

**REGULATIONS OF THE BOARD OF  
HEALTH OF THE DELAWARE  
GENERAL HEALTH DISTRICT  
CHAPTER 29**

***SEWAGE TREATMENT SYSTEM  
RULES***

## **TABLE OF CONTENTS**

<u>Rule Number</u>	<u>Rule Title</u>	<u>Page</u>
29-01	Definitions.	4
29-02	Purpose and scope.	9
29-03	Authority, applicability, and related provisions.	10
29-04	Responsibility for compliance, demonstration competency, and registration requirements.	11
29-04.1	Installers.	13
29-04.2	Septage haulers.	14
29-04.3	Service providers.	15
29-06	Fees, fee categories, fee transmittal and reporting.	16
29-07	General provisions and prohibitions.	16
29-08	Site and soil evaluation.	19
29-08.1	Subdivisions and new lots.	21
29-09	Permits for installation, alteration, and operation.	22
29-09.1	Layout plans, design plans and as-built records.	25
29-10	Sewage source, building sewer, and related fixtures	28
29-11	Tanks, pumps, and controls.	30
29-12	Effluent quality standards and pretreatment provisions.	33
29-13	Soil absorption provisions.	35
	Table to Rule 29-13	39
29-13.1	Leaching trench requirements.	40
29-13.2	Mound with pressure distribution requirements.	42
29-13.3	Drip distribution requirements.	46
29-14	Site modification.	49
29-15	Privies and holding tanks.	51

29-16	Education, inspection, compliance, and enforcement.	52
29-16.1	O&M management.	53
29-16.2	Residuals management.	54
29-17	STS abandonment.	56
29-18	Variances and related provisions.	57

29-01        **Definitions.**

As used in this chapter:

- (A) "AASHTO" mean the American association of state highway and transportation officials.
- (B) "Alter" means to change by making substantive replacements of, additions to, or deletions in the design or materials or to change the location of an existing sewage treatment system. For the purposes of this chapter, the terms "alter" or "alteration" shall not include the replacement of an existing sewage treatment system or the repair of a sewage treatment system by making minor corrections to existing components or substituting parts of a component with like parts as would occur during the servicing and maintenance of a sewage treatment system.
- (C) "ANSI" means the American national standards institute.
- (D) "ARCPACS" means the federation of certifying boards in agriculture, biology, earth and environmental sciences.
- (E) "ASTM" means the American society for testing and materials or ASTM international.
- (F) "Bedrock, rock and other fragments" means bedrock underlying the soil or exposed at the surface of the ground and rock and other fragments that are discrete particles greater than two millimeters including, but not limited to, gravel, cobbles, flagstones, stones and boulders. For the purposes of this chapter, a limiting condition shall include soils having bedrock, rock or other fragments greater than fifty per cent by volume.
- (G) "Bedroom" means any room within a dwelling that might reasonably be used as a sleeping room including but not limited to rooms designated as a den, office, or study.
- (H) "Board of health" means the board of health of the Delaware General Health District or its authorized representative.
- (I) "CSA or CAN/CSA" means the Canadian standards association or CSA international.
- (J) "Department of health" means the department of health of the state of Ohio.
- (K) "Director of health" means the director of the department of health of the state of Ohio and includes any authorized representative of the director.
- (L) "Domestic septage" means the liquid or solid material removed from a sewage treatment system, septic tank, portable toilet, or type III marine sanitation device as defined in 33 C.F.R. 159.3. (as published in the July 1, 2005 Code of Federal Regulations) "Domestic septage" does not include grease removed from a grease trap.

- (M) "Drainage system" means a drain or drains designed to effectively lower seasonally ponded or shallow subsurface water to establish or increase an unsaturated vertical separation distance uniformly beneath a soil absorption component.
- (N) "ETV water quality protection center" means the program established by the United States environmental protection agency and the national sanitation foundation to verify commercial-ready technologies that protect ground and surface waters from contamination. Under the program, technologies are evaluated by a third party organization following technically sound test procedures with appropriate quality assurance and quality control to provide purchasers, specifiers, and permittees with credible and relevant data.
- (O) "Gradient drain" means a drain designed to create a hydraulic gradient to facilitate the flow of subsurface water away from the area of a soil absorption component to allow effluent from a sewage treatment system to infiltrate the soil.
- (P) "Graywater" means sewage that does not include flows from toilets and urinals, and in some cases also does not include flows from kitchen sinks carrying food wastes.
- (Q) "Ground water" means all water occurring in an aquifer. For the purposes of this chapter, ground water includes an apparent water table.
- (R) "Hardscape" means any constructed surface area on the landscape of a site such as a driveway, parking area, patio, building slab, or other similar surface area.
- (S) "Household sewage treatment system (HSTS)" means any sewage treatment system, or part of such a system, that receives sewage from a single-family, two-family, or three-family dwelling and residential dwellings or appurtenances including but not limited to:
- (1) A bed and breakfast, residential facility, or other residence as described in divisions (B)(2), (B)(4), and (B)(13) of section 3717.42 of the Revised Code.
  - (2) An ancillary restroom associated with a dwelling in a location such as a barn or personal garage that is not used as an additional dwelling, sleeping area, or business and the users of the ancillary restroom are the same users as the dwelling. An ancillary restroom shall not be available for public use.
  - (3) Vacation rental cabins provided there is a separate HSTS for each cabin.
  - (4) A dwelling with a home business having no access for the general public and does not generate additional sewage as part of its operation.
- (T) "IAPMO" means the international association of plumbing and mechanical officials.
- (U) "Infiltrative surface" means the contact area where sewage is applied to the soil or sand fill for the purpose of treatment and/or dispersal.

- (V) "In situ soil" means soil that has been naturally deposited or formed in its present location with adequate texture, structure and consistence necessary for treatment and/or dispersal, or in the case of reclaimed or filled areas, has had sufficient time to form the texture, structure and consistence necessary for treatment and/or dispersal.
- (W) "Inspection" means the on-site evaluation or analysis of the functioning of a sewage treatment system.
- (X) "Installer" means any person who engages in the business of installing or altering or who, as an employee of another, installs or alters any sewage treatment system.
- (Y) "Interceptor drain" means a drain designed to intercept the horizontal flow of subsurface water to reduce its impact on a down gradient soil absorption component.
- (Z) "Limiting condition" means a restrictive soil layer, bedrock, ground water, a perched seasonal high water table or other condition or combination of conditions that severely limit the treatment and/or dispersal of sewage or effluent.
- (AA)"Linear loading rate (LLR)" means the volume of effluent applied daily along the landscape contour expressed in gallons per day per linear foot. The LLR may also be referred to as the hydraulic linear loading rate. The LLR is used to determine the required length of the distribution system parallel to surface contours.
- (BB)"Lot" means a legally recorded parcel of land.
- (CC)"Manufacturer" means any person that manufactures a sewage treatment system or components of a sewage treatment system.
- (DD)"Monitoring" means the activity of verifying performance requirements and may include, but is not limited to, sampling of effluent from a sewage treatment system component. For the purpose of this chapter, monitoring activities shall be conducted by either the board of health or a registered service provider.
- (EE)"NPDES" means national pollutant discharge elimination system.
- (FF)"NRCS" means the natural resources conservation service.
- (GG)"NSF" means the national sanitation foundation or NSF international.
- (HH)"ODNR" means the Ohio department of natural resources.
- (II)"OEPA" means the Ohio environmental protection agency.
- (JJ)"O&M" means operation and maintenance.
- (KK)"Order one soil survey" means a soil inventory produced for very intensive land

use that requires detailed information about soils. Standards are described in section 655.04 of the national soil survey handbook. Order two soil survey information is available in county soil surveys.

- (LL)"Perched seasonal high water table" means the shallowest depth of soil which is saturated with water above an unsaturated zone for at least three weeks or longer periods of time, often with repeated occurrences during the winter and/or spring seasons of the year.
- (MM)"Perennial stream" means natural waters of the state with a defined stream bed and bank and constant source of flowing water.
- (NN)"Person" has the same meaning as in section 1.59 of the Revised Code and also includes any state, any political subdivision of a state, and any department, division, board, commission, agency, or instrumentality of a state or political subdivision.
- (OO)"Pressure distribution" means dispersal of effluent in a manner that assures no more than a ten per cent difference in flow rate between the proximal and distal orifices on each distribution lateral and within the total distribution network.
- (PP)"Public health nuisance" means any condition of sewage or effluent that is potentially injurious to the health and safety of a person. A public health nuisance shall be deemed to exist when the conditions set forth in paragraph (F)(1) of rule 3745-1-04 of the Administrative Code are demonstrated.
- (QQ)"Replacement" means the installation of a new sewage treatment system to replace an existing system.
- (RR)"Restrictive soil layer" means a compacted or dense soil layer such as a fragipan, a soil layer with a brittle and firm or very firm consistence, a soil layer having a massive structure or having a platy structure inherited from bedrock or other soil layer similarly restricting vertical flow.
- (SS)"Sanitary sewerage system" and "sanitary sewers" means pipelines or conduits, pumping stations, force mains, and all other constructions, devices, appurtenances, and facilities that convey sewage to a central sewage treatment plant and that are required to obtain a permit under Chapter 6111. of the Revised Code.
- (TT)"Septage hauler" means any person who engages in the collection, transportation, disposal, and land application of domestic septage.
- (UU)"Service provider" means any person who services, but does not install or alter, a sewage treatment system.
- (VV)"Sewage" means liquid waste containing animal or vegetable matter in suspension or solution that originates from humans and human activities. "Sewage" includes liquids containing household chemicals in solution commonly discharged from a residence or from commercial, institutional, or other similar facilities.
- (WW)"Sewage treatment system (STS)" means an HSTS, a small flow on-site sewage treatment system, or both, as applicable.

(XX)"Small flow on-site sewage treatment system (SFOSTS)" means a system, other than an HSTS, that treats not more than one thousand gallons of sewage per day and that does not require a national pollutant discharge elimination system permit issued under section 6111.03 of the Revised Code or an injection well drilling or operating permit issued under section 6111.043 of the Revised Code. A structure or structures served by a SFOSTS shall include but is not limited to:

- (1) Vacation rental cabins with multiple cabins served by an SFOSTS.
- (2) A dwelling and an ancillary building both served by an SFOSTS where the ancillary building may be open to the public and is used by more than the residents of the dwelling.
- (3) Two dwellings, including arrangements such as a dwelling and a detached garage with living space.
- (4) A dwelling with a home business that may be open to the public, generates sewage in excess of the daily design flow or waste strength for an HSTS, and has no wastewater going to the SFOSTS other than sewage as defined in this rule.

(YY)"Soil depth credit" means the use of the design mechanisms of elevation, pretreatment, and/or distribution as substitutes for in situ soil treatment to compensate for inadequate vertical separation distance between the infiltrative surface and the limiting condition.

(ZZ)"Soil loading rate" means the daily volume of effluent applied per unit area of in situ soil expressed in gallons per day per square foot. The "soil loading rate" may also be referred to as the basal loading rate or the infiltration loading rate. The "soil loading rate" determines the size of the soil absorption area. The "soil loading rate" and the LLR determine the dimensions of the soil absorption area.

(AAA)"Subdivision" means that which is defined by section 711.001 of the Revised Code.

(BBB)"Timed dosing" means a mechanism that attenuates flows resulting from high water use periods and allows for controlled dosing intervals through use of a timing device.

(CCC)"UIC" means underground injection control and relates to the OEPA underground injection control program authorized by sections 6111.043 and 6111.44 of the Revised Code.

(DDD)"UL" means underwriters laboratories incorporated.

(EEE)"USDA" means the United States department of agriculture.

(FFF)"USEPA" means the United States environmental protection agency.

(GGG)"Vertical separation distance" means the depth from the infiltrative surface of

the distribution system of the soil absorption component to a limiting condition.

(HHH)"Waters of the state" means that which is defined in division (H) of section 6111.01 of the Revised Code as all streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and other bodies or accumulations of water, surface and underground, natural or artificial, regardless of the depth of the strata in which underground water is located, that are situated wholly or partly within, or border upon, this state, or are within its jurisdiction, except those private waters that do not combine or effect a junction with natural surface or underground waters.

29-02        **Purpose and scope.**

(A) The purpose of the STS rules is to establish HSTS and SFOSTS rules of general application including standards for siting, design, installation, alteration, operation, monitoring, maintenance, and abandonment of an STS to protect public health and the environment. The STS rules apply to HSTS in accordance with paragraphs (B) and (C) of rule 29-03 of this Chapter.

It is recognized that certain design standards contained in Chapter 29 for SFOSTS differ from those standards for on-site systems regulated under Chapter 3745-42 of the Administrative Code due to affirmative maintenance requirements for SFOSTS under this chapter. As such, differences in design standards between these two chapters of the Administrative Code should not be construed as a conflict of law.

(B) The scope of the rules includes the performance of STS components, persons, agencies, and organizations as these relate to the effective management of HSTS and SFOSTS, including the siting, design, installation, alteration, operation, monitoring, maintenance, and abandonment of an STS.

(1) STS components include those specified directly in rule, designated by a review process specified in rule, or addressed through the technical advisory committee review in compliance with sections 3718.03 and 3718.04 of the Revised Code.

(2) Persons include owners, operators, site evaluators, soil evaluators, manufacturers, suppliers, designers, installers, septage haulers, service providers, inspectors, and regulators.

(3) Agencies include boards of health, the department of health, and OEPA.

(4) Organizations include professional associations, educational providers, responsible management entities, and other organizations engaged in activities addressed in the rules.

29-03      **Authority, applicability, and related provisions.**

- (A) Unless otherwise specified, the rules apply to both HSTS and SFOSTS, referred to jointly as STS. When the rules specifically address SFOSTS, the provisions only apply to those SFOSTS that are under the jurisdiction of a board of health. The Board of Health adopted a resolution on February 27<sup>th</sup>, 2007 that placed SFOSTS under the authority of the Delaware General Health District effective June 1, 2007.
- (B) This Chapter shall apply to all STS permitted to be installed or altered pursuant to this chapter after the effective date of this chapter. In cases where the board of health has provided written approval for a household sewage disposal system prior to January 1, 2007, the board of health may permit the installation of the previously approved system if that approval has not expired and the following applies.
- (1) All site reviews conducted prior to January 1, 2005 have hereby expired. All site reviews conducted after January 1, 2005 and before January 1, 2007 will expire on December 31, 2007. All site reviews conducted after January 1, 2007 will expire 1 year from the date approved. All subdivisions and lot splits which were approved for a specific sewage treatment system that are not in conflict with NPDES requirements must obtain a permit to install no later than December 31, 2009 in order for the previously authorized system to be installed.
  - (2) The household sewage disposal system shall not conflict with provisions of the NPDES program established in section 6111.03 of the Revised Code or rules adopted or permits issued pursuant to section 6111.03 of the Revised Code.
  - (3) The owner obtaining an installation permit requests to install the previously approved household sewage disposal system and has acknowledged and signed the disclaimer indicating such a system is not the recommendation of the Health District unless such system meets the provisions of this rule.
  - (4) The installation permit for the household sewage disposal system is issued by the board of health prior to the first day of January 2010.
  - (5) Other than the siting and household sewage disposal system specifications previously approved by the board of health, the provisions of this chapter shall apply.
- (C) All STS installed or altered, or permitted to be installed or altered, prior to the effective date of these rules shall comply with the rules in effect at the time of installation, alteration, or permit issuance, unless otherwise required by this chapter. An HSTS that has been installed or altered and approved by the Board of Health prior to the effective date of these rules and that is operating or has the capacity to be operable on the effective date of these rules is deemed approved for the purposes of this chapter unless declared to be a public health nuisance by the board of health.

