Subchapter 9

DRINKING WATER & GROUNDWATER PROTECTION DIVISION

VT AGENCY OF NATURAL RESOURCES

Wastewater System and Potable Water Supply Regions and Regional Office Locations

http://dec.vermont.gov/water/ww-systems

REPLACEMENT AREAS

2007 Rules section 1-804

- (b) All projects that require a permit under these Rules that use a soil-based disposal system as the primary system shall also have a designated replacement area where a new wastewater disposal system may be constructed except as otherwise provided in this section or in other sections of these Rules.

2019 Rules section 1-902 (c)

A wastewater system that is required to have a designated replacement area can alternatively have a designated replacement system in lieu of the replacement area.

GROUND SLOPES

2007 Rules section 1-805

(c) The maximum ground slope shall not exceed 30% for wastewater systems on subdivided lots in existence before June 14, 2002. The maximum ground slope shall not exceed 20% for wastewater systems on lots that are subdivided on or after June 14, 2002. The limitation on maximum slope shall not apply to replacement systems that are subject to the variance provisions of Section 1-806 of these Rules.

2019 Rules section 1-903(d) (1)(2)(3)

- The **average ground slope** of the naturally occurring soil across the entire width and length of the area …
- The rest of the criteria remain the same.
- Refer to (d)(2) for how to calculate the average

CLASS A WATERSHED CHANGES

207 Rules Section 1-801(h)

- (h) No new soil-based disposal system with a design flow exceeding 1,000 gallons per day may be approved in a Class A watershed. The design flow of an existing soil- based system that discharges to Class A waters may not be increased if the total design flow will exceed 1,000 gallons per day. In addition, in order for a permit to be issued, there must be no more than one soil-based disposal system per lot and no more than one lot per application.

2019 Rules section 1-903(h)

- (h) For wastewater systems in Class A watersheds, except a replacement system that is not proposed in lieu of a replacement area in the same application as the wastewater system it would replace, the following requirements apply:
- (1) No wastewater system with a design flow that exceeds 1000 gallons per day shall be approved.
- (2) The maximum cumulative design flow for multiple wastewater systems on the same lot shall not exceed 1000 gallons.

SITE CONDITION REQUIREMENTS

2007 Rules Sections - 1-805

- (a) No site may be improved by the construction of a wastewater system unless the site meets one of the following three sets of requirements regarding the minimum requirements for the site.
- (b) Prescriptive Approach
- (c) Enhanced Prescriptive Approach
- (d) Performance Based Approach

2019 Rules Section 1-903 (i)-(m)

- These are the sections that now define how to determine the depth to naturally occurring soils and depth to bedrock

- The terms Prescriptive, Enhanced Prescriptive and Performance Based are gone

HYDROGEOLOGICAL ANALYSIS REQUIREMENTS

2007 Rules

- Referenced in several locations in old rules.
- 1-903(d) Groundwater Level Monitoring (example location)
  - (1) Filtrate disposal systems . . . .
  - (2) Mound wastewater disposal systems with design flows of greater than 1000 gallons/day and in-ground and at-grade systems with design flows greater than 2000 gallons/day shall calculate the induced groundwater mounding under the leachfield

2019 Rules 1-903(n)

- 1-903 (n) Except as allowed by (p) or (q) of this Subsection, a hydrogeological analysis shall be completed in each of the following circumstances:
  - This subsection explains when and how an analysis is required

HYDROGEOLOGICAL ANALYSIS REQUIREMENTS Cont'd

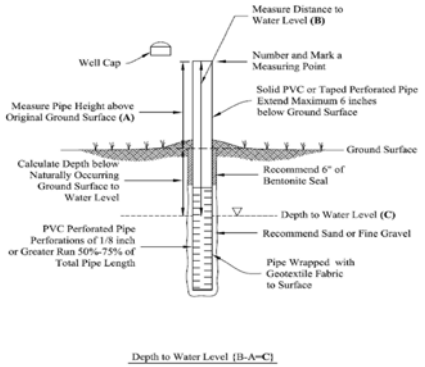
2007 Rules

- Located in multiple locations

2019 Rules Section 1-903(r)

- (r)When a hydrogeological analysis is performed to demonstrate compliance with a requirement in these Rules, the hydrogeological analysis shall:
  - (1)Be completed through one of following methods:
    - (A)the simplified method described in § 1-927, performed by a hydrogeologist or a designer authorized to design the wastewater system for which the hydrogeological analysis is performed, provided the soil does not have a consistence of firm or denser and the leachfield is one of the following:
      - (i) an in-ground leachfield or at-grade leachfield with a design flow of less than 2000 gallons per day;
      - (ii) a leachfield in a mound with a design flow of less than 1000 gallons per day; or
      - (iii)a leachfield in a bottomless sand filter with a design flow of less than 1000 gallons per day;

