

15A NCAC 18E .0906 SAND LINED TRENCH SYSTEMS

(a) Sand lined trench systems receiving DSE may be used on sites originally classified unsuitable due to SWC, soil morphology, restrictive horizon, or soil depth that may be reclassified as suitable in accordance with this Rule when there is a DDF less than or equal to 1,500 gpd.

(b) Sand lined trench systems with advanced pretreatment shall comply with Rule .1205 of this Subchapter.

(c) The soil and site shall meet the following criteria:

- (1) the texture of the receiving permeable horizon is sand, loamy sand, sandy loam, loam, or silt loam;
- (2) the structure of the receiving permeable horizon is classified suitable;
- (3) the moist consistence of the receiving permeable horizon is loose, very friable, friable, or firm;
- (4) if the receiving permeable horizon has zones of heavier textured materials, these zones are discontinuous with an average thickness not exceeding one-third of the required thickness of the receiving permeable horizon;
- (5) the naturally occurring receiving permeable horizon shall be less than or equal to 60 inches below the naturally occurring soil surface. If the receiving permeable horizon is greater than 60 inches below the naturally occurring soil surface, advanced pretreatment shall be used in accordance with Rule .1205 of this Subchapter;
- (6) artificial drainage shall be provided, as needed, to maintain the following minimum vertical separation from the infiltrative surface to a SWC:
 - (A) 18 inches with gravity or pressure dosed gravity distribution; or
 - (B) 12 inches with pressure dispersal; and
- (7) the minimum required thickness of the receiving permeable horizon shall be determined by the texture of that horizon as follows:
 - (A) sand or loamy sand texture requires a minimum thickness of one foot;
 - (B) sandy loam or loam texture requires a minimum thickness of two feet; or
 - (C) silt loam texture requires a minimum thickness of three feet.

(d) If a groundwater lowering system is required to comply with the minimum vertical separation in Paragraph (c)(6) of this Rule to a SWC that is not related to lateral water movement, design plans and specifications shall be prepared by a licensed professional if required in G.S. 89C, 89E, or 89F. The groundwater lowering system shall:

- (1) extend into the receiving permeable horizon;
- (2) have an outlet with location and elevation that allows for free discharge of groundwater as required for the groundwater lowering system to be functional. The outlet location and elevation shall be shown on the artificial drainage system plan with relative water level elevations and wastewater system site elevations labeled; and
- (3) all groundwater lowering system components are integral to the wastewater system and subject to ownership and control requirements of Rule .0301(b) and (c) of this Subchapter.

(e) The LTAR shall be determined in accordance with Table XX for sand-lined trench systems. The minimum trench length shall be calculated in accordance with Rule .0901(d) of this Section, except that the ETW shall be equal to the installed trench width. The LTAR shall be based on the lesser of the following:

- (1) LTAR set forth in Table XX based on the most hydraulically limiting, naturally occurring soils overlying the permeable receiving horizon; or
- (2) 10 percent of the in-situ Ksat of the receiving permeable horizon.

TABLE XX. LTAR for sand lined trench systems based on the most hydraulically limiting, naturally occurring soils overlying the permeable receiving horizon

Soil Group	Texture of Most Hydraulically Limiting Overlying Soil Horizon	Distribution Type	LTAR in gpd/ft ²
I	Sands	Gravity or Pressure Dosed Gravity	0.7 – 0.9
		Pressure Dispersal	0.8 – 1.2
II	Coarse Loams	Gravity or Pressure Dosed Gravity	0.5 – 0.7
		Pressure Dispersal	0.6 – 0.8
III	Fine Loams	Gravity or Pressure Dosed Gravity	0.2 – 0.4
		Pressure Dispersal	0.3 – 0.6
IV	Clays	Gravity or Pressure Dosed Gravity	0.1 – 0.2
		Pressure Dispersal	0.15 – 0.3

(f) There shall be no reduction in trench length compared to a conventional wastewater system when Accepted or Innovative gravelless trench product is used.

(g) A special site evaluation in accordance with Rule .0510 of this Subchapter shall be required for the following conditions to field verify the LTAR:

- (1) the texture of the receiving permeable horizon is sandy loam or loam and the system DDF is greater than 600 gpd; or
- (2) the texture of the receiving permeable horizon is silt loam.

(h) In addition to the requirements set forth in Rule .0901(g) of this Section, sand lined trench system installations shall comply with the following:

- (1) gravity trenches shall have a maximum width of three feet and a minimum width of one and a half feet;
- (2) trenches shall be located not less than three times the trench width on center. The minimum spacing for trenches shall be five feet on center;
- (3) the sand lined trenches shall be constructed to extend into the naturally occurring receiving permeable horizon;
- (4) the infiltrative surface shall be no deeper than 24 inches below finished grade. The top of the trench media shall be at or below the naturally occurring soil surface. Drip tubing shall be installed a minimum of six inches below the natural grade;
- (5) soil used to line the trench shall be sand in texture. The installer shall provide written laboratory verification of the media textural classification and quality when requested by the LHD based on a visual inspection of the sand used during installation. When laboratory analysis is required, the material shall be clean, uncoated fine, medium, or coarse sand with a minimum of 90 percent in sizes ranging from 0.1 to 2.0 millimeters, with no more than one percent smaller than 0.074 millimeters or a No. 200 Sieve;
- (6) pressure dosed gravity distribution or pressure dispersal shall be used when the total dispersal field line length exceeds 750 linear feet in a single system;
- (7) pressure dispersal shall be used when the total dispersal field line length exceeds 1,200 linear feet in a single system;
- (8) when pressure dispersal is used, the pressure dispersal network shall be designed in accordance with Rules .0907(e) or .0908(f) of this Section, except that the trench width shall comply with this Paragraph. The total line length shall be calculated based on infiltrative surface area;
- (9) drip dispersal systems in sand lined trenches shall require multiple runs per trench of drip tubing with emitters as follows:
 - (A) a minimum of two runs within a trench between one and one half and two feet wide; and
 - (B) a minimum of three runs within a trench between two and three feet wide.The drip tubing shall be uniformly spaced across the trench with the tubing six inches from the trench sidewalls. Drip tubing shall be covered by a minimum of six inches of sand lined trench media meeting the requirements of Subparagraph (5) of this Paragraph. Drip dispersal systems shall comply with the requirements of Section .1600 of this Subchapter and this Rule;
- (10) finished grade shall provide for positive surface drainage away from all system components, with the dispersal field crowned at one-half percent as measured from the centerline of the dispersal field. The finished grade requirements shall be made a condition of the CA; and
- (11) trench products approved under Section .1700 of this Subchapter shall be installed in accordance with PIA Approval.

(i) Other sand lined trench systems may be approved on a site-specific basis in accordance with Rule .0509(c) of this Subchapter.

*History Note: Authority G.S. 130A-335(e) and (f);
Eff. January 1, 2024.*