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STATE OF VERMONT
AGENCY OF NATURAL RESOURCES
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WASTE MANAGEMENT DIVISION
SOLID WASTE MANAGEMENT PROGRAM

PROCEDURE ADDRESSING THE DISPOSAL OF CLOGGED SEPTIC SYSTEM STONE

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PROCEDURE ADDRESSING THE DISPOSAL OF CLOGGED SEPTIC SYSTEM STONE

I. Introduction

Leach fields are used to treat liquid waste from septic tanks. Typically Leach fields are 1 to 3 feet deep with 4 feet wide trenches or greater if beds are used. Each leach field is filled with washed stone which acts as a highly permeable medium for distribution of the liquids from the pipe into the soil below where treatment occurs. Occasionally, the soil interface between the stone and soil becomes clogged with solids, preventing the liquids from percolating into the soil below the system. This results in a failed septic system.

In many cases, the existing field is abandoned and a new leach field is designed. In general, all materials are left in place in the old leach field. In some cases, the removal and disposal of the clogged septic system medium ("clogged medium") is necessary to make room for a new leach field due to a lack of other available space for the new leach field. This Procedure addresses this latter case.

While it is not always convenient to transport the clogged medium for disposal in a double lined landfill, disposal of this material at an unrestricted location is not appropriate. Controls on disposal are needed because the clogged medium may contain pathogens, including viruses and bacteria, that could be harmful to human health. Also, because the clogged medium consists primarily of rock and stone, it is not generally suitable for use as alternative daily cover in a landfill.

This procedure supersedes the June 30, 1996, "Procedure Addressing The Disposal of Clogged Septic Stone". This procedure contains minor revision to reflect the revisions to the Vermont Solid Waste Management Rules ("Rules") (eff. January 15, 1998).

II. Disposal Requirements

This procedure provides an acceptable alternative to the disposal of leach field material in a lined landfill. Upon receipt of a written request submitted by the owner of the property where disposal of the leach field stone is proposed, by a registered professional engineer, or by a certified site technician, the Secretary of the Agency of Natural Resources (Agency) may determine that the on-site or off-site disposal of clogged medium generated from the repair or replacement of a failed on-site disposal system constitutes an Insignificant Waste Management Event Approval (IWMEA), as provided in Section 6-301(c) of the Rules. Information shall be submitted with the request which demonstrates that the following criteria are met:

A. Minimum distances for the disposal location:

1. Edge of disposal area to adjoining property line - 50 feet;

2. Edge of disposal area to perennial stream or other waters of the state - 50 feet;

3. Bottom of waste to seasonal high groundwater - 3 feet;

4. Bottom of waste to bedrock - 4 feet; and

5. Edge of disposal area to a drinking water supply - Establish the minimum distance to a drinking water supply by using the presumptive methods listed in Vermont Water Supply Rule - Chapter 21 Section 11.4.1.1 or 11.4.1.2, assuming a disposal design flow of less than 2,000 gallons per day.

B. Clogged medium may not be disposed of:

1. In a Class I or Class II groundwater area;

2. Within Class I or Class II wetland or associated buffer zone (100 feet for Class I, 50 feet for Class II); or

3. In a watershed for a Class A Waters: or

4. Within Zone 1 of a Public Community Water Supply (typically a 200' radius).

C. Disposal of the clogged medium shall occur in accordance with the following procedures:

1. Clogged medium must be buried in a location not generally frequented by the public;

2. The medium must be covered with a minimum of 1 foot of soil to control vectors; and

3. The medium should be placed in layers or lifts not to exceed 12 inches in depth. Lime (Ca(OH)2) should be applied on the top surface of each layer in order to reduce pathogens.

D. The recipient of the IWMEA shall ensure that the clogged medium be left in place, undisturbed for no less than 2 years.

E. Following this procedure does not relieve the applicant from obtaining any local approvals that may be required for the disposal of clogged septic system stone.

Effective Date:

This procedure is effective upon date of signature

Signature

Signature 2/8/99

Canute Dalmasse, Commissioner Date
Department of Environmental Conservation

VERMONT WATER SUPPLY RULE . CHAPTER 21

TABLE B . REQUIRED SEPARATION DISTANCES

Required Minimum Separation Distances To Sewage System Disposal Fields (ft)[1,2]

POTENTIAL SOURCE OF CONTAMINATION	MAXIMUM DAILY DEMAND (gpm)			
Domestic Sewage System Disposal Fields (design flows):	0-1.9	2.0-4.9	5.0-7.9	>8.0
<2,000 gpd	100	150	200	200+[a]
2.000 gpd -6,499 gpd	150	I50	200	200+[a]
>=6,500 gpd	200++[b]	200++[b]	200++[b]	200+[a]

I the minimum separation distance, (X), is used to determine the minimum separation zone (see Subpart 11.4.1 and Figure 1).

