

SUBCHAPTER C: SITING REQUIREMENTS AND EFFLUENT LIMITATIONS
§§222.71, 222.73, 222.75, 222.77, 222.79,
222.81, 222.83, 222.85, 222.87
Effective July 5, 2006

§222.71. Site Selection.

Site selection of a proposed subsurface area drip dispersal system is subject to the requirements in §309.12 of this title (relating to Site Selection to Protect Groundwater or Surface Water).

Adopted June 14, 2006

Effective July 5, 2006

§222.73. Soil Evaluation.

(a) The applicant shall conduct and submit with the application a soils evaluation to identify the soils associated with the proposed site. At least one profile hole per soil type must be included in the evaluation. The applicant shall use soil borings, where appropriate, for enhancement of the profile hole determinations. The profile holes utilized in the site evaluation must be no more than five feet deep, or to the first continuous lateral lithic contact. The evaluation must include the following information:

- (1) total depth of the profile hole;
- (2) primary rooting depth;
- (3) secondary rooting depth;
- (4) horizon descriptions shall include:
 - (A) depth of the horizon;
 - (B) soil texture;
 - (C) soil structure;
 - (D) soil color;
 - (E) mottling; and
 - (F) percent coarse fragments;
- (5) boundary descriptions (soil horizons);
- (6) restrictive horizons;

- (7) potential water bearing zones; and
- (8) active water bearing zones.

(b) The soil evaluation shall be performed by a licensed professional geoscientist or engineer.

Adopted June 14, 2006

Effective July 5, 2006

§222.75. Site Preparation Plan.

The applicant shall develop and submit, with the permit application, a site preparation plan that illustrates how site preparation will alleviate potential site-specific limitations and ensure suitability for the subsurface area drip dispersal system of wastewater. This plan must include the following if applicable:

- (1) a site plan to minimize rainfall run-on and maximize rainfall runoff from the dispersal zones;
- (2) design criteria to compensate for any restrictive horizons within the soil column;
- (3) soil importation with descriptions of the chemical and physical characteristics of the proposed import material; and
- (4) any planned removal of existing vegetation.

Adopted June 14, 2006

Effective July 5, 2006

§222.77. Protection of Groundwater.

(a) A subsurface area drip dispersal system shall not pollute groundwater quality.

(b) If groundwater is present beneath the site of a proposed subsurface area drip dispersal system, the executive director may require that the baseline quality of the groundwater be documented by:

- (1) sampling the quality of the first occurrence of groundwater on site for a minimum of two sample events at least 30 days apart; or
- (2) an alternative method submitted by the applicant and approved by the executive director.

(c) The executive director may impose continuing groundwater monitoring at a particular subsurface area drip dispersal system site.

Adopted June 14, 2006

Effective July 5, 2006

§222.79. Recharge Feature Plan.

For new facilities and facilities undergoing an expansion of the subsurface area drip dispersal system, the applicant must supply a recharge feature plan with the application that is signed and sealed by a licensed professional engineer or a licensed professional geoscientist who has inspected the site of the proposed subsurface area drip dispersal system. The recharge feature plan must:

(1) document the presence or absence of any recharge features identified on any tracts of land owned, operated, controlled, rented, or leased by the applicant and to be used as a part of the facility;

(2) list the sources and methods used to identify the presence or absence of recharge features. At a minimum, the licensed professional engineer or geoscientist must review the records and maps maintained by the following sources:

- (A) Railroad Commission of Texas;
- (B) a groundwater conservation district, if applicable;
- (C) Texas Water Development Board;
- (D) the commission;
- (E) Natural Resources Conservation Service;
- (F) a previous owner of the site, if available; and
- (G) on-site inspection;

(3) provide a narrative description of the site-specific geology and groundwater at the facility. The narrative must include, at a minimum, the following information:

(A) a site-specific description of the geologic formations underlying the facility;

- (B) the depth to groundwater;
- (C) the general direction of groundwater flow;

(D) potential uses of the groundwater and any known uses of the groundwater within a ½ mile radius of the perimeter of the proposed subsurface area drip dispersal system site; and

(E) any well drillers' logs and water quality data obtained for wells on the subsurface area drip dispersal system site and within 500 feet of the property line; and

(4) identify measures to prevent impacts to groundwater from any recharge features present. The licensed professional engineer or licensed professional geoscientist must include at least one of the following in the plan:

(A) provisions for the installation of the necessary and appropriate protective measures for each located recharge feature, including berms, buffer zones, or other equivalent protective measures; or

(B) submission of a detailed groundwater monitoring plan covering all of the affected facility, including the subsurface area drip dispersal system. The plan shall monitor the first occurrence of groundwater. At a minimum, the groundwater monitoring plan shall specify the location of proposed monitoring wells including a minimum of two wells downgradient of the subsurface area drip dispersal systems, procedures to collect a groundwater sample from representative wells, the proposed constituents to be included in the sampling plan, and frequency of the sampling event; and, provide for any other similar method or approach demonstrated by the applicant to be protective of any associated recharge feature and approved by the executive director.