- (D) Unless otherwise specified in this chapter, the persons responsible for compliance with the rules, including but not limited to the siting, design, installation, alteration, operation, monitoring, maintenance, and abandonment of an STS, shall be the property owner and any person performing a related service or activity. Enforcement action may be taken against the property owner and/or any person who performs a related service or activity.
- (E) The board of health is responsible for implementation of this chapter. Implementation shall be accomplished through the coordination of regulatory responsibilities with other appropriate parties, adequate communication and notification to regulated persons, and legal and equitable enforcement.

29-04      **Responsibility for compliance, demonstration of competency, and registration requirements.**

This rule identifies the responsibilities of persons engaging in activities related to the siting, design, installation, alteration, operation, monitoring maintenance, and abandonment of STS. Emphasis is placed on the owner as the primary responsible party in managing the tasks associated with private sector parties acting as agents on behalf of an owner. Regardless of whether the owner, an agent of the owner, or the regulatory authority conducts an identified task or activity, all parties are expected to demonstrate competency in meeting performance requirements. Other rules expand on the tasks and measures of competency associated with these responsibilities. General registration requirements for installers, septage haulers, and service providers are provided in this rule with specific requirements and competency criteria identified in three supplemental rules.

- (A) The property owner is responsible for the proper siting, design, installation, alteration, operation, monitoring, maintenance, and abandonment of an STS. The owner shall comply with all applicable provisions of the law and rules and shall operate the STS in compliance with O&M instructions and any conditions of an operation permit issued by the board of health.
- (B) A site and soil evaluator shall comply with the requirements of rule 29-08 and rule 29-08.1 of this Chapter. A site and soil evaluator shall be capable of properly conducting site and soil investigations and accurately recording required information. Demonstration of competency may include, but is not limited to, certification as a professional soil scientist by the association of Ohio pedologists or ARCPACS.
- (C) A designer shall comply with the requirements of this chapter and all other applicable laws and rules when submitting design plans for an STS, including details on system components, construction, and O&M sufficient for regulatory review and determination of compliance. Design plans shall be completed in accordance with rule 29-09.1 of this Chapter. Designers shall be able to perform the following to demonstrate competency:
  - (1) Estimate and report any expected variations in STS daily design flows and SFOSTS pollutant concentrations and mass loads exceeding residential waste strength.
  - (2) Select appropriate system components capable of meeting performance requirements based on site and soil evaluation information.

- (3) Prepare scaled design plan, profile, and detail drawings depicting STS layout, dimensions, and materials and equipment specifications including construction, and O&M information.
  - (4) Conduct installation oversight as necessary to assure provision of an adequate installer as-built record documenting installation in accordance with approved design plans.
- (D) An installer, septage hauler, or service provider shall comply with the general conditions for registration required in this paragraph and the specific provisions and competency requirements respectively applicable in rule 29-04.1, rule 29-04.2, and rule 29-04.3 of this Chapter.
- (1) An application for registration shall be submitted to the board of health and shall include all information required by the board of health, the registration fee, verification of compliance with the testing provisions of paragraph (D)(2) of this rule and the competency requirements of this chapter, and proof of a Delaware General Health District surety bond as required under paragraph (D)(3) of this rule.
    - (a) A registrant that is a partnership, corporation, or other business association, shall designate one partner, officer, or other responsible full-time employee who shall be the company's representative registrant.
    - (b) Registration is not required of any person who performs labor or services under the direct supervision of a registrant. For the purposes of this rule "direct supervision" means that a registrant instructs and controls the person claimed to be supervised and that the registrant is responsible for the actions of that person and is reasonably available if and when needed, even though such registrant may not be physically present at the site.
  - (2) An installer, septage hauler, or service provider shall comply with testing requirements established by the board of health. If a registration is revoked or suspended in accordance with paragraph (D)(6) of this rule, the registrant designated under paragraph (D)(1)(a) of this rule shall be required to again comply with testing requirements before a registration is reinstated or a new registration is issued by the board of health.
  - (3) An installer, septage hauler or service provider shall obtain a surety bond which provides coverage for all work performed on an STS in the Delaware General Health District, on an original bond agreement form provided by the board of health.
    - (a) The surety bond required for registration shall establish a contractual relationship between the principal, and the surety, and shall be executed by the applicant as principal and a surety company authorized to do business in the state as surety.
    - (b) The surety bond shall be for the benefit of any aggrieved party for damages incurred as a result of a violation of this chapter. For purposes of this rule aggrieved party means the local board of health where work was performed, property owner or the agent of the property owner who contracts with an installer, service provider or septage hauler and

whose STS is not installed, altered, serviced, maintained or abandoned in compliance with the provisions of this chapter.

- (c) The surety bond shall be issued to provide insurance coverage for the calendar year of the registration application for any work performed in Delaware General Health District. The surety bond shall provide that the aggregate liability of the surety for any and all breaches of the conditions of the bond shall in no event exceed the penal sum of the bond for each calendar year for which the bond is issued.
  - (d) If the surety bond for the registration is canceled, the registrant shall immediately submit to the board of health proof of a new surety bond in accordance with the requirements of this rule. The surety company shall give thirty days written notice to the board of health prior to the effective date of cancellation.
  - (e) An installer, service provider, and septage hauler shall maintain a surety bond of not less than twenty-five thousand dollars for each category of registration.
  - (f) Any person who alleges to be an aggrieved party shall give written notification to the surety, the board of health, and the installer, service provider, or septage hauler as applicable within one year of the date of completion of the work on the STS. The board of health may conduct an investigation as necessary to determine if a violation of this chapter has occurred.
- (4) A registration shall not be transferable and shall expire annually on the thirty-first of December.
  - (5) A registrant shall maintain and submit to the board of health such complete and accurate records and information that may be required for determining compliance with the rules.
  - (6) A registrant shall submit and be subject to the compliance and enforcement provisions established in rule 29-16 of this Chapter. When the board of health finds that a registrant is or has engaged in practices in violation of this chapter, the board of health shall provide the registrant with written notification of the alleged violation, indicate if the registration may be revoked or suspended, and afford an opportunity for a hearing if the registrant does not agree to voluntary compliance. The board of health may revoke or suspend a registration when a registrant fails to timely correct violations in compliance with this chapter.

**29-04.1 Installers.**

- (A) In addition to compliance with the general registration requirements in paragraph (D) of rule 29-04 of this Chapter, and as a specific condition of registration, an installer shall demonstrate competency through one of the following mechanisms:

- (1) Achieve and maintain status as an installation qualified (IQ) contractor through the Ohio onsite wastewater association (OOWA), or
- (2) Achieve and maintain status as a certified installer of onsite wastewater treatment systems (CIOWTS) through the national environmental health association (NEHA).
- (3) Achieve completion of at least six continuing education hours per calendar year through educational programs approved by the department of health or the Delaware General Health District.

This condition of installer registration shall be effective from January 1<sup>st</sup> to December 31<sup>st</sup> of the calendar year. Registrants shall provide proof of compliance with this paragraph at the time of initial registration and all subsequent renewals of registration

- (B) A registered installer shall provide proof of compliance with any training, qualification, or certification conditions required for a component or system and shall comply with any installation instructions in accordance with an installation permit issued by the board of health.
- (C) As a condition of an installation permit, a registered installer shall warrant that the STS has been installed in accordance with all applicable rules and design specifications. A registered installer shall prepare an as-built record for each completed installation in accordance with paragraph (C) of rule 29-09.1 of this Chapter.
- (D) In lieu of a design plan, a registered installer may submit a layout plan for an HSTS in accordance with paragraph (A) of rule 29-09.1 of this Chapter and in compliance with rule 29-13.1 or rule 29-13.2 of this Chapter.

#### 29-04.2 **Septage haulers.**

- (A) In addition to compliance with the general registration requirements in paragraph (D) of rule 29-04 of this Chapter, a septage hauler shall demonstrate competency through compliance with the following specific conditions of registration:
  - (1) Certification or continuing education requirements:
    - (a) Achieve and maintain certification as a vacuum truck technician through the national association of wastewater transporters (NAWT) or the Ohio waste hauler association (OWHA).
    - (b) Achieve completion of at least six continuing education hours per calendar year through educational programs approved by the department of health or the Delaware General Health District.

Registrants shall provide evidence of compliance with this paragraph at the time of initial registration and all subsequent renewals of registration.

- (2) Obtain a permit from the board of health for each vehicle used to haul septage, report tank capacity for each vehicle, allow each vehicle and its equipment to be inspected if required by the board of health, and maintain vehicles in compliance with paragraph (B) of this rule.
  - (3) Manage the pumping, hauling, disposal and land application of septage in compliance with all applicable rules and regulations, and provide information to the board of health on the locations and methods of septage disposal and, as applicable, land application in accordance with paragraph (B) of rule 29-16.2 of this Chapter.
  - (4) Provide to the owner a report of the services conducted including the date of service and comply with any additional reporting requirements established by the board of health or required in this rule or rule 29-16.2 of this Chapter.
- (B) Any vehicle and equipment used for septage hauling shall comply with the following:
- (1) The company name and phone number is legibly written on the vehicle in words and numbers no less than four inches in height.
  - (2) All septage hauling equipment is maintained in proper operating condition and managed in a manner that prevents leakage or spills while in operation, transit, or storage.

Violation of these provisions as determined by the board of health may be cause for immediate suspension of a vehicle permit.

#### 29-04.3      **Service providers.**

- (A) In addition to compliance with the general registration requirements in paragraph (D) of rule 29-04 of this Chapter, and as a specific condition of registration, a service provider shall demonstrate competency through one of the following mechanisms:
- (1) Achieve and maintain status as an Ohio waste hauler association (OWHA) qualified service provider, or
  - (2) Achieve and maintain certification in the national association of wastewater transporters (NAWT) O&M or inspector programs.
  - (3) Achieve completion of at least six continuing education hours per calendar year from educational programs approved by the department of health or the Delaware General Health District.

Registrants shall provide evidence of compliance with this paragraph at the time of initial registration and all subsequent renewals of registration.

- (B) A registered service provider shall provide proof of compliance with any training, qualification or certification conditions required by the manufacturer or distributor of a component or system and shall comply with O&M requirements in

accordance with an installation permit or operation permit issued by the board of health. In addition to any such conditions or requirements, a service provider shall:

- (1) Provide manufacturer and/or general O&M information to the owner of the STS as applicable, and to the board of health if required, either in writing or through reference to available resources.
  - (2) Understand the treatment processes, all O&M requirements, and servicing schedule for any STS for which the service provider offers and conducts O&M services.
  - (3) Conduct routine O&M services on schedule and according to requirements.
  - (4) Provide to the owner a report of the services conducted including the date of service and notation of any evidence of clear water infiltration, STS component deterioration, or other problem conditions.
- (C) A registered service provider shall comply with any reporting or records retention requirements established by the board of health as authorized by this chapter.

**29-06 Fees, fee categories, fee transmittal and reporting.**

(A) Fees shall be established and adopted by the Board of Health to cover the cost of operating and maintaining the programs under which this chapter applies. The department of health shall receive the portion of each permit fee for STS installation or replacement as required under paragraph (B) of this rule.

(B) The board of health shall collect a fee outlined by the General Assembly on behalf of the Department of Health and forward the fee to the Department.

**29-07 General provisions and prohibitions.**

These provisions and prohibitions provide an overview of the conditions that impact the use of an STS, establish general criteria for STS performance, limit the use of discharging HSTS, and identify other regulations related to the use of an STS. The purpose of this rule is to encourage preliminary consideration of STS suitability and general regulatory requirements prior to investing in required activities for compliance with other provisions of this chapter.

(A) The siting, design, installation, alteration, operation, monitoring, maintenance, and abandonment of an STS shall comply with this chapter. An STS subject to this chapter shall not be installed or operated without an approved permit from the board of health. Unless connected to a sanitary sewerage system or utilizing an existing STS, a dwelling or structure shall not be occupied or utilized without an approved STS.

- (B) An HSTS shall serve only one dwelling. An SFOSTS may serve multiple dwellings or structures. In the case where two or more dwellings or structures are served by an SFOSTS, the entire SFOSTS shall be owned and operated by one person.
- (C) A STS shall comply with the following performance requirements and prohibitions:
- (1) An STS shall be maintained in proper working condition.
  - (2) An STS shall comply with the conditions specified in an installation and/or operation permit issued by the board of health.
  - (3) No STS or part thereof shall create a public health nuisance or safety hazard nor pollute surface water or ground water.
  - (4) No STS shall discharge to any ditch, stream, pond, lake, natural or artificial waterway, drain tile, other surface water conveyance or to the surface of the ground unless authorized by an NPDES discharge permit pursuant to Chapter 6111. of the Revised Code or otherwise specified in this chapter.
  - (5) No STS shall discharge to an abandoned well, drainage well, a dry well or cesspool, a sink hole or other connection to ground water. If classified as a class V injection well, an HSTS serving a two or three family dwelling or an SFOSTS shall comply with 40 C.F.R. 144 (as published in the July 1, 2005 Code of Federal Regulations) and the registration requirements pursuant to rule 3745-34-13 of the Administrative Code.
  - (6) No STS shall receive water from roof drains, foundation drains, clear water sumps, swimming pools, or other sources that do not convey or generate sewage from the structures served by the STS.
  - (7) No STS shall be permitted for the holding, treatment, or dispersal of industrial waste or storm water for industrial activities. For the purpose of this rule, the normal use of housekeeping products does not constitute industrial waste.
- (D) An STS shall utilize soil absorption as the means for final treatment and/or dispersal, except for the HSTS conditions and limitations described in paragraph (D)(2) of this rule when soil absorption is not feasible as demonstrated through the site and soil evaluation conducted in accordance with rule 29-08 of this Chapter.
- (1) An STS shall not be permitted for use in any new lot or new subdivision when soil absorption is not feasible.
  - (2) When soil absorption is determined to be infeasible by the board of health for a replacement HSTS for an existing dwelling or a new HSTS for an existing lot, a discharging HSTS shall only be permitted by the board of health in compliance with NPDES requirements.
- The board of health shall not permit or otherwise authorize the use of an STS that would violate the conditions of this paragraph.
- (E) STS shall be sited in compliance with this chapter including the following:

