CVR 12-030-003

This document reflects changes current through May 11, 2015

12 030 003. CHAPTER 21 - WATER SUPPLY RULE

INTRODUCTION

Applicability of This Rule

This rule, known as the Water Supply Rule, applies to all water systems in Vermont, which include Public water systems, bottled water systems, Non-Public water systems, and privately owned water sources. Only portions of this rule apply to each type of water system. The section below, entitled "Types of Water Systems," helps the reader to identify his or her type of water system. There may also be other jurisdictions with regulations affecting water systems. This rule is not intended to, and does not affect, modify or repeal existing orders of the Board of Health.

Purpose of This Rule

This rule is intended to serve a number of purposes.

First, and most important, the rule's primary purpose is to regulate water systems in the state so that they provide clean and safe drinking water to Vermont 's citizens. This is true for the smallest, single house source to the state's largest system. The rule also establishes well construction standards (contained in Part 12 of Appendix A) which apply to every constructed well in Vermont regardless of the type of facility it serves.

Second, by implementing this rule, Vermont qualifies to retain "primacy" for the Safe Drinking Water Act from the federal US Environmental Protection Agency (EPA). Primacy means that the state will administer the federal regulations that apply to all public water systems in the country, instead of EPA. Without state regulations that are at least as strict as the federal ones, Vermont may not administer the federal regulations.

We think having primacy represents an advantage to Vermont 's water systems. The federal regulations contain some optional provisions that permit exceptions to the regulations when mitigating factors make it difficult or impossible to follow the regulation. Also, there are situations where interpretations of the federal regulations can be made by states with primacy that provide some benefit to the public water systems. EPA has stated that, in the event that they have to administer their own rules in a state without primacy, they will not have the resources to provide most of these permitted exceptions to the regulations.

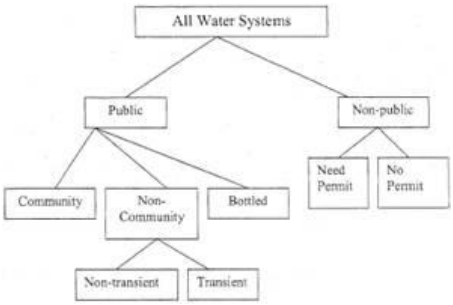
Third, this document contains all of the state's major regulations concerning water systems in a single document, which, in spite of its size, makes it easier for both the regulators and the regulated community to carry out their respective roles. The Agency will bind the various parts of the rule (discussed below) into smaller packages that make sense for the intended recipient.

Types of Water Systems

This rule varies in its applicability to the different types of water systems, and the administration of this rule is conducted by two different divisions in the Department of Environmental Conservation. Due to the

comprehensive nature of this rule, and for the convenience of the reader, the water systems have been categorized into groups, and the introduction at the beginning of each subchapter in the rule explains which sections apply to which water systems.

Also, when these categories of water systems are referred to in this rule, they are displayed in bold type. The following figure displays the different categories in graphical format, although the reader is cautioned that there are formal definitions for each type of water system contained in the Rule.



Public and Non-Public

All water systems are initially classified as either Public water systems or Non-Public water systems. Classification as a Public water system depends on the number of service connections (15 or more) or people served (25 or more) by the system, as is explained in the definition for Public water systems in Subchapter 21-2.

Community and Non-Community

Public water systems are further subdivided into Public Community water systems and

Community water systems. Generally, Public Community water systems are those which serve residents on a year-round basis, while Public Non-Community water systems serve non-residential groups of people (e.g., restaurants, schools).

Non-Transient and Transient

Public Non-Community water systems are further subdivided into those systems who serve non-residential users who don't change over time (Public Non-Transient Non-Community water system), such as schools and offices, and those non-residential users who do change over time (Public Transient Non-Community water system), such as restaurants and motels.

Bottled water systems are considered to be a special case of Public water systems, and are regulated specifically under Subchapter 21-11. They are not included in the categories addressed here.

