with improved water quality provided to consumers.
None	12VAC5-590-1003	None	Intent – Create new section 1003 titled "Chlorine dioxide addition." Include details on the chlorine dioxide treatment as a separate process. A. Acceptability of chlorine dioxide. B. Onsite generation. C. Public notification before initiating use of chlorine dioxide. Rationale – May be successfully applied in potable water treatment. Impact – Improved understanding and application of the regulations, with improved water quality provided to consumers.
None	12VAC5-590-1004	None	Intent – Create new section 1004 titled "Ozonation." Include details on the ozone treatment process requirements. A. Acceptability of ozone. B. Ozone systems. C. PER on ozone. D. Treatability studies. E. Disinfection credit. F. Alarms & automatic shutdown. Rationale – May be successfully applied in potable water treatment. Impact – Improved water quality provided to consumers.
None	12VAC5-590-1005	None	Intent – Create new section 1005 titled "Ultraviolet light (UV) disinfection." Include details on the UV treatment process requirements. A-I. Reactor systems and design requirements.

			Rationale – May be successfully applied in potable water treatment. Impact – Improved understanding and application of the regulations, with improved water quality provided to consumers.
Article 4		Article title is "Pumping Facilities"	Eliminate article number and title for simplicity.
12VAC5-590-1010	N/A	Section title is "General." Design facilities to maintain water quality. Avoid subsurface pits and pump rooms, inaccessible installations.	Intent – Change title to "Basic pumping facility design criteria". Require all pumps to be accessible for servicing and repair. Require accessibility of pumps. Rationale – Existing language does not ensure that facilities will be designed to allow for adequate maintenance. Impact – Improved operation, maintenance, and service life of pump stations.
12VAC5-590-1020	N/A	Section title is "Location."	Intent – Minor rewording with 2 new subsections A and B. Rationale – Improve clarity. Impact – Improved compliance with the regulations and water quality provided to consumers.
12VAC5-590-1030	N/A	Section title is "Groundwater facilities." A. General well appurtenances. B. Drilled wells with motors mounted on the casing. C. Submersible pumps. D. Discharge piping. E. Well pump house construction.	Intent – Repeal section. Move relevant content to appropriate sections in the regulations: text on well appurtenances to section 840, well pump discharge piping to section 1065, and well enclosures to section 1040, as applicable. Rationale – Eliminate redundancy and improve accessibility of content. Impact – Improved understanding and application of the regulations.
12VAC5-590-1040	N/A	Section title is "Pump stations." A. General requirements. B. Suction wells. C. Equipment servicing. D. Stairways and ladders. E. Heating. F. Ventilation. G. Dehumidification. H. Lighting. I. Pumps. J. Suction lift.	Intent – Consolidate pump station structure requirements in one section. Move, reorganize, and consolidate content from subsections A through H into one subsection. Relocate content from subsections I through K to section 1050. A. Enclosures; add reference to USBC.

		K. Priming.	B. Suction wells; insert relevant content from section 1040. C. Groundwater well enclosures and aprons; insert relevant content from section 1030. D. Spring enclosures; require vent. Rationale – Improve accessibility of content. Impact – Improved pump station design, operation and maintenance.
12VAC5-590-1050	N/A	Section title is "Booster pumps." A. Booster pump requirements B. Inline booster pumps	Intent – Change title to "Pumps and controls." Add content from subsections 1040 I through K. Add content from subsections 1070 E through G. Delete existing subsection B "Inline booster pumps." Consolidate content on pumps, controls, and power into single section. Rationale – Improve accessibility of information. Impact – Improved understanding and application of the regulations.
12VAC5-590-1060	N/A	Section title is "Automatic and remote controlled stations." Automatic signaling apparatus shall report to a facility manned 24 hours per day.	Intent – Repeal section. These are not requirements. Rationale – Design recommendations only. Impact – None.
12VAC5-590-1070	12VAC5-590-1065	Section title is "Appurtenances." A. Valves. B. Piping. C. Gauges and meters. D. Water seals. E. Controls. F. Power. G. Auxiliary power supply.	Intent – Repeal section 1070. Create new section 1065 titled "Piping, valves, and meters". Move content in subsections E through G to section 1050. Limit section content to appurtenances only. Relocate, reorganize, and consolidate text as follows: A. Piping. B. Valves. C. Gauges. D. Meters. E. Well discharge piping. Rationale – Improve accessibility of information. Impact – Improved understanding and application of the regulations.
Article 5		Article title is "Finished Water Storage Structures"	Eliminate article number and title for simplicity.