- (1) Sufficient suitable area shall be available to accommodate an STS including a designated area for complete relocation and replacement of an STS, the minimum horizontal isolation distances as required in paragraph (E)(3) of this rule, and any additional horizontal isolation distance determined by the board of health as necessary to accommodate lateral flow due to shallow limiting conditions identified in the soil and site evaluation conducted in accordance with rule 29-08 of this Chapter.
  - (2) Sites on which private water systems are to be installed shall be of sufficient area to provide horizontal isolation of the private water system from both the proposed STS and the area intended for any STS relocation or replacement on this or adjacent sites as required in paragraph (E)(3) of this rule and Chapter 3701-28 of the Administrative Code.
  - (3) An STS shall maintain minimum horizontal isolation distances of
    - (a) Ten feet from any utility service line, driveway or other hardscape, property line or right-of-way boundary, and any building or other structure, and
    - (b) Fifty feet from any water supply source, surface water impoundment, lake, river, or perennial stream.
  - (4) A permanent legal easement shall be required for any portion of an STS not sited on the same parcel as the structures or dwelling served by the STS. When an easement is required under this paragraph, an STS installation permit shall not be issued by the board of health until a certified copy of the legally recorded easement is provided.
- (F) STS shall not be sited under the following conditions:
- (1) A HSTS shall not be sited in an area identified as a flood way, nor within any part of the one-hundred year flood plain where prohibited by federal, state, or local regulations or ordinances. An SFOSTS shall comply with the flood plain criteria established by OEPA.
  - (2) An STS shall not impact or be sited within a jurisdictional wetland subject to a U.S. army corp of engineers 404 permit and/or OEPA 401 certification or within an isolated wetlands subject to sections 6111.02 to 6111.029 of the Revised Code.
  - (3) An STS shall not be sited within the sanitary isolation radius of a public water system well as determined in accordance with rule 3745-09-04 of the Administrative Code. An SFOSTS shall have additional design and/or management controls when sited within the inner management zone of a drinking water source protection area determined to be highly susceptible to contamination by the OEPA source water assessment and protection program for a community or non-transient non-community public water system as defined in rule 3745-81-01 of the Administrative Code.
  - (4) An STS shall not be sited under soil and site conditions that prohibit compliance with this chapter. The following are examples of conditions that may be prohibitive or may require additional siting, design or management conditions:

- (a) Exposed bedrock, boulders, stones, gravel, and coarse sand at or above the surface of the ground or underlain within a foot of the ground surface.
  - (b) Slopes in excess of the limits of the design, installation, maintenance or operation of the proposed STS or when there is risk of slippage, slump, or land slide.
  - (c) Filled, reclaimed, or disturbed areas where soil and site conditions may not be adequate to provide treatment and/or dispersal.
- (G) The board of health shall consult with appropriate sewer entity personnel as necessary to determine sanitary sewer accessibility:
- (1) An STS shall not be sited, permitted, or installed where a sanitary sewage system is accessible and has capacity to accept additional flows.
  - (2) An STS shall not be altered, replaced, maintained, operated, or used where a dwelling or structure is accessible to a sanitary sewerage system.
  - (3) Whenever a sanitary sewerage system becomes accessible to a dwelling or structure served by an STS, the dwelling and/or structures shall be connected to the sanitary sewage system and the STS abandoned in accordance with rule 29-17 of this Chapter.
- (H) In the absence of other legal authority governing the access to a sanitary sewage system, the board of health shall determine accessibility and the conditions and schedule for sanitary sewer connection and abandonment of an STS. The board of health may utilize the criteria established in division (C) of section 6117.51 of the Revised Code for an existing HSTS. In the case of an SFOSTS, the board of health shall comply with any criteria established by the OEPA.

**29-08 Site and soil evaluation.**

This rule provides criteria and procedures for site and soil evaluation. Site and soil characteristics must be observed, described, and evaluated and area risk factors considered and identified. This information provides the basis for determining the feasibility of siting an STS and, if feasible, the conditions and limitations for sewage treatment and dispersal to be addressed in a layout plan or design plan.

- (A) The board of health shall conduct a site review for any proposed STS installation to complete, or review the completeness of, the site and soil evaluation information required in this rule. Any person conducting a site and soil evaluation shall assess and record information in accordance with this rule. The board of health shall utilize the site and soil evaluation information to determine the feasibility of siting an STS in compliance with this chapter.
- (B) The site and soil evaluation shall include the assessment and documentation of the following:
  - (1) Designation of the described soil boring and/or excavation locations and the information required in paragraphs (B)(3) and (B)(4) of this rule on the site plan required in rule 29-09.1 of this Chapter or on a preliminary site drawing

adequate to provide the required site and soil evaluation documentation. A scaled site drawing shall at least include:

- (a) The dimensions of the lot or the proposed lot;
  - (b) Any existing dwellings and/or structures and any proposed dwellings and/or structures if known;
  - (c) Any site disturbances, existing driveways and other hardscapes, and proposed hardscapes or related site disturbances if known;
  - (d) Location of all private water systems and surface water features on the lot and within fifty feet of the lot boundary, or within fifty feet of the locations specified in paragraph (B)(3) of this rule; and
  - (e) North orientation arrow.
- (2) Record of site and soil characteristics for each soil boring and/or excavation location designated in paragraph (B)(1) of this rule using USDA NRCS nomenclature on a form prescribed by the board of health, including but not limited to:
- (a) Site descriptions: landscape position, slope, vegetation, drainage features, rock outcrops, erosion and other natural features;
  - (b) Detailed soil profile descriptions: color, texture, structure, consistence, and the depth of each soil horizon or layer and characterization of all limiting conditions; and
  - (c) Documentation of any relevant surface hydrology, geologic and hydrogeologic risk factors for the specific site or in the surrounding area that may indicate vulnerability for surface water and ground water contamination.
- (3) Drawings and dimensions on the site plan or site drawing of at least two locations on the site that have been evaluated and determined to have the capacity for the treatment and/or dispersal of sewage from the proposed dwelling or structures including adequate length parallel to the land contour to accommodate the soil and linear loading rates for the conditions recorded.
- (4) Identification on the site plan or site drawing of the area for which each soil profile description is representative and designation of any areas with conditions that would prohibit or impact the siting of an STS in accordance with this chapter.
- (C) An installation permit for an STS shall not be approved by the board of health in the absence of an evaluation conducted in accordance with this rule:
- (1) The board of health shall assure that a site and soil evaluation is conducted in accordance with this rule and shall:
    - (a) Determine compliance with soil absorption requirements in paragraph (D) of rule 29-07 of this Chapter, and

- (b) Consider area risk factors related to the subdivision and lot review requirements in rule 29-08.1 of this Chapter and permitting requirements in rule 29-09 of this Chapter, including risks of pathogen or nutrient contamination to surface or ground water.
- (2) The board of health may only waive the requirements of paragraphs (B)(2) and (B)(3) of this rule when soil treatment and/or dispersal is not feasible for an HSTS replacement for an existing dwelling due to the absence of adequate area for sizing the HSTS.

**29-08.1 Subdivisions and new lots.**

This rule addresses the critical prerequisite activities of assessing sewer accessibility, STS feasibility, and any area risk factors prior to the recording of a lot or subdivision. Informing property owners, land developers, and prospective buyers of the provisions of this rule, and effective implementation of these provisions, allows for a proactive versus reactive approach to proposed STS development and should prevent future problems when siting an STS. This rule is not intended to serve as a substitute for planning, zoning, sanitary sewerage, or land use responsibilities exercised by other authorities.

- (A) The board of health review required in paragraph (D) of this rule shall be coordinated, as applicable, with authorities having responsibility for the requirements established in Chapter 711. of the Revised Code, zoning, recording of parcels of land, or other land use authorities. Regarding sanitary sewerage accessibility, the board of health shall consult with appropriate sewer entity personnel such as a municipal or county sanitary engineer to confirm sewer accessibility and plans for sewer extensions by a municipality, sanitary district, regional water and sewer district, or other management entity or wastewater planning authority responsible for sanitary sewerage..
- (B) An STS shall not be sited, installed, or permitted for a proposed new lot or subdivision when any of the following conditions have been met:
  - (1) A proposed lot or subdivision is accessible to a sanitary sewerage system in accordance with criteria established by the OEPA.
  - (2) Siting an STS on any proposed new lot or subdivision lot would violate the prohibitions in paragraph (F) of rule 29-07 of this Chapter.
  - (3) A proposed STS would require an NPDES permit.
  - (4) Other conditions which would prohibit compliance with this chapter.
- (C) Any person proposing a subdivision or new lot or lots for review by the board of health shall submit sufficient information to determine compliance with the requirements of this chapter. Minimum information to be submitted for review includes the following:
  - (1) A statement indicating that siting STS on the proposed lot, lots, or subdivision would not violate the prohibitions in paragraph (B) of this rule.
  - (2) For a proposed subdivision having greater than twenty-five lots, or for any fewer numbers of lots as required by the board of health to identify risks to

surface and ground water resources, the evidence of compliance with paragraph (B)(1) of this rule shall include written documentation from OEPA.

- (3) The acreage of each proposed lot and the total land area of a proposed subdivision.
  - (4) Scaled drawing showing proposed lot lines with detail on site conditions including vegetation, approximate slopes, and drainage features. For new lot or subdivision proposals having more than five lots, or for a fewer number when required by the board of health, the scaled drawing shall also include topographic detail with contour lines sufficient to determine slope and adequate length along the contour in the areas considered suitable for STS.
  - (5) All site and soil evaluation information required in paragraph (B) of rule 29-08 of this Chapter. For the purposes of this rule, the board of health may accept or require an order one soil survey of sufficient detail to provide the soil profile information required in paragraph (B)(2)(b) of 29-08 of this Chapter. An order one soil survey shall be prepared by a professional soil scientist certified by the association of Ohio pedologists or ARCPACS.
- (D) Proposed subdivisions and new lots shall be reviewed by the board of health to determine if there are any restrictions on the use of STS. The board of health shall review readily available resources including but not limited to source water assessment reports for public water systems and ground water pollution potential maps to assess risks to surface and ground water from proposed onsite sewage treatment and may consult with the OEPA for advice on any water quality concerns. For subdivisions proposed in environmentally sensitive areas or of any density or number determined to present increased risk to surface or ground water resources, the board of health may require a responsible management entity.
- (1) For the purposes of this rule, the board of health shall provide written documentation to the person proposing a subdivision or new lot or lots of noncompliance with this chapter if the information submitted is incomplete, inaccurate, or the board of health makes a determination that the provisions of this chapter cannot be met. Upon acceptance of a complete submittal, the board of health shall make a determination within forty-five calendar days.
  - (2) When the board of health determines that the provisions of this chapter can be met, the board of health shall provide written documentation of compliance to the person proposing a subdivision or new lot or lots subject to STS installation permit approval by the board of health. The written documentation of compliance with this chapter and the board of health review required by this rule shall not preclude the denial of an installation permit pursuant to rule 29-09 of this Chapter if conditions change.

**29-09 Permits for installation, alteration, and operation.**

This rule includes the provisions for site review, issuing a permit, and determining compliance with the conditions of a permit. Given the limitations on the permitting of a discharging STS for a new home, owners and builders are strongly encouraged to obtain an approved site review application prior to the start of construction to assure that a soil absorption STS can be sited. Permits for installation and operation

provide a mechanism for regulatory oversight of the siting, design, installation, alteration, operation, monitoring, maintenance, and abandonment of an STS.

- (A) The board of health shall require a site review application for any proposed installation of a new or replacement STS. No person intending to install a new STS or replace an existing STS shall be issued an installation permit without the board of health first approving a site review application.
  - (1) A site review application shall include the application fee and all information required by the board of health, including the following as applicable:
    - (a) The completed site and soil evaluation as required in rule 29-08 of this Chapter and the design plan or layout plan required in rule 29-09.1 of this Chapter, or
    - (b) A scaled site drawing as required in paragraph (B)(1) of rule 29-08 of this Chapter in the case where the board of health will conduct the soil and site evaluation in accordance with rule 29-08 of this Chapter but will not provide a design plan. In this case the design plan or layout plan shall not be prepared for board of health review until the board of health has conducted the site and soil evaluation and has provided to the applicant the resulting site and soil evaluation documentation.
  - (2) A site review application for an STS alteration may be required by the board of health, and when required, shall contain all pertinent information and the application fee required by the board of health. In the case where an alteration involves the expansion of a soil absorption component, the board of health shall determine when a site and soil evaluation shall be conducted or required in compliance with rule 29-08 of this Chapter.
  - (3) The board of health shall review the application information to determine whether the proposed design plan or layout plan, or proposed STS alteration as applicable, is in compliance with this chapter. When the board of health determines that a proposed STS is subject to the NPDES or UIC requirements of paragraphs (C)(4) and (C)(5) of rule 29-07 of this Chapter, the board of health shall assure compliance with NPDES or UIC requirements prior to issuing a permit in accordance with paragraph (B) of this rule.
  - (4) The board of health shall deny a site review application if the application information is incomplete or inaccurate or if the application information, site review by the board of health, or site and soil evaluation indicates that the provisions of this chapter cannot be met.
  - (5) The board of health shall approve a site review application when the information, site review by the board of health, and site and soil evaluation demonstrate that the provisions of this chapter can be met. An approved site review application shall be valid for one year from the date of approval.
- (B) No person shall install or replace an STS without an approved and valid installation permit issued by the board of health. No person shall alter an STS without an approved and valid alteration permit issued by the board of health. The installation, replacement, or alteration of an STS shall only be conducted by an installer registered in compliance with rule 29-04.1 of this Chapter except in the case of a homeowner who may install, replace, or alter an HSTS for a single family dwelling that will serve or serves as the homeowner's primary permanent

residence when competency is demonstrated through compliance with the testing requirements of paragraph (D)(2) of rule 29-04 of this Chapter. The Board of Health of the Delaware General Health District shall consider the economic impact and review alternative systems with the applicant prior to issuance of a permit to install.

- (1) An installation permit, or alteration permit as applicable, shall not be issued by a board of health without an approved and valid site review application as required in paragraph (A) of this rule. The board of health may deny the approval of an installation or alteration permit if there are changes to site conditions or the site review application information and may require re-application including a fee to reapply.
  - (2) The board of health may specify terms and conditions of an installation or alteration permit governing the siting, design, installation, alteration, operation, monitoring, maintenance, or abandonment of the STS.
  - (3) An approved installation permit or alteration permit issued by the board of health shall be valid for one year from the date of issuance or until the installation or alteration is completed and approved by the board of health within the one year period. The board of health may extend the permit period for an additional six months for permits issued pursuant to this rule.
  - (4) An approved installation or alteration permit may be revoked by the board of health prior to its expiration if a change in site conditions, the quality of the installation or alteration work, or other circumstances arise that may prevent compliance with this chapter.
  - (5) The board of health shall inspect a completed installation or alteration. The as-built record, any applicable system start-up information, or other documentation required in rule 29-09.1 of this Chapter shall be available at the time of inspection. The board of health may require advance notification from the registered installer or the designer of the STS to accommodate inspections during the progress of the installation or alteration.
  - (6) The board of health shall approve an installation or alteration upon the satisfactory completion of all work and documentation required by this chapter and the terms and conditions of the permit.
- (C) No person shall operate an STS without an approved and valid operation permit from the board of health.
- (1) An operation permit shall be in effect upon board of health approval of an installation, a replacement, or an alteration of an STS. The responsible party, whether it is the STS owner, a responsible management entity recognized by the board of health, or both, shall be subject to the terms and conditions of an operation permit.
  - (2) The board of health shall specify any operation permit fees and the terms and conditions of the operation permit consistent with this chapter governing the operation, monitoring, maintenance, and abandonment of the STS. The board of health shall require an STS service contract as a condition of an operation permit in accordance with this chapter and the requirements of paragraph (C)(5) of this rule.