WATER TABLE MONITORING



2007 Rules Section 1-903

- (a) Monitoring of the groundwater level may be used in lieu of a determination of the elevation of the seasonal high water table based on soil mottling.
- (b) Critical level determination of site suitability - Each monitoring program begins with a determination of the critical level.

2019 Rules Section 1-905 (a) – (h)

- Review this section.
- Changes include that your critical level takes into account induced water table prior to the monitoring
- The worse case well within the monitoring area is the governing well. – no averaging across the site.

SEPTIC TANKS

2007 Rules section 1-904

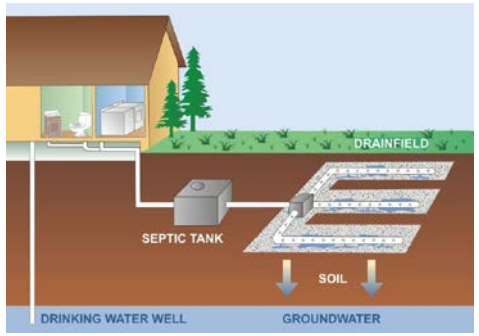
- (a) All-soil based disposal systems, including graywater disposal systems, shall include a septic tank. The septic tanks shall be sized as noted below:
- Minimum Sizes for Septic Tanks
- Less than 667 Gal/Day …….1,000 gallons
- 667 - 1500 Gal/Gay ……. 1.5 times design flow
- 1,500 – 6500 Gal/Day …… 1,125 + 75% of design flow

2019 Rules Section 1-908

- Provides more detail on design and installation
- Table 9-1
- Minimum Capacities for Septic Tanks
- 560 or less …… 1000 gallons
- > than 560 – less than 6500….. 2x design flow

HORIZONTAL ISOLATION DISTANCES AND ISOLATION ZONES FOR COMPONENTS OF WASTEWATER SYSTEMS

2007 Rules section 1-807



2009 Rules Section 1-912 (a)

- Table 9-5
  - More Comprehensive
  - Refers to Table 9-6 for potable water sources
  - Table 11-1 –Water Supplies
    - (other items besides wastewater such as agriculture practices)

DOSING AND PRESSURE DISTRIBUTION

2007 Rules Section – Multiple References

- Section 1-906-
- Section 1-913 – Mounds
- Section 1-914 – At-Grade
- Section 1-916 – Filtrate Systems

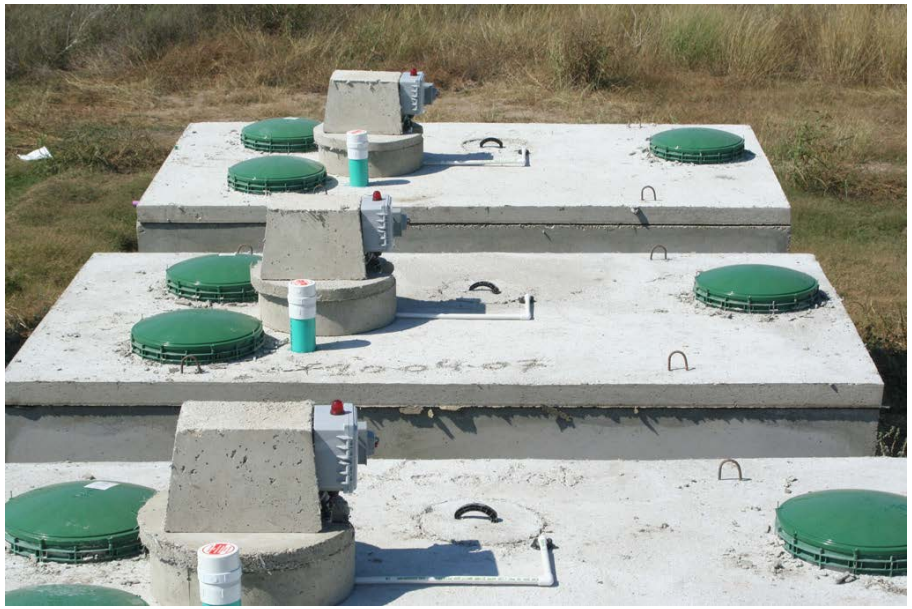
2019 Rules Section 1-914 (a)- (f)

- Consolidated into one place
- (a)A wastewater system is required to use dosing when:
  - (1)the design proposes more than 500 linear feet of distribution piping within a leachfield or combination of leachfields

TIME DOSING and FLOW EQUALIZATION

2007 Rules Section 1-906

- Not a well described procedures in the existing rules.