2 For shallow water sources the minimum separation distance, X, per Subpart 1 1.4.1, shall not be less than 150 feet, and the minimum upslope separations distance shall be 500 feet instead of 2X regardless of the minimum separation distance, X, listed. If the bottom of the well or spring is higher than the ground surface at the disposal field then the minimum separation distance. X, may be reduced to 50 feet..

a Hydrogeologic evaluation required to define potential recharge area of the source and two year time of travel.

b For all water sources with less than 8 gpm maximum daily demand, the minimum presumptive upslope separation distance to greater than 6.500 gpd leachfields, per Subpart 11.4.1, shall be 1,000 feet instead of 2X.

VERMONT WATER SUPPLY RULE - CHAPTER 21

11.4.1.0 Separation Distances to Sewage System Disposal Fields

Wells and sewage system disposal fields should be located to optimize the hydrogeologic separation within the project limitations. The applicant's designer must establish a separation zone around the water source which defines the probable area of groundwater recharge to the water source. The separation zone may be established by a presumptive method which uses ground surface topography and minimum distances.

The minimum separation distances for leachfields can be also estimated by using methods to define Well Head Protection Areas in accord with procedures defined in this rule (see Part *3* of this Appendix), or with other methods approved by the Agency.

11.4.1.1 Presumptive Minimum Separation Zone Methods for a Water Well

To determine the size and shape of the required minimum separation zone between sewage disposal fields and a water well the following steps should be taken (see Figure 1):

(a) draw a circle with a radius equal to the required minimum separation distance. X, from Table B. around the well head or water source;
(b) now either:

(1) if the circle drawn intersects with the contour elevation of the source. then draw lines beginning at these intersections, extending upslope and perpendicular to the contours, until these lines intersect an arc with a radius equal to twice the minimum separation distance (2X) from the source. If necessary, to provide closure of the area draw an arc with radius 2X from the source; or
(2) if the circle drawn in Step I is in all cases at a lower elevation than the source elevation, no further delineation may be required (resulting in the smallest possible minimum separation zone of a circle with radius X); or,
(3) if the circle drawn in Step I is in all cases is above the elevation of the well, the water shed area or a circle with a radius of 2X. whichever is smaller, shall represent the minimum separation zone (resulting in the largest possible minimum separation zone of a circle with a radius 2X).

11.4.1.2 Presumptive Minimum Separation Zone Methods for a Shallow Water Source

To determine the size and shape of the required minimum separation zone between sewage disposal fields and a shallow water source, the following steps should be taken (see Figure 1):

(a) draw a circle with a radius equal to the required minimum separation distance, X. from Table B, around the well head or water source;
(b) now either:

(1) if the circle drawn intersects with the contour elevation of the source, then draw lines beginning at these intersections. extending upslope and perpendicular to the contours, until these lines intersect an arc with a

radius equal to 500 feet from the source. If necessary, to provide closure of the area draw an arc with radius of 500 feet from the source: or

(2) if the circle drawn in Step I is in all cases at a lower elevation than the source elevation, no further delineation may be required (resulting in the smallest possible minimum separation zone ofa circle with radius X); or

(3) if the circle drawn in Step I is in all cases above the elevation of the well, the water shed area or a circle with a radius of 500 feet, whichever is smaller, shall represent the minimum separation zone (resulting in the largest possible minimum separation zone of a circle with a radius of 500 feet).

11.4.2.0 Requirements for Investigation of Potential Hydrogeologic Connections Between Water Sources and Sewage Disposal Fields

This subpart applies when a hydrogeologic connection may exist between a sewage system disposal field and a potable water source.

These distances listed in Table A & B provide a minimal level of protection for water sources. These distances may be increased or reduced based on site specific data.

11.4.2.0.1 Increasing the Minimum Separation Zone

These distances may be increased up to a maximum of 500 feet if a sewage disposal field is discharging upgradient of a water source and to the same unconsolidated, unconfined aquifer from which the water source is withdrawing.

11.4.2.0.2 Reductionof the Minimum Separation Zone

These distances may be reduced with the use of site specific data under the following conditions:

(a) If there is a continuous impeding layer from the sewage system disposal field to the well head, and the well is properly sealed to prevent contaminant migration along the well casing then the minimum separation zone around the well head may be reduced to a radius of not less than 100 feet; or

(b) If the groundwater flow from beneath the sewage system disposal fields is not toward a minimum separation zone around the well head that has a radius of X; or

(c) If a detailed hydrogeologic investigation reveals that groundwater flow from beneath the sewage system disposal field does not flow toward the source under pumping conditions the minimum separation zone around the well head may be reduced to a radius of not less than 100 feet; or

(d) If a detailed hydrogeologic investigation demonstrates a time of travel exceeding two years in accordance with Subpart 11.4.2.1, then the minimum separation zone around the well head may be reduced to a radius of not less than 100 feet.

