SEWAGE HANDLING AND DISPOSAL REGULATIONS

12 VAC 5-610-30. Relationship to other ~~Virginia Joint Sewerage Regulations~~ regulations. This chapter ~~is supplemental to~~ supplements the ~~current~~ Virginia Sewerage Collection and Treatment (SCAT) Regulations; the Authorized Onsite Soil Evaluator (AOSE) Regulations, the Waterworks Regulations, the Alternative Discharging Sewage Treatment Regulations for Single Family Dwellings, and the Private Well Regulations, or their successor, which were adopted ~~jointly~~ by the State Board of Health ~~and~~ or jointly with the Department of Environmental Quality pursuant to §62.1-44.19 of the Code of Virginia. This chapter addresses the handling and disposal of sewage not regulated by a Virginia Pollutant Discharge Elimination System (VPDES) Permit.

12 VAC 5-610-70. Grandfather clause.

A. ~~Any~~ The owner of a grandfathered lot may submit an application for a construction permit according to the procedure in 12 VAC 5-610-250. The local health department may perform a site and soil evaluation ~~in accordance with Part III (12 VAC 5-610-450 et seq.) of this chapter and a permit shall be issued~~ and issue a permit for a system which complies to the greatest extent possible with this chapter provided that the site and soil conditions would not preclude the successful operation of the system. Whenever the site and soil conditions on a grandfathered lot do not substantially comply with the requirements ~~in Part IV (12 VAC 5-610-591 et seq.) of this chapter~~ contained in the most current version of these regulations for a septic tank effluent system, secondary or better treatment ~~will~~ shall be required in the system design. In no case may

the separation distance between the ~~subsurface absorption~~ sewage system and a drinking water supply be less than the separation distance established in the regulations in effect at the time the Department approved the grandfathered lot ~~was approved (subdivision approval) or when the first permit was issued for the grandfathered lot~~.

B. Certification letters may not be issued in lieu of permits under the grandfather clause.

C. ~~All permits~~ Permits issued under the grandfather clause which do not substantially comply with the provisions of this chapter shall be considered conditional permits in accordance with 12 VAC 5-610-~~250 J~~ 254. A statement approved by the division and a dedication document (12 VAC 5-610-280) shall be recorded and indexed in the grantor index of the land records of the circuit court having jurisdiction over the site of the sewage ~~treatment and disposal~~ system. The statement shall indicate that the permit is issued under the grandfather clause and that the site and soil conditions do not substantially comply with the current regulations, whether additional conditions have been imposed as part of the permit, and may contain ~~such~~ other information as the ~~division~~ department deems appropriate ~~to serve notice to future owners of the unique nature of grandfathered lots~~.

~~D. Within 18 months of July 1, 2000, any owner of a lot for which a certification letter or subdivision approval was issued after November 1, 1982, may submit an application for a construction permit according to the procedures in 12 VAC 5-610-250. Such application shall be subject to the permitting requirements of the regulations under which the certification letter or~~

~~subdivision approval was issued.~~

~~12 VAC 5-610-75. Permits valid on the effective date of this chapter.~~

~~Sewage disposal system construction permits which are valid on July 1, 2000, shall be automatically renewed on a one-time basis. Each permit thus renewed shall have an expiration date 18 months from the expiration date shown on the face of the permit. Such permits may be converted to certification letters only if they substantially comply with the current provisions of this chapter.~~

12 VAC 5-610-100. Right of entry.

The commissioner or his designee shall have the right to enter any property to inspect, investigate, test, or take samples to assure or determine compliance with this chapter in accordance with the provisions of §32.1-25 of the Code of Virginia.

~~Article 2~~Part I

Article I

Definitions

12 VAC 5-610-120. Definitions.

The following words and terms when used in this chapter shall have the following meanings, unless the context clearly indicates otherwise:

"Absorption area" means the total area used for dispersing effluent into the soil medium, including, but not limited to, the absorption interface area, the soil between and around effluent dispersal, or the absorption interface area.

"Absorption interface area" means the area beginning at the interface between the absorption area and the point of effluent application, which is utilized for the dispersal of effluent.

“Absorption trench” and “absorption trench system” shall be defined as meeting the requirements contained in Part VI (12 VAC5-610-660 et. seq.).

"Advanced Secondary Effluent" or "ASE" means effluent treated to reduce five-day biochemical oxygen demand to 10 mg/l or less, total suspended solids to 10 mg/l or less, and fats, oils, and grease to less than 5 mg/l. Without disinfection, fewer than 10^4 fecal coliforms are present. With disinfection, fewer than 200 fecal coliforms are present. Total Nitrogen is less than 30 mg/l.

"Agent" means a legally authorized representative of the owner.

~~"Alluvial soil" means a soil developing from recently deposited alluvium and exhibiting essentially no horizon development or modification of the recently deposited materials.~~

~~"Alluvium" means mineral materials, either weathered or unweathered, that are transported by flowing water and deposited or redeposited in a flood-plain or marine terrace.~~

"Aquifer" means the water-bearing portion of a geologic formation that transmits water.

"Biochemical oxygen demand (BOD)" means the amount of oxygen consumed by microorganisms (mainly bacteria) and by chemical reactions in the biodegradation of organic matter as determined by successive measurements of dissolved oxygen taken from standard test mixtures of water and wastewater under controlled temperatures.

"BOD_5 " means the five-day biochemical oxygen demand; the oxygen demand exerted after five days of a BOD test using standard methods.

"Certification letter" means a letter issued by the commissioner, in lieu of a construction permit, which identifies a specific ~~site~~ footprint and recognizes the appropriateness of the ~~site~~ footprint for the installation of ~~an onsite wastewater disposal~~ a sewage system.

~~"Colluvial soil" means a soil developing from recently deposited colluvium and exhibiting essentially no horizon development or modification of the recently deposited materials.~~

~~"Colluvium" means an accumulation of soil material, or a mixture of stone fragments and soil material, deposited at the base of slopes or in depressional areas, primarily by gravity.~~

"Commissioner" means the State Health Commissioner or his subordinate who has been delegated powers in accordance with subdivision 2 of 12 VAC 5-610-40.

“Conditional construction permit” means a permit authorizing the installation of a sewage system

which does not fully conform to the criteria in this chapter, but which under the permit conditions can be reasonably expected to function without danger to public health or groundwater supplies and will not create a nuisance.

"Cr horizon" means weathered or soft bedrock and is used to indicate root restrictive layers ~~or~~ of bedrock or saprolite.

"Data collection" means the gathering, reporting, and implementation of appropriate procedures for obtaining necessary information to monitor the status of performance, water or effluent quality, effluent quantity, use, or flow of a sewage system installed pursuant to a permit issued under this chapter.

"Dilution area" means the land immediately adjacent to and down gradient, in the direction of ground water flow, from a mass sewage disposal system, which is provided for the purpose of diluting nitrogen, or other nutrients occurring in wastewater, with ambient ground water, in order to assure compliance with nutrient standards contained in this chapter.

"Disinfection" means a process by which microorganisms are inactivated, removed, or destroyed, by biocidal means such as chemical oxidants or equivalent agents.

"District health department" means a consolidation of local health departments as authorized in §32.1-31 C of the Code of Virginia.

"Division" means the Division of Onsite Sewage and Water Services, Office of Environmental

Health Services, State Health Department or its administrative successor.

"Drainage way" means a concave portion of the landscape in which surface water or rain water run-off gathers intermittently or continuously to flow to a lower elevation.

"Existing construction" (with failing sewage disposal systems) means an existing structure where the sewage disposal system serving the structure has failed or is currently in violation of state law or regulations and requires correction.

"Fats, oils and grease" or "FOG" means components of foodstuffs such as, but not limited to, grease, oils, mineral oils, vegetable fats or oils, waxes, or other fatty acids found in wastewater.

"Fill material" means soil transported or deposited by man or soil recently transported or deposited by natural erosion forces. The transportation and deposition of soil may be evidenced by one or more of the following.

1. No or indistinct soil horizons;

2. Depositional stratification;

3. Presence of a buried organic layer; and

4. Position in the landscape.

"Footprint" means the delineated area (measured in square feet) that is certified by the department or AOSE/PE for the eventual design and placement of an effluent dispersal method

and repair.

"General approval" means approval granted to systems which are proven and tested in accordance with ~~Article 2 (12 VAC 5-610-441 et seq.) of~~ Part II of this chapter.

"Grandfathered lot" means~~:~~

~~1. Any lot upon which no permit has been issued and which is in a subdivision approved by the department prior to July 1, 2000, in accordance with a local subdivision ordinance. Individual lots may or may not have been evaluated; or~~

~~2. Any~~ a lot, parcel, or portion thereof with a previously issued permit or a specific written approval (not including a certification letter) from the department.

"Gravelless dispersal" means the dispersal of effluent through any bedding material other than gravel in a percolation trench. For example, chambers, large diameter pipes, multi-pipe systems, and various aggregate substitutes may be used instead of clean crushed stone or gravel.

~~"Gray color" means a chroma 2 or less on the Munsell Color Chart.~~

~~"Impervious strata" means soil or soil materials with an estimated or measured percolation rate in excess of 120 minutes per inch.~~

"Limiting factor" means a restrictive soil horizon or other impervious strata, rock, water table, seasonal water table, perched water table, shrink-swell soil, soil wetness feature or soil exhibiting

wetness, or other feature that limits the adequate treatment and dispersal of wastewater.

"Local health department" means a branch of the State Health Department established in each city and county in accordance with §32.1-30 of the Code of Virginia.

"Malfunction" means failure of a sewage system to operate in a normal or usual manner. A malfunction occurs when the effluent limitation is exceeded under the permit or when a sewage system requires immediate corrective action to restore normal operation. Malfunctions may result from improperly designed equipment, poor maintenance, careless or improper operation, operator error, or any other upset condition or equipment breakdown.

"Mass sewage disposal system" means a sewage disposal system or systems which will discharge effluent to a single absorption area or multiple absorption areas with or without combined flows, such that the loading rate applied to any acre, as determined by the department, exceeds ~~1,200~~ 750 gallons per day.

"Mineral soil" means a soil consisting predominantly of, and having its properties determined predominantly by, mineral matter. A mineral soil usually contains less than 20%~~6C~~ organic matter, but it may contain an organic surface layer up to 12 inches thick.

"Monitoring" means the reporting, periodic measuring or sampling of concentrations of substances produced from a treatment works or the measuring of concentrations of substances from a monitoring well.

"New construction" means construction of a building for which a building permit is required.

"Nitrate (NO_3)" means a form of nitrogen that is an important plant nutrient and inorganic fertilizer that may pollute groundwater and adversely affect public health.

"Nitrite" means the most highly oxidized form of nitrogen found in wastewater and is extremely toxic to most aquatic species.

"Nuisance" means an activity which unreasonably interferes with the individual's or public's reasonable comfort, convenience or enjoyment such that it interferes with the rights of a reasonable person in like circumstance by causing damage, annoyance, or inconvenience.

"Office" means the Office of Environmental Health Services, State Health Department or its administrative successor.

"Onsite Management Entity (OME)" means an authority, board, commission, person or other private or public entity responsible for overseeing the operation and maintenance of sewage systems.

"Operate" means the act of making a decision (i) to place into or take out of service a unit process or unit processes or (ii) to make or cause adjustments in the operation of a unit process or unit processes at a treatment works.

"Operator" means the individual employed or appointed by the owner who is the person in

responsible charge, such as a supervisor, a shift operator, or a substitute in charge, and whose duties include but are not limited to, operating, maintaining, administering, testing or evaluating, or assuring control of the treatment works operations.

"Owner" means the Commonwealth or any of its political subdivisions, including sanitary districts, sanitation district commissions and authorities, any individual, any group of individuals acting individually or as a group, or any public or private institution, corporation, company, partnership, firm or association which owns or proposes to own a sewerage system or treatment works.

"Performance evaluation sample" means a sample provided to a laboratory for the purpose of determining whether the sewage system is meeting the limits of performance specified by the permit issued by the department.

"Performance standards" means the (1) regulatory requirements limiting the concentrations of designated substances from a treatment works or the (2) established operating standards for various program operation and maintenance requirements.

"Permit" means a written authorization granted by the Commissioner pursuant to this chapter to construct, operate, or maintain a sewage collection system, sewage system, or treatment works.

"Permit modification" means a revision to a permit that substantially complies with this chapter

"Person" means an individual, corporation, partnership, association or any other legal entity.

"Pollution" means alteration of the physical, chemical or biological properties of State waters or land that may create a nuisance or render such waters or land (1) harmful or detrimental to the public health, safety or welfare, or (2) harmful to the health of animals, fish or aquatic life; or (3) unsuitable with reasonable treatment for use as present or possible future source for a public water supply; or (4) unsuitable for recreational, commercial, industrial, agricultural or for other reasonable uses; or (5) contributing to the contravention of standards of water quality duly established by the Department of Environmental Quality.

"Practice of engineering" shall be defined by Chapter 4, §54.1-400 of the Code of Virginia.

"Pre-engineered" means a treatment device, dispersal method, or process built of or using prefabricated sections or parts that produces a desired outcome, such as effluent quality or effluent assimilation. Examples include, but are not limited to, septic tanks, devices with ANSI/NSF 40 designation, or devices that have received general or provisional approval pursuant to Part II of this chapter.

~~"Previously issued permit" means any permit issued prior to July 1, 2000, and in accordance with the regulations in effect at the time the permit was issued. There is no distinction between an expired permit and one that has been continually renewed.~~

"Public Utility", "public service company" or "public service corporation" means business entities deemed to be public utilities within the definitions set forth under Sections 56-232 and 56-265.1 of the Code of Virginia. Such entities shall have been issued certificates of convenience

and necessity by the State Corporation Commission and include those engaged in the generation, transmission or distribution of electricity, natural or manufactured gas (except in enclosed portable containers), and geothermal resources and those engaged in furnishing telephone or telegraph service, sewerage facilities, and water.

"Pump and haul" means ~~any unusual circumstance~~ circumstances wherein sewage is permitted to be transported by vehicle to a point of disposal. The term "pump and haul" includes all facilities and appurtenances necessary to collect and store the sewage for handling by a contractor having a valid sewage handling permit.

"Redoximorphic feature" means the soil properties associated with wetness that result from the reduction and oxidation of iron and manganese compounds in the soil after saturation with water and desaturation, respectively.

"Rock" or "bedrock" means continuous, coherent, lithologic material that has relative hardness depending on the degree of weathering. Bedrock has characteristics such as strike, dip, jointing, and lithological compositions. Structure and water movement are rock controlled. Bedrock grinds with an auger, and mechanical penetration is more difficult or prevented as the material gets harder.

"Safety factor" means the ratio, greater than one, incorporated into the design of a sewage system to accommodate unexpected extreme conditions beyond normal ranges to which a system or elements of a system might be subjected as determined by accepted engineering practices or

designated by this chapter.

"Saprolite" means material weathered from igneous or metamorphic rock, without soil structure, and with remnant structure and fabric of the parent rock which is soft in place and can be penetrated easily with an auger.

"Saturated hydraulic conductivity" or "Ksat" means the term used to measure the ability of soil to transmit water and is the proportionality factor in Darcy's Law.

"Seasonal water table" means the depth below the ground's surface to which the water table rises that can be observed or measured for 21 or more consecutive days, or 30 or more cumulative days out of a year with normal annual precipitation, and which has been preceded by a year with normal annual precipitation. Redoximorphic features or soil wetness features may not be present at the depth where the seasonal water table is observed, such as in an oxyaquic soil.

"Secondary effluent" or "SE" means effluent treated to reduce five-day biochemical oxygen demand to 30 mg/l or less, total suspended solids to 30 mg/l or less, and fats, oils, and grease to less than 5 mg/l.

"Septic tank effluent" or "STE" means effluent characterized by a five-day biochemical oxygen demand between 120 and 200 mg/l; total suspended solids between 70 and 150 mg/l; fats, oils, and grease of 30 mg/l or less; and having no other toxic, hazardous, or constituents not routinely found in residential wastewater flows.

"Septage" means the mat of grease and scum on the surface of septic tanks, the accumulated sludge at the bottom of tanks and the sewage present at the time of pumping.

"Sewage" means water-carried and nonwater-carried human excrement, kitchen, laundry, shower, bath or lavatory wastes separately or together with such underground, surface, storm or other water and liquid industrial wastes as may be present from residences, buildings, vehicles, industrial establishments or other places.

"Sewage disposal system" or "sewage system" means a sewerage system or treatment works ~~designed not to result in~~ to prevent a point source discharge.

"Sewage handler" means any person who removes or contracts to remove and transports by vehicle the contents of any septic tank, sewage treatment plant, privy, holding tank, portable toilet or any sewage, septage or sewage sludges which have been processed to meet acceptable treatment standards as defined in this chapter or the ~~Sewage~~ SCAT Regulations (12 VAC 5-580-10 et seq.).

"Sewage handling" means the vehicular conveyance of sewage (See "Transportation" in §32.1-163 of the Code of Virginia).

"Sewerage system" means pipe lines or conduits, pumping stations and force mains and all other construction, devices and appliances appurtenant thereto, used for the collection and conveyance of sewage to a treatment works or point of ultimate disposal.

"Shrink-swell soils" means soils with horizons that contain montmorillonite and other clays that excessively shrink upon drying and swell upon wetting. Shrink-swell soils may exhibit faster hydraulic conductivity rates when dry and therefore must be thoroughly wetted before a permeability test is performed.

"Sink hole" means a depression in the topography without a surface outlet for drainage from the low point. Sink holes are common in areas containing limestone and generally result from the collapse of solution cavities.

Slope" means the average inclination of a surface, measured from its horizontal, generally expressed as a percentage (the ratio of vertical distance to a given horizontal distance).

"Soil" means the weathered mineral and organic fraction of the earth's regolith, which is less than or equal to 2.0 mm in size as observed in place. Soil comprises sands, silts or clays or combinations of these textured components and may contain larger aggregate materials such as gravel, cobbles, stones or channers or precipitates from aqueous solution. Soil includes the A, O, B, C, and E horizons.

"Soil concretions" means hard grains, pellets, or nodules from concentrations of compounds in the soil that cement the soil grains together. Concretions may indicate a limiting factor.

"Soil Drainage Management Contract (SDMC)" means a contract between the department and the political subdivision for the development, operation, maintenance, and enforcement of all soil

drainage management plans within the political subdivision.

"Soil Drainage Management Plan (SDMP)" means a plan approved by the commissioner, pursuant to this Chapter.

"Soil horizon" means a layer of soil or soil material approximately parallel to the land surface and different from adjacent genetically related layers in physical, chemical, and biological properties or characteristics such as color, structure, texture, consistency, kinds and numbers of organisms present, degree of acidity or alkalinity, etc.

"Soil profile" means a vertical section of the soil throughout all its horizons.

"Soil restriction" means a feature that impedes the vertical movement of water. Restrictions generally consist of soil that is firmly compacted, root restrictive, or very rich in clay. Restrictions include, but are not limited to, hard pans, fragipans, clay pans, plowpans, traffic pans, iron pans, and plinthic horizons.

“Soil wetness feature” means the depth at which 2% or greater redoximorphic features appear in the soil.

"State waters" means all water, on the surface and under the ground, wholly or partially within, or bordering the Commonwealth, or within its jurisdiction.

"Subdivision" means multiple building lots derived from a parcel or parcels of land.

"Substantial Compliance" means designs that do not exactly conform to the guidelines as set forth in Part IV, V, VI and/or VII of this chapter but whose construction will not adversely affect public health or groundwater supplies. The design will not create a nuisance or result in pollution.

"Subsurface soil absorption" means a process which utilizes the soil to treat and dispose of effluent from a treatment works. (Also see "Subsurface drainfield" in §32.1-163 of the Code of Virginia).

"Tertiary effluent" or "TE" means advanced waste treatment including chemical clarification, nutrient reduction, disinfection, or filtration that produces effluent BOD_5 and TSS concentrations of 10 mg/L or less each and fats, oils, and grease (FOG) 1 mg/l or less. Without disinfection, fewer than 10^4 fecal coliforms are present. With disinfection, fewer than 20 fecal coliforms are present. Total Nitrogen less than 10 mg/l is obtained.

"Texture" means the relative proportion of various size groups of individual soil grains in a mass of soil and refers to the proportion of sand, silt, and clay contained in the soil.

"Total Kjeldahl nitrogen" or "TKN" means the total organic and ammonia nitrogen.

"Total Nitrogen" means all forms of nitrogen that are present in wastewater such as organic nitrogen, ammonia, nitrite, and nitrate.

"Total suspended solids" or "TSS" means floating matter, settleable matter, colloidal matter, and

matter in solution of wastewater.

"Treatment works" means any device or system used in the storage, treatment, disposal or reclamation of sewage or combinations of sewage and industrial wastes, including but not limited to pumping, power and other equipment and appurtenances, septic tanks and any works, including land, that are or will be (i) an integral part of the treatment process or (ii) used for ultimate disposal of residues or effluent resulting from such treatment.

"Utility" means any private or public utility that provides for monitoring, reporting, or operation and maintenance to sewage systems and may be an owner.

"Variance" means a conditional waiver of a specific regulation which is granted to a specific owner relating to a specific situation or facility and which may be for a specified time period.

"VPDES" (Virginia Pollutant Discharge Elimination System) means the Virginia system for issuing permits pursuant to the Permit Regulation (9VAC25-31-10 et seq.), the State Water Control Law, and §402 of the Clean Water Act (33 U.S.C. §1251 et seq.).

"Water table" means the depth in the soil that is saturated with water and where the water is at atmospheric pressure (water not held by tension or suction) and can be measured and observed over a defined space and time.

~~Part II~~

SEWAGE HANDLING AND DISPOSAL REGULATIONS

~~Procedural Regulations~~

~~Article 1~~

~~Procedures~~

Part I

Article II: Administration

12 VAC 5-610-190. Variances.

The commissioner may grant a variance to this chapter; however, minor deviations to the criteria contained in Part IV ~~(12 VAC 5-610-591 et seq.) or~~ , Part V ~~(12 VAC 5-610-660 et seq.),~~ or Part VI of this chapter may be granted in accordance with 12 VAC 5-610-280 C. The commissioner shall follow the appropriate procedures set forth in this section in granting a variance.

~~A. Definition of a variance. A variance is a conditional waiver of a specific regulation which is granted to a specific owner relating to a specific situation or facility and may be for a specified time period.~~

B. Requirements for a variance. The commissioner may grant a variance if a thorough investigation reveals that the hardship imposed (may be economic) by this chapter outweighs the benefits that may be received by the public and that the granting of such variance does not subject the public to unreasonable health risks.