- (3) A board of health shall inspect an STS not later than twelve months after its installation to ensure that the system is not a public health nuisance.
- (4) An operation permit may be renewed, suspended, or revoked by the board of health subject to the requirements of this chapter, the terms and conditions of the permit, and the O&M management provisions established by the board of health in accordance with rule 29-16.1 of this Chapter. An operation permit shall be valid until it expires or is suspended or revoked by the board of health. An operation permit is subject to suspension or revocation conditional upon the responsible party's or parties' compliance with this chapter and the terms and conditions of the permit.
- (5) An operation permit shall require a service contract for an STS under the following conditions and as otherwise required by the board of health:
  - (a) Any HSTS subject to an NPDES permit.
  - (b) Any STS with a pretreatment component subject to paragraph (G) of rule 29-12 of this Chapter.
  - (c) Any STS with a soil absorption component subject to paragraphs (C)(3) and (D)(2) of rule 29-13 of this Chapter.
  - (d) When required as a condition of an STS component or system approval granted by the director of health in accordance with paragraph (C) of rule 29-18 of this Chapter.

#### 29-09.1 **Layout plans, design plans and as-built records.**

This supplemental rule provides detail on layout plan and design plan options for new and replacement installations. To prevent avoidable problems during installation, a layout plan or a design plan is included with the site review application to assure proper STS siting in advance of a permit being issued. This rule also provides the requirements for the as-built record to be completed by a registered installer to document that an STS has been installed in accordance with all applicable rules and plan requirements. The intent of this rule is to assure adequate information and documentation for site review application and permit approval and to assure installation in accordance with applicable rules and approved plans to promote long term STS operation.

- (A) A registered installer may submit a layout plan in compliance with rule 29-13.1 or rule 29-13.2 of this Chapter. A layout plan may substitute for the design plan required in paragraph (B) of this rule when the proposed HSTS does not utilize a soil depth credit for pathogen reduction. A layout plan shall include:
  - (1) A site plan drawn to scale on eight and a half inch by eleven inch or larger paper showing HSTS layout elevations corresponding to flagged or staked locations at the site. The designated HSTS area shall be protected from disturbance. The site plan shall also verify horizontal isolation distances and include the designated area for complete relocation and replacement of the HSTS as required in paragraph (E) of rule 29-07 of this Chapter.
  - (2) Written details on the daily design flow, selected loading rates based on the site and soil evaluation, system configuration with absorption area

dimensions, and, if applicable, pump selection information and pressure distribution network description and calculations.

- (3) Product information and written description of materials and system components including size of all tanks and distribution component materials including mechanical distribution and diversion mechanisms.
  - (4) Manufacturer O&M requirements or instructions for components not addressed in general O&M information available through the board of health or the department of health.
  - (5) Any additional information requested by the board of health related to components, materials, and installation or O&M specifications.
- (B) A design plan in compliance with this paragraph shall be required unless a layout plan is provided by a registered installer in compliance with paragraph (A) of this rule. A design plan shall be legible, readable, and of sufficient detail to demonstrate compliance with the provisions of this chapter. A design plan shall include:
- (1) Documentation of the rationale for design decisions used to address site and soil limitations including justification for selected loading rates and the use of any soil depth credits. The site and soil evaluation shall be available with the design plan.
  - (2) Description of the dwelling and/or structures to be served by the STS with a designated daily design flow including any anticipated variations. The STS shall be designed to handle peak daily design flows or the design shall include flow equalization with designated reserve and surge capacity and timed dosing in compliance with rule 29-11 of this Chapter.
  - (3) Description of the treatment processes used to meet performance requirements including information necessary to confirm compliance with any applicable NPDES effluent quality standards or applicable standards established in rule 29-12 of this Chapter. In addition, if applicable, documentation of pollutant concentrations and mass loading in excess of residential waste strength, including the design for treatment to reduce higher strength wastewater to typical residential waste strength prior to distribution to a soil absorption component.
  - (4) Plan notes designating that the STS area shall be protected from disturbance, and additional plans notes as needed to explain any siting, installation, or O&M requirements or restrictions, including any preconstruction meetings at the site, conditions on the selection of an installer, STS start-up procedures or other designer-designated conditions.
  - (5) A site plan, drawn to a scale of one inch equals fifty feet or less, sufficient to demonstrate compliance with this chapter including but not limited to:
    - (a) North directional arrow.
    - (b) Identified vertical and horizontal reference point or benchmark with its location clearly marked at the site.
    - (c) Designation of the described soil boring and/or excavation locations from the soil and site evaluation.

- (d) Outline of existing and proposed structures, driveways and other hardscapes, and other related items on the property.
  - (e) Location of STS components and a replacement area.
  - (f) The dimensions of the property with horizontal isolation distances to the STS and replacement area from the items designated in paragraph (E) of rule 29-07 of this Chapter, including but not limited to private water systems and surface water features.
  - (g) Topography for the areas of the dwelling and/or structures to be served and the proposed STS and designated replacement areas including an indication of drainage features in these and surrounding areas.
  - (h) Designation of any easements, disturbed areas, or wooded areas within fifty feet of the proposed STS and replacement area, or other site characteristics or obstructions that may affect the installation or operation of the STS.
  - (i) Means of access for O&M equipment to service the STS.
- (6) Enlarged plan view drawings of the STS components if the site plan scale does not allow for sufficient detail.
  - (7) Profile drawing showing elevations relative to surface grade sufficient to demonstrate compliance with this chapter including the invert elevations necessary to assess the hydraulic profile of STS components and any gravity or pumped discharge outlet elevations.
  - (8) Plan and section views for the STS components and/or attachments of component and material specification information.
  - (9) Installation and O&M instructions.
  - (10) Plan note requiring that the STS installer consult with the designer regarding any intended changes to the plan and requiring installer/designer coordination on the provision of an accurate as-built record.
- (C) An as-built record shall be required to be completed by the registered installer for a completed STS installation or alteration as a condition of the installation or alteration permit and as a condition of registration in accordance with rule 29-04.1 of this Chapter. The as-built record does not substitute for a layout plan or design plan required in accordance with this rule. A designer shall provide oversight as necessary to assure that the registered installer prepares an as-built record documenting installation in accordance with a design plan prepared in accordance with paragraph (B) of this rule. An as-built record shall include:
- (1) A legible record on eight and a half inch by eleven inch or larger pages with copies provided to the owner and the board of health for inclusion in the permit file. Use of layout plan or design plan documents or as-built template forms may be acceptable.
  - (2) Any changes to the approved design plan or layout plan including distances from installed STS components to any items having applicable horizontal isolation distances. A change in location of an STS from that designated on

a layout or design plan shall not be made without prior approval by the board of health and shall not violate horizontal isolation distances required by this chapter.

- (3) A designated vertical and horizontal reference point or benchmark with its location marked at the site.
  - (4) Plan view drawing with elevations for installed STS components per the design plan or layout plan.
  - (5) Profile drawings with pipe and component elevations to confirm depths for hydraulic flow, freeze protection, and other related installation functions.
  - (6) Any additional information for components and materials may be required by the board of health including but not limited to manufacturer or supplier provision of component installation or O&M instructions and verification of compliance with any start-up procedures or aggregate specifications.
  - (7) The as-built record shall include a statement by the registered installer, and the designer as applicable in accordance with paragraph (B)(10) of this rule, indicating that the STS was installed in accordance with all applicable rules and plan specifications.
- (D) A registered installer completing an as-built record in compliance with this rule or requesting a board of health inspection required in accordance with paragraph (B)(5) of rule 29-09 of this Chapter shall avoid delays that could result in damage to STS components and affect the STS operational performance.

**29-10 Sewage source, building sewer, and related fixtures.**

This rule addresses the flow and waste strength characteristics that will vary depending on the source of the sewage to be treated by an STS. Also considered in this rule are other conditions that may impact waste strength and flows to a building sewer. All such conditions need to be identified and understood prior to considering the design of an STS.

- (A) The owner or owner's agent shall provide information on the sources of sewage from the dwelling or structures to be served by an STS for the board of health determination of compliance with this rule. The board of health may require submission of building and plumbing plans including plumbing fixture details and other information as needed.
- (B) The daily design flow estimate for an STS shall comply with the following general provisions unless otherwise specified in this chapter:
  - (1) Except as provided in paragraphs (B)(3) and (B)(4) of this rule, the daily design flow for an HSTS shall be a peak flow of one hundred twenty gallons per day per bedroom.
  - (2) The daily design flow for an SFOSTS shall be determined in accordance with the design flow table established by OEPA. For an SFOSTS with periodic large daily flows that are stored to avoid exceeding the one thousand gallon per day treatment limit, the peak daily design flow shall be greater than the average of the daily flows and no actual daily flow shall exceed three thousand five hundred gallons.

- (3) An increase in the daily design flow estimate for an STS shall be required by the board of health when there is an indication that the flows established in accordance with paragraph (B)(1) or (B)(2) of this rule will be exceeded. Any required increase in daily design flow shall be documented on the installation permit and operation permit.
  - (4) A reduction in daily design flow may be approved by the board of health when the information submitted indicates conditions that justify reduced flow such as limited fixtures, waterless toilets, in-house graywater recycling, or other circumstances that may warrant a reduction in daily design flow. Justification for a proposed reduction in daily design flow shall be included in the site review application and, if approved, shall be documented on the installation permit and operation permit.
- (C) The waste strength estimate for an STS shall be determined for design purposes in accordance with the following general provisions unless otherwise specified in this chapter:
- (1) Sewage generated by a dwelling served by an HSTS shall be judged to be typical residential sewage following primary treatment when the total suspended solids (TSS) content is not expected to exceed one hundred and fifty milligrams per liter (mg/L), the five-day biochemical oxygen demand (BOD<sub>5</sub>) is not expected to exceed two hundred and fifty milligrams per liter (mg/L), or the contents of fats, oils, and greases (FOG) is not expected to exceed twenty five milligrams per liter (mg/L). Consideration shall be given to eliminating the use of garbage disposals in kitchen sinks to assist in maintaining residential waste strength below these maximum levels and to reduce residuals and the frequency of septage removal.
  - (2) Any waste prohibited by UIC regulations for introduction into an SFOSTS shall be source separated and regulated by OEPA.
  - (3) When the waste strength for an STS is expected to exceed or has exceeded the typical residential waste strength described in paragraph (C)(1) of this rule:
    - (a) The design plan shall include loading calculations using values in accordance with the loading table established by OEPA. Any variation from the loading table values shall be justified in the design plan including waste strength characterization information. Board of health approval for any reduction or increase in loading estimates shall be documented on the installation permit and operation permit.
    - (b) Additional pretreatment shall be provided to assure that the STS soil absorption component receives a waste strength within the range of typical residential sewage. The method of pretreatment to reduce waste strength shall be justified in the design plan, reviewed by the board of health for compliance with this chapter, and, if approved, shall be documented on the installation permit and operation permit.
    - (c) When an external grease interceptor is a component of the proposed pretreatment to reduce waste strength, the external grease interceptor shall be located, designed, and installed in a manner that will allow access for inspection and maintenance, including the following:

- (i) A source segregated inlet line, when feasible;
  - (ii) Sized to account for flow volume and temperature; and
  - (iii) Watertight access risers extended to grade with secure covers.
- (D) Building sewers shall carry all sewage flow from the dwelling or structure, including graywater or other segregated sewage, and shall be connected to an STS in compliance with this chapter. Building sewers shall comply with the following:
- (1) The elevation of a building sewer shall be aligned to accommodate the plan elevations of the subsequent STS components and shall be properly bedded in native soil or sand at a uniform grade of not less than one per cent or one eighth of an inch per foot.
  - (2) A building sewer shall be a minimum of ten feet from any household water supply source and water service line, unless otherwise specified in applicable state or local regulations.
  - (3) A building sewer shall be watertight, have a minimum diameter of four inches and be constructed of durable material conforming to ASTM D 2661 for ABS plastic pipe or ASTM D 2665 for PVC plastic pipe (type DWV) or equivalent. Pipe, fittings, and joining materials shall be chemically and physically compatible.
  - (4) Cleanouts shall be required in a building sewer at any turn in the pipe greater than forty-five degrees and at the point a building sewer pipe exceeds one hundred feet and at every one hundred feet interval thereafter.
  - (5) A building sewer shall allow for proper venting of STS components. Traps shall not be installed in a building sewer.
  - (6) Casing or other form of protection shall be provided for any portion of a building sewer located in areas of vehicle traffic or when the building sewer is subject to other loads that may cause damage.

**29-11 Tanks, pumps, and controls.**

This rule addresses the STS components of tanks, pumps, and controls, including dosing provisions and electrical requirements. The purpose of the rule is to assure that tanks are watertight and structurally sound with adequate capacity, and to assure that tanks, pumps, and controls are selected, installed and maintained to meet intended performance over time.

- (A) Tanks subject to this chapter shall be manufactured to be watertight and structurally sound including septic tanks, other treatment component tanks, dosing tanks, pump vaults, HSTS holding tanks and privy vaults, or other applicable STS components.
- (1) The board of health may require watertight testing of any STS component and accept certifications granted by the Ohio Department of Health or an independent lab.
  - (2) Tank connections shall comply with the following specifications:

- (a) Joint connections shall be watertight. Any joint sealants for concrete riser connections and tank seams shall be of a butyl rubber blend meeting material, manufacture, and physical requirements specifications of ASTM C 990.
  - (b) Inlet and outlet pipe connections to a tank shall be watertight. Connectors shall be provided by the tank manufacturer and shall meet material and manufacture specifications of ASTM C 923.
  - (3) The board of health may request Ohio Department of Health or an independent lab for verification that any STS component is structurally sound.
- (B) Septic tanks used in an STS shall be labeled with the manufacturer's name and the tank capacity on the top of each septic tank and shall comply with the following requirements and specifications:
- (1) Minimum liquid capacities:
    - (a) One to two bedrooms – one thousand gallons
    - (b) Three bedrooms – one thousand five hundred gallons in two tanks or compartments
    - (c) Four to five bedrooms – two thousand gallons in two tanks or compartments
    - (d) Six or more bedrooms – one thousand gallons plus an additional 250 gallons for each bedroom in two tanks or compartments
    - (e) SFOSTS – one thousand gallons minimum in two tanks or compartments with at least two and half times the daily design flow

In two compartment tanks, the first compartment shall not be less than one half or more than two-thirds of the total capacity of the septic tank and the transfer port in the center wall shall ensure transfer of liquid from the clear zone only. When using two tanks, the septic tanks shall be connected in series, and if differing in size, the first tank in the series shall be the larger of the two.

- (2) The invert level of the inlet shall be not less than two inches above the liquid level of the tank. A vented inlet baffle or tee shall be fitted by the tank manufacturer to divert the incoming sewage downward and shall penetrate at least six inches below the liquid level but shall not be greater than that for the outlet device.
- (3) Unless otherwise specified in this chapter, the outlet shall be fitted by the tank manufacturer with a vented tee or baffle that shall extend not less than six inches above and not less than eighteen inches below the liquid level of the tank, and shall include an effluent filter device that retains solids greater than one sixteenth of an inch in size.
- (4) The septic tank shall have a liquid drawing depth of not less than four feet and the air gap between the liquid level and internal surface of the top of

the tank shall be at least nine inches. An alternative means of compliance with this paragraph includes an air gap of at least fifteen percent of the liquid capacity by volume with the outlet baffle depth required in paragraph (C)(3) of this rule adjusted as needed to access the middle of the clear zone.