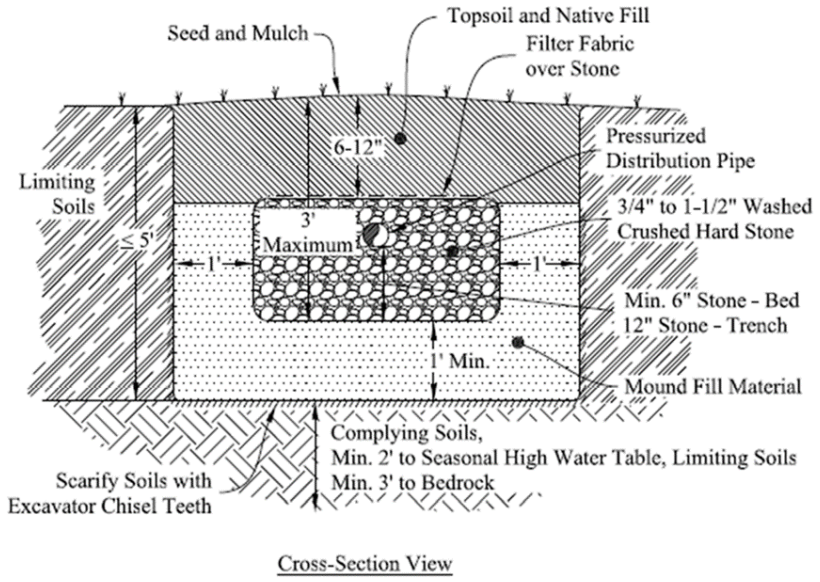
2019 Rules Section 1-915 (a)-(e) and Section 1-916 (a)-(d)

- (a) A Class 1, Class A, Class B, or Class BW designer is required to submit the installation certification for those systems
- Better defined
- Must have a full size area for both primary and replacement system, but only need to construct size based on equalization design.

LIMITING SOILS CONDITIONS (Window systems)

2007 Rules

- Not defined



Cross-Section View

2019-Rules Section 1-919 (a)-(e)

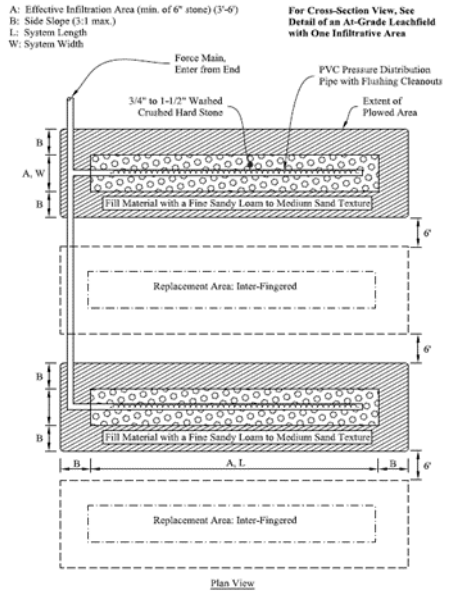
- This section outline the procedures for “window” systems
- See Figure C-7 & C-8

AT-GRADE LEACHFIELDS

2007 Rules Section 1-914

2019-Rules Section 1-920

- Main change is being able to interfinger primary and replacement systems.
- See Figure C-9



BOTTOMLESS SAND FILTERS

2007 Rules Section – not defined

- Where used for replacement system for failed systems.

2019 Rules Section 1-922(a) - (f)

- Can be for new construction
- Does not have to be pretreated
- Soil requirements per section 1-903
- Sized per section 1-918
- Make sure to review all sections as there are differences between what we do under variances now. For example: site slope and system width.

Subchapter 10 – Flexible Specific Technical Standards for Wastewater Systems

‘07 rules

- Was in Appendix
- I/A systems section
- Explanations/requirements written in sentence/paragraph form
- Appendix 1-A Design Guidelines

  Building Sewers, Collection Systems, leakage testing procedures, etc.

