

7080.2150 FINAL TREATMENT AND DISPERSAL.

Subpart 1. **General.** Treatment and dispersal of all sewage for new construction or replacement ISTS must be in compliance with this part and parts 7080.2200 to 7080.2400 as adopted into local ordinances.

Subp. 2. **General technical requirements for all systems.** All new construction or replacement ISTS must be designed to meet or exceed the provisions in items A to F.

A. All treatment and dispersal methods must be designed to conform to all applicable federal, state, and local regulations.

B. Treatment and dispersal processes must prevent sewage or sewage effluent contact with humans, insects, or vermin.

C. Treatment and dispersal of sewage or sewage effluent must be in a safe manner that adequately protects from physical injury or harm.

D. An unsaturated zone in the soil must be maintained between the bottom of the soil treatment and dispersal system and the periodically saturated soil or bedrock during loading of effluent.

E. Soil treatment and dispersal systems must not be designed in floodways. Soil treatment and dispersal systems installed in flood fringes must meet the requirements in part 7080.2270. All soil treatment systems located in areas subject to excessive run-on must have a diversion constructed upslope from the system.

F. ISTS components must be set back in accordance with Table VII.

TABLE VII
MINIMUM SETBACK DISTANCES (FEET)

Feature	Sewage tank, holding tank, or sealed privy	Absorption area or unsealed privy	Building sewer or supply pipes
Water supply wells	*	*	*
Buried water lines	*	*	*
Structures	10	20	
Property lines **	10	10	
Ordinary high water level of public waters	***	***	

* Setbacks from buried water lines and water supply wells are governed by chapters 4714 and 4725, respectively.

** Infringement on property line setbacks must be made through accepted local procedures.

*** Setbacks from lakes, rivers, and streams are governed by chapters 6105 and 6120.

Subp. 3. **Other technical requirements for systems.** Items A to M are required for specific designs as determined in parts 7080.2200 to 7080.2400.

A. Employ components registered under parts 7083.4070 and 7083.4080 that are installed, used, and operated according to the conditions placed on registration.

B. Employ structural components and joint sealants that meet or exceed the system's expected design life.

C. For acceptable treatment of septic tank effluent by soil, the soil treatment and dispersal systems must meet the requirements of subitems (1) and (2).

(1) A minimum three-foot vertical soil treatment and dispersal zone must be designed below the distribution media that meets the criteria in units (a) to (c):

(a) the zone must be above the periodically saturated soil and bedrock. The zone must be continuous and not be interrupted by seasonal zones of saturation;

(b) any soil layers that are any of the United States Department of Agriculture (USDA) soil textures classified as sand with 35 to 50 percent rock fragments or loamy sand with 35 to 50 percent rock fragments must be credited at only one-half their thickness as part of the necessary treatment zone. Soil layers, regardless of soil texture, with greater than 50 percent rock fragments must not be credited as part of the necessary treatment zone. Layers that are given full, partial, or no credit must, in any layering arrangement in the soil profile, be cumulatively added to determine the amount of soil treatment zone in accordance with other soil treatment zone provisions; and

(c) the entire treatment zone depth must be within seven feet from final grade.

(2) The distribution system or media must not place a hydraulic head greater than 30 inches above the bottom of the bottom absorption area.

D. The system's absorption area must be original soil.

E. The system's absorption area and mound absorption ratio must be sized according to Table IX or IXa.

TABLE IX

LOADING RATES FOR DETERMINING BOTTOM ABSORPTION AREA AND ABSORPTION RATIOS USING DETAILED SOIL DESCRIPTIONS *

		Treatment Level C	Treatment Level C	Treatment Level A, A-2, B, B-2	Treatment Level A, A-2, B, B-2
		Absorption area loading rate (gpd/ft ²)	Mound absorption ratio	Absorption area loading rate (gpd/ft ²)	Mound absorption ratio***
USDA soil texture	Soil structure and grade				
Sand, coarse sand, loamy sand, loamy coarse sand, fine sand, very fine sand, loamy fine sand, loamy very fine sand, 35 to 50% rock fragments	Single grain, granular, blocky, or prismatic structure; weak grade	**	1.0	**	1.0
Sand, coarse sand, loamy sand, loamy coarse sand, <35% rock fragments	Single grain, granular, blocky, or prismatic structure; weak grade	1.2	1.0	1.6	1.0
Fine sand, very fine sand, loamy fine sand, loamy very fine sand, <35% rock fragments	Single grain, granular, blocky, or prismatic structure; weak grade	0.6	2.0	1.0	1.6
Sandy loam, coarse sandy loam, fine sandy loam, very fine sandy loam	Granular, blocky, or prismatic structure; weak to strong grade	0.78	1.5	1.0	1.6