C. Application for a variance. Any owner who seeks a variance shall apply in writing ~~for a variance~~. The application shall be sent to the appropriate district and local health department for review ~~and~~ before forwarding to the commissioner. The application shall include:

1. A citation to the regulation from which a variance is requested;

2. The nature and duration of the variance requested;

3. Any relevant analytical results including results of relevant tests conducted pursuant to the requirements of this chapter;

4. The hardship imposed by the specific requirement of this chapter;

5. A statement of reasons why the public health and welfare would be better served if the variance were granted;

6. Suggested conditions that might be imposed on the granting of a variance that would limit the detrimental impact on the public health and welfare;

7. Other information, if any, believed pertinent by the applicant; and

8. ~~Such other information~~ Information as the local health department ~~and~~ or the commissioner may require.

D. Evaluation of a variance application.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

1. The commissioner shall act on ~~any~~ a complete variance request ~~submitted pursuant to subsection C of this section~~ within 60 calendar days of receipt of the request.

2. ~~In the commissioner's evaluation of a~~ When evaluating the variance application, the commissioner shall consider the following factors:

a. The effect that such a variance would have on the operation of the sewage handling or disposal facility;

b. The cost and other economic considerations imposed by this requirement;

c. The effect that such a variance would have on protection of the public health;

d. Any relevant analytical results including results of relevant tests conducted pursuant to the requirements of this chapter;

e. The hardship imposed by enforcing the specific requirement of this chapter;

f. The applicant's statement of reasons why the public health and welfare would be better served if the variance were granted;

g. The suggested conditions that might be imposed on the granting of a variance that would limit the detrimental impact on the public health and welfare;

h. Other information~~, if any,~~ believed pertinent by the applicant;

i. ~~Such other~~ Other information ~~as~~ that the local health department ~~and~~ or the commissioner may require; and

j. ~~Such other~~ Other factors ~~as~~ that the commissioner may deem appropriate.

E. Disposition of a variance request.

1. The commissioner may reject ~~any applicant~~ the application for ~~a~~ variance by sending a rejection notice to the applicant. The rejection notice shall be in writing and shall state reasons for the rejection. ~~The application may petition for a hearing~~ The denial of a variance shall be deemed the denial of a permit and the applicant may appeal a rejection to the Appeal Review Board by filing a notice of appeal within 30 calendar days ~~to challenge~~ after receiving the rejection ~~pursuant to 12 VAC 5-610-200~~ letter. Such appeal shall be made in writing and shall include the required fee.

2. If the commissioner proposes to grant a variance request ~~submitted pursuant to subsection C of this section,~~ the applicant shall be notified in writing of this decision. Such notice shall identify the variance, sewage handling or disposal facility covered, and shall specify the period of time for which the variance will be effective and any conditions imposed pursuant to issuing the variance. The effective date of a variance shall be 15 calendar days following its issuance.

3. No owner may challenge the terms set forth in the variance after 30 calendar days have elapsed from the date of issuance.

F. Posting of variances. All variances granted to any sewage handling or disposal facility are nontransferable. Each variance shall be attached to the permit to which it is granted. Each variance is revoked when the permit to which it is attached is revoked.

12 VAC 5-610-200. Hearing types.

Hearings before the board, commissioner or the commissioner's designees shall include any of the following forms depending on the nature of the controversy and the interests of the parties involved.

A. Informal hearings. An informal hearing is a meeting with the district or local health department with the district or local health director presiding and held in conformance with §9-6.14:11 of the Code of Virginia. The district or local health department shall consider all evidence presented at the meeting which is relevant to the issue in controversy. Presentation of evidence, however, is entirely voluntary. The district or local health department shall have no subpoena power. ~~No~~ A verbatim record ~~need be taken~~ is not required at the informal hearing but may be made at the discretion of the Department. The local or district health director shall review the facts presented and based on those facts render a decision. A written copy of the decision and the basis for the decision shall be sent to the appellant within 15 work days of the hearing unless the parties mutually agree to a later date in order to allow the department to evaluate additional evidence. If the decision is adverse to the interests of the appellant, ~~an~~ and the appellant is an aggrieved ~~appellant~~ owner, he may request an adjudicatory hearing pursuant to 12

SEWAGE HANDLING AND DISPOSAL REGULATIONS

VAC 5-610-200 B.

B. Adjudicatory hearing ~~for appeals of denials of sewage system construction permits~~. The adjudicatory hearing is a formal, public adjudicatory proceeding before the commissioner or his designee, the Sewage Handling and Disposal Appeal Review Board or a designated hearing officer, and held in conformance with §9-6.14:12 of the Code of Virginia. An adjudicatory hearing includes the following features:

1. Notice. Notice which states the time and place and the issues involved in the prospective hearing shall be sent to the ~~owner or the person who is the subject of the hearing~~ appellant. Notice shall be sent by certified mail at least 15 calendar days before the hearing is to take place.

2. Record. A verbatim record of the hearing shall be made by a court reporter. ~~A copy of the transcript of the hearing, if transcribed, will be provided within a reasonable time to any person upon written request and payment of the cost.~~

3. Evidence. All interested parties shall attend the hearing and submit oral and documentary evidence and rebuttal proofs, expert or otherwise, that is material and relevant to the issues in controversy. The admissibility of evidence shall be determined in accordance with §9-6.14:12 of the Code of Virginia.

4. Counsel. All parties may be accompanied by and represented by counsel and are entitled to conduct such cross-examination as may elicit a full and fair disclosure of the facts.

5. Subpoena. Pursuant to §9-6.14:13 of the Code of Virginia, the commissioner, or his designee, Sewage Handling and Disposal Appeal Board, or hearing officer may issue subpoenas on behalf of themselves for the attendance of witnesses and the production of books, papers, maps or other materials. Failure to appear or to testify or to produce materials without adequate excuse may be reported by the commissioner to the appropriate circuit court for enforcement.

6. Judgement and final order. The commissioner may designate a hearing officer or subordinate to conduct the hearing as provided in §9-6.14:12 of the Code of Virginia, and to make written recommended findings of fact and conclusions of law to be submitted for review and final decision by the commissioner. The final decision of the commissioner shall be reduced to writing and will contain the explicit findings of fact upon which his decision is based. A certified copy of the decision shall be delivered to the ~~affected owner~~ appellant. Notice of a decision will be served upon the parties and become a part of the record. Service may be by personal service or certified mail, return receipt requested.

12 VAC 5-610-210. Request for hearing.

The commissioner, or any person or owner injured by alleged violation of this chapter, may request a hearing of one of the types listed by sending the request in writing to the district or local health department within 30 days from the date of the alleged violation or the commissioner's decision. The request ~~for hearing~~ shall cite the ~~reason or~~ reasons for the hearing ~~request~~ and shall cite the ~~section or~~ sections of this chapter involved.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

12 VAC 5-610-220. Hearing as a matter of right.

Any person or owner whose rights, duties, or privileges have been, or may be affected by any decision of the board or its subordinates in the administration of this chapter shall have a right to ~~both~~ an informal ~~and adjudicatory hearings~~ hearing. The commissioner may require participation in an informal hearing before granting the request for a full adjudicatory hearing.

Exception. No person other than an owner of the property at issue shall have the right to an adjudicatory hearing to challenge the issuance of either a construction permit or operation permit unless the person can demonstrate at an informal hearing that the minimum standards contained in these regulations have not been applied and that he will be injured in some manner by the issuance of the permit.

12 VAC 5-610-230. Appeal.

A. ~~Any~~ The appeal from a ~~denial of a~~ denied construction permit, certification letter, or other requested approval under this Chapter ~~for a sewage disposal system~~ must be made in writing, shall include the required fee, and must be received by the department within 30 days ~~of the date of receipt of notice of the denial.~~ from the date that the aggrieved owner received the denial notice.

~~B. Any request for hearing on the denial of an application for a variance pursuant to 12 VAC 5-610-170 E 1 must be made in writing and received within 30 days of receipt of the denial notice.~~

~~C.~~ B. ~~Any~~ The request for a variance must be made in writing and received by the department prior to the denial of the sewage ~~disposal~~ system permit, or within 30 days ~~after such~~ from receipt of the denial.

~~D.~~ C. ~~In the event~~ If a person applies for a variance within the 30-day period provided by subsection ~~C of this section~~ B, the date for appealing the denial of the permit~~, pursuant to subsection B of this section,~~ shall commence from the date on which the department acts on the ~~request for a variance~~ variance request.

~~E.~~ D. Pursuant to the Administrative Process Act (§9-6.14:1 et seq. of the Code of Virginia), only an aggrieved owner of the property at issue may appeal a final decision of the commissioner or Appeal Review Board to an appropriate circuit court.

Part I

Article III: Construction Permits and Certification Letters

12 VAC 5-610-250. ~~Procedures for obtaining a construction permit for a sewage disposal system.~~ Sewage System Type.

Construction permits are issued by the commissioner ~~but all requests~~ . Requests for a ~~sewage disposal construction~~ permit shall be directed initially to the district or local health department.

A. Type I. ~~A~~ Type I sewage ~~disposal system is an individual sewage disposal system~~

~~incorporating a septic tank and subsurface soil absorption (septic tank-subsurface drainfield) serving a single residence. The submission of an application is all that is normally necessary to initiate procedure for obtaining a permit under this subsection. If after a site investigation, it is determined that pumping, enhanced flow distribution (see 12 VAC 5-610-930 A) or low pressure distribution (see 12 VAC 5-610-940) is necessary, the system shall be considered a Type II system.~~ systems are designed for residential dwellings with flows less than or equal to 750 gallons per day. The design shall include one or more treatment devices that are pre-engineered or prescribed by Part VI of this chapter. The method of dispersal may include designs that are pre-engineered or prescribed by Part VI of this chapter, or other designs deemed adequate by an AOSE/PE. Formal plans are not required; however, when the Department requires construction plans and specifications, then those plans and specifications must be prepared by an AOSE/PE. The district or local health department may require a pre-construction meeting.

~~B. Type II. A Type II sewage disposal system is a sewage disposal system incorporating a septic tank and subsurface soil absorption system which serves a commercial or other establishment, more than a single family dwelling unit, or where pumping, enhanced flow distribution (see 12 VAC 5-610-930 A) or low pressure distribution (see 12 VAC 5-610-940) is necessary. The procedure for obtaining a permit includes the following steps:~~

~~1. The submission of an application;~~

~~2. A preliminary conference as necessary; and~~

~~3. The submission of informal plans, specifications, design criteria, and other data, as may be required by the district or local health department. Depending on the size and complexity of the system, the submission of formal plans and specifications may be required.~~

~~C.~~ B. Type ~~III. A Type III sewage disposal system includes sewage disposal systems other than a septic tank subsurface soil absorption system, and subsurface soil absorption systems, regardless of design, with design flows greater than 1,000 gpd.~~ II. Type II systems include designs for (1) non-residential projects, (2) residential projects with flows greater than 750 gallons per day, (3) land application designs, or (4) designs with flow equalization. When the wastewater strength is stronger than septic tank effluent (STE), the treatment methodology shall comply with the requirements found in 12 VAC 5-581-10 et seq. of the SCAT Regulations. Type II sewage systems require the practice of engineering. The procedure for obtaining a permit ~~under this subsection~~ includes the following steps:

1. The submission of an application;

2. A preliminary conference; and

3. The submission of formal plans, specifications and design criteria. Other supporting data may be required on a case-by-case basis. Upon written request by the professional engineer, the Department may consider submission of less detailed plans when the design is not considered sufficiently complex to warrant formal plans.

~~When high strength wastes are proposed for subsurface disposal, the treatment methodology shall comply with the requirements found in 12 VAC 5-580-10 et seq. of the Sewage Regulations.~~

~~D.~~ C. Type ~~IV. Privies~~ III. Type III systems include privies and vaulted tanks designed for periodic pumping or replacement. ~~The submission of an application is all that is normally necessary to initiate the procedure for obtaining a permit under this section.~~

12 VAC 5-610-252. Application required.

~~E. Application. All applications for any type sewage disposal system~~ Requests for construction permits or certification letters shall be made ~~on an application form provided by~~ to the district or local health department ~~and~~ using an application form approved by the department.

12 VAC 5-610-252.1. Preliminary Conference.

~~F. Preliminary conference. A preliminary conference~~ Preliminary conferences with the district or local health department ~~is~~ shall be held for Type II ~~and Type III~~ systems unless waived by the local or district health department. When a ~~Type III~~ system for septage disposal is planned, the conference shall be with the department. At such conference the owner ~~and/or~~ or his agent shall ~~be prepared to~~ set forth the sewage disposal problems and the proposed solution in such a manner to support his conclusions and recommendations.

~~G.~~ 12 VAC 5-610-253. Formal plans.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

A. In accordance with the provisions of Title 54.1 of the Code of Virginia, all formal drawings, specifications, reports, and other documents submitted for approval shall be prepared by or under the supervision of a licensed professional engineer. The front cover of each set of drawings, of each copy of data and each copy of the specifications submitted shall bear the original imprint of the seal and dated signature of the professional engineer licensed in Virginia who prepared them. In addition each drawing submitted shall bear an imprint or a legible facsimile of such seal.

~~1.~~ B. All formal plans for sewage disposal systems shall bear a suitable title showing the name of the owner and shall show the scale in feet, a graphical scale, the north point, date, and the name of the licensed professional engineer by or under whom prepared. The cover sheet and each plan sheet shall bear the same general title identifying the overall sewage disposal project and each shall be numbered. Appropriate subtitles should be included on the individual sheets.

The plans shall be clear and legible. They shall be drawn to a scale which will permit all necessary information to be plainly shown. The size of the plans should be no larger than 30 inches by 48 inches. Data used should be indicated. Location, when made, shall be shown on the plans. Logs of test borings shall be given either on plans or in the specifications.

Detailed plans shall ~~consist of~~ include plan views, elevations, sections, and supplementary views which together with the specifications and general layouts provide the working information for the contract and construction of the work, ~~including~~ dimensions and relative elevations of structures, the location and outline form of equipment, the location and size of piping, water

levels, ground elevations, and erosion control abatement facilities.

~~2.~~ C. Geographical and other features. Topography, elevations (contour lines), existing or proposed streets and all bodies of water, ditches, buildings, springs, cisterns and wells within 100 feet horizontally of the proposed sewage disposal system site and/or well, a water mounding analysis showing the impact of the proposed sewage system on ground water and all property lines shall be clearly shown.

~~3.~~ D. General layout. The general layout shall show the following:

a. Test borings, ground water elevation (if observed), and soil profiles;

b. Size and location of sewage disposal systems;

c. Schematic flow diagram showing the flow through the various disposal system units;

d. Piping; and

e. Hydraulic profile showing the flow of sewage.

4. Detailed plans. Detailed plans shall show the following:

a. Location, dimensions and elevations of existing or proposed system facilities;

b. Pertinent data concerning the rated capacity of pumps, blowers, motors and other mechanical devices. All or part of such data may be included in the specifications by suitable reference on

the plans;

c. Average and maximum hydraulic flow in profile; and

d. Adequate description of any features not otherwise covered by the specifications.

~~H.~~ D. Formal specifications. Complete technical specifications for the construction of the sewage disposal system and all appurtenances shall accompany the plans. The specifications accompanying construction drawings shall include, but not be limited to, all construction information not shown on the drawings, which is necessary to inform the builder in detail of the design requirements as to the quality of material workmanship and fabrication of the project, type, size, strength, operating characteristics, and rating of equipment; allowable infiltration, machinery, valves, piping, and jointing of pipe, electrical apparatus, wiring and meters; operating tools and construction materials; special filter materials such as stone, sand, gravel or slag; miscellaneous appurtenances; chemicals when used; instructions for testing materials and equipment as necessary to meet design standards and operating test for the complete works and component units.

12 VAC 5-610-253.1. Approval of formal plans.

The Department may require revisions to formal plans, specifications, or documents. The district or local health department may review final, complete, and detailed plans and specifications when submitted in accordance with the provisions of 12 VAC 5-610-250 and 12 VAC 5-610-

253. If the plans are reviewed, the Department shall approve the plans if they comply with this chapter, and if the sewage system will function properly. A set of approved plans shall be returned to the owner.

~~I.~~ 12 VAC 5-610-253.5. Special requirements for certain sewage disposal systems.

A certification letter or construction permit for a single sewage ~~disposal~~ system proposed to serve a dwelling unit with multiple living units, multiple dwelling units or multiple lots with dwelling units shall be issued only to a single owner. The owner shall provide legal documentation to assure operation and the maintenance of the system for the expected life of the living units or dwellings.

~~J.~~ 12 VAC 5-610-254. Construction permit with conditions.

~~1. Definition: "Conditional construction permit" means a permit authorizing the installation of a septic tank subsurface soil absorption system which does not fully conform to the criteria in Part V (12 VAC 5-610-660 et seq.) of this chapter pertaining to septic tank size, subsurface soil absorption system size and certain ground water table conditions as indicated by soil evaluation, but which, under the conditions to which the permit is subject, can be reasonably expected to function without danger to public health.~~

~~2. The purpose of this section is to allow for the issuance of conditional construction permits. Procedures for obtaining a conditional construction permit~~ are the same as those contained in

~~subsections A, B, C and D of this section.~~ A. The footprint shall comply with Part IV or Part V of this chapter, except as provided below.

~~3.~~ B. Conditional construction permits may be issued for ~~any one or more of~~ the following ~~use~~ conditions when ~~satisfactory substantiation is provided by~~ the applicant provides satisfactory written justification:

~~a. Reduced water flow based on permanent water saving plumbing devices;~~

~~b. Limitations on the number of persons occupying the dwelling or using the facility served by the proposed septic tank system;~~

~~c.~~ 1. Intermittent or seasonal use of the dwelling or facility served by the ~~septic tank~~ sewage system; and

~~d.~~ 2. Temporary use of the ~~septic tank~~ sewage system for a specified time period not to exceed one year. Such permits may be renewable when the commissioner determines there is a good cause for renewal.

3. Sewage systems or footprints that have design flows less than that specified by 12 VAC 5-610-670.

~~4. Criteria.~~

~~a. The septic tank and/or drainfield size may be reduced based on the use conditions contained in~~

~~subdivision 3 a, b, c, or d of this subsection.~~

~~b.~~ C. In areas with seasonal fluctuating water table(s), where the seasonally high water table or soil wetness would cause failure if the system were to be used continuously, ~~septic tank~~ sewage systems may be installed when the period of use ~~of the septic tank system~~ coincides with the ~~period when the ground water table, as indicated by free water, is at its lowest~~ least-limiting level of the groundwater table or soil wetness feature. ~~Acceptable separation distances to free standing ground water are the same as those found in Tables 4.3 and 4.4 of this chapter~~.

~~c.~~ D. Because of the increased risk of ~~f~~ailure, a conditional permit shall not be issued~~,~~ in an area with a seasonally fluctuating water table if the proposed absorption area is within 200 feet of ~~a~~ shellfish growing ~~area~~ areas, recreational waters, or ~~a~~ public water supply ~~impoundment~~ impoundments.

~~5.~~ E. The district or local health department shall affix to the conditional construction permit a clear and concise statement relating the conditions and circumstances which formed the basis for issuing the conditional permit as well as the owner's obligations under the permit.

~~6.~~ F. The holder of any conditional construction permit shall have the permit recorded and indexed in the grantor index under the holder's name in the land records of the clerk of the circuit court having jurisdiction over th~~e~~ site of the ~~septic tank~~ system within 30 days after the permit is issued. District or local health departments shall be provided with certification that the conditional septic tank system permit has been recorded in the land records of the circuit court.

The conditional permit shall become effective ~~one day~~ after the district or local health department receives notification of recordation. The district or local health department shall advise the local building official that conditional ~~septic tank~~ ~~system~~ permits are not valid without certification that the permits have been properly recorded ~~as required and.~~ The Department shall ~~forthwith~~ notify the local building official when the conditional permit becomes effective. Final approval of the construction of the ~~septic tank~~ ~~subsurface soil absorption~~ system shall not be given until ~~or unless~~ the system is constructed in accordance with the conditions of the permit. The operation permit will be issued in accordance with 12 VAC 5-610-340.

~~7.~~ G. ~~As per~~ In accordance with §32.1-164.1 of the Code of Virginia, the holder of the permit and ~~any~~ subsequent holders of the permit shall be bound by the conditions stated in the permit unless the holder or subsequent holder obtains ~~an additional permit for modification or alteration of the septic tank system to meet any new use conditions.~~ a different permit or permit modification.

12 VAC 5-610-255. Certification letters.

A. An applicant for a sewage disposal system who does not intend to build within 18 months of application shall apply for a certification letter. The process shall be the same as for a system application made in accordance with 12 VAC 5-610-250. The fees charged for a certification letter shall be the same as prescribed in §32.1-~~164 C~~ 164-C of the Code of Virginia.

B. Certification letters indicate that a site ~~is~~ contains a suitable footprint for ~~an~~ onsite sewage

treatment and disposal ~~system and do not need to indicate the type of system for which the site is suitable~~. Certifications shall include the following information:

1. The gallons per day for which the footprint is approved;

2. The management level required for any future system designed within the footprint;

3. The quality of effluent that may be dispersed within the footprint;

4. Who may design the sewage system;

5. A reference to the expert report relied upon in granting the approval.

6. How to obtain a copy of the reports that the Department relied upon to approve the footprint.

7. A reference to the survey-located footprint and its location of recordation in the land records.

C. Certification letters do not expire and shall convey with the land in the event the property is sold between the time the certification letter is issued and a construction permit is requested.

D. Certification letters may be converted to a construction permit by making application to the local health department in accordance with 12 VAC 5-610-250 and paying any required fees. ~~Note, however, no~~ No additional fee shall be charged ~~when~~ if a certification letter is converted to a construction permit within 18 months of the date the letter was issued. If more than 18 months elapses between the issuance of a certification letter and the application to convert it to a construction permit, then the Department shall impose the application fee in effect at the time of

application.

E. Formal plans and design specifications are not required in order to obtain a certification letter ~~unless said plans and specifications are necessary to determine the appropriateness of a site for a sewage disposal system. Depending upon the type and complexity of the system to be permitted, formal plans and specifications may be required~~. Before issuing the certification letter, the Department may require the applicant to submit information and plans that are deemed necessary to determine the appropriateness of the footprint.

F. ~~Certification letters shall be issued only for conventionally approved systems.~~ Certification letters shall not be issued for ~~experimental or~~ footprints based upon provisionally approved or specially approved systems because there is no assurance that said system will successfully complete the required testing and demonstration and, hence, may not be available when the property owner wishes to convert the letter to a construction permit. Further, no certification letter shall be issued for a ~~conditional permit~~ footprint pursuant to 12 VAC 5-610-~~250 J~~ 254.