‘19 rules

- Legal reason to add this in the rules and NOT “guidelines”;
- Minimum accepted practices (AWWA, ASTM, etc.) are defendable and noted,
- Only requests to use something other than what is in the “flexible” section will be required , in writing, in the application, see **§ 1-1001 (b)**

Subchapter 11 – Specific Technical Standards for Potable Water Supplies

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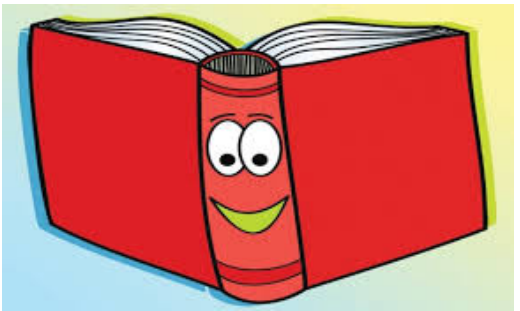
- Water Supply Rule Chapter 21 Section 11 for all basic requirements related to potable water supplies, such as standards for construction and location, are now incorporated in these Rules.



Key point of Subchapter 11

§ 1-1102 (b)

A building or structure shall be served by no more than one potable water source unless:

(1) the Secretary determines, based on information provided by the applicant's designer, that more than one source is required to meet the design flow for the building or structure; or

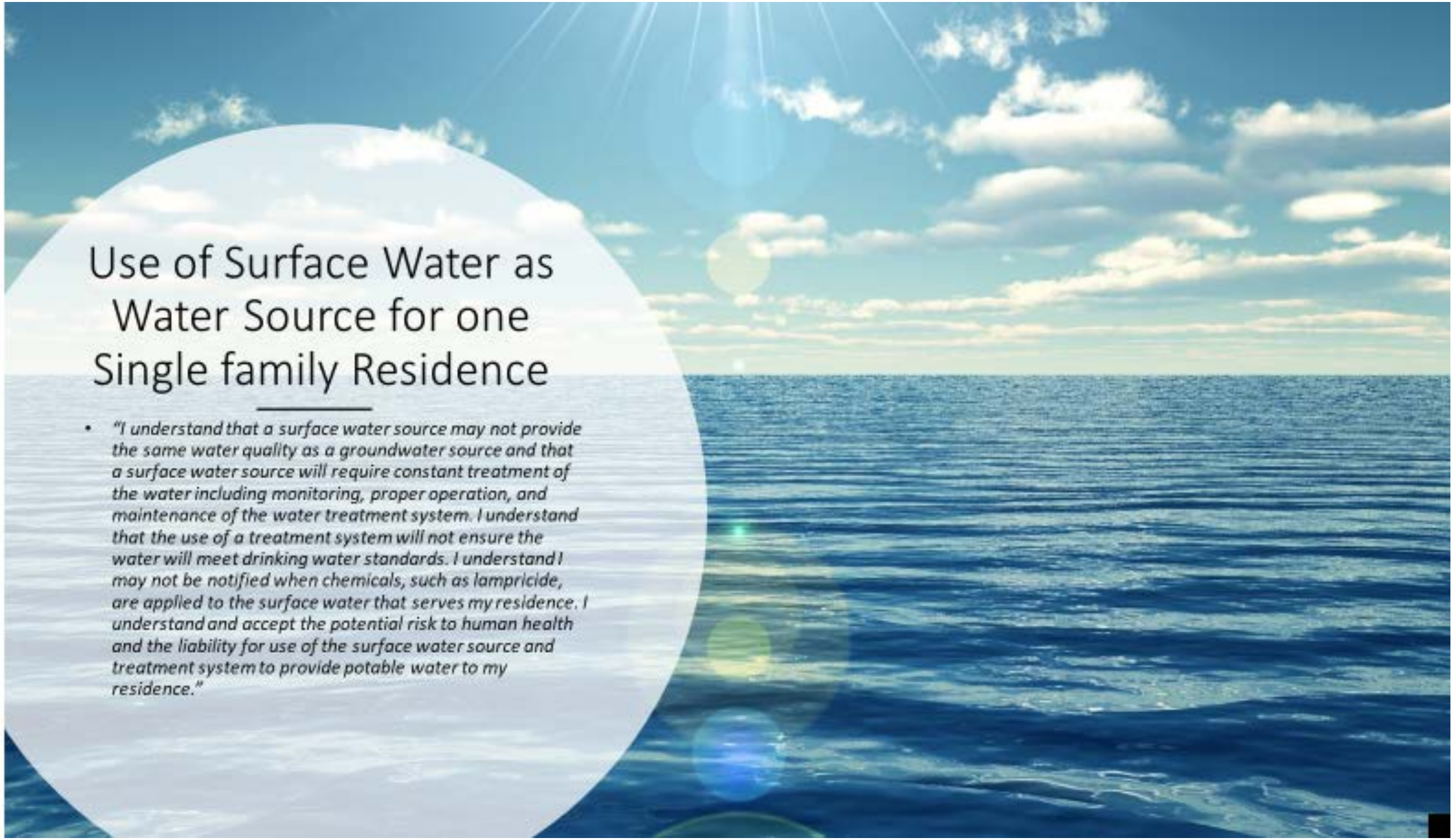
(2) none of the potable water supply presumptive isolation zones for the potable water sources serving the building or structure extend onto land owned by a person different than the owner of the building or structure.