- (5) The septic tank access openings shall be located above the inlet and outlet of the tank and shall allow adequate space for pumping of the tank and inspection and maintenance. An access opening and cover shall be provided above the compartment wall in a two compartment tank unless the transfer port in the center wall is a pass through opening that allows a shared liquid level in both compartments. The cover or riser lid shall weigh a minimum of sixty-five pounds or be secured against unauthorized access.
  - (6) The tank shall be installed with a minimum of two watertight risers extended to grade or above grade to provide access to the inlet and outlet of the tank. The connection of the riser to the tank and the connection of additional riser sections shall incorporate joint grooves or adapters to prevent lateral movement of the riser. Riser lids shall prevent infiltration of water and have secured covers.
  - (7) The septic tank shall be installed, bedded, and backfilled in accordance with manufacturer specifications to assure the structural integrity of the tank. The tank shall be level. To allow for ease of access, the septic tank shall be installed no deeper than two feet below grade unless the terms of the installation permit allow for greater septic tank depth and the tank is designed to withstand the additional load.
- (C) Dosing tanks shall be designed and manufactured in accordance with the following:
- (1) Dosing tanks shall be easily accessible and have secured covers. All connections shall comply with applicable specifications under paragraphs (A)(2)(a) and (A)(2)(b) of this rule.
  - (2) Dosing tanks shall be selected to accommodate the volume below maximum drawdown, the maximum design dose including any drainback, and the design portion of the reserve and surge capacities as applicable. The STS design shall provide a reserve capacity for high water alarm events that is not less than the daily design flow. If time dosed, the STS design shall accommodate combined reserve and surge capacities of not less than one hundred and fifty per cent of the daily design flow.
  - (3) A septic tank second compartment or a second septic tank in series may be used for low volume dosing if all conditions under paragraph (C)(2) of this rule are met and a filtered step system or screened vault is used in lieu of, or in addition to, the effluent filter device required under paragraph (B)(3) of this rule.
- (D) Pumps shall meet the following specifications:
- (1) A pump shall be rated for effluent service by the manufacturer and be a UL or CSA listed product.
  - (2) The pump shall be properly sized to meet the design flow rate and total dynamic head requirements specified for the STS.

- (3) A quick disconnect shall be accessible in the pump discharge piping, with adequate lift attachments provided for removal and replacement of the pump and water level control assembly without having to either enter the dosing tank or pump the tank to lower the liquid level.
- (E) A dosing siphon may only be used if the STS design requirements, including the design flow rate, dose capacity, and any pressure distribution parameters, can be met and maintained.
- (F) Switches, controls, alarms, and electrical components shall be UL or CSA listed products, shall be installed in a manner easily accessible for routine monitoring and maintenance, and shall comply with the following:
  - (1) Switches and controls shall accommodate the minimum and maximum dose capacities of the specified distribution component.
  - (2) An elapsed time meter, counter, and/or flow meter shall be included in those STS having any dosing component. Time dosed STS shall include flow meters, counters, and control panels with programmable timers, manual pump operation, test features, and as applicable, adjustable override settings for high water alarm conditions.
  - (3) Controls shall have both audible and visual alarms. Alarms, controls, motors, and pumps shall be on a separate dedicated circuit. The board of health may require that the alarm be located in close proximity to the dwelling or structure when the STS location is remote.
  - (4) Control panels and alarms shall be mounted in an easily accessible exterior location, shall be field-tested to assure compliance with the STS specifications, and shall include written instructions related to standard operation and alarm events.
- (G) The designer and/or installer shall assure that all electrical wiring meets the national electric code.
- (H) STS components described in this rule shall be installed, operated and maintained as specified by the manufacturer or the approved plan.

29-12      **Effluent quality standards and pretreatment provisions.**

Effluent quality standards are established through various means including NPDES permit requirements, provisions in this rule, and under risk conditions that may warrant nutrient reduction. This rule addresses secondary or higher quality effluent from a pretreatment component. The provisions of this rule relate to the pretreatment component approval process and the selection of pretreatment components in compliance with effluent quality standards established in this rule or NPDES permit requirements when applicable.

- (A) The following effluent quality standards are performance standards applied in advance of effluent distribution to a soil absorption component, excluding effluent generated from a septic tank or other means of primary treatment. Pretreatment components approved in compliance with this rule are deemed to comply as applicable for effluent quality standards in this paragraph and are not subject to routine sampling for performance monitoring.

- (1) BOD<sub>5</sub>/TSS standard – Compliance with this standard requires that effluent meet the thirty-day average of less than thirty milligrams per liter (mg/L) for five-day biochemical oxygen demand (BOD<sub>5</sub>) and total suspended solids (TSS) to utilize STS sizing criteria addressed in paragraph (E)(1)(a) of rule 29-13 of this Chapter.
- (2) Fecal coliform standards – Compliance with the pathogen reduction standards listed below requires that effluent meet the thirty-day geometric mean of the standard to utilize the soil depth credits or other applicable provisions of rule 29-13 of this Chapter.
  - (a) less than or equal to ten thousand colonies/one hundred mL allows for a one foot soil depth credit
  - (b) less than or equal to one thousand colonies/one hundred mL allows for a two foot soil depth credit
  - (c) less than or equal to two hundred colonies/100 mL required for restricted surface application
  - (d) less than or equal to twenty colonies/one hundred mL required for unrestricted surface application

Alternate E.coli standards may also be used to determine compliance if approved by the director of health.

- (3) Nutrient standards – Nutrient reduction standards for pretreatment components shall be established when there is a significant risk of nutrient contamination to surface or ground water due to risk factors identified in the site evaluation or risk due to proximity to local, state, or federally recognized nutrient sensitive environments.
- (B) Pretreatment components shall be designed to have effluent sampling capability at the endpoint of the treatment process prior to dispersal or discharge. In addition, pretreatment components combining separate treatment and disinfection units shall provide effluent sampling capability between the treatment and disinfection units. Disinfection units shall not discharge disinfection residuals to a soil absorption component.
  - (C) Covers shall be secured and be easily accessible for monitoring and maintenance of the entire pretreatment component.
  - (D) Pretreatment components that are housed in a septic tank second compartment or a second septic tank in series shall assure that the pretreatment component design, or the STS design which includes the pretreatment component, prevents passage of solids greater than one sixteenth of an inch in size.
  - (E) Installation shall be conducted in a manner consistent with manufacturer or designer specifications to allow for proper O&M and monitoring of the pretreatment component. All pretreatment components shall have written O&M instructions with time lines for service and the registered installer shall provide the O&M instructions to both the owner and the board of health as a condition of installation approval.

- (F) STS pretreatment components shall be operated, maintained, and monitored as necessary to assure compliance with any applicable effluent quality standards established in this rule or the final effluent limitations set forth in a valid NPDES permit for HSTS. Sampling of NPDES discharges shall be performed in accordance with the NPDES permit monitoring requirements.
- (G) To assure that a pretreatment component is operated and maintained in accordance with O&M instructions for the life of the component, as a condition of the operation permit required in paragraph (C) of rule 29-09 of this Chapter, the board of health shall require the STS owner to obtain and maintain a service contract for any pretreatment component or components permitted for BOD<sub>5</sub>-/TSS sizing reduction, pathogen reduction soil depth credit, nutrient reduction, or NPDES compliance.

### 29-13      **Soil absorption provisions**

This rule addresses technical standards for the siting and design of a soil absorption component. The rule assigns vertical separation distances to allow for treatment in the soil profile and provides options for sites where adequate depth of suitable soil is not available. This rule applies to all STS soil absorption components and includes provisions for applying soil depth credits, determining loading rates, and general design and installation requirements. The three supplemental rules for leach lines, mounds, and drip distribution do not substitute for the provisions in this rule nor do they preclude the use of any soil absorption component that may be designed to comply with this rule.

- (A) Soil absorption components shall maintain a vertical separation distance of at least two feet to any limiting condition with the exception of bedrock, rock, other rock fragments, and dense glacial till which require at least three feet of vertical separation distance. The vertical separation distance is the depth from the infiltrative surface of the distribution system of the soil absorption component to a limiting condition.
- (B) A minimum of six inches of in situ soil shall be present on site in order for a STS to be permitted. A minimum vertical separation distance of one foot of in situ soil shall be maintained for all leaching trench systems. When maintaining a one foot vertical separation distance from the seasonal high water table for mound and drip systems, the one foot of separation may be one foot of in situ soil or a combination of no less than six inches of in situ soil with the balance of the twelve inches being sand fill. A minimum vertical separation distance of one foot of in situ soil shall be maintained from bedrock, rock, rock fragments and dense glacial till for all on-site STS. A vertical separation distance established in paragraph (A) of this rule may be reduced through the use of soil depth credits as specified in paragraph (C) of this rule. The area of the suitable in situ soil to be used for the soil absorption component shall be free of any limiting conditions within the horizontal and vertical distances designated for treatment and dispersal. Sites with a seasonal high water table of less than 6 inches shall not be permitted for a STS.
- (C) Soil depth credits for infiltrative surface elevation, pretreatment pathogen reduction and/or timed micro-dosed distribution shall be available as follows and in accordance with this chapter. A one foot credit may be applied for those limiting conditions requiring a two foot vertical separation distance. For

bedrock, rock, rock fragments, and dense glacial till requiring a three foot vertical separation distance, soil depth credits may be used individually or in combinations not to exceed a maximum of two feet of credit:

- (1) A one-to-one equivalency soil depth credit shall apply to soil absorption components that elevate the infiltrative surface of the distribution system to achieve vertical separation distance. Sand fill material in an elevated soil absorption component such as a mound system shall comply with applicable design specifications including the preparation of the sand soil interface and sand placement requirements. The loading rate for the sand fill material shall not exceed 1.0 gpd/ft<sup>2</sup>. Concrete sand meeting ASTM C 33 for fine aggregate may be used provided the material meets the following specifications:
    - (a) An effective size in the range of 0.15 to 0.30 mm;
    - (b) A uniformity coefficient in the range of four to six;
    - (c) No more than twenty per cent by weight is gravel greater than two mm; and
    - (d) No more than five per cent by weight is silt and clay less than 0.053 mm.
  - (2) Soil depth credits shall apply for pathogen reduction as specified for effluent meeting the fecal coliform standards and pretreatment component requirements of rule 29-12 of this Chapter.
  - (3) A soil depth credit of one foot shall apply when distribution to the soil absorption area provides for timed micro-dosing controlled at each point of application not to exceed one quarter gallon per dose and one gallon per four square feet of infiltrative area for each point of application per day. A soil absorption component in compliance with the requirements of rule 29-13.3 of this Chapter shall be eligible for this soil depth credit when the provisions of this paragraph are met.
- (D) The following requirements for effluent distribution to the soil absorption component shall be met, as applicable:
- (1) Gravity distribution of effluent to a leach system shall be used in accordance with this chapter and any referenced design specifications in accordance with paragraph (F)(6) of this rule and in compliance with the following conditions and limitations:
    - (a) Septic tank effluent may be distributed by gravity to a leaching system meeting the vertical separation distances described under paragraph (A) of this rule, provided the leach system is designed at 150% of the soil/linear loading rate.
    - (b) Effluent from a pretreatment component meeting the BOD<sub>5</sub>/TSS soil loading rate selected in accordance with paragraph (E)(1)(a) of this rule may be distributed by gravity to a leach system having at least two feet of vertical separation distance from the shallowest limiting condition provided the leach system is designed at 150% of the soil/linear loading rate.

- (c) Effluent from a pretreatment component meeting the one foot pathogen reduction credit may be distributed by gravity to a leach system having at least three feet of vertical separation distance to dense glacial till, bedrock, rock, and other fragments provided there are no shallower limiting conditions provided the leach system is designed at 150% of the soil/linear loading rate.
  - (d) Effluent meeting the BOD<sub>5</sub>/TSS and/or pathogen reduction standards in rule 29-12 of this Chapter shall not be applied by gravity distribution to the infiltrative surface of in situ soils that have loamy sand or coarser textures and allow rapid access to ground water.
- (2) Uniform distribution of effluent across the infiltrative surface of the soil absorption component shall be used in accordance with this chapter and any referenced design specifications in accordance with paragraph (F)(6) of this rule and in compliance with the following conditions and limitations:
- (a) Uniform distribution shall be required when applying effluent to the sand fill infiltrative surface of an elevated soil absorption component.
  - (b) Uniform distribution shall be required when using pretreatment component effluent quality meeting the BOD<sub>5</sub>/TSS and/or pathogen reduction standards in rule 29-12 of this Chapter except as specified in paragraph (D)(1) of this rule.
  - (c) The means of distribution may include but are not limited to pressure distribution in a low pressure pipe system for leaching trenches or mounds and drip distribution in accordance with this chapter.
- (3) Surface application of effluent meeting fecal standards under paragraphs (A)(2)(c) and (A)(2)(d) of rule 29-12 of this Chapter shall comply with this chapter and any referenced design specifications in accordance with paragraph (F)(6) of this rule.
- (E) The soil absorption component area shall be of adequate size and configuration to disperse the effluent and prevent surface seepage. When sizing the soil absorption area the following requirements shall be met:
- (1) Soil loading rates, including basal loading rates for sand fill systems, shall be based on effluent quality and on soil structure, texture, and consistence and shall be justified through reference to soil and site evaluation information and the loading rate estimates referenced in the appendix to this chapter.
    - (a) The selection of soil loading rates based on effluent quality shall be limited to a rate for septic tank effluent or a rate for effluent meeting the BOD<sub>5</sub>/TSS standard under paragraph (A)(1) of rule 29-12 of this Chapter.
    - (b) The structure, texture, and consistence of the most limiting in situ soil layer within the vertical separation distance shall be used to determine a soil loading rate.
  - (2) Linear loading rate (LLR) estimates shall be used to determine the required length of the distribution system parallel to surface contours and shall be based on soil characteristics, land slope, and depth to limiting conditions.

LLR estimates shall be justified through reference to soil and site evaluation information and the loading rate estimates referenced in the appendix to this chapter. If site and soil conditions indicate horizontal subsurface flow, the minimum horizontal isolation distances shall be increased in undisturbed areas around the perimeter or downslope of the soil absorption component as necessary for adequate dispersal and prevention of surface seepage.

(F) General requirements for designing an STS soil absorption component are as follows:

- (1) Effluent dispersal components shall be oriented parallel to natural surface contours and shall not be sited on slopes exceeding limitations specified in this chapter or applicable design manuals or product specification as referenced in accordance with this paragraph.
- (2) Observation ports shall be provided to monitor the infiltrative surface of the soil absorption component as required in this chapter and when determined to be necessary by the board of health.
- (3) Designs shall prevent damage to components or operational failures due to freezing temperatures.
- (4) For short term repairs or resting of a soil absorption component, easily accessible shut-off mechanisms shall be provided to allow for segregation of flows to portions of the soil absorption component. Examples of such mechanisms include but are not limited to shut-off valves at a mound manifold split or drop box plugs for serial distribution leach lines.
- (5) Pressure distribution networks shall have a means of measuring design pressure or operating head for both initial baseline measurement and future monitoring of orifice clogging and other network operations and shall include a means of scouring or flushing distribution laterals.
- (6) The design plan or layout plan for a soil absorption component may include referenced design manuals, proprietary soil absorption component specifications including those for gravelless and chamber products, or alternative aggregate product specifications provided these do not conflict with this chapter. Unless an available internet source for any referenced manual or specification is included in a design plan or layout plan, the design manual, proprietary soil absorption component specifications, or alternative aggregate product specifications shall accompany the plan. Inclusion of referenced resources does not substitute for critical information or calculations required for board of health approval of a design or layout plan.