11.4.2.1 Two Year Time of Travel

If required elsewhere in Subpart 11.4.2. then a minimum travel time of two years must exist in the materials between a potential source of contamination that may contain pathogenic microorganisms and the drinking water source. The two year travel time is based on the reasonable assurance of pathogen attenuation. Calculations of travel time

must take into account hydraulic gradient, porosity, saturated hydraulic conductivities in the materials with the largest saturated hydraulic conductivity, the cone of influence of production wells or the recharge area of springs being considered, and mounding of the water table due to groundwater recharge by discharge of the sewage effluent.

11.4.2.2 Increased Level of Contamination

The potential source(s) of contamination may not increase the level of contamination in any drinking water source to more than the Maximum Contaminant Levels (MCL) of the Drinking Water Standards in Subchapter 21-6 of this rule. Nitrate (expressed as N) may be used as an indicator when dealing with domestic (non-industrial) wastes. Calculations must take into account the concentration of nitrate-nitrogen at the base of the leachfield, which is assumed to be 40 mg/l dilution by precipitation and groundwater flow, dispersion, background concentrations of nitrate-nitrogen, and other existing sources of nitrate-nitrogen, including fertilizers, in the subsurface drainage basin, using the assumption that no denitrification takes place in the subsoil. Methods of calculation and evaluation must closely approximate actual conditions and should be determined in consultation with the Agency before any work is done.

The minimum separation distances for leachfieids can be also estimated by using methods to define Well Head Protection Areas as contained in Part *3* of this appendix, or with other methods approved by the Agency.

11.5 Well and Spring Construction Standards

11.5.0 Water Well

The requirements of this subpart presume that water wells are constructed in compliance with Vermont Water Well Construction Standards.

11.5.1 Spring and Shallow Well Construction

11.5.1.1 Materials

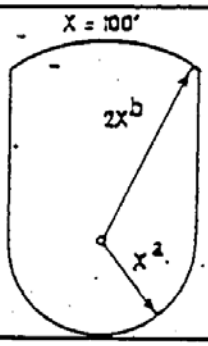
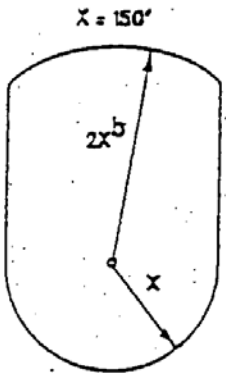
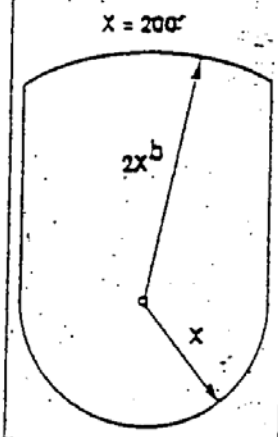
Acceptable materials include:

(a) concrete tiles;
(b) poured in place concrete;
(c) well casing;
(d) other casing may be approved upon review by the Agency.

11.5.1.2 Site Work

Spring and shallow well site construction shall include the following:
(a) screened ventilation or overflow openings;
(b) surface water diversion berm at least 50 feet upslope when feasible; -
(c) back fill material of high clay content sloping away from source;
(d) minimum of 4 inches of top soil over the clay;
(e) a watertight, rodent-proof sanitary cover.

FIGURE 1. PLAN VIEW OF REQUIRED MINIMUM SEPARATION DISTANCES TO DOMESTIC SEWAGE DISPOSAL FIELDS[1]

Domestic Sewage System Disposal Field Design Flow (gpd)	Water Source Maximum Daily Demand, MDD (gpm)			
	MDD < 2	2 ≤ MDD < 5	5 ≤ MDD < 8	8 ≤ MDD
< 2000				X = 200' For water source with demands of 8 gpm or greater, the well must be located outside the 2 year time of travel of all effluent plume paths.
≥ 2000 and < 6500				
≥ 6500	X = 200' For septic systems over 6500 gpd wells must be located outside the 2 year time of travel effluent plume path, or greater than 1000' from the disposal fields.			

1 These shapes assume parallel ground surface contours horizontally across page, with a downslope direction toward the bottom of the page.

a For shallow water supplies X = 150'

b For shallow water supplies use 500' distance instead of 2X.