12VAC5-590-1080	Break section 1080 into 3 sections: 12VAC5-590-1080 12VAC5-590-1081 12VAC5-590-1082	Section title is "General." A. Location of facilities. B. Watertight roofs and covers. C. No drain connection to sewer. D. Overflow pipe. E. Access. F. Vents. G. Penetrations. H. Downspouts. I. Safety. J. Freeze protection. K. Catwalks. L. Surface grading and drainage. M. Cathodic protection and paint. N. Cleaning before disinfection. O. Disinfection & testing.	Intent – Change title to "Basic finished water storage structure design criteria." Reorganize relevant content. A. Materials and design reference to AWWA standards. B. Safety and VOSH. C. Location of water storage structures. D. Pressure variation. Insert & consolidate content from subsection 1100 A. E. Level controls. Insert & consolidate content from subsections 1100 B & C. Create new section 1081 titled "Atmospheric tank storage". Create new section 1082 titled "Pressure tank storage". Rationale – Information is more easily located in separate sections. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-1081	See 12VAC5-590-1080 B through N	Intent – Create new section 1081 titled "Atmospheric tank storage," relocate relevant text from subsections 1080 B through 1080 N as follows: A. Protection; B. Turnover of water. C. Drains. D. Overflows. E. Inlet and discharge pipes. F. Access. G. Vents. H. Penetrations. I. Freeze prevention. J. Catwalks. K. Grading and runoff. L. Cathodic protection and paints. M. Cleaning before disinfection. N. Disinfection, reference to AWWA standards. Rationale – Information is more easily located in separate sections. Impact – Improved understanding and application of the regulations.
None	12VAC5-590-1082	See 12VAC5-590-1090 E	Intent – Create new section 1082 titled "Pressure tank storage", reorganize relevant content, and insert content from subsection 1090 E. Modify to require tanks equal or

			greater than 250 gal to have access manway and other appurtenances. Rationale – Information is more easily located in separate sections. Impact – Improved understanding and application of the regulations.
12VAC5-590-1090	N/A	Section title is “Plant storage.” A. Washwater tanks. B. Clearwells. C. Finished water. D. Receiving basins 7 pump wet wells. E. Hydropneumatic (pressure) storage tanks	Intent – Relocate subsection E “Hydropneumatic (pressure) tanks” to new section 1082 "Pressure tank storage." Minor wording changes. Limit section content to finished water storage at treatment plants only. Rationale – Hydropneumatic (pressure) tanks are not often located at surface water treatment plants; they are located at many well sites and sometimes in distribution systems. Impact – Improved understanding and application of the regulations.
12VAC5-590-1100	N/A	Section title is “Distribution storage.” A. Max variation between high and low level. B. Adequate controls. C. Pressure tanks.	Intent – Repeal section. Relocate and consolidate subsections A through C into subsections 1080 D & 1080 E. Rationale – Content relevant to section 1080. Impact – Improved understanding and application of the regulations.
Article 6		Article title is “Water Distribution Systems”	Eliminate article number and title for simplicity.
12VAC5-590-1110	N/A	Section title is “Materials.”	Intent – Change title to “Distribution system materials.” Consolidate relevant text with minor wording changes: reference AWWA standards. Rationale – Keep relevant content in place. Impact – Improved understanding and application of the regulations.
12VAC5-590-1120	N/A	Section title is “Minimum pipe size.” A. 4-in. minimum pipe size. B. Pipe size for fire flows. C. The standard grading schedule of the Insurance Services Office and other	Intent – Minor reorganization & update content; move subsection E into subsection B. Organize content appropriately and delete outdated references. A. Move subsection D to A 3. B. Move subsection E into subsection B.