(G) Installation shall be conducted by a registered installer in a manner consistent with an approved plan to assure proper operation and future servicing or monitoring of the soil absorption component.

- (1) Soil moisture conditions shall be evaluated at the time of installation, and the excavation or preparation of the soil infiltration interface, such as a trench or basal area, shall not proceed when there is a risk of smearing or compaction as evidenced by a deformability test, commonly referred to as ribboning, or other means established by the board of health.

- (2) Proprietary soil absorption components or alternative aggregate product specified in an approved design plan or layout plan shall be installed in accordance with the manufacturer's installation instructions or product specifications provided these do not conflict with this chapter.
- (3) Testing of any pressure distribution components shall be conducted prior to installation approval by the board of health. Flow rate and distal pressure or operating head shall meet specifications and a baseline shall be recorded for future performance monitoring.
- (4) Baseline records and any soil absorption component O&M instructions shall be provided by the installer to both the owner and the board of health as a condition of installation approval.
- (H) STS soil absorption components shall be operated, maintained, and monitored as required by the operation permit issued by the board of health to assure compliance with the requirements of this chapter. A registered service provider offering a service contract for an STS that includes a soil absorption component along with the component or components targeted for service, shall also service and/or monitor the soil absorption component.

**(I)**

Loading rates provided in Table 1 shall be used to determine the calculated size of the absorption area.

Table 1. Infiltration rates in gal/da/ft<sup>2</sup> for wastewater of >30 mg/L or wastewater of <30 mg/L and hydraulic linear loading rates in gal/da/ft for soil characteristics of texture and structure and site conditions of slope and infiltration distance. Values assume wastewater volume of >150 gal/da/bedroom. If horizon consistence is stronger than firm or any cemented class or the clay mineralogy is smectitic, the horizon is limiting regardless of other soil characteristics

Soil Characteristics				Hydraulic Linear Loading Rate, gal/da/ft											Row	
				Infiltration Loading Rate, gal/da/ft <sup>2</sup>			Slope									
							0-4%			5-9%			>10%			
Texture	Structure		>30 mg/L	<30 mg/L	Infiltration Distance, in.			Infiltration Distance, in.			Infiltration Distance, in.					
	Shape	Grade			8-12	12-24	24-48	8-12	12-24	24-48	8-12	12-24	24-48			
COS, S, LCOS, LS	--	OSG	0.8	1.6	4.0	5.0	6.0	5.0	6.0	7.0	6.0	7.0	8.0	1		
FS, VFS, LFS, LVFS	--	OSG	0.4	1.0	3.5	4.5	5.5	4.0	5.0	6.0	5.0	6.0	7.0	2		
COSL, SL	--	OM	0.2	0.6	3.0	3.5	4.0	3.6	4.1	4.6	5.0	6.0	7.0	3		
		PL	1	0.2	0.5	3.0	3.5	4.0	3.6	4.1	4.6	4.0	5.0	6.0	4	
	PR/BK /GR	2,3	0.0	0.0	-	-	-	-	-	-	-	-	-	-	5	
		1	0.4	0.7	3.5	4.5	5.5	4.0	5.0	6.0	5.0	6.0	7.0	6		
FSL, VFSL	--	OM	0.2	0.5	2.0	2.3	2.6	2.4	2.7	3.0	2.7	3.2	3.7	8		
		PL	1,2,3	0.0	0.0	-	-	-	-	-	-	-	-	-	9	
	PR/BK /GR	1	0.2	0.6	3.0	3.5	4.0	3.3	3.8	4.3	3.6	4.1	4.6	10		
		2,3	0.4	0.8	3.3	3.8	4.3	3.6	4.1	4.6	3.9	4.4	4.9	11		
L	--	OM	0.2	0.5	2.0	2.3	2.6	2.4	2.7	3.0	2.7	3.2	3.7	12		
		PL	1,2,3	0.0	0.0	-	-	-	-	-	-	-	-	-	13	
	PR/BK /GR	1	0.4	0.6	3.0	3.5	4.0	3.3	3.8	4.3	3.6	4.1	4.6	14		
		2,3	0.6	0.8	3.3	3.8	4.3	3.6	4.1	4.6	3.9	4.4	4.9	15		
SIL	--	OM	0.0	0.2	2.0	2.5	3.0	2.2	2.7	3.2	2.4	2.9	3.4	16		
		PL	1,2,3	0.0	0.0	-	-	-	-	-	-	-	-	-	17	
	PR/BK /GR	1	0.4	0.6	2.4	2.7	3.0	2.7	3.0	3.3	3.0	3.5	4.0	18		
		2,3	0.6	0.8	2.7	3.0	3.3	3.0	3.5	4.0	3.3	3.8	4.3	19		
SCL, CL SICL	--	OM	0.0	0.0	-	-	-	-	-	-	-	-	-	20		
		PL	1,2,3	0.0	0.0	-	-	-	-	-	-	-	-	-	21	
	PR/BK /GR	1	0.2	0.3	2.0	2.5	3.0	2.2	2.7	3.2	2.4	2.9	3.4	22		
		2,3	0.4	0.6	2.4	2.9	3.4	2.7	3.0	3.3	3.0	3.5	4.0	23		
SC, C, SIC	--	OM	0.0	0.0	-	-	-	-	-	-	-	-	-	24		
		PL	1,2,3	0.0	0.0	-	-	-	-	-	-	-	-	-	25	
	PR/BK /GR	1	0.0	0.0	-	-	-	-	-	-	-	-	-	-	26	
		2,3	0.2	0.3	2.0	2.5	3.0	2.2	2.7	3.2	2.4	2.9	3.4	27		
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O		

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29-13.1 **Leaching trench requirements.**

This rule provides siting conditions for gravity fed leaching trench soil absorption components with either parallel or serial distribution. If preparing a leaching trench HSTS layout plan for an owner, a registered installer must meet the requirements in this rule. A layout plan would accompany the site review application for a site that has been evaluated and determined to have adequate area and suitable soils to accommodate leaching trenches.

- (A) Leaching trench soil absorption components are subject to this chapter including the following conditions:
- (1) Paragraph (B) of this rule shall only apply to leaching trench soil absorption components with gravity distribution from a septic tank or pretreatment component in compliance with this chapter and the provision in paragraph (D)(1) of rule 29-13 of this Chapter.
  - (2) Site modification and siting limitations for leaching trench soil absorption components include but are not limited to the following:
    - (a) A leaching trench soil absorption component shall be sited to avoid natural drainage features and depressions that may hold surface water. The plan for a leaching trench STS shall address surface water diversion as needed. An interceptor drain in compliance with paragraph (D) of rule 29-14 of this Chapter may be used upslope of a leaching trench soil absorption component.
    - (b) A leaching trench shall not be sited on slopes greater than fifteen percent, unless the STS plan includes special installation criteria.
    - (c) Sites with large trees or numerous smaller trees are less desirable for leaching trenches and such conditions shall be avoided or shall be identified and addressed in the STS plan.
- (B) A registered installer providing a layout plan for a leaching trench HSTS shall comply with paragraph (A) of rule 29-09.1 of this Chapter and this paragraph. While a design plan prepared in accordance with paragraph (B) of rule 29-09.1 of this Chapter may vary from the requirements of this paragraph, a leaching trench soil absorption component layout plan prepared by a registered installer shall comply with the following:
- (1) The soil loading rate and linear loading rate shall be determined from the site and soil evaluation information required in rule 29-08 of this Chapter. For the purpose of sizing, the soil loading rate shall apply to the trench length and the trench width specified for the leaching trench material or component. The trench shall have a minimum width of one foot and shall not exceed two feet in width. The linear loading rate shall be used to establish the minimum length of the soil absorption area parallel to the natural surface contours. This minimum length and the specified trench width shall be used to determine the number of leaching trenches needed to accommodate the daily design flow. Additional leaching trench may be specified for the purpose of providing capacity for resting a portion of the absorption area.
  - (2) A pipe and gravel leaching trench shall have a minimum of eight inches of gravel extending two inches above and two inches below a four inch

perforated pipe. Gravel shall be washed or thoroughly rinsed to avoid the accumulation of fines in the trench and shall meet an AASHTO M 43 sizing for coarse aggregate with at least seventy per cent by weight in the range of three-fourth to one and one-half inch. Use of other leaching trench material such as alternative aggregate or proprietary gravelless and chamber components shall be specified in accordance with paragraph (F)(6) of rule 29-13 of this Chapter.

- (3) A leaching trench bottom shall be level along its length and shall follow the natural surface contour maintaining the specified trench depth from the natural surface of the ground along the entire trench length. The trench depth shall be specified as a uniform depth of no more than twenty four inches and no less than two inches from the natural surface of the ground and shall be determined by the vertical separation distance to the limiting conditions. For shallow trenches with sidewalls extending above grade, the layout plan shall specify the trench materials or components and any fill or backfill specifications. Any fill placed prior to trench excavation shall be in compliance with paragraph (A)(3) of rule 29-14 of this Chapter.
- (4) The minimum center to center distance between two trenches shall be six feet. This distance shall be increased on wooded sites and sites with slope or irregular contours as necessary to avoid trees and to accommodate variations in the surface contour.
- (5) The means of flow distribution and management in accordance with paragraph (F) of rule 29-13 of this Chapter and this rule shall include:
  - (a) Specification of either parallel or serial distribution with components to be used having access to grade and a mechanism for flow diversion. Each line shall be able to be controlled from the flow diversion device. For gravity leach systems, the system shall also be designed to rest  $\frac{1}{2}$  the system during any specified time.
  - (b) Distribution component connections between the tank or another distribution component and to a leaching trench shall be watertight and shall include properly supported rigid solid wall pipe to prevent settling and damage under normal loads and operating conditions.
  - (c) A means for determining the liquid level or capacity of a leaching trench shall be provided. If an inspection port is used or required by the board of health, the port shall be anchored and accessible with at least a four inch opening and a removable watertight cap.
  - (d) Except as required in rule 29-13-( D) timed dosing shall be required and the combined surge and reserve capacity shall be a minimum of one and a half times the daily design flow with increased surge capacity as needed to reduce the incidence of high water alarms during peak flows. Dosing controls shall prevent flow to the STS distribution component in excess of the daily design flow.
- (6) Geotextile fabric or straw covering for aggregate trenches or other barrier as specified for proprietary components shall be used to prevent introduction of soil fines and allow for free movement of air and water.

- (7) The soil cover shall have a depth of at least six inches after settling or as specified for a proprietary product and shall be of a quality to allow for oxygen transfer and growth of vegetation.
- (C) In addition to the applicable installation requirements of paragraph (G) of rule 29-13 of this Chapter and the as-built record required in paragraph (C) of rule 29-09.1 of this Chapter a leaching trench installation shall comply with the following requirements:
- (1) The full soil absorption area shall be free of any site disturbance. If any disturbance or damage has occurred, installation shall not proceed and the registered installer shall contact the owner and the board of health.
  - (2) Prior to excavation the registered installer shall check all elevations in the layout plan relative to the established benchmark including the surface contour and proposed bottom elevation of each trench and the flow line elevation of other STS components to assure proper flow through the system.
  - (3) When soil conditions are suitable, leaching trenches shall be installed to meet all of the specifications and requirements of this chapter. The as-built record shall provide sufficient documentation of excavated trench bottom and natural surface grade elevations to prove compliance. Leaching trench material shall be placed in a manner that prevents compaction of the infiltrative surface. Open trenches shall be avoided for any length of time to prevent impacts from sediments in runoff and windblown silt.
  - (4) Suitable backfill and cover material as required in this rule or proprietary component specifications shall not be compacted and shall allow for settling unless otherwise specified by the proprietary product installation instructions. The completed STS area shall be protected from erosion through surface water diversion and provision of suitable vegetative cover, mulching, or other specified means of protection.
- (D) In conjunction with any operation permit conditions or O&M management provisions required in this chapter or by the board of health, the O&M of a leaching trench STS shall include but is not limited to monitoring the liquid level or capacity of the leaching trench soil absorption component, management of flow diversion mechanisms for the purpose of resting portions of the soil absorption area, and checking for surface water infiltration or clear water flows from the dwelling or structures into the STS or onto the soil absorption area.

#### 29-13.2 **Mound with pressure distribution requirements.**

This rule provides siting conditions for a septic tank / mound soil absorption system and includes requirements for the pressure distribution network. If preparing an HSTS mound layout plan for an owner, a registered installer must meet the requirements in this rule. A layout plan would accompany the site review application for a site that has been evaluated and determined to have adequate area, suitable soils, and at least one foot of vertical separation to any limiting condition.

- (A) Mound soil absorption components are subject to this chapter including the following conditions:

- (1) Paragraph (B) of this rule shall only apply to a mound soil absorption system having septic tank effluent dosed to a pressure distribution network in compliance with this chapter and the elevation soil depth credit provision in paragraph (C)(1) of rule 29-13.
  - (2) Site modification and siting limitations include but are not limited to the following:
    - (a) An interceptor drain in compliance with paragraph (D) of rule 29-14 of this Chapter may be used upslope of a mound soil absorption component. Gradient drains shall not be used with mound soil absorption components addressed in this rule. The mound component shall be sited to avoid natural drainage features and depressions that may hold surface water. A plan for a mound soil absorption component shall address surface water diversion as needed.
    - (b) A mound soil absorption component shall not be sited on a slope greater than fifteen percent unless the STS plan includes special installation criteria.
    - (c) Sites with boulders or numerous trees are less desirable for a mound soil absorption component. Such conditions shall be avoided or the STS plan shall increase the basal area to compensate for losses due to boulders or flush cut trees and shall include special instructions for the basal area preparation under such conditions.
- (B) A registered installer providing a layout plan for an HSTS mound shall comply with paragraph (A) of rule 29-09.1 of this Chapter and this paragraph. While a design plan prepared in accordance with paragraph (B) of rule 29-09.1 of this Chapter may vary from the requirements of this paragraph, a layout plan prepared by a registered installer shall comply with the following requirements:
- (1) For the purpose of sizing, the soil loading rate and linear loading rate shall be determined from the site and soil evaluation information required in rule 29-08 of this Chapter. Conservative loading rate values shall be selected on sites having depths between one to two feet from the surface of the ground to limiting conditions. When the daily average flow from a dwelling is expected to exceed sixty percent of a peak daily design flow of one hundred twenty gallons per day per bedroom, the peak daily design flow shall be increased accordingly. The peak daily design flow and the linear loading rate shall establish the minimum continuous length of the mound soil absorption area parallel to the natural surface contour. For the purposes of paragraph (B) of this rule, a mound may not be split or sited at different contour elevations.
  - (2) The mound sand fill depth shall be determined based on the depth to the limiting conditions and the sand fill depth shall not exceed two feet other than for a slope adjustment. The loading rate for the sand fill material shall not exceed 1.0 gpd/ft<sup>2</sup>. Concrete sand meeting ASTM C 33 for fine aggregate may be used provided the material meets the following specifications:
    - (a) An effective size in the range of 0.15 to 0.30 mm;
    - (b) A uniformity coefficient in the range of four to six;

- (c) No more than twenty per cent by weight is gravel greater than two mm;  
and
  - (d) No more than five per cent by weight is silt and clay less than 0.053 mm.
- (3) The layout plan shall include the calculations used for determining the distribution area width and length and the basal area width and length including any variation due to slope and the subsequent increase in sand fill depth. The layout plan may include references to mound resource manuals.
- (4) The depth of the distribution area shall be at least nine inches with a minimum of six inches of durable aggregate beneath the distribution pipe and at least one inch of aggregate over the pipe. Washed or thoroughly rinsed gravel meeting an AASHTO M 43 sizing for coarse aggregate with at least seventy percent by weight in the range of three-fourth to one and one-half inch shall be used for the distribution area unless the layout plans specify the use of other material such as alternative aggregate or proprietary components in accordance with paragraph (F)(6) of rule 29-13 of this Chapter.
- (5) The means of pressure distribution and management shall be in accordance with paragraph (F) of rule 29-13 of this Chapter and the following:  
Except as required in rule 29-13-( D) timed dosing shall be required and the combined surge and reserve capacity shall be a minimum of one and a half times the daily design flow with increased surge capacity as needed to reduce the incidence of high water alarms during peak flows. Dosing controls shall prevent flow to the STS distribution component in excess of the daily design flow.
- (a) Distribution component connections shall be watertight and shall include properly supported rigid solid wall pipe to prevent settling and damage under normal loads and operating conditions.
  - (b) The layout plan shall include the entire network configuration including pipe lengths and sizes for the force main, any force main branches, manifolds, and laterals with orifice size, spacing and shielding and also the calculations used to determine dose volume and pump selection within the following specification:
    - (i) Each dose shall deliver to the distribution area no greater than one fourth of the daily design flow and at least five times the void volume of the laterals.
    - (ii) The orifice number and spacing shall provide distribution of no more than six square feet per orifice with an orifice size of not less than three-sixteenth inch. The method of orifice shielding shall be specified in the plan.
    - (iii) The selected distal pressure head to be maintained at the end of each lateral shall be between two to five feet using a higher pressure head when selecting smaller orifice sizes.