Sandy loam, coarse sandy loam, fine sandy loam, very fine sandy loam	Platy with weak grade or massive	0.68	1.8	0.87	1.8
Loam	Granular, blocky, or prismatic structure; weak to strong grade	0.6	2.0	0.78	2.1
Loam	Platy with weak grade or massive	0.52	2.3	0.68	2.4
Silt loam, silt	Granular, blocky, or prismatic structure; weak to strong grade	0.5	2.4	0.78	2.1
Silt loam, silt	Platy with weak grade or massive	0.42	2.9	0.65	2.5
Clay loam, sandy clay loam, silty clay loam	Granular, blocky, or prismatic structure; moderate to strong grade	0.45	2.6	0.6	2.7
Clay, sandy clay, silty clay	-	**	**	**	**

* Proposed absorption areas must meet item L and must have very friable and friable consistence or loose noncemented sands.

** Conduct percolation test and size under Table IXa. May need to be designed under part 7080.2300.

*** Assume a hydraulic loading rate to the sand at 1.6 gpd/ft².

TABLE IXa

LOADING RATES FOR DETERMINING BOTTOM ABSORPTION AREA AND
ABSORPTION RATIOS USING PERCOLATION TESTS

Percolation rate (MPI)	Treatment level C absorption area loading rate (gpd/ft ²)	Treatment level C mound absorption ratio	Treatment levels A, A-2, B, and B-2 absorption area loading rate (gpd/ft ²)	Treatment levels A, A-2, B, and B-2 mound absorption ratio
<0.1	-	1.0	-	1.0
0.1 to 5	1.2	1.0	1.6	1.0
0.1 to 5 (fine sand and loamy fine sand)	0.6	2.0	1.0	1.6
6 to 15	0.78	1.5	1.0	1.6
16 to 30	0.6	2.0	0.78	2.0
31 to 45	0.5	2.4	0.78	2.0
46 to 60	0.45	2.6	0.6	2.6
61 to 120	-	5.0	0.3	5.3
>120	-	-	-	-

F. If drainfield rock medium is employed, a durable, nonwoven geotextile fabric must be used to cover the distribution rock medium. The fabric must be of sufficient strength to undergo installation without rupture. The fabric must permit passage of water without passage of overlying soil material into the rock medium.

G. All excavation into the absorption area, or surface preparation of the upper 12 inches of absorption area, must be in a manner to expose the original soil structure in an unsmeared and uncompacted condition. Excavation is only allowed when the soil moisture content is at or less than the plastic limit and is not frozen or freezing.

H. Excavation equipment or other vehicles must not be driven on the excavated or prepared absorption area. Foot traffic on these areas must be minimized and not cause compaction. The exposed areas must be immediately covered with media or the designed coverage materials. If the areas are exposed to direct rainfall, they must be allowed to dry and must be re-prepared according to item G.

I. A minimum of six inches of topsoil borrow must be placed over the system.

J. A close-growing, vigorous vegetative cover must be established over the soil treatment and dispersal system and other vegetatively disturbed areas. The sodding, seeding, or other vegetation establishment must begin immediately after the placement of the topsoil borrow. If the climatic season does not allow immediate establishment of

vegetation, the soil treatment and dispersal system must be protected from erosion and excessive frost and a vegetative cover must be established as soon as favorable climatic conditions exist. The vegetative cover established must not interfere with the hydraulic performance of the system and must provide adequate frost and erosion protection. Trees, shrubs, deep-rooted plants, or hydrophytic plants must not be planted on the system.

K. Sewage tank effluent concentrations to the soil dispersal system must not exceed a BOD concentration of 170 mg/l, a CBOD₅ concentration of 125 mg/l, a TSS concentration of 60 mg/l, or an oil and grease concentration of 25 mg/l.

L. The distribution media must not be in contact with soils with any of the USDA soil textures classified as sand with 35 percent or more rock fragments or loamy sand with 35 percent or more rock fragments or any soils that have a percolation rate of less than 0.1 minute per inch.

M. The contour loading rate for soil dispersal systems must be between 1 and 12 gallons per lineal foot per day.

Subp. 4. **Systems with a design flow greater than 2,500 gallons per day.** At a minimum, systems designed under this chapter with a design flow of greater than 2,500 gallons per day, which impact water quality of an aquifer, as defined in part 4725.0100, subpart 21, must employ best management practices for nitrogen reduction developed by the commissioner to mitigate water quality impacts to groundwater.

Statutory Authority: *MS s 14.389; 115.03; 115.55; 115.56; L 2015 1Sp4 art 4 s 132; art 4 s 145*

History: *32 SR 1347; 35 SR 1353; 38 SR 1001; 40 SR 689*

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