~~12 VAC 5-610-260. Requirements for the submission of formal plans, specifications and other data.~~

~~A. In accordance with the provisions of Title 54.1 of the Code of Virginia, all formal drawings, specifications, reports, and other documents submitted for approval shall be prepared by or under the supervision of a licensed professional engineer. The front cover of each set of drawings, of each copy of data and each copy of the specifications submitted shall bear the original imprint of~~

~~the seal and signature of the licensed professional engineer by or under whom prepared. In addition each drawing submitted shall bear an imprint or a legible facsimile of such seal.~~

~~B. If revisions to the formal plans, specifications or documents are necessitated, a letter will be sent to the engineer outlining the revisions and requesting submission of the revised documents within 30 calendar days.~~

~~12 VAC 5-610-270. Approval of formal plans.~~

~~Final, complete and detailed plans and specifications submitted in accordance with the provisions of 12 VAC 5-610-250 and 12 VAC 5-610-260 will be reviewed by the district or local health department as appropriate as soon as practicable upon receipt. Such plans will be approved if they demonstrate compliance with the criteria set forth in Part V (12 VAC 5-610-660 et seq.) of this chapter, and if the sewage disposal system will be able to function properly. A set of approved plans will be returned to the owner.~~

12 VAC 5-610-280. Issuance of the ~~construction permit~~ approval.

A. ~~A~~ The construction permit or certification letter shall be issued by the commissioner after ~~approval of the application submitted under 12 VAC 5-610-250 A and D and fulfilling the requirement contained in 12 VAC 5-610-700 E 2, if applicable.~~ the Department finds that the application complies with this chapter and after the applicant records a dedication document in a form approved by the Division in the grantor index under the holder's name in the land records of

the clerk of the circuit court having jurisdiction over the footprint. The dedication document will assure that the footprint is only used for sewage system design and repair and will define its location by survey.

B. A construction permit shall be issued by the commissioner after (1) approval of the application, (2) certification that the dedication document was properly recorded, and (3) after approval of plans and specifications submitted under 12 VAC 5-610-250 ~~B and C~~. Such approvals shall include the requirement contained in 12 VAC 5-610-700 E 2, if applicable, and applicable requirements of the Department of Environmental Quality in accordance with §32.1-164.3 of the Code of Virginia.

C. Exception.

1. If compliance with the criteria contained in Part IV ~~(12 VAC 5-610-591 et seq.) or~~ , Part V ~~(12 VAC 5-610-660 et seq.)~~ , V, VI or VII ~~of this chapter~~ imposes economic or other conditions that are not justified by the health considerations upon which the criteria are based, a construction permit may be issued for the disposal system design which substantially complies with the criteria ~~set forth in Part IV or V of this chapter~~.

2. When issuing a construction permit for repair of an existing failing sewage ~~disposal~~ system for an occupied structure with indoor plumbing, the criteria contained in Parts IV ~~and V of~~ V, and VI of this chapter shall be complied with to the greatest extent possible. However, it is not necessary to substantially comply with all of the requirements ~~in those parts~~ of this chapter with

the exception of the set back distances for shellfish waters or drinking water wells, unless the system is already closer in which case the corrected system shall not be closer than the existing system. Furthermore, when it can be documented that compliance with those parts creates an economic hardship, the district health director or the district environmental health manager may waive the requirements for pretreating the effluent. All corrections must be of such a nature that they can reasonably be expected to reduce the risk to public health caused by the malfunctioning systems.

12 VAC 5-610-290. Denial of a construction permit, certification letter, or other approval issued under this chapter.

A. If it is determined that the ~~proposed design~~ application or footprint is inadequate or that soil, geological or other conditions are such to preclude safe and proper operation of a proposed sewage ~~disposal~~ system ~~or~~ , that the installation of the system would create an actual or potential health hazard or nuisance, or that the proposed design does not comply with the regulations, the ~~permit~~ application shall be denied and the owner shall be notified in writing of the basis for the denial. The notification shall also state that the owner has the right to appeal the denial.

B. Construction permits may be denied for new construction to be served by a public water supply system which has reached its permitted capacity.

12 VAC 5-610-300. Voidance, revalidation, modification, and revocation of construction permits with and without conditions.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

A. Null and void. ~~All sewage disposal~~ Sewage system construction permits are null and void when (i) conditions such as house location, sewage system location, sewerage system location, well location, topography, drainage ways, or other site conditions are changed from those shown on the application; (ii) conditions are changed from those shown on the construction permit; or (iii) more than 18 months elapse from the date the permit was issued. ~~Reapplication for the purposes of having an expired permit reissued shall be the responsibility of the owner~~, The owner of an expired permit may submit a new application and such reapplication shall ~~be handled as an initial application and~~ comply ~~fully~~ with 12 VAC 5-610-250.

B. Revalidation. Except as provided in 12 VAC 5-610-70, construction permits shall be revalidated if more than 18 months have elapsed since issuance of the construction permit and construction has not commenced. The district or local health department shall revalidate the permit if the permit had been previously issued in accordance with this chapter and the site conditions are the same as shown on the application and construction permit. Exception. This subsection is inapplicable to a Type ~~III~~ II septage disposal facility.

C. Revocation. The commissioner may revoke a construction permit or inspection statement for any of the following reasons:

1. Failure to comply with the conditions of the permit;

2. Violation of any of this chapter for which no variance has been issued;

3. Facts become known which reveal that a potential health hazard would be created or that the ground water resources may be adversely affected by allowing the proposed sewage disposal system to be installed or completed.

D. Modification. If an owner receives notice that a permit is null & void or revoked, then the owner may request a permit modification by submitting modified plans from a professional engineer or Authorized Onsite Soil Evaluator (AOSE) within 30 days from receiving such notice. The Department shall not require a new application and fee if the owner requests a permit modification within 30 days from receiving notice. Nothing in this section shall prohibit the Department from allowing permit modifications on a case-by-case basis to assure efficient program implementation and to protect public health and groundwater supplies.

12 VAC 5-610-310. Revisions of approved plans.

Any deviation from approved plans and specifications affecting capacity, hydraulic conditions, operating units or the functioning of the sewage ~~disposal~~ system must be approved by the ~~bureau~~ Division or the district or local health department before such changes are made. Revised plans and specifications shall be submitted in time to permit the review and approval of such plans and specifications before ~~any~~ construction ~~work which will be affected by the changes is begun~~. begins.

12 VAC 5-610-320. Inspection and correction.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

No part of ~~any~~ the installation shall be covered with earth or used until inspected, corrections made if necessary, and approved, by the district or local health department or unless expressly authorized by the district or local health department. Any part of an installation which has been covered prior to approval shall be uncovered upon the direction of the district or local health department.

Exception. This section is ~~inapplicable~~ does not apply to a Type ~~III septage disposal facility~~ II system.

12 VAC 5-610-330. Statements required upon completion of construction.

A. Statement from a ~~licensed~~ professional engineer licensed in Virginia on a project where the submission of formal plans and specifications are required. Upon completion of the construction or modifications of such sewage ~~disposal~~ system, the owner shall submit to the district or local health department, within 30 days after completion, a statement signed by a licensed professional engineer stating that the construction work was completed substantially in accordance with approved plans and specifications revised only in accordance with the provisions of 12 VAC 5-610-310. This statement shall be based upon inspections of the sewage disposal system during and after construction or modifications that are adequate to assure the accuracy of the statement.

B. Statement from the sewage ~~disposal~~ system contractor. Upon completion of the construction or modification of a sewage disposal system, the owner shall submit to the district or local health department a statement signed by the contractor that the construction work was completed in

accordance with the construction permit, and when appropriate the plans and specifications approved for the project and substantially in accordance with ~~Part V (12 VAC 5-610-660 et seq.) of~~ this chapter.

In the event that an owner is unable to obtain a completion statement from the sewage system contractor, the Department shall accept a completion statement from the licensed general contractor responsible for the construction project, an AOSE, or from a licensed professional engineer stating that the system was installed in accordance with the construction permit and this chapter. If the system is in operation the statement must indicate that the system appears to be functioning properly and is not creating a nuisance. If the sewage system contractor is known, then the name and address of the contractor must be provided.

The Department may also accept a completion statement from the current owner of the property stating that, to the best of his knowledge, the system was installed in accordance with the construction permit and the requirements under this chapter. If the system is in operation the statement must indicate that the system appears to be functioning properly. Along with the completion statement, the owner shall complete a Release and Hold Harmless agreement approved by the Department. If the sewage system contractor is known the name and address of the contractor must also be provided. Since the Release and Hold Harmless Agreement must be recorded in the land records of the appropriate Circuit Court, the owner must provide written documentation of such recording before an operation permit may be issued.

C. . Statement from an Authorized Onsite Soil Evaluator (AOSE) on a project where the owner includes informal plans and specifications from an AOSE. Upon completion of the construction or modifications of such sewage disposal system, the owner shall submit to the district or local health department a statement signed by an AOSE stating that the construction work was completed substantially in accordance with approved plans and specifications revised in accordance with the provisions of this chapter. The statement shall state that it is based upon inspections of the sewage system during and after construction to assure the accuracy of the statement.

12 VAC 5-610-340. Issuance of the operation permit.

A. Upon satisfactory completion of the requirements of 12 VAC 5-610-320 and 12 VAC 5-610-330 the commissioner shall issue an operation permit. The issuance of an operation permit does not denote or imply any guarantee by the department that the sewage disposal system will function for any specified period of time. It shall be the responsibility of the owner or any subsequent owner to maintain, repair or replace any sewage disposal system that ceases to operate as defined in the operation permit and in 12 VAC 5-610-350.

B. The Operation Permit shall include the operation and maintenance, performance monitoring, performance standards, inspection schedule, frequency of performance evaluation sampling, and all reporting requirements, including but not limited to having a valid maintenance contract with an OME or Operator as may be required to protect public health and groundwater supplies. The

SEWAGE HANDLING AND DISPOSAL REGULATIONS

Operation Permit may be valid for a specific period of time and renewable at regular intervals (Management Level 3, 4, or 5).

12 VAC 5-610-350. Failure of a sewage disposal system.

For the purpose of requiring correction of ~~a~~ an in-ground malfunctioning sewage ~~disposal~~ system the presence of raw or partially treated sewage on the ground's surface or in adjacent ditches or waterways or exposure to insects, animals or humans is prima facie evidence of ~~such~~ system failure and is deemed a violation of these regulations. Pollution of the groundwater, failure to meet effluent limits, or backup of sewage into plumbing fixtures ~~may also~~ generally indicate system failure or malfunction.

Part I

Article IV: Subdivision Review, SDMC, and Pump & Haul

12 VAC 5-610-360. Review of subdivision plats for individual sewage disposal systems when required by local ordinance.

A. The intent of this section is to assure that adequate information is supplied to the district or local health department to determine if any or all proposed lots contain a suitable ~~area and reserve area~~ footprint for onsite sewage disposal systems prior to recordation of the subdivision plat. This section shall not be construed to restrict the department in rendering preliminary opinions in accordance with local ordinances prior to recordation. The information requested

herein is supplemental to the information which may be required by local subdivision ordinances.

B. A subdivision plat or a subsection of a subdivision plat submitted to the district or local health department for review of onsite sewage ~~disposal~~ systems shall show at a minimum the location of the ~~proposed onsite sewage disposal systems and the reserve absorption areas if required by Part V (12 VAC 5-610-660 et seq.) of this chapter, 12 VAC 5-610-710 for the onsite sewage disposal systems~~ footprint and ~~the location of the~~ water supply system on each lot, if applicable. Each plat or subsection of a subdivision plat shall be accompanied by specific soil information for each lot ~~(absorption area and reserve area)~~ in accordance with ~~Article 1 (12 VAC 5-610-450 et seq.) of~~ Part III of this chapter and the AOSE Regulations. If not provided by the local subdivision ordinance, the district or local health department ~~may~~ shall require the plat to show streets, utilities, storm drainage, water supplies, easements, lot lines and original topographic contour lines by detail survey or other information as required. For suggested contour interval and scale see APPENDIX L.

C. No department employee shall sign or indicate approval for onsite sewage disposal systems on a subdivision plat or subsection of a subdivision plat for recordation until a ~~sewage disposal site(s), including reserve area when required in accordance with 12 VAC 5-610-710,~~ footprint has been identified, approved or disapproved and recorded on each lot of the subdivision plat on file with the district or local health department. The plat on file with the district or local health

department shall be reconciled with the plat to be recorded. The recorded plat shall reference the plat on file with the department. The signature of a department employee on a recorded subdivision plat or subsection of a subdivision plat does not imply or connote that any lot(s) identified as approved shall be issued a sewage disposal construction permit unless all conditions and circumstances, such as but not limited to landscaping, contained in the original approval exist at the time of application for a sewage disposal construction permit.

D. Before building construction begins on a lot within the subdivision, a valid individual sewage disposal construction permit shall be issued for that lot in accordance with 12 VAC 5-610-280.

12 VAC 5-610-370. (Repealed)

12VAC5-610-371. General. Installation of Residential Sewage Disposal Systems in Political Subdivisions Having Soil Drainage Management Contracts with the State Health Department.

It is the policy of the department to grant sewage system permits for private residential systems whenever such permits can be granted without endangering public health. Many soils are limited in their ability to accept sewage by limiting factors. Some soils can accept sewage when an adequate local plan for soil drainage exists. When a political subdivision enters into a Soil Drainage Management Contract with the department and subsequently develops Soil Drainage Management Plan(s) in an area in which soils respond to artificial drainage and the plan is acceptable to the department, the department will consider approval in soils that were previously unacceptable because of limiting factor.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

12 VAC 5-610-372. Applicability.

This article shall be applicable only in those political subdivisions which enter into Soil Drainage Management Contracts with the department.

12VAC5-610-373. Procedures for entry into or withdrawal from a Soil Drainage Management Contract (SDMC).

A. Entry.

1. Any political subdivision in the Commonwealth may apply to the department through the district or local health department for entry into an SDMC with the department. The application shall contain the following minimum elements:

a. A proposed contract between the department and the political subdivision; and

b. Drafts of all ordinances, required easements, or other legal documents which the political subdivision proposes to adopt as a portion of the SDMC including a local ordinance requiring the holder of a construction permit issued in conjunction with the SDMC to have the permit recorded in the land records of the circuit court having jurisdiction.

2. The department shall, within 60 days of the submission of an application for entry into an SDMC, evaluate the application and propose to the political subdivision any suggestions for modification to the SDMC.

3. The political subdivision may review the department's suggested modifications and resubmit a revised application within such time as the political subdivision elects.

4. The department shall accept or reject entry into an SDMC within 90 days of receipt of the final application from a political subdivision.

5. Upon rejection by the department of a final application for entry into an SDMC, the political subdivision may appeal the department's decision to the appropriate circuit court. The Virginia Administrative Process Act, §9-6.14:1et seq., shall apply to such an appeal.

B. Withdrawal.

1. If the department determines that a political subdivision is failing to abide by the terms set forth in its SDMC with the department, the department may withdraw from the contract.

2. The department shall, within 60 calendar days of its proposed withdrawal from an SDMC notify the political subdivision of the department's intent.

3. The political subdivision may apply to the department for a hearing upon the proposed withdrawal. Such hearing shall be held in accordance with the provisions governing case decisions contained within the Virginia Administrative Process Act.

4. Within 30 calendar days after such hearing, the department shall notify the political subdivision whether the department will withdraw from the SDMC.

5. A decision by the department to withdraw from an SDMC may be appealed to the appropriate circuit court pursuant to the provisions of the Virginia Administrative Process Act.

6. If withdrawal occurs, continued maintenance of all SDMP's shall be the responsibility of the political subdivision in areas where permits were issued in accordance with this chapter.

12VAC5-610-374. Minimum standards for Soil Drainage Management Plans.

A. Every SDMP offered in conjunction with a SDMC shall meet the following minimum standards for surface and groundwater management.

B. The SDMP shall provide for:

1. Positive surface grading in the area of a dwelling and subsurface soil absorption area at a minimum of 0.5%;

2. Drainage ditches for diverting surface water and for lowering the seasonal groundwater table which shall:

a. Completely surround the sewage system;

b. Have a minimum grade of 0.2%;

c. Be located 70 feet, ±10 feet from the drainfield; and

d. Have the invert of the ditch placed in a Group I, II or III soil at an elevation so that the normal

water surface in the ditch is at least six inches below the invert of the trench of the subsurface soil absorption system;

3. A French drain on one side in lieu of an open drainage ditch on one of the four sides;

4. Diversion ditches or swales shall be:

a. Required where adjacent property is equal to or higher in elevation than the proposed site and the adjacent property may be expected to discharge water onto the proposed site;

b. Designed to meet such site specific individual requirements as the department determines to be necessary;

5. A receiving stormwater and groundwater drainage system which is adequate in capacity so that waters from a proposed site shall be conveyed to it in accordance with the political subdivision's criteria;

6. Diversion ditches, where required, or other ditches to transport stormwater and/or groundwater from a site to a receiving body in accordance with the political subdivision's criteria;

7. Ditches to remain open and not be piped and covered unless approved by appropriate local government official, such approval to be granted only with the concurrence of the department;

8. Only appurtenances to the subsurface soil absorption system shall be constructed within the confines of the perimeter ditches required in paragraph B 2 a, above, except where a French

drain is provided on one side; and

9. Lots which shall be a minimum of three acres in size not including swamps or marshland.

12 VAC 5-610-375. Department procedures relating to subsurface soil absorption system applications in SDMC counties and cities.

A. All applications for subsurface soil absorption systems will be evaluated based on the criteria contained in this part. When the site is limited only by a high seasonal water table or surface runoff, the department shall require that a satisfactory SDMP be in place and functioning satisfactorily before issuance of a construction permit. Typed on the construction permit will be the following statement which shall be signed by the applicant:

I understand that this soil has severe limitations for the disposal of septic effluent. With the aforementioned drainage measures the health department expects reasonable serviceability, however, it may malfunction during extreme conditions.

I understand and acknowledge the above and agree to install and maintain the drainage measures.

Signed

Date

B. Soils to be considered shall demonstrate their ability to be artificially drained and shall fall generally into Texture Group I, II, or III.

C. The SDMP and site specific drainage system or systems shall be certified, supervised, maintained, and prepared by or under the direct supervision of a professional engineer licensed in Virginia who is a full-time employee of the political subdivision. In addition, the political subdivision shall have the manpower or other capability to maintain the applicable conditions of the SDMP. This certification shall become a part of the subsurface soil absorption system permit.

D. Proper easements from the owner to the political subdivision, shall be provided for drainage to assure access for proper maintenance.

E. Political subdivisions shall assure proper installation and maintenance of the stormwater and ground water drainage system or systems.

F. The department retains the right to reject any SDMP if in the opinion of the department the SDMP proposed will result in a nuisance or health hazard condition.

12 VAC 5-610-400. Revocation of sewage handling permits.

A. Each permit shall be for a time period not to exceed 12 months.

B. Each permit may be revoked when conditions are changed from those shown in the application.

C. Each permit may be revoked when there is a potential or real health hazard associated with the

sewage handling operation.

D. Each permit may be revoked if the Department determines that the sewage hauler has not complied with the regulations.

12 VAC 5-610-423. Pump and Haul of Sewage.

Pump and haul pertains to an unusual circumstance wherein sewage is permitted to be transported by vehicle to a point of disposal. Pump and haul includes all facilities and appurtenances necessary to collect and store the sewage for handling by a contractor having a valid sewage handling permit.

12 VAC 5-610-424. Permanent pump and haul.

Pumping and hauling on a permanent basis is prohibited unless done under the auspices and supervision of a government entity as provided for in 12 VAC 5-610-427 (see 12 VAC 5-610-410 for exception). Pumping and hauling for over one year shall be considered as permanent pumping and hauling.

12 VAC 5-610-425. Emergency pumping and hauling.

When serious malfunctioning of an existing sewage system, sewerage system or treatment works occurs, pumping and hauling may be authorized for a definite time period until the malfunctioning system can be reconstructed or repaired.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

12 VAC 5-610-426. Temporary pumping and hauling.

Temporary pumping and hauling may be permitted under the following conditions:

1. It must be demonstrated that the temporary pumping and hauling of sewage is not the usual practice in order to permit premature and unplanned real estate or commercial development in an area where sewerage facilities do not exist;

2. Construction of an approved sewage system or treatment works is actively in progress with personnel and machinery at work in the particular area. Bonding, cash escrow or other assurances shall be required to guarantee completion of the sewerage system and/or treatment works;

3. The completion of the sewage system or treatment works is assured and a completion date within the definition of temporary pumping and hauling has been set; and

4. Delays from the anticipated completion date shall be reported immediately by the holder of the pump and haul permit to the district or local health department. Delays not resulting from circumstances beyond the control of the holder of the pump and haul permit shall be grounds for revocation of the pump and haul permit.

12 VAC 5-610-427. Permanent pump and haul.

Permanent pumping and hauling of sewage may be permitted under the following conditions:

1. That the government entity enters into a contract with the department. The government entity will provide pump and haul services, either directly or through a private contractor holding a sewage handling permit, to the home(s), commercial establishment(s) or occupied structure(s) for the period the occupied structure is utilized or until connection can be made to an approved sewage facility;

2. Upon completion of the contract between the department and the government entity, the commissioner shall issue a single pump and haul permit to the government entity. A separate construction permit shall be issued to the government entity for each sewage storage facility. The sewage storage facilities shall be designed and constructed in accordance with Article 7 (12 VAC 5-610-990 et seq.) of Part V of this chapter; and

3. When the government entity provides the sewage pump and haul services, it shall conform to the conditions contained in 12 VAC 5-610-380 and ~~Article 8 (~~12 VAC 5-610-1020 et seq~~.) of Part V~~ of this chapter.

12 VAC 5-610-430. Issuance of a construction permit for storage facilities associated with the pump and haul of sewage.

A construction permit shall be issued by the commissioner after completion of the requirements contained in 12 VAC 5-610-420 and~~, Article 7 (~~12 VAC 5-610-990 et seq~~.) of Part V~~ of this chapter.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

12 VAC 5-610-440. Issuance of the ~~special~~ pump and haul permit.

After concurrence of the local political subdivision and upon satisfactory completion of the requirements set forth in 12 VAC 5-610-420, 12 VAC 5-610-430, ~~Article 4 (~~12 VAC 5-610-598 et seq~~.) of Part IV~~ and ~~Article 7 (~~12 VAC 5-610-990 et seq~~.) of Part V~~ of this chapter, and if the commissioner determines that issuance of the pump and haul permit is in the best interest of public health, a permit shall be issued.

12 VAC 5-610-440.1. Sewage handling; general.

A. In accordance with 12 VAC 5-610-240 B, a sewage handler shall have a written sewage handling permit issued by the commissioner.

B. It is the obligation of every sewage handler to assure that the sewage, sludge or septage handled are transported and disposed of in a safe and sanitary manner in conformance with this chapter and to maintain all records to establish compliance. Treatment and management of sewage and sewage sludge are regulated by the SCAT Regulations (12 VAC 5-580-10 et seq.).