- (c) The dosing tank size and the pump, control, and alarm specifications shall be included with the layout plan and the plan shall indicate the float switch settings used to accommodate the dose volume including any drainback to the dosing tank.
- (d) The following shall be provided for O&M and monitoring:
  - (i) At least three inspection ports shall be spaced at intervals adequate for observation of distribution and any ponding at the sand fill surface. The ports shall be anchored and be accessible with at least a four inch opening and a removable watertight cap.
  - (ii) An access port shall be provided for the required shutoff mechanism to portions of the distribution network.
  - (iii) Accessible turn-ups shall be provided at the end of each lateral for the purpose of flushing the laterals and testing distal pressure head.
- (6) A geotextile fabric or straw covering of the aggregate in the distribution area or other barrier as specified for proprietary components shall be used to prevent introduction of soil fines and allow for free movement of air and water.
- (7) The soil cover shall be six inches over the entire mound and the mound shall be crowned to promote runoff. Soil cover shall be of a quality to allow for oxygen transfer and growth of vegetation.
- (C) In addition to the applicable installation requirements of paragraph (G) of rule 29-13 of this Chapter and the as-built record required in paragraph (C) of rule 29-09.1 of this Chapter, a mound soil absorption component installation shall comply with the following requirements:
  - (1) The full soil absorption area shall be free of any site disturbance. If any disturbance or damage has occurred, installation shall not proceed and the registered installer shall contact the owner and the board of health.
  - (2) Prior to excavation the registered installer shall check all elevations in the layout plan relative to the established benchmark including the surface contour and the flow line elevation of other STS components to assure proper flow through the system.
  - (3) When site conditions are suitable, the mound soil absorption component shall be installed to meet all of the specifications and requirements of this chapter. The as-built record shall provide sufficient documentation of installed components and natural surface grade elevations to prove compliance.
  - (4) The mound shall be installed according to the layout plan and any referenced resource and shall comply with the following:
    - (a) All vegetation shall be cut close to the ground and removed from the site. Stumps, roots, sod, topsoil, and boulders shall not be removed. The force main should be installed from the upslope side. All vehicle traffic on the basal area and downslope area of the mound should be avoided with installation work being conducted from the upslope side or end of the mound basal area.

- (b) The basal area of the mound shall be prepared to provide a sand/soil interface and to improve infiltration if needed. The basal area preparation shall not damage the structure of the soil infiltrative surface. Any basal scarification or other basal area preparation shall be conducted working along the contour. Sand may be incorporated into the basal area during the preparation process. Following basal preparation, a layer of sand fill shall be placed on the entire basal area to prevent damage from precipitation and foot traffic.
  - (c) The specified depth and sufficient amount of sand fill shall be placed to cover the basal area, form the absorption area, and shall not exceed 3:1 side slopes. The distribution area shall be formed to the specified dimensions and the sand surface of the distribution area shall be level.
  - (d) Construct and install all components of the distribution network and observation ports.
  - (e) Cover the distribution area with straw, geotextile fabric, or other product as applicable and place the required soil cover over the mound.
- (5) The completed STS area shall be protected from erosion through surface water diversion and provision of suitable vegetative cover, mulching, or other specified means of protection.
- (6) The as-built record shall include the observed height of the distal pressure head and float switch settings as baseline measures for future O&M and monitoring.
- (D) In conjunction with any operation permit conditions or O&M management provisions required in this chapter or by the board of health, the O&M of a mound soil absorption system shall include but is not limited to checking the mound vegetative cover for erosion or settling and any evidence of seepage on the sides or toes of the mound, flushing of distribution laterals, checking for ponding in the distribution area, monitoring the dose volume and distal pressure head of the distribution system, and checking for any surface water infiltration or clear water flows from the dwelling or structures into STS components or around the mound soil absorption area.

### 29-13.3 **Drip distribution requirements.**

This rule provides for the use of drip distribution as a component of an STS that is fully supported by a responsible party providing assurances of this support. The described assurance process is intended to promote coordination of the siting, design, installation, and O&M of a drip distribution STS. Drip distribution meeting these requirements allows for the use of a soil depth credit for additional treatment and dispersal benefits including increased retention time and oxygen transfer due to time controlled micro-dosed application to the biologically active upper horizon of the soil profile.

- (A) The drip distribution requirements in this rule are subject to the following conditions:

- (1) Drip distribution components that are part of a fully supported STS in compliance with this rule shall be eligible for a soil depth credit in accordance with paragraph (C)(3) of rule 29-13 of this Chapter.
  - (2) Any person intending to act as the responsible party providing a fully supported drip distribution STS shall submit written assurances of compliance with this rule to the department of health for approval. In addition to the written assurances, a submittal shall include sample plans, manuals for the drip distribution and other STS components as applicable, and any other information necessary to demonstrate compliance. The written assurances shall indicate how the responsible party shall comply with the following:
    - (a) Assure that the site and soil conditions and limitations reported for each site represent accurate information.
    - (b) Assure that design plans comply with this chapter and the additional requirements of this rule.
    - (c) Assure the provision of training to installers and oversight as necessary to assure proper installation.
    - (d) Assure that upon completion of an installation, a system start-up is conducted to establish baseline performance and compliance with design specifications.
    - (e) Assure that qualified and registered service providers are available to conduct O&M for the entire system through the service contract requirements of paragraph (C) of this rule. Forms, programs, or instructions supporting start-up procedures and O&M service and monitoring shall be provided with the written assurances.
  - (3) The board of health may not issue a permit to install for a drip distribution STS until the written assurances required in this rule have been approved by the department of health. Following the initial department of health approval, the board of health shall notify the department of health when a responsible party does not comply with the assurance requirements in paragraphs (A)(2)(a) to (A)(2)(e) of this rule.
- (B) Referenced manuals and technical resources may be used for general design, but a drip distribution STS shall comply with this chapter and the following requirements:
- (1) Siting limitations and site modification shall include but are not limited to the following:
    - (a) The drip distribution component shall be sited to avoid natural drainage features and depressions. The design plan shall address surface water diversion as needed.
    - (b) An interceptor drain in compliance with paragraph (D) of rule 29-14 of this Chapter may be used upslope of the soil absorption component.
    - (c) Drip distribution shall not be sited on slopes greater than twenty five percent unless the design plan includes special siting, design, installation, and O&M specifications.

- (2) Areas designated for installation and replacement shall be undisturbed and be protected from damage or disturbance. The design plan shall specify that any disturbance or damage may result in the invalidation of the design plan. If any disturbance or damage has occurred, installation shall not proceed and the registered installer shall contact the owner, the drip distribution responsible party, and the board of health. Installation of subsurface drip tubing or preparation of the soil infiltration interface for at-grade or elevated sand fill drip fields shall not proceed when there is a risk of smearing or compaction.
- (3) The design plan shall indicate the vertical separation distance from the drip tubing to limiting conditions and justify the placement of the drip tubing at a specific subsurface depth not to exceed one foot, at-grade, or a specific sand fill elevation not to exceed one foot. When placement is at-grade or on sand fill, basal area preparation shall be specified in the design plan. Any sand fill shall meet the specifications in paragraph (C)(1) of rule 29-13 of this Chapter. Cover material and depth specifications including precautions for freeze protection of the entire distribution system shall be included in the design plan.
- (4) The method and calculations for sizing the soil absorption area shall be included in the design plan with reference to any manufacturer, supplier, or designer specifications but shall not be less than that determined in accordance with the site and soil evaluation information required in rule 29-08 of this Chapter and soil loading rate estimates referenced in the appendix to this chapter.
- (5) Only pressure compensating emitters shall be used for STS drip distribution. The design plan shall specify the flow rate of the emitters and approximate absorption area per emitter.
- (6) Drip distribution areas shall be sited, and the drip tubing installed, parallel to natural surface contours. The length of the distribution area along the contour shall be determined by the linear loading rate. When site conditions indicate shallow horizontal subsurface flow, an undisturbed on-lot area of up to twenty five feet shall be preserved below or around the drip distribution area and the designated replacement area.
- (7) Any selected pretreatment component shall conform to this chapter and the STS design specifications including additional capacity if needed to accommodate drip tubing and filter flushes. Use of pretreatment to justify reductions in either the soil absorption area or vertical separation distance shall be justified in the design plan.
- (8) Timed dosing shall be required and the combined surge and reserve capacity shall be a minimum of one and a half times the daily design flow with increased surge capacity as needed to reduce the incidence of high water alarms during peak flows. Dosing controls shall prevent flow to the drip distribution component in excess of the daily design flow. Controls shall provide a means to record alarm events, troubleshoot system malfunctions, and monitor flow over time and flow rates during both dosing and flushing events. Observation ports required in paragraph (F)(2) of rule 29-13 of this Chapter shall not be required.

- (9) The drip tubing shall be maintained through an automated scouring flush at a frequency adequate to prevent coating of the drip tubing and clogging of emitters. The frequency shall be specified in the design plan and shall not be less than twice a month per zone under normal operating conditions and shall be adjustable for actual operating conditions. Drip tubing flushes and filters flushes used to reduce solids going to emitters shall be returned to the influent end of the pretreatment component or septic tank. In the case where flush volumes may disrupt the process of a pretreatment component, added pretreatment component capacity shall be required.
  - (10) For management purposes, at least two zones shall be included in the drip distribution design with an easily accessible shutoff mechanism for each zone. The timed micro-doses specified in paragraph (B)(8) of this rule and paragraph (C)(3) of rule 29-13 of this Chapter may be applied simultaneously or alternately to each zone. Air release valves shall be required at the highest elevation in each zone to vent the zone and prevent soil fines from entering the emitters during drain down after the pump shuts off.
  - (11) Following installation and before STS approval by the board of health, the responsible party and/or the registered installer shall conduct a start-up procedure and document baseline measurements needed for future O&M and monitoring. Baseline measurements and monitoring information shall include but is not limited to dose rates and flushing flow rates for each zone and calculation of daily flow averages. As-built records including baseline measurements and O&M instructions shall be provided to the owner, service provider, and the board of health.
- (C) In conjunction with any other operation permit conditions or O&M management provisions required in this chapter or by the board of health, and as a condition of an operation permit for a drip distribution STS, the board of health shall require the owner of a drip distribution STS to maintain an O&M service contract. The O&M and monitoring of the entire STS shall be conducted at least annually, or more often as required by the responsible party or the manufacturer of any component of the drip distribution STS, and shall be conducted by the responsible party acting as a registered service provider or by a registered service provider who has been qualified by the responsible party.

29-14      **Site modification.**

The purpose of this rule is to address site modifications that may have already occurred on a site being considered for an STS and those site modifications that may be proposed to support STS installation or operation. This rule provides requirements and criteria related to fill material, surface water diversion, and existing and proposed subsurface drainage. While this rule allows the use of a diversion swale or interceptor drain as acceptable practice for use with any STS when needed, the rule does limit the use of a gradient drain or drainage system.

(A) Site modification involving fill material shall comply with the following:

- (1) Prior to consideration of siting a soil absorption component in settled non-compacted fill material that over time may have developed the characteristics of soil, the material shall be thoroughly evaluated as to its

treatment and dispersal capacity in conjunction with the soil and site evaluation required in rule 29-08 of this Chapter.

- (2) No fill material shall be present in the vertical separation distance below the infiltrative surface of the distribution system, other than that found suitable under paragraph (A)(1) of this rule or sand fill material specified for a soil absorption component in compliance with paragraph (C)(1) of rule 29-13 of this Chapter.
  - (3) Fill material applied to the natural ground surface prior to the excavation of shallow in situ soil leaching trenches shall be a sandy texture soil or sandy loam soil capable of maintaining trench sidewall stability during installation and shall be applied in a manner that both protects and creates an interface with the underlying in situ soil.
- (B) When siting an STS, an existing drain tile, drainage system, or other artificial subsurface drainage shall be avoided whenever possible with at least ten feet of horizontal separation from any component of an STS. If necessary, an existing drainage tile may be abandoned and rerouted to maintain at least the ten feet of separation and the abandoned section of tile shall be plugged. If existing drainage tile cannot be avoided or abandoned and rerouted and will be present in the area of a soil absorption component, the top of the drainage tile shall be considered a limiting condition subject to the three foot vertical separation distance in paragraph (A) of rule 29-13 of this Chapter.
- (C) When surface water runoff will infiltrate or cause ponding on or around STS components, diversion swales shall be designed to intercept and divert surface water with specifications indicated in the layout plan or design plan. STS components shall not be sited in depressions where surface water runoff cannot be properly managed through diversion. Diversion of surface water associated with an STS shall not negatively impact other property or stormwater management.
- (D) Any artificial subsurface drain designed to influence a STS shall comply with the following as applicable:
- (1) An interceptor drain shall be sited upslope of an STS when horizontal subsurface flow of water would impact a down gradient soil absorption component. The specifications for the interceptor drain, including the upslope distance from STS components and the interceptor drain outlet and outfall in accordance with paragraph (D)(2) of this rule, shall be included in the layout plan or design plan.
  - (2) A drain outlet shall comply with the following:
    - (a) The drain outlet, including rigid solid wall pipe and animal guard, shall be designed to allow for free flow from the invert of the pipe for the purpose of sampling.
    - (b) The invert of the pipe for a gravity flow outlet shall be at least four inches above whichever is closer of the receiving water level or ground surface.
    - (c) If a gravity flow outlet cannot be achieved the drain shall include a pump vault accessible for sampling and of sufficient size and dose volume to maximize pump life. A pumped drain shall include a check valve if

needed and an alarm in compliance with paragraph (F)(4) of rule 29-11 of this Chapter.