Adopted June 14, 2006

Effective July 5, 2006

§222.81. Buffer Zone Requirements.

(a) The permittee must locate the subsurface area drip dispersal system a minimum horizontal distance of:

(1) 500 feet from public water wells, springs, or other similar sources of public drinking water;

(2) 150 feet from private water wells as described in §309.13(c)(1) of this title (relating to Unsuitable Site Characteristics); and

(3) 100 feet from surface waters in the state.

(b) The permittees must locate the wastewater treatment plant unit in accordance with §290.41(c)(1)(B) of this title (relating to Water Sources) and §309.13(c) of this title.

(c) Buffer variance.

(1) The executive director may grant a variance to a permittee operating a subsurface area drip dispersal system under an existing authorization issued prior to November 1, 2006, to continue the operation and use of any existing subsurface area drip dispersal system located within the buffer zones listed in this section provided that the system:

(A) is in compliance with the recharge feature plan required by §222.79 of this title (relating to the Recharge Feature Plan); or

(B) is certified by a licensed professional engineer or licensed professional geoscientist determining that the existing buffers will be protective of water quality.

(2) The permittee shall maintain documentation authorizing variances of buffer zones on site for the duration of the permit and make it available to commission personnel upon request.

(d) The permittee shall not locate a subsurface area drip dispersal system within a floodway. The permittee shall provide the source of all data for determination of the floodway locations and include a copy of the relevant Federal Emergency Management Agency (FEMA) flood map or the calculations and maps used where a FEMA map is not available.