C. All sewage handling equipment in contact with sewage shall be washed in such a manner and location that the wastewater from washing it is conveyed to an approved sewerage system or treatment works.

D. Disposal of sewage sludges or septage into bodies of water or streams is prohibited.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

12 VAC 5-610-440.3. Septage management; general.

Ultimate management of septage generally falls into one of two categories, landfilling or land spreading. Landfilling requires that the septage be stabilized and dewatered to increase solids content nearly fivefold to avoid leaching problems. Land spreading of both stabilized and unstabilized septage is permissible under controlled conditions for agricultural purposes. The preferred methods for septage disposal are disposal in an approved sewage treatment plant or stabilization and subsequent disposal by land application or landfilling in accordance with the Biosolids Use Regulations (12 VAC 5-585-10 et seq.).

12VAC5-610-440.4. Acceptable disposal sites.

A. Sewerage system or treatment works. Any sewerage system or treatment works for which a certificate to operate has been issued jointly by the Department and the Department of Environmental Quality or a system which has been issued a separate permit by the commissioner is considered an approved disposal site for vehicular transported sewage sludge or septage provided permission is obtained from the owner of the sewerage system or treatment works, the Department and the Department of Environmental Quality, as applicable, determine that the disposal of the sewage sludge or septage will not overload the facility.

B. Special facility. A special facility is a treatment works especially designed and constructed for the stabilization or disposal of septage including land as well as physical works. All special facilities are Type II sewage disposal systems (see 12VAC5-610-250). Industrial waste sludges

and sludges containing chemical concentrations in violation of state hazardous waste regulations and applicable federal regulations shall not be placed in a special facility.

Exception: Special facilities related to lime stabilization or direct injection may not require formal plans and specifications to be submitted.

C. Processes which may be utilized in special facilities designed for stabilization of septage.

1. The following processes are described in the Commonwealth of Virginia SCAT Regulations (12VAC5-580-10 et seq):

a. Aerobic digestion;

b. Anaerobic digestion;

c. Chemical oxidation; and

d. Incineration.

D. Land as a special facility for ultimate disposal of septage.

1. Landfilling. Prior to landfilling, septage must be stabilized and dewatered. All landfilling operations must be in conformance with the regulations of the Commonwealth of Virginia Department of Waste Management governing disposal of solid waste.

2. Land spreading. Land application of lime stabilized sludge is prohibited.

E. Special facility operation.

1. Records and reports shall be kept in a manner satisfactory to the department. As a minimum, the records shall reflect the quantity of septage (gallons) discharged into the special facility daily, the quantity (gallons) removed daily for land application, the land application site, and for anaerobic lagoons, the date the last load was discharged into the anaerobic lagoon. Reports shall be submitted to the department on a quarterly basis (See APPENDIX H).

2. Sampling and analyses requirements for an anaerobic lagoon shall be performed in accordance with the provisions of 12VAC5-580-720.

~~Article 2~~

Part II:

Systems with ~~Experimental~~ Special or Provisional Approval

12 VAC 5-610-441. Special permits for ~~experimental~~ methods, process and equipment not covered by this chapter, not categorized with general approval, or not addressed by Virginia Department of Health policy.

A. New construction. Sewage treatment and disposal methods, processes, and equipment which (i) are not covered by criteria in ~~Part V (12 VAC 5-610-660 et seq.)~~ Part VI of this chapter and (ii) in principle ~~and/or~~ or application are new or unconventional are subject to a special

permitting procedure in lieu of that set forth in 12 VAC 5-610-250. All applications for such processes, methods, and equipment shall be made to the division through the district or local health department.

1. Submission of data ~~on experimental methods, processes, and equipment~~. The policy of the division is to encourage the development of ~~any~~ new methods, processes, and equipment not covered by the chapter or policy, which appear to have application for the treatment and disposal of sewage; however, new developments shall have been thoroughly tested in a full scale or representative pilot system utilizing this process and equipment. Results of this testing must be submitted to the division. The testing required on new developments will generally follow the following guidelines:

a. All procedures used in validating the process, methods or equipment shall be conducted under the supervision of a faculty member in an appropriate program of an accredited college or university, a licensed professional engineer experienced in the field of sanitary engineering, or by a testing firm acceptable to the division.

b. The tests shall be performed under maximum design conditions and over extended periods of time in the Virginia geographical area of the proposed installation.

c. The data shall be from a continuous operation of a full scale or pilot installation treating or conveying the type of sewage to be handled.

d. Flow measuring equipment shall be provided and total flow shall be recorded daily.

e. The minimum sampling and analysis program will be established by the division in accordance with the process under investigation.

f. All analyses will be made in accordance with Standard Methods for the Examination of Water and Wastewater, 1992 (American Public Health Association), or analytical methods approved by the division.

g. The sampling shall establish the impact of the ~~experimental~~ sewage treatment and disposal methods, processes, or equipment subject to the special permit provisions on ground water and public health.

h. The application shall identify and suggest operation and maintenance guidelines for the process or components of the process.

2. Detailed plans must be submitted showing how, in case of noncompliance, the method, equipment or process will be converted to or replaced with a proven system. ~~In order to~~ To assure that funds are available to convert or replace the ~~experimental~~ method, equipment or process subject to a special permit with a proven system, bonding or other assurances prescribed by the Department shall be provided. A proven system shall be a Type I, ~~II,~~ or ~~III~~ II system, a point source discharge system, or connection to an existing approved sewerage system or treatment works. ~~The~~ An application ~~for the experimental system~~ submitted under Part II shall be

accompanied by one of the following: (i) a Virginia Pollution Discharge Elimination System (VPDES) permit, or (ii) a General Permit Registration Statement issued by the Department of Environmental Quality and a construction permit for an alternative discharging sewage treatment system issued by the commissioner, or (iii) certification from the owner of the existing sewage system or treatment works that connection is available, or (iv) a valid construction permit for a Type I~~, II,~~ or ~~III~~ II system.

3. Issuance of a construction permit. After review of the plans and testing data by the division and approval of a ~~proven system (see subdivision 2 of this subsection)~~ Type I or II system, the commissioner shall issue a construction permit in accordance with the procedures in 12 VAC 5-610-250 if reasonably satisfied that the method, process, or equipment will provide satisfactory sewage disposal.

4. Issuance of ~~an experimental~~ a special operation permit. Upon completion of construction or modification, a permit to operate for a definite period of time will be issued for the operation of the ~~experimentally approved~~ methods, processes and equipment approved under the special permit provisions. The number of ~~experimental~~ special systems of similar design characteristics to be installed for an evaluation period shall be determined by the division and where soil dependent systems are utilized, the number shall be limited to not more than four for each physiographic province (see Appendix K). There shall be no limit on the number of ~~experimental~~ systems allowed to be installed when an approved back-up system is constructed ~~in accordance~~

~~with subdivision 2 of this subsection~~ and plumbing is provided to the back-up system. In this instance, a flow diversion valve shall be installed to divert wastewater flow between the two systems as necessary. The ~~experimental~~ permit to operate ~~the experimental system~~ special systems shall require that the evaluation period be a minimum of 18 months and no longer than 36 months, under design conditions, and the holder of the ~~experimental~~ special operation permit shall submit reports on operation during the evaluation period as required by the division.

5. Issuance of an operation permit. The commissioner shall issue an operation permit upon expiration of the ~~experimental~~ special permit if, on the basis of testing during that period, the division finds that the ~~experimental~~ method, processes or equipment provides satisfactory sewage disposal. If these conditions are not met, then the commissioner shall issue an order which will require the owner to alter the sewage disposal system in a manner that will enable the conditions to be met or to construct or connect to a Type I or II system previously specified.

B. Existing construction. Sewage treatment and disposal methods, processes and equipment that (i) are not covered by the criteria in ~~Part V (12 VAC 5-610-660 et seq.)~~ Part VI of this chapter and (ii) in principle ~~and/or~~ or application are new or unconventional may be utilized where a conventional sewage disposal system serving an occupied dwelling has failed and it is not possible to provide an alternate sewage ~~disposal~~ system having a discharge to state waters. The procedures for obtaining a permit for such systems shall generally follow those set forth in ~~subsection A of~~ this section with the following exceptions:

1. The detailed plans required ~~need not~~ do not need to show how in case of nonacceptance the sewage disposal system will be converted to or replaced with a proven process nor are bonds or assurances required;

2. ~~More~~ No more than four permits for soil dependent ~~experimental~~ systems of similar design characteristics may be issued per physiographic province; and

3. If the disposal system fails to work satisfactorily on a year-round basis, further ~~correction~~ corrections or conditions to the system may be required.

C. Issuance of design and construction criteria. When sewage treatment and disposal methods, processes or equipment have demonstrated satisfactory performance and operational competence to the satisfaction of the commissioner, ~~by completing the experimental process or by similar rigorous testing in other states or countries~~, provisional system approval shall be granted and design and construction criteria shall be developed ~~in accordance with this article~~. If the wastewater to be treated is substantially different in flow or characteristics from one which was used during testing, the commissioner shall require ~~the issuance of an experimental operating permit and~~ further testing conducted until operational competence is demonstrated. The criteria shall include, at a minimum, the siting criteria, design and construction standards, performance, monitoring and service requirements of the methods, processes and equipment.

12 VAC 5-610-442. Provisionally approved systems; overview.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

A. Sewage treatment and disposal systems, methods, processes, technology and equipment that are not covered by criteria in ~~Part V (12 VAC 5-610-660 et seq.) of this chapter~~ Part VI and have not received general approval for use under the provisions of this chapter may be eligible for provisional approval. Depending upon the complexity of the system, method, process, technology or equipment, provisional approval may be granted requiring individual applications for ~~either~~ a Type II ~~or Type III~~ system, as described in 12 VAC 5-610-250. After the evaluation period described in ~~12 VAC 5-610-500~~ 12 VAC 5-610-447, a provisionally approved system may be given general approval and be incorporated into this chapter.

B. The purpose of the provisional approval process is to use, evaluate, and develop criteria for the use of new and innovative technology. The evaluation process allows the department ~~a realistic amount of time~~, under varied field conditions, to develop and refine siting, construction, operation and maintenance criteria applicable to conditions and uses occurring in Virginia. During this evaluation period, residents of the Commonwealth have the benefit of the systems and the department can review, evaluate, revise and refine all aspects of criteria related to the system.

12 VAC 5-610-443. Applying for provisional approval.

A. Applications for provisional approval shall be made in writing to the division and shall request provisional approval for a specific system, technology, method or process. The application shall comply with 12 VAC 5-610-250 regarding the submission of detailed plans and

specifications.

B. The application shall include the following:

1. A description of the system's operation including the accepted scientific and engineering principles upon which the system technology, method or process is based.

2. A description of the site criteria required for successful operation of the system.

3. Design criteria for sizing the system to meet all relevant site conditions and waste flow characteristics.

4. Construction procedures for successfully installing a system.

5. Operation criteria and maintenance requirements for the successful use of the system over the life expectancy of the system.

6. Proposed performance standards that the system is expected to meet to determine the success or failure of the system.

7. Documentation giving factual evidence of the principles upon which the system is based demonstrating the capacity for satisfactory performance and operational competency for treating and disposing of effluent. Such evidence must include sufficient basic and applied research to demonstrate that ~~experimental~~ special status should be waived. Provisional approval of a product is principally intended to ~~provide a method of~~ be based on full-scale system demonstration;

however, limited applied research may be required when in the exclusive opinion of the department, the information obtained from applied research is necessary to the evaluation and decision-making process. Systems, technologies, methods, or processes which have not demonstrated sufficient basic and applied research to support the principles or theory of operation ~~shall~~ may be considered ~~experimental~~. for a special permit under 12 VAC 5-610-441.

8. Documentation of at least 50 comparable systems of identical design and capacity having been installed in Virginia or elsewhere. Only systems installed under similar soil and site conditions (if applicable) to the site and soil conditions for which approval is sought in Virginia shall be considered. Additionally, the wastewater flows, strength and other characteristics shall be documented and be similar in both the demonstration systems and the proposed use in the provisional application.

9. Data indicating that the 50 systems identified in subdivision 8 of this subsection have provided both treatment and disposal no worse than a conventional septic tank-drainfield system over a period of time not less than three years.

10. Test results and certifications must be conducted by an accredited college or university, the National Sanitation Foundation, entities accredited by the American National Standards Institute, or other testing groups that may be acceptable to the division as being impartial and competent in testing or evaluating wastewater treatment and disposal methods.

C. An application submitted according to this section and containing the information required by

subsections A and B of this section shall be considered a completed application.

12 VAC 5-610-444. Evaluation process for provisional system applications.

A. Preliminary evaluation. Upon receiving an application, the division shall review it for completeness. The division shall request additional information from the applicant if the application does not contain all of the requested information. ~~Once the application is complete, the division shall prepare a summary and a preliminary evaluation of the proposal.~~

B. Division evaluation and recommendation. The division shall evaluate all completed applications and make a recommendation to the commissioner concerning the application. The recommendation, if favorable, shall include proposed criteria for installing, operating and maintaining the system. The division shall consider the following information which shall be provided by the manufacturer or other interested party:

1. Whether the demonstrations and test results required by 12 VAC 5-610-443 B have or will provide sufficient scientific evidence to support the proposed theory of operation and that the application of the theory is appropriate for proposed uses without posing an undue risk to public health and ground water.

2. The impact of the system on ground water and public health.

3. The operation of the system in other states. The division may solicit evaluations and comments from health officials in other states or countries where the system, method, process,

equipment or technology has been used.

4. A review of the appropriate manufacturer's or the distributor's records relating to system maintenance and user complaints. Failure to maintain accurate and up-to-date records of maintenance actions and customer complaints may delay or prevent completing a review.

5. A review of any sample results which may be collected from or around any of the systems.

6. The practicability of preventative maintenance and the frequency of the required maintenance.

7. Other information as deemed appropriate by the division which relates to evaluating the effect of the system, method or process on ground water or public health.

C. Decision by commissioner. In making a decision, the commissioner shall review the recommendations of the division and the comments and recommendations made by the advisory committee. The commissioner may elect to approve or deny the application, or approve the application with conditions or with requirements for additional testing. The commissioner's provisional approval shall set forth the criteria for filing an application ~~(i.e., Type II or Type III system)~~, installing, operating, maintaining and testing the provisionally approved system. The commissioner's approval shall indicate that the provisional approval may be modified as set forth in 12 VAC 5-610-447 C.

D. During the first year ~~of~~ after provisional system approval, a maximum of 100 permits may be issued for a provisionally approved system. When 50 or more systems have been installed,

operated, reviewed by the division and found to be demonstrating satisfactory performance and operational competency, the division may allow additional permits to be issued, ~~up to~~ a maximum of 1,000 systems during the first five years. ~~No single increment of additional~~ The commissioner may allow additional permits after the first five year period but permits may not exceed 500 additional systems per year. ~~and a satisfactory review must be made by the division~~ The Division must provide the commissioner with a satisfactory review prior to ~~any additional release of~~ allowing additional permits. Further, at least 12 months must elapse between permit releases to assure adequate time passes for potential problems to develop and be discovered by the division.

12 VAC 5-610-445. Appeals.

A. Denial of provisional status. Pursuant to the Administrative Process Act ~~(§9-6.14:1~~ §2.2-4000 et seq. of the Code of Virginia), any aggrieved applicant seeking provisional approval for a specific type of system may appeal the final case decision of the commissioner by requesting an adjudicatory hearing.

B. Denial of an applicant for use of a provisionally approved system. Aggrieved applicants who have been denied use of a system having provisional approval may request a formal hearing ~~in accordance with 12 VAC 5-610-210~~ by sending a written request to the commissioner within 30 days after they receive the commissioner's decision.

12 VAC 5-610-446. Permits for constructing and operating provisionally approved systems.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

A. Construction permit application. Homeowners can apply for a construction permit to install a provisionally approved system in the same manner provided for in 12 VAC 5-610-250 ~~for Type II or Type III systems~~ depending upon the nature of the provisional approval granted by the commissioner. Appeals from the denial of a permit application for a provisionally approved system shall conform to the requirements of 12 VAC 5-610-210.

B. Operation permit status. Homeowners installing a provisionally approved system in accordance with the construction permit issued by the commissioner and provisional siting, design and construction criteria for that system shall be issued an operation permit. Such operation permit shall be valid until the system ceases to operate in a safe and sanitary manner, as determined by the department. The validity of any individual operation permit issued for a system having provisional approval shall not be dependent upon ultimate approval or denial of that specific type of provisionally approved system for general approval under this chapter.

C. Recordation. All permits for provisionally approved systems shall be recorded with the clerk of the circuit court in the jurisdiction where the system is permitted, in accordance with ~~12 VAC 5-610-250 J 6~~ 12 VAC 5-610-254 F.

D. Repair area. A 100%~~6C~~ repair area, meeting or exceeding the requirements of this chapter, or an approved discharge permit shall be identified prior to permitting a site for a provisional system. The repair area shall be reserved for the exclusive use of the repair system. A 100%~~6C~~ repair area meeting the requirements of the provisional approval shall be considered adequate

toward meeting this repair area provision.]

E. Maintenance. Whenever deemed appropriate by the commissioner, the department shall require operation and maintenance procedures and schedules appropriate for the method proposed.

12 VAC 5-610-447. Evaluation period for provisionally approved systems.

A. Evaluation criteria. Prior to receiving general approval and being incorporated into this chapter, systems with provisional approval shall be evaluated for not less than five years. The Department may waive the five-year requirement for the evaluation of treatment devices with provisional approval. The division should conduct an annual review of systems with provisional approval. The review, at a minimum, should be based on the following information submitted by the manufacturer; however, nothing shall prevent the department from verifying, augmenting or otherwise collecting additional information on the performance and operation of the system.

1. A field review of a sample of the systems installed. The sample shall include a representation of systems of newer and older installations and systems installed under different site and system limitations. System limitations will frequently be unique to each system and therefore the criteria used to select systems of different manufacturers will vary according to the nature and design of the system. The division shall determine the sample size to be evaluated and the criteria for sample selection.

2. Interviews with a sample of system owners to determine customer satisfaction and customer opinions. This sample may or may not be the same as the sample of systems reviewed under subdivision 1 of this subsection.

3. A review of the manufacturer's or the distributor's records relating to system maintenance and customer complaints. Failure to maintain accurate and up-to-date records of maintenance actions and customer complaints may delay or prevent completing a product review.

4. A review of any sample results which may be collected from or around any of the systems.

5. Other information as deemed appropriate by the division which relates to evaluating the effect of the system, method or process on ground water or public health.

B. Tracking of site locations. The manufacturer shall submit to the department records on the numbers, locations and operation of all provisionally approved systems on a quarterly basis not later than the 15th day of the month following the quarter.

C. Revisions to provisional approval. During the period of provisional approval, the department may revise any aspect of the site, soil and design requirements for that system based on experience gained during the use of the systems. The department shall work with the applicant to revise the approval by agreement, but ~~shall not be prohibited from doing so without~~ may modify the agreement in its discretion without the consent of the applicant, if warranted by health or environmental concerns. The revised provisional approval shall apply to any systems for which

an application is filed after the revision is made.

12 VAC 5-610-448. General approval of provisionally approved systems.

A. After the evaluation period specified in 12 VAC 5-610-447 is completed, site selection design and construction criteria shall be developed when the commissioner is satisfied that the sewage treatment and disposal system, method, process or equipment has demonstrated operational competency and satisfactory performance ~~equal to or better than that of a gravity flow septic tank drainfield absorption system.~~ Initially these criteria shall be implemented by policy and shall grant the status of general approval to the system or process and shall not limit the number of systems allowed. Subsequently, at the discretion of the department, criteria for the approved system shall be incorporated into this chapter in accordance with the Virginia Administrative Process Act (§9-6.14:1 et seq. of the Code of Virginia). The criteria shall include, at a minimum, the site conditions necessary for permitting a system, design considerations, installation criteria, performance, monitoring and service requirements of the methods, processes and equipment.

B. After the evaluation period specified in 12 VAC 5-610-447 is completed, site selection and design and construction criteria required in ~~Part V (~~12 VAC 5-610-660 et seq.~~) of this chapter~~ shall not be developed if the commissioner concludes that the sewage treatment and disposal system, method, process or equipment has not demonstrated satisfactory performance and operational competency ~~equal to or better than that of a gravity flow septic tank drainfield absorption system.~~ The provisional system approval may be extended or rescinded for any

system failing to ~~show equivalency with a gravity flow septic tank-drainfield absorption system~~. adequately protect public health and groundwater supplies. After the provisional approval for a system has been rescinded, any future applications for systems utilizing the same design shall be denied. However, this provision shall not be used to prevent systems of similar design which have been modified in a manner which can reasonably be expected to overcome the previously identified deficiencies to be considered under ~~the experimental requirements of this chapter~~. 12 VAC 5-610-441.

~~Article 3~~

~~Mass Sewage Disposal Systems (Withdrawn)~~

Part III

~~General Criteria and~~ Methods for Conducting Site Evaluations

~~Article 1~~

~~Evaluation Criteria for Subsurface Soil Absorption Systems~~

12 VAC 5-610-450. General.

~~Soil evaluation for a subsurface soil absorption system~~ Site evaluations shall follow a systematic approach ~~including~~ that includes consideration of the physiographic province, topography, available area, degree of slope, and soil profile (thickness of each horizon, color, permeability,

and texture). The evaluation is intended to document sufficient information to conclude whether ~~or not~~ the ~~site~~ footprint can accommodate an onsite sewage ~~treatment and dispersal~~ system ~~listed in Part IV (12 VAC 5-610-591 et seq.) of this chapter~~. The topography, available area, ~~seasonal water table~~ limiting factor(s), drinking water supplies, bodies of water, shellfish growing areas, soil horizon, depth, rate of absorption, or combination of any of the above shall be considered in such evaluation. A ~~percolation test~~ permeability test may be required ~~as a prerequisite~~ prior to the issuance of a permit. ~~When the district or local health department questions the estimated percolation rate, the district or local health department may require a percolation test. Percolation tests shall be analyzed as only one of many criteria in determining soil suitability for absorption of treated sewage.~~

12 VAC 5-610-460. Site and structure identification.

A site plan (sketch) showing dimensions of property, proposed ~~and/or~~ or existing structure or structures, driveways, underground and overhead utilities ~~on the property and~~ ,adjacent sewage disposal systems, bodies of water, drainage ways, agricultural drain tile, wells, cisterns, and springs for a minimum of 200 feet radius of the center of the proposed building or drainfield is necessary in order to evaluate the suitability of a ~~subsurface~~ soil absorption system for that site. In addition, for new construction, the boundary of the lot and building site shall be staked. ~~As a minimum, prior~~ Prior to issuance of the construction permit the perimeter of the ~~soil absorption area site or sites~~ footprint shall be shown on a copy of a surveyed plat of the property. ~~When a~~

~~parcel of land consisting of a single lot is involved on which an onsite sewage disposal system is proposed to be located and is not directly influenced by the off site location of any sewage disposal system, well, body of water, etc., the requirement for the surveyed plat may be waived by the district or local health department.~~

12 VAC 5-610-470. Physical features.

A. Physical features including soil features, slope, depth of rock, the location of rock outcrops, drainage ways, marshes, swamps, sink holes, flood plains, artificial drainage systems, and various structures and topographic features found in Tables 4.1 through ~~4.4~~ 4.6 shall be fully and accurately documented in writing as part of the site and soil evaluation.