- (d) The receiving area for a drain outlet shall not pond and shall allow free flow away from the outlet during both dry and wet weather conditions to an established drainage feature.
- (e) Written permission shall be obtained for placement of a drain outlet within a right-of-way or legally established public drainage improvement. A drain outlet associated with an STS shall be subject to the easement provisions of paragraph (E)(4) of rule 29-07 of this Chapter.

#### 29-15 **Privies and holding tanks.**

The purpose of this rule is to provide for the storage of household sewage under limited circumstances. The board of health determines the conditions and circumstances under which a privy or holding tank may be permitted. It is expected that the use of privies and holding tanks will be infrequent and that holding tanks would generally be used for temporary periods, such as when sanitary sewers would be accessible within a short timeframe or the installation of a soil absorption component is delayed due to site conditions.

- (A) A holding tank or privy vault shall only be installed by a registered installer when authorized by the board of health in compliance with this chapter.
- (B) A privy shall only be permitted and installed as an HSTS under the following limited conditions:
  - (1) All plumbing or drain connections to the privy vault are prohibited.
  - (2) The vault shall comply with the requirements of paragraph (A) of rule 29-11 of this Chapter and shall have a capacity of not less than five hundred gallons.
  - (3) The location of the vault shall comply with all isolation distance requirements set forth in paragraphs (E) and (F) of rule 29-07 of this Chapter.
  - (4) The superstructure shall be vented and minimize entry of insects or animals.
- (C) A holding tank shall only be permitted as an HSTS under the following limited conditions when a variance has been granted by the board of health in compliance with rule 29-18 of this Chapter.
  - (1) A holding tank shall comply with the requirements of paragraph (A) of rule 29-11 of this Chapter.
  - (2) A holding tank shall be located in compliance with paragraphs (E) and (F) of rule 29-07 of this Chapter and shall be easily accessible for frequent pumping.
  - (3) The size of the holding tank shall take into account the design flow criteria established under paragraph (A) of rule 29-10 of this Chapter. The board of health shall establish a required frequency of pumping for the tank as a

condition of the variance. As an alternative to a scheduled pumping frequency, a high water alarm may be installed in compliance with paragraph (F)(4) of rule 29-11 of this Chapter.

A board of health that has taken responsibility for SFOSTS in accordance with paragraph (A) of rule 29-03 of this Chapter shall not permit a holding tank for an SFOSTS. Except as permitted for HSTS in accordance with this paragraph, holding tanks are subject to the requirements of OEPA under rule 3745-42-11 of the Administrative Code.

- (D) The owner of a privy or holding tank shall have a registered septage hauler remove the contents of the vault or tank before the capacity is exceeded. As a condition of the operation permit required in paragraph (C) of rule 29-09 of this Chapter, the board of health shall require the contents of a privy or holding tank be removed in accordance with this rule and in compliance with any other operation permit or variance conditions established by the board of health.

29-16        **Education, inspection, compliance, and enforcement.**

- (A) The board of health shall promote compliance with this chapter through educational outreach including but not limited to the following:
  - (1) Proactively provide information to owners and other parties on applicable areas of responsibility for compliance with this chapter.
  - (2) Provide O&M instructions to the STS owner in conjunction with the board of health operational inspection required in paragraph (C)(3) of rule 29-09 of this Chapter.
  - (3) Provide referrals to department of health and manufacturer internet sites for O&M instructions that are required by law to be posted, or upon request, directly provide a copy of these O&M instructions.
- (B) The board of health may provide owners with information on financial assistance resources, and may promote or participate in local and state financial assistance programs to support STS repair and replacement or connection to sanitary sewers and STS abandonment.
- (C) The board of health shall provide the oversight necessary to determine compliance with this chapter. The board of health may at any reasonable time inspect any STS or part thereof, conduct sampling, collect data, inspect a proposed STS site, or perform other activities necessary to assure compliance with this chapter.
- (D) No person shall violate this chapter, orders issued pursuant to these chapters by the board of health, or the conditions of a registration or permit issued in accordance with this chapter. Upon determining noncompliance, the board of health shall notify the owner or other responsible party of the determination of noncompliance. The board of health notification shall specify any necessary corrective action and the time line for compliance as applicable. The board of health shall provide for due process protection in its implementation of compliance and enforcement duties and shall provide opportunity for compliance hearings and appeal of board of health orders.

## 29-16.1 **O&M Management**

This rule promotes a proactive and preventive approach to managing STS performance. The operation permits required in statute and rule serve as the legal means to establish O&M requirements, and in some cases, mandatory service contracts. The "USEPA Voluntary National Guidelines for Management of Onsite and Clustered (Decentralized) Wastewater Treatment Systems (2003)" provides a resource for assessment of state and local management programs.

- (A) The board of health shall implement an O&M management program in compliance with this chapter. An O&M management program shall include but is not limited to the provisions of this rule.
  - (1) STS permit records shall be organized by location providing a history of siting, design, installation, alteration, operation, monitoring, maintenance, and abandonment activities. The results of any O&M monitoring or reporting required by this chapter shall be maintained in the STS permit record.
  - (2) The board of health shall comply with operation permit requirements in paragraph (C) of rule 29-09 of this Chapter.
  - (3) Tracking of activities and requirements associated with the conditions of an operation permit or this chapter shall be required, including but not limited to:
    - (a) Dates of board of health operation inspections including the inspection required in paragraph (C)(3) of rule 29-09 of this Chapter.
    - (b) Time line for the expiration and renewal of an operation permit as applicable.
    - (c) Record of owner compliance with service contract requirements in accordance with this chapter and the operation permit conditions established in paragraph (C)(5) of rule 29-09 of this Chapter.
  - (4) O&M in accordance with manufacturer's instructions shall be met when required as a condition of an operation permit or this chapter. A person may demonstrate the required O&M in lieu of having a board of health inspection conducted when an inspection is otherwise required. This may include a person securing a service contract or being certified for O&M service by a manufacturer in lieu of a required board of health inspection for which an inspection fee is charged. This shall not preclude the board of health from conducting compliance inspections for general oversight purposes nor from requiring payment of an operation permit fee for O&M management.
- (B) When establishing O&M management provisions in addition to those required in this chapter, the board of health shall consider the following
  - (1) Increased levels of management related to risk conditions associated with higher STS density, STS complexity and reliability, and the location of STS in areas of high risk for surface or ground water contamination or where there are existing unsanitary conditions due to a high incidence of STS substandard performance or failure.

- (2) Recording of operation permit conditions, service contract requirements, or other O&M management information on property deeds as a means to provide notification upon transfer of property served by an STS.
- (3) Utilization of private sector professionals and responsible management entities or designation of qualified agents to conduct monitoring or other O&M management responsibilities when the board of health provides oversight to assure compliance with this chapter.
- (4) Inclusion of alternative O&M management mechanisms such as web-based reporting, remote telemetry, and use of publicly and privately available database programs to support O&M tracking requirements.

In establishing an O&M management program and adopting any additional provisions, a board of health may not relinquish or delegate responsibility for assuring compliance with this chapter.

- (C) The O&M management program shall include additional provisions when the board of health has expanded its local authority through the regulation of SFOSTS in accordance with this chapter and/or the oversight of semipublic disposal systems in accordance with section 3701.085 of the Revised Code.

#### 29-16.2      **Residuals Management**

This rule includes the requirements for the management of STS residuals and the collection, transportation, disposal, and land application of domestic septage. The land application requirements in this rule are in addition to those in 40 C.F.R. 503 (as published in the July 1, 2005 Code of Federal Regulations).

- (A) The board of health shall assess the management of STS residuals generated within its jurisdiction, including adequate capacity for the disposal of STS residuals and/or land application of domestic septage within the area of its jurisdiction. Residuals management by the board of health shall include but is not limited to the following:
  - (1) Notification to septage haulers registered by the board of health of available receiving locations for STS residuals and any prohibitions on the land application of domestic septage. Compliance with paragraph (B) of this rule is required when land application is permitted by the board of health.
  - (2) Provision of information to STS owners on recommended time lines for removal of residuals from STS components including more frequent removal when a garbage disposal is in use. Information may also be provided as applicable for the management of grease interceptor waste when the board of health has authority for SFOSTS.
  - (3) Requirements for reporting of residuals removal or tank pumping as applicable when required as a condition of an operation permit or as necessary to demonstrate compliance with this chapter.
- (B) Land application of domestic septage shall not create a public health nuisance and shall be performed for agronomic benefit in compliance with this paragraph

and 40 C.F.R. 503 (as published in the July 1, 2005 Code of Federal Regulations) on sites approved by the board of health.

- (1) A land application site may be considered for approval by the board of health if the following is provided by the registered septage hauler:
  - (a) Written permission from the property owner to land apply septage and information on the presence of any field tile within the proposed land application site.
  - (b) Information from an order two soil survey indicating that the site has a slope no greater than eight per cent, has at least three feet of soil above ground water, has at least three feet of soil above dense glacial till, bedrock, rock and other fragments, and is free of conditions that could allow land application of septage to cause contamination of ground water or run off to surface waters.
  - (c) Additional information required by the board of health concerning the site, the surrounding area, or the land application methods used by the registered septage hauler.
- (2) The board of health shall conduct a site inspection prior to approval and shall enforce the prohibitions in this paragraph. Land application of domestic septage is prohibited within the sanitary isolation radius of a public water system well as determined in accordance with rule 3745-09-04 of the Administrative Code. Land application of domestic septage is also prohibited within an inner management zone of a drinking water source protection area determined to be highly susceptible to contamination by the OEPA source water protection and assessment program for a community or non-transient non-community public water system as defined in rule 3745-81-01 of the Administrative Code. The area to be used for land application shall meet the following minimum horizontal isolation distances:
  - (a) Two hundred feet from any dwelling, business, or location used for community gatherings or recreational purposes.
  - (b) Fifty feet from any property line.
  - (c) One hundred feet from any private water system, non-potable water well or water supply well used by a transient, non-community public water system as defined in rule 3745-81-01 of the Administrative Code.
  - (d) Fifty feet from any waters of the state excluding ground water but including grass waterways.
  - (e) Three hundred feet from a sinkhole or drainage well, or one hundred feet if a permanent vegetative buffer is maintained round the sinkhole or drainage well.
  - (f) Fifteen hundred feet from a public drinking water surface water intake.
- (3) The amount of septage applied to the site shall not exceed the annual nitrogen application rate required for the type of vegetation on the site. The soil shall be tested every two years for phosphorus and shall not exceed the recommended levels for agronomic loading rates. Any vegetation or crop grown on the application site shall be harvested, grazed, or otherwise

removed in accordance with 40 C.F.R. 503 (as published in the July 1, 2005 Code of Federal Regulations).

- (4) Trash shall be screened and removed from the septage prior to land application and shall be dewatered prior to disposal as solid waste.
- (5) Septage shall be land applied in accordance with the following:
  - (a) Septage shall not be permitted to pool or flow on the surface of the ground.
  - (b) Septage shall be applied in accordance with the vector attraction reduction requirements and the pathogen reduction requirements of 40 C.F.R. 503 (as published in the July 1, 2005 Code of Federal Regulations).
- (6) Records shall be maintained by the septage hauler for at least five years to demonstrate compliance with this rule and the requirements of 40 C.F.R. 503 (as published in the July 1, 2005 Code of Federal Regulations).

#### 29-17      **STS abandonment**

This rule establishes the procedures for the proper abandonment of an STS. The purpose is to assure the final removal of sewage residuals and to prevent hazards that could occur when tanks or other components are no longer in use.

- (A) Any person who is no longer using an STS or an applicable component of an STS shall properly abandon all tanks, dosing tanks, and/or pretreatment components that are no longer in use in accordance with this rule.
- (B) All tanks, dosing tanks, and/or pretreatment components shall have the sewage contents pumped and removed by a registered septage hauler. If there is a need to remove solid materials such as filter media or other STS components, these shall be taken to an approved solid waste disposal facility or shall be managed in a manner that prevents a public health nuisance and contamination of surface or ground water.
- (C) Upon removal of the contents of the tank, dosing tank and/or pretreatment component, the top shall either be completely removed or shall be collapsed and at least one side collapsed to prevent containment of water in the abandoned tank or component. The resulting void shall be filled to the ground surface with inert and clean fill materials such as sand, gravel, or compacted soil in an amount and manner that allows for settling and prevents ponding of surface water.
- (D) Any person who abandons an STS system shall notify the board of health in writing that the STS has been properly abandoned, and shall provide the following information that shall be retained by the board of health:
  - (1) The owner and location of the abandoned STS and the date of abandonment.
  - (2) The name of the registered septage hauler and the name of the person or registered installer that performed the STS abandonment.

- (3) The manner in which the tank, dosing tanks, and/or pretreatment components were abandoned or removed.
- (E) When the board of health has taken responsibility for SFOSTS in accordance with paragraph (A) of rule 29-03 of this Chapter, the board of health shall notify the OEPA within sixty days when an SFOSTS that was previously permitted to be installed by the OEPA has been abandoned in accordance with this rule.

**29-18 Variances and related provisions**

- (A) Any person who believes that a variance from the rules of this chapter is necessary shall make application in writing to the board of health, specifically stating the proposed variance from the particular rule or rules.
- (B) The board of health may grant a variance from the requirements of this chapter as shall not be contrary to the public interest, where a person shows that because of practical difficulties or other special conditions compliance with this chapter will cause unusual and unnecessary hardship, and that no other technically feasible or economically reasonable means of compliance exists in rule. Financial impact alone may not form the basis for a variance under this rule. No variance shall be granted that will defeat the spirit and general intent of this chapter, or be otherwise contrary to the public interest or adversely affect the public health or cause contamination of the environment.
  - (1) The board of health shall not grant a variance from the provisions in paragraphs (C) and (D) of rule 29-07 of this Chapter.
  - (2) The board of health shall not grant a variance from the provisions of paragraphs (A) and (B) of rule 29-13 of this Chapter.
- (C) STS or STS components differing in design or function from systems or components, the use of which is authorized under this chapter, may qualify for approval by the director of health subject to the review and recommendation of the STS technical advisory committee established pursuant to division (A) of section 3718.03 of the Revised Code. A manufacturer seeking approval for use of a system or component that differs in design or function from systems or components authorized under this chapter shall submit an application and information as required in division (A) of section 3718.04 of the Revised Code. The system or component shall be reviewed by the STS technical advisory committee and the department of health in accordance with the standards and guidelines developed under division (F)(1) of section 3718.03 of the Revised Code. The STS technical advisory committee shall advise the director on approval or disapproval of such systems or components. The director of health shall approve or disapprove the use of systems or components submitted for review and shall provide notification of the approval or disapproval in accordance with section 3718.04 of the Revised Code. The director of health shall utilize a department of health web site listing to notify boards of health and interested parties of those systems and components approved under this paragraph and section 3718.04 of the Revised Code.