Adopted June 14, 2006

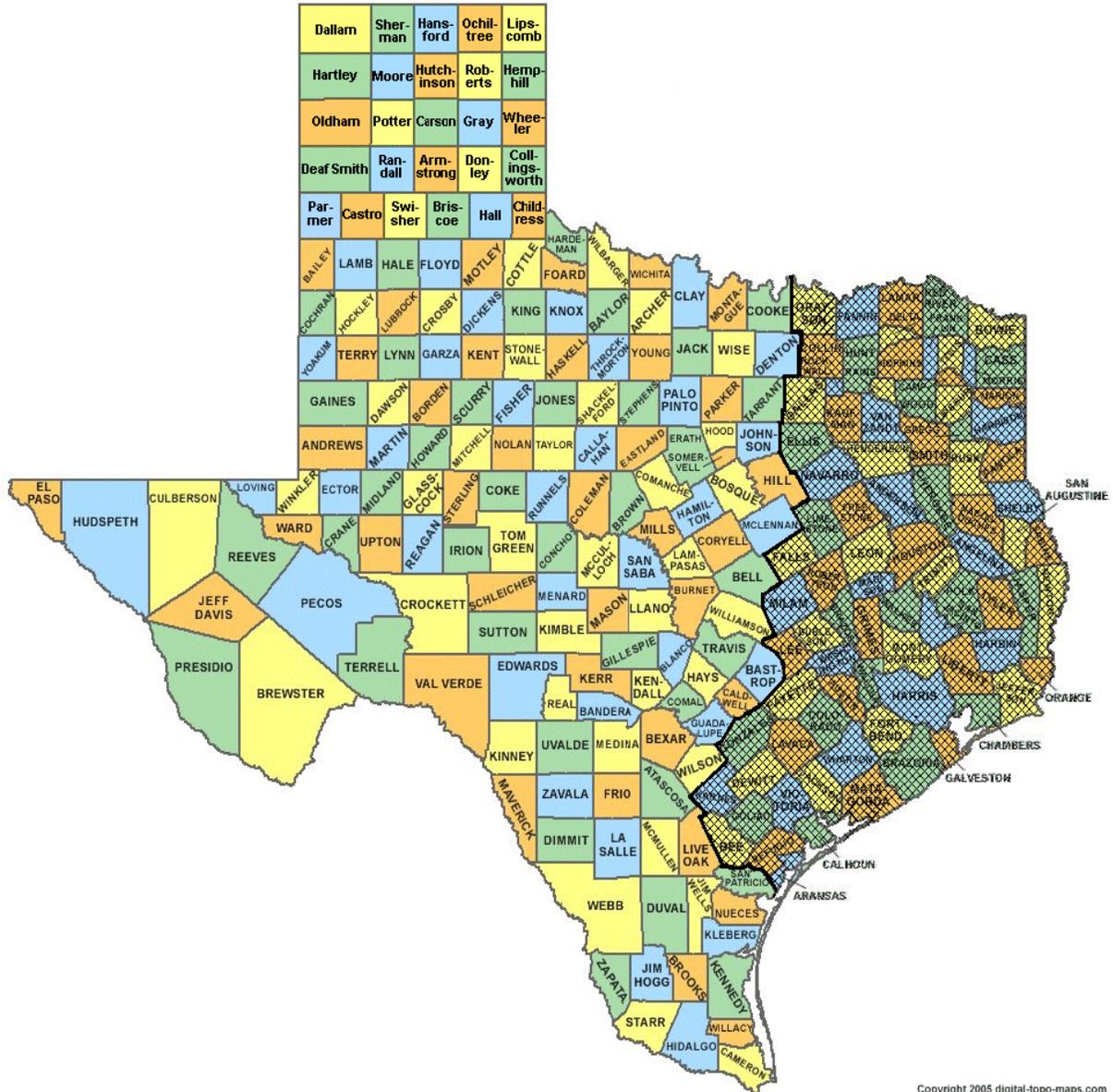
Effective July 5, 2006

§222.83. Hydraulic Application Rate.

(a) The permittee must demonstrate in the engineering report and ensure that the hydraulic application rate for a subsurface area drip dispersal system meets one of the following.

(1) The hydraulic application rate for a subsurface area drip dispersal system located west of the boundary shown in paragraph (2) of this subsection, Figure 1, and using a vegetative cover of non-native grasses that are over seeded with cool season grasses in the winter months (October - March) shall not exceed 0.1 gallons per square foot per day.

(2) The hydraulic application rate for a subsurface area drip dispersal system located east of the boundary shown in Figure 1 of this paragraph or in any part of the state when the vegetative cover is any crop other than non-native grasses, the permittee shall use the following equations to establish the rate.



$$\mathbf{AR} = \mathbf{ET} - \mathbf{RAINe} + \mathbf{LEACH}$$

Where:

AR = hydraulic application rate (inches per month)

ET = $E_{To} \times K_c$, the actual water requirement of crop (inches per month)

E_{To} = potential evapotranspiration (inches per month)

K_c = crop coefficient (decimal) K_c ranges from 0.5 to 1.0

RAINe = $RAIN \times EF\%$, the effective rainfall (inches per month)

RAIN = total rainfall (inches per month)

EF% = effective rainfall percentage is the portion of rainfall/precipitation (inches) that infiltrates into the soil. An EF% of any value other than 0.67 must be justified by the applicant and approved by the executive director.

LEACH = leaching volume (inches per month). The leaching fraction may be determined using the electrical conductivity (millimhos/cm at 25° C) of the applied water and targeted soil salinity level (see §309.20(b)(3)(A) of this title (relating to Land Disposal of Sewage Effluent); or

$$\mathbf{SMa} = \mathbf{ET} - \mathbf{RAINe} + \mathbf{LEACH} - \mathbf{AR}$$

Where:

SMa - change in available soil moisture and is calculated from the soil depth and soil water holding capacity. Soil water holding capacity is defined as the volume of water (inches) held in the soil between field capacity and permanent wilting point.

(3) The applicant must calculate the hydraulic application rate for each month of the year. A monthly water balance is computed that includes soil moisture storage. Any available soil moisture is carried over to the next month. The maximum application rate is exceeded when the total hydraulic loading (rainfall and irrigation) exceeds the total of the available soil moisture storage, the actual water requirement of crop (inches per month), and leaching.

Soil Water Holding Capacity	
Soil	Holding Capacity
Clay	2.1
Clay Loam	2.0
Loam	1.7
Sand	0.9
Sandy Loam	1.4

(4) The permittee may use an alternative method to calculate the hydraulic application rate with the approval of the executive director.

(b) The nitrogen application rate for a subsurface area drip dispersal system must be calculated using the anticipated nitrogen concentration of wastewater effluent prior to land application.

(1) The permittee must calculate the allowable annual hydraulic loading rate based on nitrogen limits using the following equation.

$$Lw_{(n)} = \frac{(Cp)(Pr-ET) + (U)(4.4)}{(1-f)(Cn) - Cp}$$

Where:

Lw_(n) = allowable annual hydraulic loading rate based upon nitrogen limits in inches per year

Cp = total nitrogen concentration in soil solution in milligrams per liter. The soil solution contains small but significant quantities of soluble inorganic and organic compounds, some of which contains elements that are essential for plant growth.