		related organizations shall be followed in other cases. D. Justification by hydraulic analysis. E. Adequate flows and pressure.	C. Delete reference to "standard grading schedule of the Insurance Services Office and other related organizations." Rationale – Minimum pipe size must be clearly defined to ensure adequate flow and pressure. Impact – Improved water distribution to consumers.
12VAC5-590-1130	N/A	Section title is “System design.” A. Minimizing dead-ends. B. Where dead-end lines occur, they shall be provided with a fire hydrant, flushing hydrant, or blowoff for flushing purposes. C. No flushing device connected to sewer.	Intent – Change title to “Distribution system design”. Require a "means of effective flushing" in place of specific "fire hydrant, flushing hydrant, or blowoff..." Allow alternate methods to flush water mains. Rationale – Other options may exist or be available in the future to achieve the objective. Impact – Potential cost savings to utilities while maintaining water quality provided to consumers.
12VAC5-590-1140	N/A	Section title is “Installation of water mains.” A. Supports and restraints. B. Bedding. C. Trenching. D. The specifications for installation. E. Tracing wire for buried pipe.	Intent – Change title to "Installation and testing of water mains." Incorporate industry standards for testing and allowable leakage. A. Add “and restraints” to text. B & C. No changes. D. Update to include AWWA standards on pressure testing and allowable leakage, as applicable. E. Minor wording changes. Rationale – Acceptance criteria are not clearly defined in existing regulations. Impact – Improved construction and reliability of distribution systems.
12VAC5-590-1150	N/A	Section title is “Separation of water mains and sewers.” A. Factors to consider. B. Parallel installation. C. Crossing. D. Water pipes shall not pass through or come in contact with any part of a sewer manhole.	Intent – Change title to “Separation of water mains and sanitary sewers.” Remove requirements for AWWA approved water pipe and no leakage. A. Minor wording changes. B. Modify to require sanitary sewers to be constructed of AWWA distribution pipe, pressure tested in place in accordance with sections 1110 and 1140.

			C. Minor wording changes. D. Delete sentence and require 10 feet horizontal separation distance or greater. E. Add new requirement for safe horizontal separation of water mains from other sources of contamination. Rationale – Existing language is inconsistent with industry standards for water mains. Impact – Improved construction and reliability of distribution systems.
12VAC5-590-1160	N/A	Section title is "Valve, air relief, meter, and blowoff chambers." A. Air and sediment accumulations may be removed using fire hydrants, compressed air or pumping. B-C. Chambers & drainage. D. Valve inspection & servicing. E. Air relief & blowoff piping.	Intent – Clarify means of removing sediments and air; require accessibility of valves and discharge piping from air relief and blow-off valves. A. Modify to require standard hydrants or blowoffs for removal of sediments; fire hydrants, blowoffs or air relief valves for removal of accumulated air. B-C. Minor wording changes; add information on backfill material as absorption pit. D. Add requirement for chambers or pits shall be designed for inspection and servicing of valves. E. Add requirements for air relief or blowoff piping. Rationale – Removal methods are different for sediments (bottom of pipe) and air (top of pipe). Air relief valves require periodic inspection and service. Discharge water from air relief and blowoffs must be diverted away from the chamber to prevent potential submergence, valve malfunction, and contamination of potable water. Impact – Improved design, construction, serviceability, and reliability of distribution systems.
12VAC5-590-1170	N/A	Section title is "Hydrants." A. Hydrants that are not plugged must be drained to the ground or to dry wells. B. Hydrant drains shall not be connected to sewers.	Intent – Clarify acceptable fire hydrant design and installation. A. Add further description of drain requirements. B. No changes. C. Delete "domestic flow" and add reference to section 1120.

		C. Fire hydrants connected to water mains designed for fire flows and domestic flow.	Rationale – Hydrant drains must be properly constructed to achieve purpose; hydrants are provided for fire fighting and pipe flushing, not domestic use. Impact – Reduced risk of contamination of drinking water.
12VAC5-590-1180	N/A	Section title is "Surface water crossings." A. Above water crossings. B. Under water crossings.	Intent – Clarify requirements for installation, testing, and repairs. A. Update on the preparation of project documents. B. Relabel subsection A as subsection B "Aerial water crossings". C. Relabel subsection B as new subsection C. Modify text to require valves and taps for underwater crossings using rigid pipe only. Rationale – Directional drilling method uses fusion-welded, flexible pipe, having low risk of pipe and joint failures. Impact – Negligible; changes have already been implemented and cost savings to waterworks have been realized.
12VAC5-590-1190	N/A	Section title is "Water services and plumbing."	Intent – Repeal section. Content is addressed in preceding sections. Rationale – The USBC has oversight. Impact – None.
12VAC5-590-1200	N/A	Section title is "Water pressure in systems."	Intent – Repeal section. Content is addressed in preceding sections. Rationale – The USBC has oversight. Impact – None.
12VAC5-590-1210	N/A	Section title is "Disinfection of water mains." A. All mains must be disinfected before being put in service. B - E. Detailed procedure for flushing, disinfection methods, and testing of water mains. F. Procedures following repairs shall follow AWWA Standard C601.	Intent – Change title to "Disinfection and testing of water mains." Remove outdated disinfection and testing procedures and refer to appropriate AWWA standard. A. Require water mains to be disinfected according to AWWA Standard C651, and delete subsections B through F. B. New subsection to require project documents to provide