~~B. Drainage way. A drainage way is a concave portion of the landscape in which surface water or rain water run-off gathers intermittently to flow to a lower elevation.~~

~~C. Fill material. Fill material means soil transported and deposited by man as well as soil recently transported and deposited by natural erosion forces. Recent natural soil transportation and deposit is evidenced by one or more of the following.~~

~~1. No or indistinct soil horizons;~~

~~2. Depositional stratification;~~

~~3. Presence of a buried organic layer; and~~

~~4. Position in the landscape.~~

~~D. Minimum depth to seasonal water table. As used herein, "seasonal water table" means that portion of the soil profile where a color change has occurred in the soil as a result of saturated soil conditions or where soil concretions have formed. Typical colors are gray mottlings, solid gray or black. The depth in the soil at which these conditions first occur is termed "seasonal water table."~~

~~E.~~ B. ~~Artificial drainage.~~ Where soils are artificially drained, soil coloration may no longer be an accurate indicator of the ~~position of the~~ seasonal water table or soil wetness. Three types of artificial drainage systems which are generally considered are as follows:

1. A water table depressor system of buried conduits, i.e., agricultural drainage tile;

2. A lateral ground water movement interceptor is a buried conduit ~~for the purpose of intercepting~~ used to intercept lateral ground water movement, i.e., a French drain; and

3. Open ditches with the bottom elevation of the ditch below the seasonal water table or soil wetness features.

12 VAC 5-610-480. Soil profiles and patterns.

A. ~~General.~~ ~~The purpose of determining the soil profiles and patterns is to~~ Soil profiles and patterns identify the soil characteristics that affect installation of a ~~subsurface~~ soil absorption

system.

~~B. Soil profile. A soil profile is a vertical section of the soil throughout all its horizons.~~

~~C. Profile holes~~.

~~1. Acceptable equipment.~~

~~a. Auger. An auger is defined as a mechanical device which is used to remove a soil sample for evaluation.~~ B. Devices utilizing the Archimedes screw principle are prohibited because they blend and ~~mast~~ mask the true soil characteristics.

~~b. Other equipment.~~ Other equipment may be used in addition to an auger to expose the soil profile as long as it does not mask or blend the true soil characteristics.

~~2.~~ C. ~~General location of profile holes.~~ Profile holes ~~to determine design requirements~~ shall be located in the ~~area that is unrestricted by the criteria contained in Part IV (12 VAC 5-610-591 et seq.) of this chapter and Table 4.2~~. footprint. Additional profile holes outside of the ~~unrestricted area~~ footprint may be required to make a complete evaluation of the site.

~~3.~~ 1. Depth of profile hole. The minimum depth of the profile hole shall be five feet unless prevented ~~or made unnecessary by some physical feature of the soil such as gray coloration, rock or when a potential horizon is found at a lesser depth.~~ by a limiting factor or because it is unnecessary. Where a potential soil horizon is considered for use, the soil evaluation shall be

extended below the potential horizon to assure that there is no interference with ~~seasonal water table, rock or impervious strata (See Tables 4.3 and 4.4 of this chapter)~~ limiting factors.

~~4.~~ 2. Number and location of profile holes. A minimum of five holes is necessary to determine the ~~design requirements of an area for the placement of absorption trenches~~ footprint. Where there is uniform topography and the profile holes exhibit a uniform profile, a minimum of three holes is necessary. The size of the area investigated shall be based on the soil texture group encountered. ~~As a minimum, holes~~ Holes shall be placed to ~~be representative of the area under consideration for placement of the absorption trenches~~ accurately represent and reflect the site and soil characteristics of the footprint.

3. If more than one area is required ~~in which to install the absorption trenches~~ to establish a satisfactory footprint, each area shall be evaluated as described above. If ~~any~~ the proposed ~~absorption trench site~~ footprint is found unacceptable ~~due to~~ because of soil conditions, the site shall have been evaluated with a minimum of three holes which characterize the ~~soil problem or~~ problems and support the reasons for rejection. The actual area and number of holes to be investigated may be more than described above and shall be determined on a case-by-case basis.

~~5.~~ 4. In situations where a large area is to be evaluated, where the soil is highly variable, where the profile must be exposed below five feet or where the soil is "tight" (dense or compact) and/or rocky, the district or local health department may require that the owner have the soil profile in selected areas exposed by the digging of trenches, auger holes or pits. The actual area and

number of holes, trenches, or pits ~~to be investigated~~ evaluated shall be determined on a case-by-case basis by the Department or an AOSE/PE.

D. Soil profile documentation. Soil profiles shall be determined and a record made in writing of each boring in accordance with the Authorized Onsite Soil Evaluator Regulations, the "Field Book for Describing and Sampling Soils: Version 1.1" by the National Soil Survey Center, Natural Resources Conservation Service, U.S. Department of Agriculture dated May 13, 1998, or other Department policies. Additional documentation may be required by the ~~district or local health department~~ Department.

12 VAC 5-610-490. ~~Characteristics of soils that determine suitability.~~ Soil Texture Groups.

~~A. Color. Color is a key indication of the suitability of a soil.~~

~~1. Red and yellow mottlings may indicate slow internal drainage and may indicate a seasonal water table.~~

~~2. Gray and/or gray mottlings indicate seasonal water tables for at least three weeks duration.~~

~~3. Black appearance may be due to organic matter which has accumulated due to poor soil drainage.~~

~~B. Texture. The term texture refers to the relative proportion of various size groups of individual soil grains in a mass of soil. Specifically it refers to the proportion of sand, silt, and clay.~~

~~1. Soil Classification.~~ A. For the purpose of this chapter soils have been categorized into four groups based on texture as follows:

~~a.~~ 1. Texture Group I--sand and loamy sand;

~~b.~~ 2. Texture Group II--sandy loam~~,~~ and loam~~, and sandy clay loam. Texture Group II soils are subdivided into Texture Group IIa and IIb soils. Texture Group IIa soils consist of sandy loam soils with percolation rates less than 31 minutes per inch and no structure development. The remainder of soils within this texture group are Texture Group IIb soils~~;

~~c.~~ 3. Texture Group III--sandy clay loam, silt loam, clay loam, and silty clay loam; ~~and~~

~~d.~~ 4. Texture Group IV--sand clay, silty clay and clay.

~~2.~~ A. The soil texture shall be estimated by field testing. The field test that shall be applied is contained in APPENDIX F and is entitled "Field Guide to Soil Texture Classes." Laboratory estimation of texture by sieve and sedimentation analysis may be substituted for the field test at the owner's request and expense. Samples shall be collected by the laboratory under supervision of the district or local health department, or an AOSE.

~~C.~~ B. Permeability. ~~The term permeability pertains to the characteristics of the soil that enable water or air to move through its pores. The permeability of a soil profile may be limited by the presence of one nearly impermeable horizon, even though the others are permeable.~~

~~1. Estimated rates. The soil classifications contained in subdivision B 1 of this section have been assigned the following estimated rates in minutes per inch for the purpose of design. These rates may be modified when experience has shown that because of soil structure the texture group has a demonstrated rate different from that assigned.~~

~~a. Texture Group I - up to 16;~~

~~b. Texture Group IIa - 17 to 30;~~

~~c. Texture Group IIb - 31 to 45;~~

~~d. Texture Group III - 46 to 90; and~~

~~e. Texture Group IV - equal to or greater than 91.~~

~~2. Percolation tests. When the estimated percolation rates are in question, percolation tests may be performed, however, the district or local health department may require percolation tests to determine "measured" percolation rates.~~

~~a. Requirements. Percolation tests are to be performed under the supervision of the district or local health department. Test holes shall be located at points and depths selected and/or approved by the district or local health department. A minimum of three holes representative of the absorption area are required. When the results of the individual test holes have a spread of more than 30 minutes/inch, five holes with at least one hole in the center of the proposed absorption~~

~~area are required. Records of all percolation tests performed shall be attached to the application (See APPENDIX G).~~

~~b. Procedure. All percolation tests shall be performed in accordance with the procedure contained in APPENDIX G.~~

~~c. Records. Data on swelling, saturation and measurement of the percolation rate shall be recorded on forms by the district or local health department; examples of these forms are contained in APPENDIX G.~~

~~d. Interpretation of percolation test results. The absorption area shall be based on the average percolation rate measured in the test holes. The average percolation rate shall be computed by determining the percolation rate (minutes/inch) for each hole and averaging those values. When the percolation rate for an individual hole is in excess of 240 minutes/inch, the area represented may be retested one time and the most favorable rate used to calculate the percolation rate.~~

~~D. Soil restrictions. A soil restriction is a feature in the soil that impedes the percolation of water. Restrictions generally consist of a layer of soil horizon within a soil that is firmly compacted or is very rich in clay. Soils containing restrictions may require verification of the percolation rate by percolation tests. Examples of restrictions are listed below.~~

~~1. Pans. The term pans include hard pans, fragipans, clay pans, plowpans, traffic pans, iron pans, and plinthic horizons.~~

~~2. Stoniness. The term stoniness pertains to the relative proportions of stones present in a soil. Stoniness reduces the soil volume for absorption, and therefore, may require a larger subsurface soil absorption field than would be indicated by soil texture.~~

~~E. Soil concretions. Soil concretions as hard grains, pellets, or nodules from concentrations of compounds in the soil that cement the soil grains together. Concretions are indicative of slow percolation rates, restrictions, and/or seasonal water tables.~~

~~F. Shrink-swell soils. Shrink-swell soils may exhibit satisfactory percolation rates when dry and therefore must be thoroughly wetted before a percolation test is performed.~~

Saturated Hydraulic Conductivity (or Ksat) data measurements (or other permeability measurements such as the percolation test) have limitations that shall be considered when determining a final design or footprint. A Ksat value measured in the field is simply a constant value for a specific time and specific location within the soil body. Ksat does not describe unsaturated flow conditions. Ksat results and other field permeability testing methods can exhibit high variability. Direct field measurements may not adequately reflect water movement and soil properties. The following table shall be used as a guide when estimating the permeability of soil horizons.

Soil Group	Structure	Ksat Cm/day Range

SEWAGE HANDLING AND DISPOSAL REGULATIONS

Texture	Shape	Grade	
Group I Sands and Loamy Sands	SG	0	865.0 - 85.0
Group II	M	0	0.85 - 0.085
	PL	1	8.5 - 0.85
Sandy loam, Loam		2,3	0.85 - 0.085
	PR, BK, GR	1	8.5 - 0.85
		2,3	85.0 - 8.5
Group III	M	0	< 0.085
	PL	1, 2, 3	0.85 - 0.085
Silt loam, Sandy clay loam,	PR, BK, GR	1	8.5 - 0.85
Clay loam, Silty clay loam		2, 3	85.0 - 8.5
Group IV	M	0	< 0.085
	PL	1, 2, 3	0.85 - 0.085

Sandy clay, Silty clay, Clay	PR, BK, GR	1	0.85 - 0.085
		2, 3	8.5 - 0.85

"SG" means single grain structure; "M" means massive structure; "PL" means platy structure; "PR" means prismatic structure; "BK" means blocky structure; "GR" means granular structure

"0" means structureless; "1" means weak; "2" means moderate; "3" means strong.

~~12 VAC 5-610-500. Availability of suitable soils.~~

~~Sufficient suitable soils shall be available to install the subsurface soil absorption system and reserve area. Design criteria for subsurface soil absorption systems are contained in Article 5 (12 VAC 5-610-900 et seq.) of Part V of this chapter and reserve area requirements are contained in 12 VAC 5-610-710. Rock Fragments~~.

~~Article 2~~

~~Sewage Handling and Septage Management~~

~~12 VAC 5-610-560. Sewage handling; general.~~

~~A. In accordance with 12 VAC 5-610-240 B, a sewage handler shall have a written sewage handling permit issued by the commissioner.~~

~~B. It is the obligation of every sewage handler to assure that the sewage, sludge or septage handled are transported and disposed of in a safe and sanitary manner in conformance with this chapter. Treatment and management of sewage and sewage sludge are regulated by the Sewage Regulations (12 VAC 5-580-10 et seq.).~~

~~C. All sewage handling equipment in contact with sewage shall be washed in such a manner and location that the wastewater from washing it is conveyed to an approved sewerage system or treatment works.~~

~~D. Disposal of sewage sludges or septage into bodies of water or streams is prohibited.~~

~~12 VAC 5-610-570. (Repealed)~~

~~12 VAC 5-610-580. Septage management; general.~~

~~Ultimate management of septage generally falls into one of two categories, landfilling or land spreading. Landfilling requires that the septage be stabilized and dewatered to increase solids content nearly fivefold to avoid leaching problems. Land spreading of both stabilized and unstabilized septage is permissible under controlled conditions for agricultural purposes. The preferred methods for septage disposal are disposal in an approved sewage treatment plant or stabilization and subsequent disposal by land application or landfilling in accordance with the Biosolids Use Regulations (12 VAC 5-585-10 et seq.).~~

~~12 VAC 5-610-590. Acceptable disposal sites.~~

SEWAGE HANDLING AND DISPOSAL REGULATIONS

~~A. Sewerage system or treatment works. Any sewerage system or treatment works for which a certificate to operate has been issued jointly by the department and State Water Control Board or a system which has been issued a separate permit by the commissioner is considered an approved disposal site for vehicular transported sewage sludge or septage provided permission is obtained from the owner of the sewerage system or treatment works and the department and the State Water Control Board, as applicable, determine that the disposal of the sewage sludge or septage will not overload the facility.~~

~~B. Special facility. A special facility is a treatment works especially designed and constructed for the stabilization or disposal of septage including land as well as physical works. All special facilities are Type III sewage disposal systems (see 12 VAC 5-610-250 C). Industrial waste sludges and sludges containing chemical concentrations in violation of state hazardous waste regulations and applicable federal regulations shall not be placed in a special facility.~~

~~Exception: Special facilities related to lime stabilization or direct injection may not require formal plans and specifications to be submitted.~~

~~C. Processes which may be utilized in special facilities designed for stabilization of septage.~~

~~1. The following processes are described with associated criteria in the Commonwealth of Virginia Sewerage Regulations, State Department of Health, State Water Control Board, February 1977 (Sewerage Regulations, 12 VAC 5-580-10 et seq):~~

~~a. Aerobic digestion;~~

~~b. Anaerobic digestion;~~

~~c. Chemical oxidation; and~~

~~d. Incineration.~~

~~2. The following processes are described in Article 9 of this chapter:~~

~~a. Anaerobic lagooning; and~~

~~b. Lime stabilization.~~

~~3. Other processes may be considered on a case-by-case basis if supported by operating and test data satisfactory to the department.~~

~~D. Land as a special facility for ultimate disposal of septage.~~

~~1. Landfilling. Prior to landfilling, septage must be stabilized and dewatered. All landfilling operations utilizing septage must be in conformance with the regulations of the Commonwealth of Virginia Department of Waste Management governing disposal of solid waste.~~

~~2. Land spreading. For the purpose of this chapter land spreading is the controlled uniform application of either dewatered or undewatered septage to the land surface for ultimate disposal. Land spreading shall be accomplished in such a manner so as not to adversely affect future~~

~~agricultural use of the land. All land spreading operations must take into consideration such factors as application rates, potential runoff of contaminants from the septage applied to soils, groundwater contamination, proximity to residences and people and other public health considerations. All land spreading operations require site specific management criteria and approval.~~

~~a. Stabilized septage may be disposed of by land spreading in accordance with the provisions of applicable portions of 12 VAC 5-580-720 of the Sewerage Regulations and any applicable federal regulations, except where stated in this chapter.~~

~~b. Unstabilized septage may be disposed of by land spreading in accordance with the provisions of subsection E, the Code of Virginia and any applicable federal regulations.~~

~~E. Land spreading of unstabilized septage. General. Land spreading of unstabilized septage via shallow injection plowing is permissible (see 12 VAC 5-610-560 D). Injection plowing is a technique which employs a device which injects septage into a cavity created below the ground surface with positive closure of the injection swath. Injection plowing shall be accomplished with a narrow shank injector at a depth between 6 and 12 inches. The injection device and any associated prime mover shall be equipped with high flotation tires so as not to damage the physical characteristics of the soil in relation to agricultural practices. All land spreading operations for unstabilized septage shall provide for:~~

~~1. Storage during periods when weather, soil conditions or cropping conditions do not allow for~~

~~injection;~~

~~2. Sampling and monitoring of the septage before land spreading for quality control as may be requested;~~

~~3. Record keeping and reporting for quality control;~~

~~4. Controlled access to the public for 12 months;~~

~~5. No grazing for at least one month following the date of each injection by farm animals whose products are consumed by humans;~~

~~6. Compliance with applicable portions of 12 VAC 5-580-720 of the Sewerage Regulations except where stated in this chapter; and~~

~~7. Limiting the application rate so as not to exceed ½ acre-inches (13,600 gal./acre) at one time due to the low solids content and excessive hydraulic loading by septage.~~

~~F. Special facility operation.~~

~~1. Records and reports shall be kept in a manner satisfactory to the department. As a minimum, the records shall reflect the quantity of septage (gallons) discharged into the special facility daily, the quantity (gallons) removed daily for land application, the land application site, and for anaerobic lagoons, the date the last load was discharged into the anaerobic lagoon. Reports shall be submitted to the department on a quarterly basis (See APPENDIX H).~~

~~2. Sampling and analyses requirements for special facilities are as follows:~~

~~a. Anaerobic lagoon. In accordance with the provisions of 12 VAC 5-580-720 of the Sewerage Regulations.~~

~~b. Lime stabilization of domestic septage. The origin and the pH of each load must be determined and recorded by the hauler prior to land application. However, periodic sampling and analyses may be required by the department on a case-by-case basis (See paragraph F 1 of this section).~~

~~c. Shallow injection of unstabilized septage. Generally no sampling and analyses will be required by the department. The origin of each load must be determined and recorded by the hauler prior to injection. However, periodic sampling and analyses may be required by the department on a case by case basis.~~

~~3. An operations and maintenance manual shall be prepared for the septage stabilization facility and shall contain, as a minimum the following information:~~

~~a. Site security methods to prevent unauthorized entry.~~

~~b. Procedures to maintain the appropriate records.~~

~~c. Site management procedures including all-weather access road and ground maintenance.~~

~~d. Methods and equipment utilized for placing septage into and removing septage from, the~~

~~lagoon facility, mixing facility or storage facility as applicable.~~

~~e. Plan for land application of septage and/or other disposal methods.~~

~~f. Methods for odor control which may include both physical methods such as lagoon depth control and the use of appropriate chemicals.~~

~~g. Methods and procedures for monitoring characteristics of the septage and groundwater quality.~~

~~4. The site and physical works shall be maintained in a condition free from tall grass and weed overgrowth and rodent harborage.~~

~~5. When an anaerobic lagoon is utilized for stabilization its contents shall not be removed for land application until a time period of at least 90 days has elapsed from the time the last load of septage has been discharged into the lagoon.~~

~~*C.* Special facility abandonment. In the event a septage stabilization facility ceases to operate, it shall be the responsibility of the owner to abandon the facility properly. The following steps are required.~~

~~1. The owner shall notify the department at least 30 days in advance that the facility is to be abandoned;~~

~~2. The contents of the facility shall be disposed of in an approved manner under the supervision of the department; and~~

~~3. The structure shall be dismantled and the site returned approximately to its natural contours.~~

Part IV

~~General Criteria for the~~ Selection of a ~~Wastewater Treatment and Disposal~~ Sewage System Based on Site Conditions

~~Article 1~~

~~Site Limitations~~

Article I.

General Information

12 VAC 5-610-591. ~~Overview.~~

~~The intent of this part is to provide guidance on how to match various treatment and dispersal systems to site-specific conditions in order to construct a safe, proper, and adequate sewage system for the site under consideration. Article 1 (12 VAC 5-610-591 et seq.) identifies site conditions which limit or prohibit the use of onsite systems. Article 2 (12 VAC 5-610-594 et seq.) establishes criteria for the use of systems that rely on naturally occurring undisturbed soils to treat and disperse effluent, with or without pretreatment. Article 3 (12 VAC 5-610-597 et seq.) establishes criteria for the use of systems which rely on fill soils to accomplish treatment prior to dispersal.~~ This part provides guidance on matching systems designs (special, provisional, and

general) to the site conditions present in the footprint. This part also provides guidance on locating the footprint based on effluent quality. The criteria specified in this part shall apply to all footprints and sewage system designs, regardless of who designs a sewage system or proposes the footprint.

12 VAC 5-610-592. Setback distances.

A. Septic tanks, other tanks, and header line setback distances. The minimum separation distances between septic tanks, pump chambers, aerobic pretreatment devices (including sand filters, biofilters, and aerobic treatment units), ~~header lines, and~~ similar devices as determined by the department, and various structures and topographic features are contained in Table ~~4.1 entitled Minimum Separation Distances for Pretreatment Units, Conveyance Lines, and Header Lines~~. 4.4.

B. Manifolds. Manifolds shall not pass closer than 50 feet to any drinking water source unless pressure tested in place at pump shut-off head and determined to be effective. Under no circumstances shall a manifold come within 10 feet of a drinking water source.

C. ~~Absorption area. The absorption area is the soil medium beginning at the interface between the soil and the gravel, sand, or other point of effluent application, which is utilized for dispersal of the effluent. The absorption area includes the infiltrative surface in the absorption trench, or the point of effluent application, and the soil between and around the effluent distribution system. Setback distance to various structures and topographic features and an absorption area~~

~~are contained in Table 4.2.~~ Upslope siting of sewage systems from wells. Special precaution shall be taken when locating sewage systems within a 60 degree arc upslope from wells. The minimum separation distance shall be increased 25 feet for every 5.0% slope unless the well has additional casing and grouting. See 12 VAC 5-630-380.B of the Private Well Regulations for determining downlsope separation distances for wells with additional casing and grouting.

12 VAC 5-610-593. Physical features.

Physical features, landscape position and soil characteristics affect the ability of soil-based systems to treat and disperse effluent. In order to correctly select and place a sewage system in the environment such that public health and the environment are protected, it is necessary to understand and consider the local hydrologic conditions, the regional geology, and the nature of the soils occurring on the site being evaluated. At a minimum, the following features shall be considered:

1. Marshes and swamps. Placement of ~~subsurface soil absorption~~ sewage systems on or in swamps and marshes is prohibited.