Key point of Subchapter 11

§ 1-1102 (d)

A surface water potable water source shall meet the following requirements:

- A surface water potable water source shall serve only one building or structure that is a single-family residence occupied by the owner of record. The single-family residence may include a home occupation as that term is defined in these Rules but the residence may not be used in any other way, including uses that employ persons other than family members and involve visits by the public in a manner or duration that would presume the need for use of a potable water supply.
- The only surface waters that may be used as potable water sources are lakes and ponds that the Watershed Management Division has determined to be not impaired and Lake Champlain, excluding St. Albans Bay, Missisquoi Bay, and portions from the Lake Champlain Bridge south. Streams shall not be used.


Use of Surface Water as Water Source for one Single family Residence
• "I understand that a surface water source may not provide the same water quality as a groundwater source and that a surface water source will require constant treatment of the water including monitoring, proper operation, and maintenance of the water treatment system. I understand that the use of a treatment system will not ensure the water will meet drinking water standards. I understand I may not be notified when chemicals, such as lampricide, are applied to the surface water that serves my residence. I understand and accept the potential risk to human health and the liability for use of the surface water source and treatment system to provide potable water to my residence."

Key point of Subchapter 11

- **§ 1-1104 Horizontal Isolation Distances and Isolation Zones for Components of Potable Water Supplies**