Pr = precipitation rate in inches per year

ET = evapotranspiration rate in inches per year,

U = nitrogen uptake by crop in pounds per acre per year

4.4 = combined conversion factor

Cn = total nitrogen concentration in wastewater at time of application to land in milligrams per liter

f = fraction of applied nitrogen removed by denitrification and volatilization and assumed to be 0.20.

(2) Upon request by the applicant, the executive director may approve other fractions of applied nitrogen removed based upon special conditions relating to a proposed site, if justified in the engineering report.

(c) The result obtained from calculation of the allowable annual hydraulic loading rate that is based upon nitrogen limits must be compared to the hydraulic loading rate that is based on crop need and soil water holding capacity. The more restrictive of the two calculations will set the maximum hydraulic application rate.

Adopted June 14, 2006

Effective July 5, 2006

§222.85. Effluent Quality.

(a) Protection of fresh water. The applicant must demonstrate that both surface and subsurface fresh water will not be polluted by the application of wastewater by the subsurface area drip dispersal system.

(b) Domestic waste.

(1) The permittee shall maintain the pH of the effluent within the limits of 6.0 - 9.0 standard units immediately prior to dispersal in accordance with §309.20(b)(5)(E) of this title (relating to Land Disposal of Sewage Effluent), unless a specific variance is approved by the executive director based upon site-specific conditions.

(2) When a subsurface area drip dispersal system applies effluent on land where there is the potential for public contact with the soil, the permittee shall comply with Effluent Set 4 located in §309.4 of this title (relating to Table 1, Effluent Limitations for Domestic Treatment Plants), or with more stringent effluent limitations prescribed by the executive director, if warranted to protect human health and the environment.

(3) When a subsurface area drip dispersal system applies effluent on land where there is not potential public contact with the soil, the permittee shall comply with Effluent Set 5 located in §309.4 of this title, or with more stringent effluent limitations prescribed by the executive director, if warranted to protect human health and the environment.

(4) Disinfection.

(A) Permittees applying treated effluent to land where there is the potential for public contact with the soil must disinfect the effluent prior to it entering the subsurface area drip dispersal system in accordance with §309.3(g) of this title (relating to Application of Effluent Sets).

(B) If the effluent is to be transferred to a holding pond or tank prior to dispersal, the permittee shall ensure that the effluent meets the relevant criteria of §222.87 of this title (relating to Effluent Limitations) at the time it enters the distribution system.

(C) Permittees are allowed to use ultraviolet disinfection systems only with effluent having a daily average five-day biochemical oxygen demand (BOD₅) concentration and total suspended solids concentration that are less than 20 milligrams per liter each.

(5) The permittee must comply with requirements other than those specified in this section, if determined by the executive director to be necessary to protect human health.

Adopted June 14, 2006

Effective July 5, 2006

§222.87. Effluent Limitations.

(a) Domestic waste. The permittee shall comply with the effluent limitations in §309.3 and §309.4 of this title (relating to Application of Effluent Sets and Table 1, Effluent Limitations for Domestic Wastewater Treatment Plants) and any specific effluent limitations placed in the permit by the executive director.

(b) Industrial waste.

(1) The permittee is prohibited from introducing the following wastes into a subsurface area drip dispersal system:

(A) characteristically hazardous wastes as determined in 40 Code of Federal Regulations (CFR) Part 261, Subpart C;

(B) listed hazardous wastes as defined in 40 CFR Part 261, Subpart D;

(C) wastes specifically prohibited for land disposal in 40 CFR Part 268, Subpart C; and

(D) wastes containing radioactive materials unless the permittee is authorized to store, process and dispose of these wastes in compliance with the Atomic Energy Act of 1954 (as amended) or in compliance with the Texas Radiation Control Act.

(2) Effluent limitations.

(A) The permittee shall comply with effluent limitations established by the executive director in individual permits.

(B) The permittee shall demonstrate compliance with technology-based effluent limitations by monitoring the effluent prior to introduction into the subsurface area drip dispersal system.

(C) If the soil pH is less than 6.5 standard units at a subsurface area drip dispersal system site, the permittee shall monitor certain trace elements, including phosphorus, fluoride, and heavy metals as specified by the executive director in the individual permit.

(D) Prior to disposal, the permittee shall ensure that the effluent from a treatment system meets Effluent Set 5, established in §309.4 of this title.

Adopted June 14, 2006

Effective July 5, 2006