2. ~~Seasonal water table~~ Limiting factors. A vertical separation distance between the point of effluent application and a ~~seasonal water table~~ limiting factor shall be maintained which reflects the quality of the effluent and the receiving environment. Minimum vertical separation distances ~~may be found in Articles 2 (12 VAC 5-610-594 et seq.) and 3 (12 VAC 5-610-597 et seq.) of this part and Tables 4.3 and 4.4~~. are located in Tables 4.2, 4.3, and 4.6.

3. Slope. ~~Subsurface soil absorption trench~~ Sewage systems shall not be placed on slopes greater than 50%~~6C~~ unless terraced. ~~Criteria for other types of onsite systems are contained in Tables 4.3 and 4.4.~~

4. Drainage ways. ~~Subsurface soil absorption~~ Sewage systems shall not be placed at a position in a drainage way subject to intermittent flooding. Soil absorption systems dispersing advanced secondary effluent (ASE) or tertiary effluent (TE) with Management Level 4 or 5 may be considered on a case by case basis if a professional engineer working with an AOSE designs and proposes the system.

5. Fill material. ~~Placement of subsurface soil absorption systems in fill materials is generally prohibited except in three specific situations. The Wisconsin Mound system is considered a fill system as is the sand-on-sand system. These systems are governed by criteria found in 12 VAC 5-610-960, 12 VAC 5-610-965, and Table 4.4. Fill material consisting of colluvial soil derived from sandstone (noncarbonaceous) in the mountainous area may be considered on a case-by-case basis for placement of subsurface soil absorption systems.~~ Placement of soil absorption systems in fill material is acceptable with the following designs: Wisconsin Sand Mound, Sand-on-sand, or colluvial soil derived from noncarbonaceous sandstone in the mountainous regions.

6. Sink holes. Placement of a ~~subsurface~~ soil absorption system at the low point of a sink hole is prohibited. For set back distance see Table ~~4.2.~~ 4.5.

7. Flood plains. ~~Subsurface soil absorption~~ Soil absorption systems shall not be placed in flood

plains subject to annual or more frequent sustained (24 hours) flooding.

~~8. Alluvial and colluvial deposits. Placement of subsurface soil absorption areas in alluvial and colluvial deposits with shallow depths, extended periods of saturation, or possible flooding is prohibited.~~

~~9. Shrink-swell soils. When soils containing horizons with shrink-swell characteristics (see definitions in 12 VAC 5-610-120) have been identified, they shall be rejected for use for subsurface soil absorption systems.~~

~~8. Soil restrictions. Soil restrictions in themselves may form the basis for outright rejection of the site.~~

~~11.~~ 8. Free standing water. The presence of free standing water in a profile hole may ~~be grounds for rejection of the site~~ indicate a limiting factor.

Part IV.

Article ~~2~~ II

~~Systems Using Naturally Occurring Undisturbed Soil~~

In-ground and surface application systems

12 VAC 5-610-593.5. Credit for additional footprint with reduced setback distance. A relationship exists between setback distance, effluent quality, and area loading rate. When dispersing secondary or better effluent by pressure distribution, the size of the footprint may be increased to allow for vertical separation distances less than those specified by Table 4.2. In such case, the footprint shall be increased as specified in the Table 4.3.

12 VAC 5-610-594. In-ground systems.

A. ~~An in-ground system is a system which utilizes a~~ In-ground systems utilize natural, undisturbed soil ~~horizon~~ to treat and disperse effluent where the infiltrative surface is placed ~~18~~ greater than 6-inches ~~or more~~ beneath the original surface of the ground and has a minimum of 12 inches of additional soil cover above the point of effluent application. Systems installed less than 6-inches deep with at least 12 inches of suitable soil cover may also be considered a "shallow-placed" in-ground system. In-ground systems include, but are not limited to, shallow-placed systems, conventional septic tank drainfield systems, chamber systems, alternative aggregate systems, enhanced flow systems, and pressure dosed systems. Measured or estimated hydraulic conductivity shall be based on the permeability at the system's installation depth (including trench sidewall) and the soil comprising the standoff distance to a limiting factor.

B. Septic tank effluent. Septic tank effluent may be utilized ~~in~~ with an in-ground system when all of the site and soil criteria ~~of this subsection~~ are met for dispersing septic tank effluent. Only systems installed 18-inches or deeper and not considered a "shallow-placed" system are

permitted to disperse septic tank effluent. The minimum installation depth shall be increased 1-inch for every 2% increase in slope over 10%, except in cases where drip dispersal technology is used. ~~Also see Table 4.3.~~ See Tables 4.1, 4.2, and 4.7.

1. Horizon. The soil horizon(s) for the 18 inches immediately below the installation depth shall not show the presence of any limiting factor. Limiting factors include, but are not limited to, bedrock, seasonal or permanent water table, pans, or other impervious strata.

2. Separation distances. Table ~~4.2~~ 4.5 contains the minimum setback distances between ~~an absorption field and~~ the footprint or the dispersal field to various structures or topographic features.

3. Estimated or measured infiltration rates. The estimated or measured infiltration rate shall ~~not exceed 120 minutes per inch~~ be equal to or greater than 2.1 cm/day within ~~any part of~~ the sidewall area of the trench or within 18 inches of the ~~infiltrative interface where effluent encounters undisturbed soil.~~ point of effluent application.

C. Soil criteria when utilizing secondary or better effluent. Secondary or better effluent may be utilized ~~in~~ with an in-ground system when all of the criteria ~~of this subsection~~ are met for dispersing such effluent. ~~Also see Table 4.3~~. See Tables 4.2, 4.3, 4.5, and 4.7.

~~1. Horizon. The soil horizon(s) for the 12 inches immediately below the installation depth shall not show the presence of any limiting factor. Limiting factors include bedrock, seasonal or~~

~~permanent water table, pans or other impervious strata.~~

~~2. Separation distances. Table 4.2 contains the minimum setback distances between an absorption field and various structures or topographic features.~~

~~3. Estimated or measured infiltration rates.~~ ~~The estimated or measured infiltration rate shall not exceed 120 minutes per inch within the sidewall area of the trench, if any, or within 12 inches of the infiltrative interface where effluent encounters undisturbed soil.~~

12 VAC 5-610-596. Shallow-placed systems.

A. ~~Shallow-placed systems are systems which utilize a natural, undisturbed soil horizon to treat and disperse effluent where the infiltrative surface is placed at a depth of less than 18 inches from the original soil surface. Also see Table 4.3. Shallow-placed systems may use the system designs similar to in-ground systems; however, when shallow-placed systems are~~ In-ground systems that do not meet the requirements specified in 12 VAC 5-610-594 B or that are installed less than 18-inches below the original ground surface shall be considered (labeled) as "shallow-placed". Shallow-placed systems installed at less than 12 inches from the ground surface~~, timed dosing~~ shall ~~be used to~~ disperse ~~the~~ effluent by time dosing.

B. Septic tank effluent prohibited. ~~Septic tank effluent is prohibited for use in shallow-placed systems~~ Shallow-placed systems shall disperse secondary or better effluent because of the increased likelihood for human and vector contact with effluent.

~~C. Soil criteria when utilizing secondary effluent. Secondary or better effluent may be utilized in an shallow-placed system when all of the criteria in this subsection are met. Also see Table 4.3.~~

~~1. Soil texture. In order to assure effluent dispersal under adverse conditions while maintaining adequate treatment capacity, shallow-placed systems installed shallower than 12 inches, which utilize absorption trenches, are limited to Texture Group I and II soils. Any soil texture group may be utilized absorption trench systems installed between 12 and 18 inches.~~

~~2. Limiting features. A minimum of 12 inches of soil is required beneath the trench bottom or infiltrative surface before encountering soils with a seasonal or permanent water table. Additionally, to assure adequate hydraulic dispersal capacity, bedrock and impervious strata may not occur within 18 inches of the trench bottom.~~

~~3. Separation distances. Table 4.2 contains the minimum setback distances between an absorption field and various structures or topographic features~~.

12 VAC 5-610-596.1. Land application systems. Land application systems disperse effluent from 6 inches below the original ground's surface to the surface of the ground without 12-inches of additional soil cover. Land application systems applied directly onto the ground's surface shall comply with all applicable regulations and policies by the Virginia Department of Environmental Quality and shall not have a design flow greater than 1,000 gallons per day. Only residential designs shall be considered under this chapter for land application systems that disperse effluent directly onto the ground's surface.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

A. Site and soil requirements for land application systems shall comply Table 4.2 through Table 4.5.

B. Infiltration. Land application systems shall be designed to prevent runoff from reaching State waters unless an appropriate VPDES permit is issued by the Department of Environmental Quality.

C. Slope. When designing land application systems on forested sites, slopes up to 20% may be used. When designing land application systems on non-forested sites, slopes up to 15% may be used. Steeper slopes may be considered on a case by case basis by the Division. The Division may require additional absorption area or buffer, depending on the site and soil conditions.

D. Ground cover. The Department shall not issue an Operation Permit for land application systems until an appropriate vegetative cover is established. The owner of the system shall assure that cover is properly maintained.

1. Forested sites shall have mature trees with humus and leaf litter, including an O horizon.

2. Non-forested sites shall have a vegetative cover that will utilize nutrients, tolerate wet weather conditions, provide erosion control, have long periods of active growth, be cold hardy, and allow infiltration with slowly permeable soil conditions.

E. Treatment. Advanced secondary or better effluent shall be required. Disinfection shall be provided for land application designs when effluent is applied or expected to be applied to the

surface. See Table 5.0 for calculating the minimum footprint.

F. Grazing animals shall be fenced from land application systems and prevented from entering into the dispersal area.

12 VAC 5-596.2. Buffer requirements are established below for land application systems that may disperse effluent onto the ground's surface (Use Table 4.5 for systems that will not disperse effluent onto the ground's surface):

Buffer requirements for systems that are expected to disperse effluent onto the ground's surface

Feature	Horizontal Buffer Distance	
	Spray Irrigation	Non-Spray Sites
Property Lines	100'*	25'[1]
Private roads and driveways	25'	10'
Dwellings	100'	25'
Outbuildings	25'	10'
State Waters	100'*	50'
Swimming pools	100'*	25'
Water supplies	100'	100'[2]
Rock Outcrops	10'	10'
Utility lines	10'	10'

Shellfish Growing Areas	100’	70’
Food Processing Plants	100’	50’

* Distance may be reduced to 50-feet if the buffer will prevent wind drift of the spray.

1 Property line is downgradient from dispersal area. If not, 10-feet.

2 Distance may be reduced to 50-feet for Class IIIA and IIIB wells.

Part IV.

Article ~~3~~ III.

Systems Using Fill Material

12 VAC 5-610-597. Fill systems.

A. Fill systems are systems where the infiltrative surface and some portion of the treatment medium is comprised of fill material and not a naturally occurring undisturbed soil. ~~Fill systems may be located in-ground, shallow-placed, or above-ground. Fill systems addressed in these regulations are the Wisconsin Mound system, the noncarbonaceous mountain colluvium system, and the sand-on-sand system.~~

B. Elevated Sand Mounds. Septic tank effluent may be utilized with elevated sand mounds.

Pretreatment shall be required when effluent strength exceeds residential strength wastewater and may be required where hydrologic conditions meet the minimum criteria contained in this chapter. ~~For the purpose of siting an elevated sand mound, the criteria in~~ See Table ~~4.4~~ 4.5 and 4.6 ~~shall apply. For the purposes of establishing minimum setback distances between an elevated sand mound and various structures or topographic features, the mound shall be considered an absorption field and distances shown in Table 4.2 utilized.~~

C. Sand-on-sand systems. Sand-on-sand is a process of modifying a soil absorption system site using fill material which is similar in texture to the original, naturally occurring material. Filling is accomplished in accordance with 12 VAC 5-610-965.

1. ~~Criteria for utilizing septic effluent.~~ Septic tank effluent may be utilized with sand-on-sand systems. For ~~the purpose of~~ siting a sand-on-sand system, use ~~the criteria in~~ Table ~~4.4 shall apply~~. 4.5. Sand-on-sand systems may be utilized ~~with septic tank effluent~~ when the following criteria are met:

a. Soil texture. ~~In order to assure effluent dispersal under adverse conditions, while maintaining adequate treatment capacity, shallow placed~~ Fill systems are limited to Texture Group I and ~~IIa~~ II soils. The use of Texture Group ~~IIb,~~ III and IV soils for sand-on-sand systems is prohibited.

b. Soil structure. Sand-on-sand ~~is restricted to~~ systems may only be placed into soils classified as entisols (i.e., a young soil with no horizon development) and which have a texture of sand, loamy sand, coarse sandy loam, or sandy loam texture.

c. Depth of soil. ~~A minimum of 18 inches of naturally occurring undisturbed soil, measured from the ground surface, is required before encountering soils with bedrock, or a seasonal or permanent water table. Additionally, to assure adequate hydraulic dispersal capacity, no restrictive horizons may occur within 30 inches of the ground surface.~~ See Table 4.6.

d. Separation distances. ~~Table 4.2 contains the minimum setback distances between an absorption field and various structures or topographic features.~~ See Table 4.5.

e. Estimated or measured infiltration rates. When siting a sand-on-sand system, the estimated or measured infiltration rate shall ~~not exceed 30 minutes per inch~~ be equal to or greater than 13.3 cm/day within the sidewall area of the trench or within 18 inches of the infiltrative interface where effluent encounters undisturbed soil.

f. Slope. Sand-on-sand is prohibited where the slope of the original site exceeds 5%~~6C~~.

~~2. Criteria for utilizing secondary effluent.~~

~~a. Depth of soil. A minimum of 12 inches of soil, measured from the ground surface, is required before encountering bedrock, or a seasonal or permanent water table. Additionally, to assure adequate hydraulic dispersal capacity, no restrictive horizons may occur within 24 inches of the ground surface.~~

~~b. Separation distances. Table 4.2 contains the minimum setback distances between an absorption field and various structures or topographic features.~~

~~c. Estimated or measured infiltration rates. The estimated or measured infiltration rate shall not exceed 30 minutes per inch within the sidewall area of the trench, if any, or within 18 inches of the infiltrative interface where effluent encounters undisturbed soil.~~

D. Fill systems in mountain colluvium. The criteria for conventional, in-ground trench systems contained in ~~Table 4.3~~ Tables 4.2 and 4.3 shall be complied with to the greatest extent possible. However, fill material consisting of colluvial soil derived from sandstone (noncarbonaceous) in the mountainous area may be ~~considered~~ approved by the Department on a case-by-case basis ~~for placement of subsurface soil absorption systems~~.

Part IV.

Article IV.

Tables

Table 4.1: Effluent Quality Design Standards

Constituents	Effluent Type	Septic Tank Effluent	Secondary	Advanced Secondary	Tertiary
BOD_5	mg/l	≤ 200	≤ 30	≤10	≤10

TSS	mg/l	≤150	≤ 30	≤10	≤10
FOG	mg/l	≤ 30	≤ 5	≤ 5	≤ 5
Total-N	mg/l	≤90	≤ 60	≤ 30	≤10
Fecal Coliform without Disinfection	Counts/ 100 ml	$\leq 10^7$	$\leq 10^6$	$\leq 10^5$	$\leq 10^4$
Fecal Coliform with Disinfection	Counts/ 100 ml	N/A	≤ 200	≤ 200	≤ 20

Table 4.2

Vertical Separation Distance ("Standoff") to Limiting

Factors using various Effluent Qualities

Site Factor	In-ground and Land Application Systems

	STE	SE	ASE	Tertiary Effluent
Bedrock	18"	12"	6"	*
Restriction	18"	12"	6"	*
Shrink-swell	18"	12"	6"	*
Soil Wetness Feature or Water table	18"	12"	6"	*

* No vertical separation required with plans and specifications from a professional engineer (PE). PE must assure that effluent can be dispersed from the site. Requires Management Level 4 or 5.

Table 4.3

Effluent Quality, Standoff distance to Limiting Factor, and Footprint Relationship

Effluent Quality	Vertical Separation Distance	Footprint area Multiplier

SE	12 inches or more	No Safety Factor Required
SE	6 - 12 inches	2.0
ASE	6 inches or more	No Safety Factor Required
ASE	Less than 6 inches	1.5

~~[Table 4.1.~~Table 4.4

Minimum Separation Distances for Pretreatment Units~~, Conveyance Lines, and Header Lines.~~

Structure or Topographic Features	Minimum Horizontal Distance
Property Lines	5
Building Foundations	10
Basements	20
~~Drinking~~ Water Wells (all classes)	50
Cisterns (Bottom Elevation Lower than Ground Surface in Area of Pretreatment Unit)	100
Shellfish Waters	70
Natural Lakes & Impounded Waters and Streams	50~~1~~

Developed Springs (when the spring is down slope)	100
Drainage Ditches:	
Ditch Bottoms above Seasonal Water Table or soil wetness feature	10
Ditch Bottom below Seasonal Water Table and Ditch Normally Contains Water	50
~~Lateral Ground Water Movement Interceptor~~	~~50[2]~~
Low Point of Sink Holes When Placed within the Bowl of the Sink Hole	100
Utility Lines	10

~~[1]~~ ~~See also Table 4.2~~

~~[2]~~ ~~See also 12 VAC5-610-950.C.3 for upslope placement of LGMI]~~

~~[Table 4.2.~~ Table 4.5

Minimum Separation Distances.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

Structure or Topographic Features	Soil Texture Group	Minimum Distance (Ft) from Bottom or Sidewall of ~~Subsurface~~ Soil Absorption System Trench or footprint	
		Vertical	Horizontal
Property Lines	I, II, III, IV	----	5
Building Foundations	I, II, III, IV	----	10
Basements	I, II, III, IV	----	20
~~Drinking Water~~ Wells			
Class IIIA or IIIB	I, II, III, IV	----	50
Class IIIC or IV	I, II, III, IV	----	100
Cisterns (Bottom Elevation Lower Than Ground Surface in Area of ~~Subsurface~~ Soil Absorption System)	I, II, III, IV	----	100
Shellfish Waters	I, II, III, IV	----	70
Natural Lakes & Impounded Waters	I, II, III, IV	----	50

Streams	I, II, III, IV	----	50[a]
Developed Springs (when the spring is down slope)	I, II, III, IV	----	200[e]
~~Rock and Rock Outcropping~~	~~I~~		~~2~~
Rock and Rock Outcropping	I, II, III, IV	~~1.5~~	1.5
Pans and Impervious Strata	I, II, III, IV	~~1.5~~	1.5
Drainage Ditches:			
Ditch Bottoms above Seasonal Water Table	I, II, III, IV	----	10
Ditch Bottom below Seasonal	I	----	70[a]
Water Table and Ditch Normally	II	----	70[a]
Contains Water	III	----	50[a]
	IV	----	50[a]
Water Table Depressor System	I	6[b]	70
	II	3[b]	70

	III	2[b]	50
	IV	2	50
Lateral Ground Water	I	----	70[c] 10[d]
Movement Interceptor	II	----	70[c] 10[d]
	III	----	50[c] 10[d]
	IV	----	50[c] 10[d]
Low Point of Sink Holes When Placed within the Bowl of the Sink Hole	I, II, III, IV	----	100
Utility Lines	I, II, III, IV	----	10

[a] The set back distance may be reduced to 10 feet in Group III and IV soils and 20 feet in Group I and II soils if the ~~subsurface~~ soil absorption system is designed to produce unsaturated flow ~~condition~~ conditions in the soil.

[b] Vertical Distance to the invert of the drain tile in the water table depressor system.

[c] Absorption trench up slope from interceptor.

[d] Absorption trench down slope from interceptor.

[e] Arc of 180 degree up slope of spring and 100 ft. down slope.]

~~[Table 4.3.~~

~~Summary of Separation Distances between Systems Using Naturally Occurring Undisturbed Soils and Limiting Site Factors.~~

~~Site Factor~~	~~In-Ground System[1]~~		~~Shallow-placed System[1]~~	
	~~Septic Tank Effluent~~	~~Secondary Effluent~~	~~Septic Tank Effluent~~	~~Secondary Effluent~~
~~Bed Rock~~	~~18"~~	~~12"~~	~~n/a~~	~~18"[2]~~
~~Restriction~~	~~18"~~	~~12"~~	~~n/a~~	~~18"~~
~~Shrink-Swell Soil~~	~~18"~~	~~12"~~	~~n/a~~	~~18"~~
~~Slope~~	~~50%~~	~~50%~~	~~n/a~~	~~50%~~
~~Perc Rate~~	~~5-120 mpi~~	~~5-120 mpi~~	~~n/a~~	~~5-45 mpi[3]~~
~~Water Table~~	~~18"~~	~~12"~~	~~n/a~~	~~12"~~

~~[1] The separation distances for in-ground and shallow-placed systems are measured from the trench bottom or other infiltrative interface vertically down to listed site factor.~~

~~5 See also 12 VAC 5-610-596.C.2~~

SEWAGE HANDLING AND DISPOSAL REGULATIONS

~~3~~ ~~See also 12 VAC 5-610-596.C.1~~ ~~]~~

~~[Table 4.4.~~ Table 4.6

Summary of Separation Distances between Fill Systems and Limiting Site Factors.

Site Factor	Elevated Sand Mound		Sand-on-Sand System[2]		Noncarbonaceous Mountain Colluvium	
	Septic Tank Effluent	Secondary Effluent	Septic Tank Effluent	Secondary Effluent	Septic Tank Effluent	Secondary Effluent
Bed Rock	24"[1]	24"[1]	~~60~~ 18"	~~60~~ 12"	18"	12"
Restriction	24"	12"	30"	24"	18"	12"
Shrink-Swell Soil	24"	12"	40"	30"	18"	12"
Slope	25%	25%	5%	5%	50%	50%
~~Perc Rate~~	~~5-120 mpi~~	~~5-120 mpi~~	~~5-30 mpi~~	~~5-30 mpi~~	~~5-120 mpi~~	~~5-120 mpi~~
Water Table or Soil Wetness Feature	24"	10"	18”	12"	18"	12"

[1] 24 inches refers to creviced bedrock. This distance may be reduced to 12 inches when noncreviced bedrock is encountered. See the Wisconsin Mound Soil Absorption System Siting, Design, and Construction Manual, ~~January 1990~~.2000.

[2] The separation distance for sand-on-sand systems is measured from the ground surface vertically down to the listed site factor.]