Non-Public Requiring Permits and Non-Public Not Requiring Permits

Non-Public water systems include those requiring permits and those not requiring permits. Examples of Non-Public water systems requiring permits are some 9 lot-or-fewer subdivisions, and public buildings serving fewer than 25 people. Non-public water systems not requiring permits, such as single family homes on lots not subject to state subdivision rules, have no direct responsibilities under the rule, and are regulated indirectly by the standards in Part 12 of Appendix A and the Well Driller Licensing Rule in Chapter 15 of the Environmental Protection Rules. These systems are not included in the categories addressed here, either. The regulations regarding Non-Public water systems have been changing over the past several years and are

expected to continue to change. The Regional Office should be contacted regarding what permits and requirements are relevant to these water systems.

In summary, then, there are five categories of water systems referred to throughout this rule and grouped for convenience:

(a) Public Community water systems;

(b) Public Non-Transient Non-Community (NTNC) water systems;

(c) Public Transient Non-Community (TNC) water systems;

(d) Bottled water systems; and

(e) Non-Public water systems requiring permits.

The formal definitions for (a) through (d) above (i.e., the Public water systems) are contained in Subchapter 2, Definitions. Public water systems are also subject to regulation under the federal Safe Drinking Water Act. By enacting this rule, the federal regulations will be administered by the Department of Environmental Conservation when it has "primacy," or primary administrative and enforcement authority.

The water systems contained in categories (c) and (e) above are generally administered for construction permit purposes, by the Regional Offices of the Wastewater Management Division. The design and construction standards for Public Non-community water systems are contained in Appendix A, Part 11. Continued operating requirements, including operating permits, fees, and other requirements, are administered by the Water Supply Division of the Department of Environmental Conservation.

Organization of the Rule

The complete Water Supply Rule consists of the sixteen subchapters and four appendices. The chapters are divided into Sections (e.g., 2.12) and Subsections (e.g., 2.18(a)(1)). Each subchapter contains a brief introduction which identifies which type(s) of water systems are regulated by that subchapter. These subchapters contain regulatory requirements that water systems must follow.

Following the main part of the rule are the four appendices, lettered A through D. Each is briefly described here.

Appendix A of the rule contains the Vermont Standards for Water System Design, Construction, and Protection. These are technical standards that apply to persons designing, constructing, and operating water systems. This appendix contains twelve Parts, and the introduction at the beginning of the appendix identifies which parts of the appendix apply to which water systems. The numbering in Appendix A is divided into Parts (e.g., 5) and Subparts (e.g., 5.1.2(a)).

Parts 1 through 9 of Appendix A apply to Public Community water systems and Bottled water systems with sources in Vermont. Part 11 contains the technical standards for Public Non-community water systems and Non-public water systems requiring permits, which are considerably simplified from those for Public Community systems. Finally, Part 12 contains standards for water sources, both privately owned (which do not require permits), as well as those for which permits are required from the Water Supply Division or the Wastewater Management Division.

Appendix B contains the requirements for the Long Range Plan, a document required under the rules, whose purpose is to assist water systems in proper planning for the continued viability of their systems.

Appendix C is a table of the sampling frequencies required for bacteriological monitoring.

Appendix D contains the standards for Operation & Maintenance (O&M) Manuals, which are also required under this rule.

The Department has made a concerted effort to coordinate this rule with all the appropriate state agencies in order to reduce conflicting or overlapping regulations. For assistance in complying with this rule the reader should contact the nearest Regional Office of the Agency of Natural Resources for Public Non-community water systems or the Water Supply Division in Waterbury for Public Community water systems and bottled drinking water facilities.

SUBCHAPTER 21-1 AUTHORITY AND PURPOSE

Introduction

This subchapter applies to all water systems.

Section 1.1 Authority.

This rule is adopted under the authority of 10 V.S.A. Chapter 48, Groundwater Protection; 10 V.S.A. Chapter 56, Public Water Supply; 10 V.S.A. Chapter 61, Water and Waste Water Permits; and *18 V.S.A. §1218*. Related statutes include: *3 V.S.A. § 2822 (j)*, regarding fees; *18 V.S.A. §501b*, regarding certification of laboratories; *18 V.S.A. §503*, regarding use of laboratory by people; and 24 V.S.A. Chapter 120, regarding funding of public water supply planning and construction.