- **Table 11-1 is more comprehensive than previous published tables**

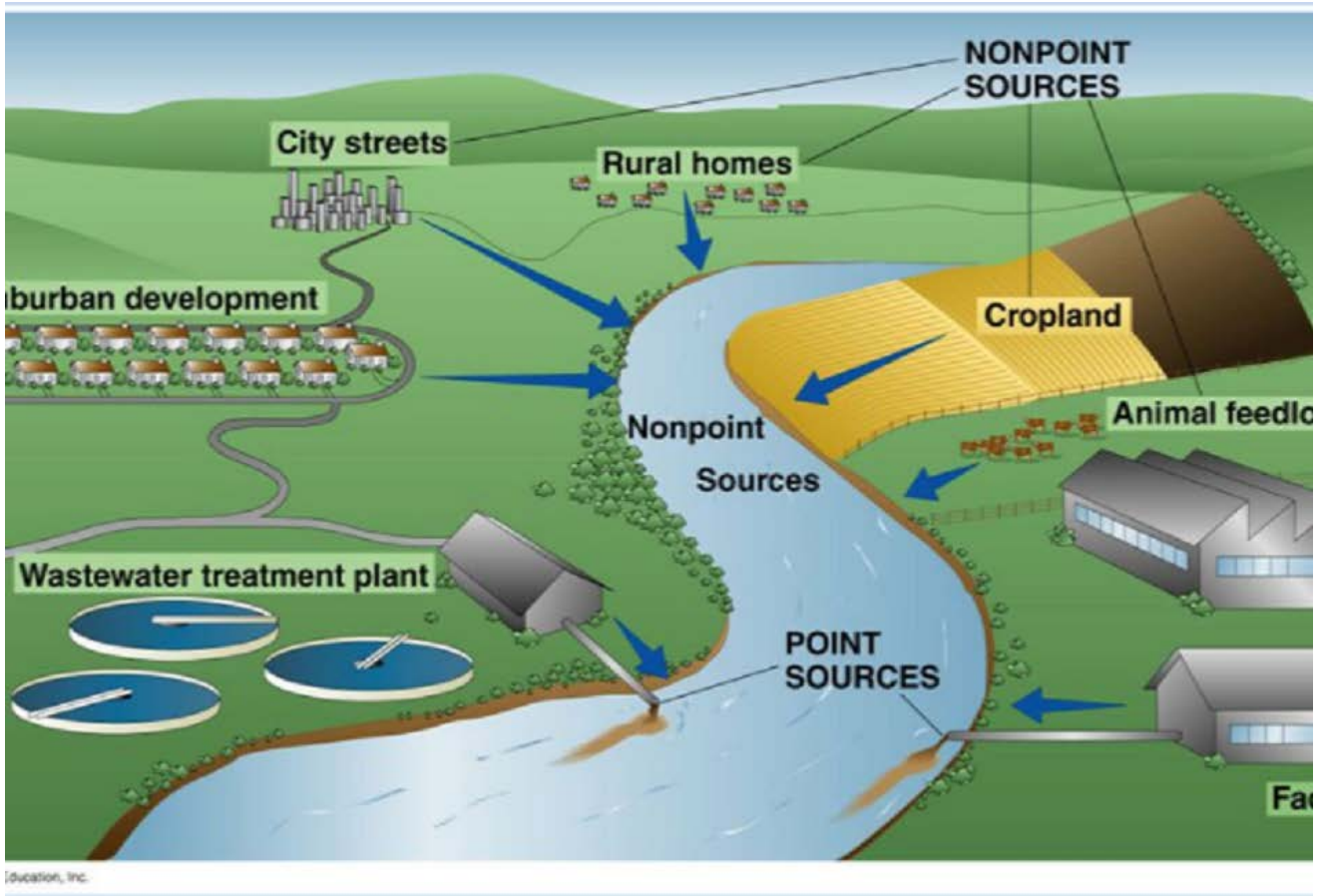


Table 11-1
Horizontal Isolation Distances, in Feet for Potential Sources of Contamination

Potential Source of Contamination	Potable Water Sources in Bedrock or Confined Surficial Aquifer	Potable Water Sources in Unconfined Surficial Aquifer	Water Service Lines and Water Service Pipes (Pressure)	Water Service Lines and Water Service Pipes (Suction)	Water Storage Tanks (Atmospheric Below Ground Surface)
Agriculture cropland	100	200	25	100	50
Buildings or structures, porches, foundations of buildings or structures	5	5	N/A	N/A	N/A
Cemeteries	100	150	25	100	50
Composting sites (commercial or agricultural)[1]	200	300	25	300	50
Concentrated livestock holding areas barnyard [2]	200	500	25	100	50
Driveways (fewer than 3 residences)	5	10	N/A	N/A	10
Driveways (3 or more residences), roadways, parking lots	25	25	N/A	N/A	25
Fertilizer or pesticide storage structures (buried tank of any size; above ground tank >1,500 gallons; dry or liquid; and piping serving a non-residential facility)	100	200	50	200	50
Fuel oil, gasoline & other petroleum tanks and piping (not including liquefied petroleum gas tank)	25	100	25	100	50
Herbicide or pesticide application on utility right of way where herbicides or pesticides either have been applied in the last 12 months or may be applied within the next 12 months[3]	100	200	25	200	100
Leachfields (proposed, existing, or permitted)	Requires isolation zone (See Table 11-2)		25	100	100
Manure storage systems, above ground[2]	50	100	25	50	50
Manure storage systems, in-ground concrete or geosynthetic lined[2]	100	200	25	200	100
Manure storage system, earthen lined[2]	200	500	25	200	200
Salvage yards[4]	300[8]	300[8]	25	300	100
Sanitary sewer collection lines and sanitary sewer service lines	50	75	Distances and requirements established in § 1-1204 apply in lieu of this Section		50
Silage storages	50	75	25	75	50
Solid waste transfer facilities[5]	100	200	25	200	100
Stormwater conveyance/treatment/control practice (lined)	10	10	10	10	10
Stormwater conveyance/treatment/control practice (unlined and subsurface systems)	100	150	10	150	25
Storm sewers	10	50	Distances and requirements established in § 1-1204 apply in lieu of this Section	Distances and requirements established in § 1-1204 apply in lieu of this Section	10
Surface water, normal high water elevation[6]	10	25	N/A	N/A	25
Wastewater disposal spray area and lagoons	200	300	50	300	100
Wastewater tanks (proposed, existing, or permitted)[7]	Requires isolation zone (See Table 11-2)		25	50	50
Wells that are not potable water sources (e.g., irrigation wells, geothermal wells)	100	100	N/A	N/A	N/A