~~Article 4~~

~~Pump and Haul of Sewage~~

~~12 VAC 5-610-598. General.~~

~~Pump and haul pertains to an unusual circumstance wherein sewage is permitted to be transported by vehicle to a point of disposal. Pump and haul includes all facilities and appurtenances necessary to collect and store the sewage for handling by a contractor having a valid sewage handling permit.~~

~~12 VAC 5-610-599. Permanent pumping and hauling.~~

~~Pumping and hauling on a permanent basis is prohibited unless done under the auspices and supervision of a government entity as provided for in 12 VAC 5-610-599.3 (see subdivision 2 of 12 VAC 5-610-410 for exception). Pumping and hauling for over one year shall be considered as~~

~~a permanent pumping and hauling operation.~~

~~12 VAC 5-610-599.1. Emergency pumping and hauling.~~

~~When serious malfunctioning of an existing sewage disposal system, sewerage system or treatment works occurs, pumping and hauling may be authorized for a definite time period until the malfunctioning system can be reconstructed or repaired.~~

~~12 VAC 5-610-599.2. Temporary pumping and hauling.~~

~~Temporary pumping and hauling may be permitted under the following conditions:~~

~~1. It must be demonstrated that the temporary pumping and hauling of sewage is not the usual practice in order to permit premature and unplanned real estate or commercial development in an area where sewerage facilities do not exist;~~

~~2. Construction of an approved sewerage system or treatment works is actively in progress with personnel and machinery at work in the particular area. Bonding, cash escrow or other assurances shall be required to guarantee completion of the sewerage system and/or treatment works;~~

~~3. The completion of the sewerage system or treatment works is assured and a completion date within the definition of temporary pumping and hauling has been set; and~~

~~4. Any and all delays from the anticipated completion date shall be reported immediately by the~~

~~holder of the pump and haul permit to the district or local health department. Delays not resulting from circumstances beyond the control of the holder of the pump and haul permit shall be grounds for revocation of the pump and haul permit.~~

~~12 VAC 5-610-599.3. Permanent pump and haul.~~

~~Permanent pumping and hauling of sewage may be permitted under the following conditions:~~

~~1. That the government entity enter into a contract with the department setting forth that the government entity will provide pump and haul services, either directly or through a private contractor holding a sewage handling permit, to the home(s), commercial establishment(s) or occupied structure(s) for the period the occupied structure is utilized or until connection can be made to an approved sewerage facility;~~

~~2. Upon completion of the contract between the department and the government entity, the commissioner shall issue a single pump and haul permit to the government entity. A separate construction permit shall be issued to the government entity for each sewage storage facility. The sewage storage facility(s) shall be designed and constructed in accordance with Article 7 (12 VAC 5-610-990 et seq.) of Part V of this chapter; and~~

~~3. When the government entity provides the sewage pump and haul services, it shall conform to the conditions contained in 12 VAC 5-610-380 and Article 8 (12 VAC 5-610-1020 et seq.) of Part V of this chapter.~~

SEWAGE HANDLING AND DISPOSAL REGULATIONS

~~Article 5~~

~~Installation of Residential Sewage Disposal Systems in Political Subdivisions Having Soil Drainage Management Contracts with the State Health Department~~

~~12 VAC 5-610-600. General.~~

~~It is the policy of the department to grant sewage disposal system permits for private residential systems utilizing subsurface soil absorption whenever such permits can be granted without endangering public health. Many soils are limited in their ability to accept sewage by high seasonal water tables. Some soils can accept sewage when an adequate local plan for soil drainage exists. When a political subdivision enters into a Soil Drainage Management Contract with the department and subsequently develops Soil Drainage Management Plan(s) in an area in which soils respond to artificial drainage and the plan is acceptable to the department, the department will consider the approval of subsurface soil absorption systems in soils that were previously unacceptable because of high seasonal water tables.~~

~~12 VAC 5-610-610. Definitions.~~

~~The following words and terms, when used in this article, shall have the following meanings, unless the context clearly indicates otherwise.~~

~~"Soil Drainage Management Contract (SDMC)" means a contract between the department and the political subdivision for the development, operation, maintenance, and enforcement of all soil~~

~~drainage management plans within the political subdivision.~~

~~"Soil Drainage Management Plan (SDMP)" means a plan approved by the commissioner, pursuant to 12 VAC 5-610-630 below, meeting the criteria set forth in 12 VAC 5-610-640 below.~~

~~12 VAC 5-610-620. Applicability.~~

~~This article shall be applicable only in those political subdivisions which enter into Soil Drainage Management Contracts with the department.~~

~~12 VAC 5-610-630. Procedures for entry into or withdrawal from a Soil Drainage Management Contract (SDMC).~~

~~A. Entry.~~

~~1. Any political subdivision in the Commonwealth may at any time apply to the department through the district or local health department for entry into an SDMC with the department. The application shall contain the following minimum elements:~~

~~a. A proposed contract between the department and the political subdivision; and~~

~~b. Drafts of all ordinances, required easements, or other legal documents which the political subdivision proposes to adopt as a portion of the SDMC including a local ordinance requiring the holder of a sewage disposal construction permit issued in conjunction with the SDMC to have~~

~~the permit recorded in the land records of the circuit court having jurisdiction.~~

~~2. The department shall, within 60 days of the submission of an application for entry into an SDMC, evaluate the application and propose to the political subdivision any suggestions for modification to the SDMC.~~

~~3. The political subdivision may review the department's suggested modifications and resubmit a revised application within such time as the political subdivision elects.~~

~~4. The department shall accept or reject entry into an SDMC within 90 days of receipt of the final application from a political subdivision.~~

~~5. Upon rejection by the department of a final application for entry into an SDMC, the political subdivision may appeal the department's decision to the appropriate circuit court. The Virginia Administrative Process Act, §9-6.14:1, et seq., shall apply to such an appeal.~~

~~B. Withdrawal.~~

~~1. If the department determines that a political subdivision is failing to abide by the terms set forth in its SDMC with the department, the department may withdraw from the contract.~~

~~2. The department shall, within 60 calendar days of its proposed withdrawal from an SDMC notify the political subdivision of the department's intent.~~

~~3. The political subdivision may apply to the department for a hearing upon the proposed~~

~~withdrawal. Such hearing shall be held in accordance with the provisions governing case decisions contained within the Virginia Administrative Process Act.~~

~~4. Within 30 calendar days after such hearing, the department shall notify the political subdivision whether the department will withdraw from the SDMC.~~

~~5. A decision by the department to withdraw from an SDMC may be appealed to the appropriate circuit court pursuant to the provisions of the Virginia Administrative Process Act.~~

~~6. If withdrawal occurs, continued maintenance of all SDMP's shall be the responsibility of the political subdivision in areas where permits were issued in accordance with this chapter.~~

~~12 VAC 5-610-640. Minimum standards for Soil Drainage Management Plans.~~

~~A. Every SDMP offered in conjunction with a SDMC shall meet the following minimum standards for surface and groundwater management.~~

~~B. The SDMP shall provide for:~~

~~1. Positive surface grading in the area of a dwelling and subsurface soil absorption area at a minimum of 0.5%;~~

~~2. Drainage ditches for diverting surface water and for lowering the seasonal groundwater table which shall:~~

~~a. Completely surround the subsurface soil absorption system;~~

~~b. Have a minimum grade of 0.2%;~~

~~c. Be located 70 feet, ±10 feet from the drainfield; and~~

~~d. Have the invert of the ditch placed in a Group I, II or III soil at an elevation so that the normal water surface in the ditch is at least six inches below the invert of the trench of the subsurface soil absorption system;~~

~~3. A French drain on one side in lieu of an open drainage ditch on one of the four sides;~~

~~4. Diversion ditches or swales shall be:~~

~~a. Required where adjacent property is equal to or higher in elevation than the proposed site and the adjacent property may be expected to discharge water onto the proposed site;~~

~~b. Designed to meet such site specific individual requirements as the department determines to be necessary;~~

~~5. A receiving stormwater and groundwater drainage system which is adequate in capacity so that waters from a proposed site shall be conveyed to it in accordance with the political subdivision's criteria;~~

~~6. Diversion ditches, where required, or other ditches to transport stormwater and/or groundwater from a site to a receiving body in accordance with the political subdivision's criteria;~~

~~7. Ditches to remain open and not be piped and covered unless approved by appropriate local~~

~~government official, such approval to be granted only with the concurrence of the department;~~

~~8. Only appurtenances to the subsurface soil absorption system shall be constructed within the confines of the perimeter ditches required in paragraph B 2 a, above, except where a French drain is provided on one side; and~~

~~9. Lots which shall be a minimum of three acres in size not including swamps or marshland.~~

~~12 VAC 5-610-650. Department procedures relating to subsurface soil absorption system applications in SDMC counties and cities.~~

~~A. All applications for subsurface soil absorption systems will be evaluated based on the criteria contained in this part. When the site is limited only by a high seasonal water table and/or surface runoff, the department shall require that a satisfactory SDMP be in place and functioning satisfactorily before issuance of a construction permit. Typed on the construction permit will be the following statement which shall be signed by the applicant:~~

~~I understand that this soil has severe limitations for the disposal of septic effluent. With the aforementioned drainage measures the health department expects reasonable serviceability, however, it may malfunction during extreme conditions.~~

~~I understand and acknowledge the above and agree to install and maintain the drainage measures.~~

~~Signed~~

~~B. Soils to be considered shall demonstrate their ability to be artificially drained and shall fall generally into Texture Group I, II, or III.~~

~~C. The SDMP and site specific drainage system or systems shall be certified, supervised, maintained, and prepared by or under the direct supervision of a professional engineer licensed in Virginia who is a full-time employee of the political subdivision. In addition, the political subdivision shall have the manpower or other capability to maintain the applicable conditions of the SDMP. This certification shall become a part of the subsurface soil absorption system permit.~~

~~D. Proper easements shall be provided for drainage to assure access for proper maintenance.~~

~~E. Political subdivisions shall assure proper installation and maintenance of the stormwater and ground water drainage system or systems.~~

~~F. The department retains the right to reject any SDMP if in the opinion of the department the SDMP proposed will result in a nuisance or health hazard condition.~~

Part V

~~Design and Construction Criteria~~

~~Article 1~~

~~General Requirements~~

SEWAGE HANDLING AND DISPOSAL REGULATIONS

Determining Management Level and Calculating Footprint

12VAC 5-610-650. Model Program Management Level. The Department shall use the Environmental Protection Agency's document entitled "Draft EPA Guidelines for the Management of Decentralized Wastewater Systems: September 26, 2000" to define and characterize the components of five management programs in Virginia. A management program addresses the planning, siting, design, installation, operation, maintenance, performance monitoring, and enforcement (if necessary) of sewage systems. A description of the five model programs are listed below:

A. Management Level 1. Owner owns, operates and maintains sewage system. Owner has awareness of sewage system needs. The Department maintains system inventory list and has awareness of sewage system maintenance needs. The Department establishes program to remind owner of scheduled preventive maintenance needs.

B. Management Level 2. Owner owns sewage system but keeps maintenance contract with an Onsite Management Entity (OME) for the life of the system. Owner has specific reporting requirements at regular intervals (determined by the Department) that are obtained from the OME. The Department administers tracking system for maintenance contract compliance.

C. Management Level 3. Owner owns sewage system. The Department's Operation Permit shall establish specific and measurable performance monitoring and reporting requirements from an

OME, including maintenance contract needs. The Operation Permit is renewed at an interval established by the Department. Requires system inspection at the time of Operation Permit renewal.

D. Management Level 4. Owner owns sewage system. Private or public utility operates and maintains sewage system. The utility is issued the Operation Permit. The Operation Permit establishes specific and measurable performance monitoring and reporting requirements. The Operation Permit may be renewed at an interval established by the Department. Financial, management, and technical audits of the utility occur.

E. Management Level 5. Private or public utility owns, operates, and maintains the sewage system. All responsibility for the system to work properly is transferred to a professional entity. Financial, management, and technical audits of the utility occur.

F. The Department shall only approve systems with management levels that exist and are shown to be available by the applicant. If an applicant proposes to use a management level that does not exist, but is proposed to exist in the future, the Department shall not issue the approval until the management level exists.

12 VAC 5-610-651.1. Table 4.7 shall be used to determine the minimum square footage per 100 gallons of design flow for in-ground systems.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

Table 4.7: Minimum Footprint Area for In-ground Systems

Square Feet per 100 gallons

Ksat Cm/day	STE Management Level 1	STE Management Level 2 or 3[1]	STE Management Level 4 or 5[1]	SE or better Management Level 2[2]	SE or better Management Level 3[1]	SE or better Management Level 4 or 5[1]
=>16.1	1510	1290	1130	760	640	530
14.1 – 16	1710	1450	1280	850	730	600
12.1 – 14	2000	1700	1500	1000	850	700
10.1 – 12	2380	2020	1780	1190	1010	830
8.1 – 10	2920	2480	2190	1460	1240	1020
6.1 – 8	3670	3120	2750	1840	1560	1290
4.1 – 6	4860	4130	3650	2430	2070	1700
2.1 – 4	6480	5510	4860	3240	2750	2270
0.8 – 2.0	NA	NA	NA	NA	5000	5000

0.001 – 0.8	NA	NA	NA	NA	*	*

* Requires formal plans from a professional engineer. PE must state that the system design can be expected to function properly and will not create a nuisance.

1 Low pressure distribution (LPD) provides reduction in footprint area for Management Levels 3, 4 & 5 as follows: When the Ksat value is equal to or greater than 12 cm/day, then a 10% reduction can be given. When the Ksat value is less than 12 cm/day, then a 25% reduction can be given. Reduction of the footprint is at the option of the AOSE or professional engineer.

2 Management Level 1 shall not be considered for systems dispersing secondary or better effluent.

12VAC 5-610-651.2. Minimum length along the contour. When calculations are made in accordance with 12 VAC 5-610-651.1, then the footprint shall have a minimum length along the contour. A minimum length along the contour will assure sufficient area is available and that effluent can be adequately dispersed without creating a nuisance or causing pollution. A professional engineer may substantiate a different method for determining the minimum length along the contour for the footprint by submitting formal plans justifying the different length. The following table shall be used to determine adequate length along the contour:

Table 4.8: Minimum distance required along the contour

Linear feet per 100 gallons

SEWAGE HANDLING AND DISPOSAL REGULATIONS

Ksat Cm/day	0.5 - 4.0 % SLOPE[1]				
	Vertical separation distance from point of effluent application to limiting factor				
	0 - 6 Inches[2]	6 – 12 Inches	12 – 24 Inches	24 – 48 Inches	48 – 60 Inches
>16.1	30	23	18	14	12
14.1 – 16	33	25	20	16	13
12.1 – 14	38	29	23	18	15
10.1 – 12	44	34	27	22	17
8.1 – 10	49	38	30	24	19
6.1 – 8	55	41	33	26	21
4.1 – 6	60	46	37	30	24
2.1 – 4	65	50'	40	32	26'

.001 - 2	*	*	*	*	*

1 A 1-foot reduction in contour length for every 2% slope up to 24 % is acceptable. Slopes less than 0.5% do not require a minimum length along the contour.

2 Disinfection required.

* Requires formal plans and specifications from a professional engineer working with an AOSE.

12VAC 5-610-651.3. Alternate Method for Calculating Footprint: Nitrogen Guideline.

A professional engineer or AOSE may also use the following equations to determine the minimum footprint instead of the methods identified by 12VAC 5-610-651.1 and 651.2. If the footprint is calculated using 651.3, then the AOSE or PE shall use the most limiting footprint calculated between the Rein Laak equation or the Hantzsche and Finnemore (1992) mass-balance equation. After calculating the footprint, the AOSE or PE shall include a safety factor multiplier as shown in the following table:

Table 4.9: Safety Factor

Management Level	STE	SE	ASE	Tertiary

1 or 2	4	4	4	4
3	3	2	1.5	1.2
4 or 5	2	1.5	1.2	1.2

Hantzsche and Finnemore (1992) mass-balance equation for Nitrogen:

$$A = \frac{0.01344W(N_w - dN_w - N_r)}{R(N_r - N_b)}$$

Where

A = Gross area in Acres

W = Effluent quantity in gallons per day (gpd)

N_w = Nitrogen concentration in the effluent (mg/l)

d = Nitrogen removal fraction in the soil/plant system (dependent upon the effluent quality and dispersal method)

N_r = Nitrogen concentration (mg/l) desired in the recharge water (i.e. Discharge limit for Nitrogen)

N_b = Nitrogen concentration in the rain (mg/l)

R = Amount of rain infiltrated into the ground (inches per acre per year), typically no more than 25% of the average rainfall.

0.01344 = conversion factor.

Rein Laak proposed the following equation in 1986 for calculating footprint based on hydraulic loading:

$$A = \frac{Q * (BOD_5^{0.5} * SS^{0.1})}{120 * k^{0.3}} * 3$$

Where

A = area in square feet

Q = gpd flow

BOD_5 and SS in mg/l

k = permeability of soil in ft/min.

3 = conversion factor from trench bottom area to footprint area

Table 5.0

Minimum Footprint for Land Application Systems

that disperse effluent onto the Ground's surface (See 12 VAC 5-610-596.1)

Square Feet per 100 gallons

Ksat Cm/day	Management Level 2	Management Level 3	Management Level 4 or 5
=>16.1	1890	1510	1290
14.1 – 16	2140	1710	1450
12.1 – 14	2500	2000	1700
10.1 – 12	2980	2380	2020
8.1 – 10	3650	2920	2480
6.1 – 8	4590	3670	3120
4.1 – 6	6080	4860	4130
2.1 – 4	8100	6480	5510
0.8 – 2.0	(1)	(1)	(1)
0.001 – 0.8	(1)	(1)	(1)

1 Requires formal plans and specifications from a professional engineer working with an AOSE.

Part VI.

Design and Construction Criteria

Article 1: Design and Site Protection

12 VAC 5-610-660. General.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

~~The criteria contained in this section~~ This part shall apply to ~~all onsite sewage disposal~~ sewage systems designed by the Virginia Department of Health.

A. Materials, controls, and components specified by this part for sewer lines, septic tanks, pump tanks & controls, siphons, and conveyance lines shall apply to all designs. All system designs shall have a minimum of 400 square feet of absorption area.

B. Professional engineers and AOSEs may use the criteria listed in Part VI as a prescriptive guide to design sewage systems. All design flows for systems other than single family homes shall comply with 12 VAC 5-581-520, Table 3 of the SCAT Regulations.

C. ~~Deviations~~ The district or local health department may consider deviations from these criteria ~~may be considered by the district or local health department~~ on a case-by-case basis.

12 VAC 5-610-670. Sewage flows.

~~Subsurface soil absorption systems shall be designed on the basis of the sewage flows tabulated in Table 5.1.~~

~~Table 5.1.~~

~~Sewage Flows.~~

	~~Flow~~

Discharge Facility	Design Unit	Flow (gpd)	BOD (#/day)	S.S. (#/day)	Duration (Hour)
Dwelling[1]	per person total	75	0.2	0.2	24
Food preparation		15			
Toilet facilities		20			
Bathing facilities		20			
Handwashing facilities		5			
Laundering		15			
Schools with shower and cafeteria	per person	16	0.04	0.04	8
Schools without showers and with or without cafeteria	per person	10	0.025	0.025	8
Boarding schools	per person	75	0.2	0.2	16
Motels at 65 gals/person (rooms only)	per person	130	0.26	0.26	24

~~Trailer courts~~	~~per person~~	~~75~~	~~0.2~~	~~0.2~~	~~24~~
~~Restaurants~~	~~per seat~~	~~50~~	~~0.2~~	~~0.2~~	~~16~~
~~Interstate or through highway restaurants~~	~~per seat~~	~~100-180~~	~~0.7~~	~~0.7~~	~~16~~
~~Interstate rest areas~~	~~per person~~	~~5~~	~~0.01~~	~~0.01~~	~~24~~
~~Service stations~~	~~per vehicle serviced~~	~~10~~	~~0.01~~	~~0.01~~	~~16~~
~~Factories & office buildings~~	~~per person per 8-hr shift~~	~~15-35~~	~~0.03-0.07~~	~~0.03-0.07~~	~~operating period~~
~~Shopping centers~~	~~per 1,000 sq. ft. of ultimate floor space~~	~~200-300~~	~~0.1~~	~~0.1~~	~~12~~
~~Hospitals~~	~~per bed~~	~~300~~	~~0.6~~	~~0.6~~	~~24~~
~~Nursing homes~~	~~per bed~~	~~200~~	~~0.3~~	~~0.3~~	~~24~~
~~Homes for the aged~~	~~per bed~~	~~100~~	~~0.2~~	~~0.2~~	~~24~~

~~Doctor's office in medical center~~	~~per 1,000 sq. ft.~~	~~500~~	~~0.1~~	~~0.1~~	~~12~~
~~Laundromats, 9 to 12# machines~~	~~per machine~~	~~500~~	~~0.3~~	~~0.03~~	~~16~~
~~Community colleges~~	~~per student and faculty~~	~~15~~	~~0.03~~	~~0.03~~	~~12~~
~~Swimming pools~~	~~per swimmer~~	~~10~~	~~0.001~~	~~0.001~~	~~12~~
~~Theaters, drive-in type~~	~~per car~~	~~5~~	~~0.01~~	~~0.01~~	~~4~~
~~Theaters, auditorium type~~	~~per seat~~	~~5~~	~~0.01~~	~~0.01~~	~~12~~
~~Picnic areas~~	~~per person~~	~~5~~	~~0.01~~	~~0.01~~	~~12~~
~~Camps, resort day and night with limited plumbing~~	~~per campsite~~	~~50~~	~~0.05~~	~~0.05~~	~~24~~
~~Luxury camps with flush toilets~~	~~per camp site~~	~~100~~	~~0.1~~	~~0.1~~	~~24~~

~~Dump station~~	~~per camp site~~	~~50~~	~~0.05~~	~~0.05~~	~~24~~

~~[1] For all dwelling units the design shall be based on two persons per bedroom.~~

Sewage systems and footprints serving single family dwellings shall be designed on the basis of two persons per bedroom using the equation Q = [40 + (35 * the number of persons)], where Q equals the gallons per day. For dwellings in excess of 2500 square feet of heated living space, sewage flow designs shall be increased at least 50 gallons per day for each additional 500 square feet of heated living space.

A. Sewage systems and footprints shall be designed to reflect actual water use, including peak daily flow. The design flow shall consider additional fixtures, hot tubs, or other pertinent factors.

B. Sewage flows for non-residential facilities shall be designed in consultation with a professional engineer licensed in the Commonwealth of Virginia. The sewage flow shall be determined using available flow data, occupancy, operation patterns, and other measured data. Performance monitoring may be required to assure that the design flow accurately reflects the sewage flow and strength predicted.

C. AOSEs and Professional Engineers shall account for peak daily flows and flow variation before selecting a pretreatment device that disperses secondary or better effluent. Peak flow shall have a minimum peak flow factor of 1.8.