This rule refers to and adopts the authority of the Federal Safe Drinking Water Act: *42 U.S.C. 300* f. et. seq. and except as explicitly provided herein, the rule adopts and incorporates by reference the National Primary Drinking Water Regulations, 40 CFR 141 (July 1, 2009), the National Primary Drinking Water Regulations Implementation, 40 CFR 142(July 1, 2009), and the National Secondary Drinking Water Regulations, 40 CFR 143 (July 1, 2009), under an agreement with the US Environmental Protection Agency, by which the State of Vermont has primary enforcement authority (primacy) in Vermont for the Safe Drinking Water Act.

Where necessary to protect the public health, but subject to appeal, the Secretary may require additional drinking water permit conditions under this rule.

Section 1.2 Purpose.

The purpose of this rule is to protect the public health by assuring safe, affordable drinking water from Public and Non-Public Water systems, and to implement and enforce the provisions of the Federal Safe Drinking Water Act and Vermont statutes.

The granting of a permit under this rule does not relieve the water supplier of the responsibility for the satisfactory functioning of the water system, nor limit his/her responsibility or liability under other statutes or rules.

Omitted…

4.3 Disinfection

Historically chlorine has been the preferred disinfecting agent. However, disinfection may be accomplished with liquid chlorine, monochloramines, calcium or sodium hypochlorite or chlorine dioxide. Other disinfecting agents will be considered, providing reliable application equipment is available and testing procedures for residual are recognized in Standard Methods for the Examination of Water and Wastewater, latest edition or an equivalent means of measuring effectiveness exists. Disinfection is required for all Subpart H systems including surface water supplies and groundwater under the direct influence of surface water, and for any groundwater at risk of contamination. The required amount of primary disinfection needed shall be specified by the reviewing authority and shall be consistent

with levels of treatment required by these rules. Consideration must be given to the formation of disinfection byproducts (DBPs) when selecting the disinfectant.

4.3.1 Chlorination

4.3.1.1 Equipment

4.3.1.1.1 Type

Solution feed gas chlorinators or hypochlorite feeders of the positive displacement type must be provided (See Part 5 of Appendix A). Use of gas is limited to large, operator on-site, or monitored, 24 hour facilities, under very specific conditions.

4.3.1.1.2 Capacity

The chlorinator capacity shall be such that a free chlorine residual of at least 2 milligrams per liter can be maintained in the water with CT values as required in Appendix A Subpart 4.3.2(c) when maximum flow rate coincides with anticipated maximum chlorine demand. The equipment shall be of such design that it will operate accurately over the desired feeding range. (See Appendix A Subpart 5.0.1.)

4.3.1.1.3 Standby equipment

Where chlorination is required for protection of the supply, standby equipment of sufficient capacity shall be available to replace the largest unit. Spare parts shall be made available to replace parts subject to wear and breakage.

4.3.1.1.4 Automatic switchover

Automatic switchover of chlorine cylinders shall be provided, where necessary, to assure continuous disinfection.

4.3.1.1.5 Automatic proportioning Automatic proportioning chlorinators will be required where the rate of flow or chlorine demand is not reasonably constant.

4.3.1.1.6 Eductor

Each eductor must be selected for the point of application with particular attention given to the quantity of chlorine to be added, the maximum injector waterflow, the total discharge back pressure, the injector operating pressure, and the size of the chlorine solution line. Gauges for measuring water pressure and vacuum at the inlet and outlet of each eductor should be provided.

4.3.1.1.7 Injector/diffuser

The chlorine solution injector/diffuser must be compatible with the point of application to provide a rapid and thorough mix with all the water being treated. The center of a pipeline is the preferred application point.

4.3.2 Contact time and point of application

(a) Due consideration shall be given to the contact time of the chlorine in water with relation to pH, ammonia, taste producing substances, temperature, bacterial quality, trihalomethane formation potential and other pertinent factors. Chlorine should be applied at a point which will provide adequate contact time. All basins used for disinfection must be designed to minimize short circuiting. Determination of contact time for calculation of CT values will be made using Appendix C of the E.P.A. Guidance Manual, October, 1989.

(b) At plants treating surface water, provisions should be made for applying chlorine to the raw water, filtered water, and water entering the distribution system. The contact time as required in this subpart must be provided to achieve the necessary log removal as shown below.