			details of procedures and disposal of water used. Rationale – AWWA Standard C601 replaced by C651. Impact – Negligible; current AWWA standard procedures are being implemented and accepted.
12VAC5-590-1220	N/A	Section title is "Cover." All pipe shall be covered sufficiently to prevent freezing.	Intent – Change title to "Pipe cover." Clarify that all buried pipe shall be covered or encased sufficiently to prevent freezing and protect from damage by external forces. Include option of encasing pipe and include objective of damage protection. Rationale – Sufficient earth cover may not be available in all instances; but there may be alternative solutions. Impact – Improved design, construction, and performance of distribution systems.
12VAC5-590-1230	N/A	Section title is "Metering." Each service connection shall be metered.	Intent – Change title to "Service connection metering." Clarify that service lines in community waterworks shall be metered. Require pipes connecting water mains to service connections to meet all applicable codes. Limit service meter requirement to community waterworks only; address installations where waterworks does not own or control the water line from the main to the service connection. Rationale – Service meters are used for water accountability in community waterworks, but generally unnecessary in noncommunity waterworks because most have single service connections. The connecting pipe between the water main and the service may be owned or controlled by the waterworks, the locality, or a private entity. Impact – Potential improvements in water accountability and reductions

			in water loss for community waterworks.
None	12VAC5-590-1235	None	Intent – Create new section 1235 titled "Water loading stations." Regulate water loading stations for hauling potable water. A. Design stations to prevent unauthorized use, tampering, and vandalism. B. Require backflow prevention on the fill connection. C. Prevent possible contamination from one user to the next. D. Require hoses to be approved for potable water. E. Require hoses to be protected from contamination. Rationale – Water hauling is a short-term solution to meet a potable water demand; minimum standards are needed to ensure that water is safe to consume. Impact – Reduced risk of contamination of hauled water.

Current section number	**New section number, if applicable**	**Current requirement**	**Change, intent, rationale, and likely impact of new requirements**
Part IV Exceptions for Noncommunity Waterworks to Specific Sections of the Manual of Practice (Part III) – Repeal			
12VAC5-590-1240	N/A	Section title is "General."	Intent – Repeal section. Relocate specific requirements in Part III of the Regulations. Rationale – Text is unnecessary, as the entire Part IV is to be repealed. Impact – None.
12VAC5-590-1250	N/A	Section title is "Exceptions to Article 1 of Part III." A. Minimum storage in conjunction with source, shall provide for peak hour demand. B. Minimum lab sink and workbench required.	Intent – Repeal section. Eliminate potential for overlooking content of this Part by moving specific exceptions into applicable sections of the Regulations. Rationale – Storage requirements are in 12VAC5-590-640 B, and laboratory requirements are in section 12VAC5-590-760 B.

			Impact – None.
12VAC5-590-1260	N/A	Section title is "Exceptions to Article 2 of Part III." A. Minimum size well lot B. Minimum well source requirements and testing	Intent – Repeal section. Eliminate potential for overlooking content of this Part by moving specific exceptions into applicable sections of the Regulations. Rationale – Well lot requirements are in 12VAC5-590-840 D and well source requirements are in 12VAC5-590-840 H. Impact – None.
12VAC5-590-1270	N/A	Section title is "Exceptions to Article 5 of Part III." Booster pumping duplicity and capacity.	Intent – Repeal section. Eliminate potential for overlooking content of this Part by moving specific exceptions into applicable sections of the Regulations. Rationale – Booster pump quantity and capacity requirements are in 12VAC5-590-1050 D 4 d. Impact – None.
12VAC5-590-1280	N/A	Section title is "Exceptions to Article 6 of Part III." Water line plumbing inside a building shall comply with the Uniform Statewide Building Code (USBC). Water lines serving 2 or more buildings shall be adequately sized.	Intent –Repeal section. Eliminate unnecessary language. Rationale – Requirements of the USBC are not affected by these Regulations. Minimum capacity and pressure requirements must be maintained under all circumstances. Impact – None.