Key point of Subchapter 11

- **§ 1-1107**
- Long-Term Yield Analysis
- Design Rate

- **Chapter 21 11.6**
- Average Day Demand
- Maximum Day Demand

Key point of Subchapter 11

§ 1-1113 (c) Water Quality

Water sampling required pursuant to Subsection (a) shall comply with the following requirements:

- Waters samples shall be taken by the person who owns the lot on which is located the building or structure or campground that is served by the potable water supply, a well driller, a designer, a hydrogeologist, a certified water specialist, a Town health officer, a master plumber, a public water system certified operator, a Vermont State employee responsible for taking water samples prior to licensing a facility or activity, or another person deemed qualified by the Secretary.

Water Quality § 1-1113

Chapter 21 Water Supply Rule

Tables A11-6 & A117

PRIMARY CONTAMINANT STANDARDS

- **Table A11-6 PRIMARY CONTANIMANT STANDARDES FOR PUBLIC TRANSIENT NON-COMMUNITY WATER SYSTEMS**
- **Primary Contaminant Standards** — **Maximum Contaminant Level**
- Arsenic — 0.050 mg/l
- Nitrate — 10 mg/l
- Nitrite — 1.0 mg/l
- Total Coliform Bacteria — Absent
- Uranium — 20 ug/l
- **Table A11-7 - PRIMARY CONTAMINANT STANDARDS FOR NON-PUBLIC WATER SYSTEMS REQUIRING A PERMIT**
- **Primary Contaminant Standards** — **Maximum Contaminant Level**
- Arsenic — 0.010 mg/l
- Nitrate — 10 mg/l
- Nitrite — 1.0 mg/l
- Total Coliform Bacteria — Absent
- Uranium — 20 ug/l

Table 11-5

Primary Contaminant Standards for Potable Water Supplies

Primary Contaminants	Standards
Arsenic	0.010 mg/L
Escherichia coli (E.coli)	0 (absent or less than 1)
Fluoride	4 mg/L
Lead	0.015 mg/L
Manganese	0.3 mg/L
Nitrate as N	10 mg/L
Nitrite as N	1.0 mg/L
Total Coliform Bacteria	0 (absent or less than 1)
Uranium	0.020 ug/L
Adjusted Gross Alpha Particle Activity (including radium 226 but excluding radon and uranium)	15 pCi/L

Water Quality § 1-1113

Chapter 21 Water Supply Rule

Table A11-5

SECONDARY CONTAMINANT STANDARDS

Secondary Contaminant Standards	Maximum Contaminant Level
Chloride	250 mg/l
Sodium	250 mg/l
Iron	0.3 mg/l
Manganese	0.05 mb/l
Odor	3 threshold odor number
pH	6.5 to 8.5

Table 11-6

Secondary Contaminant Standards for Potable Water Supplies

Secondary Contaminants	Standards
Chloride	250 mg/L
Sodium	250 mg/L
Iron	0.3 mg/L
Odor	3 threshold odor number
pH	6.5 to 8.5

Manganese has move to the Primary Contaminant Table

Key point of Subchapter 11

- **§ 1-1115 Closure of Potable Water Sources**

- Potable water sources that are no longer serving a building or structure or campground are recommended to be closed and may be required by the Secretary to be closed to prevent possible contamination of the aquifer or to otherwise protect human health and the environment.

Subchapter 12 – Flexible Specific Technical Standards for Potable Water Supplies

‘10 rules

- NO MORE “CHAPTER 21” for Potable Water Supplies
- Much like subchapter 10 for the wastewater disposal systems

‘19 rules

- Legal reason to add this in the rules and NOT “guidelines”;
- Minimum accepted practices (AWWA, ASTM, etc.) are defendable and noted,
- Only requests to use something other than what is in the “flexible” section will be required , in writing, in the application, see **§ 1-1201 (b)**

Appendix A – Information for an Application

‘07

- Was “Design Guidelines”

‘19

- Minimum information required for an application/plans; Elevations and materials…for both water and wastewater piping
- Flow equalization calculations examples
- Details & Diagrams