The required minimum primary disinfection is the disinfection needed for the entire surface water and Subpart H treatment process to meet the overall treatment requirement of 3 log Giardia and 4 log virus removal/inactivation. Regardless of any filter efficiency, a 0.5 log minimum inactivation of Giardia by disinfection is required.

The following table provides a summary of the expected minimum level of surface water and Subpart H treatment performance in well operated filter systems and the required level of disinfection.

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The Secretary may require greater removals/inactivation depending on the degree of contamination in the source water.

(c) For surface water and groundwater under the direct influence of surface water sources, CT Values (CT) must be achieved as shown in Tables A4-1 and A4-2 (See following Appendix A Subpart 4.3).

(d) For groundwater sources determined to be vulnerable to viral contamination, 4.0 log inactivation of viruses must be achieved as shown in Table A4-1.

(e) Groundwater sources not under the direct influence of surface water that are required to be continuously disinfected or that are required to have the capability of being continuously disinfected shall meet the CT requirements to provide 4.0 log viral inactivation as shown in Table A4-1.

4.3.3 Residual chlorine

Minimum free chlorine residual at distant points in a water distribution system should be 0.1 milligrams per liter. Higher residuals may be required depending on pH, temperature and other characteristics of the water.

4.3.4 Testing equipment

(a) Chlorine residual test equipment, using the DPD method or other method recognized in the latest edition of Standard Methods for the Disinfection of Water and Wastewater, shall be provided and should be capable of measuring residuals to the nearest 0.1 milligram per liter.

(b) Each system shall continuously monitor the disinfectant residual of the water as it enters the distribution system and record the lowest disinfectant residual each day. Systems serving fewer than or equal to 3300 people may take grab samples in lieu of continuous monitoring at frequencies as follows

4.3.5 Chlorinator piping

4.3.5.1 Cross connection protection

The chlorinator water supply piping shall be designed to prevent contamination of the treated water supply by sources of questionable quality. At all facilities treating surface water, pre and post chlorination systems must be independent to prevent possible siphoning of partially treated water into the clear well. The water supply to each eductor shall have a separate shut-off valve. No master shut off valve will be allowed.

4.3.5.2 Pipe material

The pipes carrying elemental liquid or dry gaseous chlorine under pressure and liquid chlorine must be schedule 80 seamless steel tubing or other materials recommended by the Chlorine Institute (never use PVC).

A chlorine solution is defined as a solution of chlorine in water and, therefore, its handling differs from that of elemental liquid or dry gaseous chlorine. For chlorine solution piping and fittings, rubber, PVC, polyethylene, or other materials recommended by the Chlorine Institute must be used.

Nylon products are not acceptable for any part of the chlorine solution piping system.

4.3.6 Housing

Adequate housing must be provided for the chlorination equipment and for storing the chlorine (see Appendix A Part 5).Display Table

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4.3.7 Non-Chorine Based Disinfection

Design and installation of disinfection methods other than chlorine based systems, such as ultraviolet light, may be permitted, provided such designs conform to the Secretary's written guidelines.

…Omitted…

Statutory Authority

STATUTORY AUTHORITY:

3 V.S.A. § 2822; 10 V.S.A. Chs. 48, 56, 61; *18 V.S.A. §§ 501b*, *503*, *1218*; 24 V.S.A. Ch. 120

History

EFFECTIVE DATE:
September 24, 1992 Secretary of State Rule Log # 92-47

AMENDED:
July 8, 1996 Secretary of State Rule Log # 96-38; July 15, 1996 Secretary of State Rule Log # 96-45; August 1, 1999 Secretary of State Rule Log # 99-32; December 29, 2000 Secretary of State Rule Log # 00-68; August 2001 [Not an amendment, replace corrected pages]; January 30, 2002 Secretary of State Rule Log # 02-04; June 19, 2003 Secretary of State Rule Log # 03-15 [Administrative correction to Appendix E]; April 25, 2005 Secretary of State Rule Log # 05-11; December 1, 2010 Secretary of State Rule Log #10-042

CODE OF VERMONT RULES
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