D. Professional engineers may propose different design flows than what is prescribed in this section.

1. When a professional engineer proposes a design flow less than the figure specified by this section, then a conditional permit in accordance with 12 VAC 5-610-254 is required. The conditional permit may require a specific management level with different reporting than is specified by Part VI or VII of this Chapter. Performance monitoring may be required to assure that the system is operated in accordance with the design flow and strength predicted by the engineer.

2. Nothing shall prevent a professional engineer or AOSE from proposing a design flow in excess of the figures required by this section when professional judgement dictates that a greater design flow is best suited.

12 VAC 5-610-680. Water saving plumbing devices.

~~Water~~ Permanent water saving plumbing devices are encouraged ~~to lengthen the life of the subsurface soil absorption system. However, only permanent water saving plumbing devices such as low flush toilets shall be considered in reducing the size of the absorption area~~. Devices such as inserts in showers are considered temporary. Sewage strength can be anticipated to be stronger when wastewater is not diluted.

~~12 VAC 5-610-690. Recycle and reuse systems.~~

~~Recycle and reuse systems are methods, processes and equipment in which sewage is restored to a condition suitable for reuse. When recycle and reuse systems are utilized in conjunction with toilet wastes only, an approved method of sewage disposal shall be provided to properly dispose of sewage generated via handwashing and other related sanitation activities. All recycle and reuse systems shall provide for an approved method of sewage disposal to handle excess sewage generated within the system. These systems are considered experimental unless they have been previously deemed to be satisfactory in accordance with the provisions of 12 VAC 5-610-441 and/or as a minimum have been certified by the National Sanitation Foundation as meeting the current Standard 41 as determined by the bureau. Water recycle and reuse systems intended to produce water for other than toilet flush water are considered experimental and shall comply with the provisions of 12 VAC 5-610-441. All proposals for recycle and reuse systems shall be submitted to the bureau through the district or local health department.~~

12 VAC 5-610-700. Site preparation and alteration.

A. Preservation of soil structure. The preservation of the original structure of the soil in the area selected for placement of the absorption trenches is essential to maintaining the percolative capacity of the soil.

1. Prohibition on construction. ~~Subsurface soil~~ Soil absorption systems shall not be constructed in Texture Group III and IV soils during periods of wet weather when the soil is sufficiently wet at the depth of installation to exceed its plastic limit. For the purpose of this chapter, the plastic

limit of a soil shall be considered to have been exceeded when the soil can be rolled between the palms of the hands to produce threads 1/8 inch in diameter without breaking apart and crumbling.

2. Soil compaction. Special caution shall be taken in allowing wheeled and tracked vehicles to traverse the area selected for placement of the absorption systems before, during and after construction of the trenches, especially during wet weather. Precaution is especially important where Texture Group III and IV soils are involved. Alteration of soil structure by movement of vehicles may be grounds for rejection of the site and/or system or revocation of the permit.

3. Soil smearing. Excavating equipment utilized to construct the absorption system shall be so designed as not to compress or smear the sidewalks or bottom of the system. Excessive smearing of the usable absorption trench sidewalls or bottom during construction may result in irreversible damage to the soil infiltrative surface and may be grounds for rejection of the site and/or system.

B. Removal of vegetation. Vegetation such as maple, cottonwood, willows and other plant species with extremely hydrophilic (water loving) root systems shall be removed for a minimum of 10 feet from the actual absorption areas. Other trees should be removed from the absorption area.

C. Grading.

1. Pregrading. The proposed site for the ~~subsurface~~ soil absorption system shall not be graded

until the district or local health department has completed the site evaluation contained in Article 1 (12 VAC 5-610-450 et seq.) of Part III of this chapter.

2. Interim grading. Interim grading means site grading during or immediately preceding the construction of the absorption system. Any such grading shall be done in accordance with the conditions contained in the construction permit. The district or local health department may require notification upon completion of the interim grading but before actual installation of the absorption system.

3. Final grading. Final grading of the absorption area site for diversion of surface water (e.g., crowning) for the purpose of eliminating surface water from flowing or ponding on the site, preparation for seeding, etc. shall be accomplished to avoid damaging the absorption area. Prior to grading, the distribution box, pretreatment unit and absorption area shall be clearly staked.

D. Drainage.

1. Surface water. The area surrounding the absorption area shall be graded to divert surface water from the absorption area site. The absorption area site shall also be graded to eliminate the ponding of water.

2. Roof drains, basement sump discharges (nonsewage), floor drains, footing drains, etc., are prohibited from being connected to the sewage disposal system and shall be directed away from the absorption area site in a manner to preclude water flow into, through or over the site.

Discharge of sewage into a basement sump collecting water from floor drains, storm water, etc., is prohibited.

3. Lateral ground water movement interceptors (LGMI, e.g., French drains) may be required to divert ground water movement away from the absorption area site. The LGMI shall be placed perpendicular to the general slope of the land and generally parallel to the absorption trenches. A tight drain from the LGMI shall be constructed to discharge into a natural or manmade drainage way.

E. Protection of ~~subsurface soil absorption system~~. of the footprint and sewage system.

1. No structures shall be placed over the ~~subsurface soil absorption~~ sewage system or within the boundaries of the footprint (See 12 VAC 5-610-280). Driveways or parking lots shall not be constructed on the ~~subsurface~~ soil absorption system unless the invert of the lead or header lines or top of the gravel in the absorption trenches is deeper than 30 inches below the ground surface and the driveway or parking lot is paved with portland cement or bituminous concrete to prevent compaction of the trench bottom. Driveways and parking lots shall not be constructed over the distribution box unless adequate structural and access provisions are provided.

2. Where all or part of ~~a subsurface soil absorption~~ the sewage system or footprint is proposed to be installed on property other than the owners, an easement in perpetuity shall be recorded with the clerk of the court prior to issuance of a construction permit (see 12 VAC 5-610-280). The easement shall be of sufficient area to permit access, construction, ~~required reserve area (see 12~~

~~VAC 5-610-710),~~ and maintenance of the system.

3. Where the sewer line from the building to the pretreatment unit or the conveyance line is to be placed underneath a state road or in a Virginia Department of Transportation right-of-way, the requirement for a recorded easement in perpetuity can be waived for that portion of the system located underneath the road or in the right-of-way. In its place, the applicant shall obtain the appropriate permit or permits from the Department of Transportation to construct the sewer or conveyance line in its right-of-way. The construction permit for the sewage disposal system shall not be issued until the applicant provides the local health department with a copy of the permit issued by the Department of Transportation. Under no circumstances shall the pretreatment unit, the distribution box, or the soil absorption portion of the system be installed in the Department of Transportation right-of-way.

F. Preplacement and post-placement of utilities. ~~Subsurface soil absorption systems~~ Soil absorption systems and the footprint shall not be placed in an underground utility easement. No buried public or private utility service (e.g., water lines, electrical lines, gas lines, etc.) shall traverse the ~~subsurface~~ soil absorption system area or footprint nor shall the buried service be closer than 10 feet to the system or footprint.

~~12 VAC 5-610-710. Reserve absorption area sites.~~

~~Separate reserve area or areas meeting the requirements of Part III, Article I of this chapter and equalling 50% of the required absorption area shall be provided where the estimated or measured~~

~~percolation rate exceeds 45 minutes/inch.~~

~~Article 2~~

Part V.

Article II.

Building Sewers

12 VAC 5-610-720. General.

Sewers referred to in this section are watertight, smooth bore, rigid conduits which convey sewage from a building drain to a pretreatment unit and are not to be confused with public sewers addressed in the ~~Sewerage~~ SCAT Regulations. (See 12 VAC 5-580-10 et seq.)

12 VAC 5-610-730. Minimum size.

Sewers shall have a minimum internal diameter (ID) of three inches. Larger sewers may be required depending on projected flows.

~~Article 3~~

Part VI.

Article III.

Pretreatment Systems

~~12 VAC 5-610-780. General.~~

~~As used in this article, "pretreatment" refers to treatment works designed to prepare sewage for disposal in a soil medium~~.

~~12 VAC 5-610-790. Types.~~

~~Three general types of pretreatment systems are described herein. They are as follows:~~

~~A. Biological;~~

~~B. Physical; and~~

~~C. Chemical.~~

12 VAC 5-610-800. Aerobic biological systems.

~~Aerobic biological treatment systems will be considered on a case-by-case basis at the request of the owner~~. These systems shall meet the applicable criteria contained in 12 VAC 5-640-360 of the Alternative Discharging Sewage Treatment Regulations for Individual Single Family Dwellings or 12 VAC 5-580-770 of the ~~Sewerage~~ SCAT Regulations (12 VAC 5-580-10 et seq.) or criteria developed by a testing laboratory or agency approved by the division. Where an activated sludge process is used to produce a secondary or better effluent, provisions shall be made to protect the drainfield from bulking solids. ~~Use of an aerobic pretreatment system shall not result in the reduction of the absorption area requirements contained in Article 5 (12 VAC 5-~~

~~610 900 et seq.) of this chapter.~~

12 VAC 5-610-805. Alternate Filter Media.

Alternate media materials may include sand, crushed glass, crushed coal, textiles, synthetic foam, peat or other media approved by the Division.

12 VAC 5-610-810. Anaerobic biological systems.

~~Septic tanks are the most commonly used pretreatment systems and under normal circumstances are the most inexpensive units that give acceptable results with a minimum of maintenance.~~

The preferred material for use in constructing septic tanks is concrete. Other materials may be considered on a case-by-case basis. All materials must be resistant to corrosion, both chemical and electrolytic, and must have sufficient structural strength to contain sewage and resist lateral compressive and bearing loads.

12 VAC 5-610-815. Septic tank design.

A. Tank capacity. ~~The minimum hydraulic detention time shall be 48 hours based on daily design flow. In no case shall the septic tank capacity be less than 750 gallons.~~ Table ~~5.2~~ 5.1 contains the minimum required septic tank capacities for dwelling units.

Table ~~5.2.~~ 5.1.

Septic Tank Capacities for Dwelling Units.

No. of Bedrooms	Approximate Tank Volume in Gallons
1	750
2	750
3	900
4	1200
5	1500
6	1800
7	2100
8	2400

B. Tank dimensions. Septic tanks shall be rectangular in plan, cross-section and longitudinal view. The length to liquid depth to width ratio should be approximately equal or greater than 2 to 1 to 1 (2:1:1) and less than or equal to 3 to 1 to 1 (3:1:1). In no case shall the liquid depth be less than four feet or greater than eight feet. A minimum of one foot free board shall be provided. Inlet and outlet structures shall be placed on the longitudinal axis of the tank. Typical tank

dimensions are found in Table ~~5.3~~ 5.2.

Table ~~5.3.~~ 5.2

Typical Septic Tank Dimensions in Feet.

Approximate Gallons	Length	Width	Liquid Depth	Freeboard
750	7	3.5	4	1
900	8	4	4	1
1200	9	4.5	4	1
1500	9.5	5	4.7	1

C. Inlet-outlet structure.

1. General. The inlet and outlet structures shall function as a baffle. The invert of the inlet structure shall be greater than one inch but less than two inches higher than the invert of the outlet structure with the tank installed. The inlet structure shall extend six to eight inches below and eight to 10 inches above the normal liquid level. The outlet structure shall extend below the normal liquid surface to a distance of 35 to 40%~~6C~~ of the liquid depth and eight to 10 inches

above the normal liquid level. The inlet and outlet structures shall have an open space not less than four inches by four inches in cross-section or four inches in diameter.

2. Materials. All materials used for inlet and outlet structures shall have long term resistance to chemical and electrolytic corrosion. When pipe tees are used as inlet and outlet structures, the material shall be compatible with the material used in the sewer.

D. Top access and watertightness. All septic tanks shall be watertight and shall be provided with a watertight top. As a minimum, access manholes shall be provided over the inlet and outlet structures and shall have a minimum open space of 18 inches by 18 inches. When the septic tank has in excess of 30 inches of soil cover, an access manhole shall be brought to within 18 inches of the ground surface and shall be provided with a tight fitting cover. In wet areas the manhole covers shall be watertight.

E. Construction of septic tanks. The contractor and/or manufacturer shall design and construct the septic tank to withstand the lateral and bearing loads to which the septic tank is expected to be subjected.

F. Placement of septic tanks. The precast septic tank shall be bedded with at least six inches of sand or fine gravel where rock or other undesirable conditions are encountered. The tank shall be placed level. Where excavation is required, the hole shall be sufficiently large to permit placement of the tank. Backfilling the excavation for all septic tanks shall be done in layers with sufficient tamping to avoid settling. Backfill material shall be free of large stones and debris.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

12 VAC 5-610-817. ~~Maintenance.~~ Other Requirements.

A. ~~In order to~~ To encourage proper maintenance and reduce the ~~likelihood~~ discharge of solids ~~being discharged~~ to an absorption field~~, all septic tanks constructed after July 1, 2000,~~ septic tanks shall be designed ~~to allow for routine inspection without being uncovered~~ ~~(i.e., have an inspection port as provided for in subsection B of this section), or have an effluent filter as provided for in subsection C of this section, or be designed for reduced maintenance~~ ~~as provided for in subsection D of this section.~~ with at least one of the following: (1) an inspection port on the influent side of the septic tank, (2) an at-grade access port and effluent filter on the effluent side of the septic tank, or (3) be designed for reduced maintenance.

B. Inspection port. An inspection port is a three-inch or larger port pipe or structure which allows access to the septic tank for the purpose of measuring sludge and scum accumulation. The inspection port shall terminate at or above grade and be designed to allow an inspection of sludge buildup in the septic tank. The inspection port shall be constructed of schedule 40 PVC pipe, or its equivalent, and shall be fitted with a watertight threaded cap. The recommended location of the inspection port shall be in or near the manhole cover on the inlet side of the septic tank away from the inlet tee. Other locations may be approved by the district health department on a case-by-case basis.

C. Effluent filters. An effluent filter is a device which has one or more of the following purposes: (i) to manage solids to provide greater service life to a pump or other components of an onsite

system; (ii) to manage the total suspended solids (TSS) passed to the absorption field, potentially enhancing absorption field life; or (iii) some other purpose recognized as beneficial by the department.

1. All effluent filters shall be designed to improve the quality of effluent leaving the tank in a manner which is consistent with their purpose.

2. Septic tank outlet filters shall be constructed from a material which resists the corrosive nature of the environment within a septic tank.

3. A tamper proof child resistant at-grade access port shall be provided to assure the filter can be readily maintained as necessary.

D. Reduced maintenance septic tanks. Septic tanks which are sized 30%~~6C~~ larger than shown in Table ~~5.3~~ 5.2 and which are baffled such that the first compartment is nominally the volume required in Table ~~5.3~~ 5.2 shall be considered ~~to be~~ a reduced maintenance septic tank.

12 VAC 5-610-820. Miscellaneous.

A. Multiple septic tanks in series. The required volume for a septic tank may be satisfied by ~~the utilization of~~ utilizing two septic tanks in series; however, the first septic tank in series shall equal to 1/2 to 2/3 the required total volume.

B. Physical and/or chemical systems. Physical or chemical systems~~, or both,~~ utilized as

pretreatment for subsurface disposal of sewage shall meet the applicable criteria contained in 12 VAC 5-580-930 through ~~12 VAC 5-580-960~~ 12 VAC5-610-920 of the ~~Sewerage~~ SCAT Regulations.

C. Water stop. A water stop is a method for sealing the annular space around a conduit or pipe, or both, for the purpose of preventing infiltration or exfiltration~~, or both~~. Conduits or pipes passing through the walls of a pretreatment unit shall be provided with a water stop.

~~Article 4~~

Part VI.

Article IV.

Conveyance Systems

12 VAC 5-610-850. General.

~~For the purpose of this chapter an "effluent conveyance system" is defined as the piping,~~ Conveyance systems describe mechanical equipment and appurtenances ~~utilized to~~ that transport effluent from a pretreatment system to a point where the flow is split for distribution to ~~a subsurface soil absorption~~ an in-ground or land application system.

12 VAC 5-610-870. Gravity effluent mains.

A. Size. Mains transporting effluent by gravity shall have a minimum internal diameter of three

inches.

B. Slope. Gravity mains shall have a slope of not less than six inches per 100 feet.

C. Materials. Gravity mains spanning disturbed soil shall meet the material specifications contained in 12 VAC 5-610-750. The mains shall meet the specifications until placed two feet in undisturbed soil or until termination in a structure. The remaining gravity mains shall have a minimum crush strength of 1500 pounds per foot and may be constructed of cast iron, plastic, vitrified clay or other material resistant to the corrosive action of sewage. All gravity mains shall be watertight, smooth bore, rigid conduits.

D. Appurtenances.

1. Joints. Gravity mains shall have joints of the compression type with the exception of plastic mains which may be welded sleeve or chemically fused.

2. Adapters. Joining of mains of different size and/or material shall be accomplished by use of a manufactured adapter specifically designed for that purpose.

3. Valves. Valves shall be constructed of materials resistant to the corrosive action of sewage. Valves placed below ground level shall be provided with a valve box and a suitable valve stem so that it may be operated from the ground surface.

E. Flow diversion devices. Flow diversion is a technique for increasing the useful life of an

absorption area. Flow diversion provides for diversion of flow to two alternate equally sized absorption areas whose sum meets the area requirements in 12 VAC 5-610-950 B with a rest period of approximately one year for recovery of each absorption area. These devices shall ~~meet the material requirements contained in paragraph D 3 of this section.~~ be constructed of materials resistant to the corrosive action of sewage.

F. Construction. Construction standards for gravity effluent mains are the same as those for house sewers and are found in 12 VAC 5-610-770.

12 VAC 5-610-880. Pumping.

A. Force mains.

1. Velocity. At pumping capacity, a minimum self-scouring velocity of two feet per second shall be maintained. A velocity of eight feet per second should not be exceeded.

2. Air relief valve. Air relief valves shall be placed at high points in the force main, as necessary, to relieve air locking.

3. Bedding. All force mains shall be bedded to supply uniform support along their length.

4. Protection against freezing. Force mains shall be placed deep enough to prevent freezing.

5. Location. Force mains shall not pass closer than 50 feet to ~~any~~ drinking water ~~source~~ sources unless pressure tested in place at pump shut-off head. Under no circumstances shall a force main

come within 10 feet of ~~a~~ nonpublic drinking water ~~source~~ sources.

6. Materials of construction. All pipe used for force mains shall be of the pressure type with pressure type joints.

7. Anchors. Force mains shall be sufficiently anchored within the pump station and throughout the line length. The number of bends shall be as few as possible. Thrust blocks, restrained joints and/or tie rods shall be provided where restraint is needed.

8. Backfilling and tamping. Force main trenches shall be backfilled and tamped as soon as possible after the installation of the force main has been approved. Material for backfilling shall be free of large stones and debris.

B. Pumping station and pumps.

1. Sizing. Pumping station wet wells shall provide at least one quarter (1/4) day storage above the high level alarm set point. Actual volume between high and low level limits is determined on a case-by-case basis depending on the objective of pumping: (i) when low pressure dosing is utilized see 12 VAC 5-610-940 A for sizing requirements; (ii) when pumping to a gravity distribution box the wet well shall be sized to provide a working volume between 1/4 the daily flow and the daily flow; (iii) when pumping for the purpose of enhancing flow distribution (see 12 VAC 5-610-930 A) the working volume of the wet ~~wall~~ well shall be ~~0.6~~ 60% of the volume of the percolation piping.

2. Materials. Materials for construction of pumping stations are the same as for septic tanks (see 12 VAC 5-610-810). All materials and equipment utilized in pumping stations shall be unaffected by the corrosive action of sewage.

3. Access. An access manhole terminating above the ground surface shall be provided. The manhole shall have a minimum width dimension of 24 inches and shall be provided with a shoe box type cover adequately secured.

4. Construction. Pumping stations constructed of precast or poured in place concrete shall conform with the construction requirements contained in 12 VAC 5-610-815 E. When precast concrete pipe is utilized for a pumping station, the pipe shall be placed on and bonded to a concrete pad at least six inches thick and having a width at least one foot greater than the diameter of the pipe. All pumping stations shall be watertight. All conduits entering or leaving the pumping stations shall be provided with a water stop. The influent pipe shall enter the pumping station at an elevation at least one inch higher than the maximum water level in the wet well (total usable volume).

5. Installation. Placement of pumping stations shall conform to the requirements for placement of septic tanks contained in 12 VAC 5-610-815 F.

6. Pumps. All pumps utilized shall be ~~of the open face centrifugal type~~ designed to pump sewage or septic tank effluent. Pumps utilized for the sole purpose of pumping effluent to a higher elevation shall have a capacity approximately 2.5 times the average daily flow in gallons per

minute but not less than five gallons per minute at the system head. Pumps utilized for the purpose of enhancing flow distribution (See 12 VAC 5-610-930 A) shall ~~have a minimum capacity of~~ pump at least 36 gallons per minute at system head per 1200 linear feet of percolation piping. Pumps discharging to a low pressure distribution system shall be sized in accordance with 12 VAC 5-610-940 A. Dual alternating pumps are required on systems 1800 linear feet or greater in accordance with 12 VAC 5-610-930 B. Pumps shall be so placed that under normal start conditions it shall be subjected to a positive suction head. When multiple pumps are used, each pump shall have its own separate suction line. Suitable shutoff valves shall be provided on the discharge line and suction line (if provided) for normal pump isolation. A check valve shall be placed in the discharge line between the pump and shutoff valve. When the pump discharge is at a lower elevation than the high liquid level in the pump station, an antisiphon device shall be provided on the pump discharge. Pumps shall be piped so that they can be removed for servicing without having to dewater the wet well.

7. Controls. Each pumping station shall be provided with controls for automatically starting and stopping the pumps based on water level. When float type controls are utilized, they shall be placed so as to be unaffected by the flow entering the wet well. Provisions shall be made for automatically alternating the pumps. The electrical motor control center and master disconnect switch shall be placed in a secure location above grade and remote from the pump station. Each motor control center shall be provided with a manual override switch.

8. Alarms. A high water alarm with remote sensing and electrical circuitry separate from the motor control center circuitry shall be provided. The alarm shall be audiovisual and shall alarm in an area where it may be easily monitored. When multiple pumps are utilized, an additional audiovisual alarm shall be provided to alarm when a pump motor fails to start on demand.

9. Ventilation. Positive ventilation shall be provided at pumping stations when personnel are required to enter the station for routine maintenance.

a. Wet wells. Ventilation may be either continuous or intermittent. Ventilation, if continuous, shall provide at least 12 complete air changes per hour; if intermittent, at least 30 complete air changes per hour. Such ventilation shall be accomplished by mechanical means.

b. Dry wells. Ventilation may be either continuous or intermittent. Ventilation, if continuous, shall provide at least six complete air changes per hour; if intermittent, at least 30 complete air changes per hour. Such ventilation shall be accomplished by mechanical means.

12 VAC 5-610-890. Siphons.

A. Use. Intermittent dosing siphons have two major uses:

1. Low pressure dosing of ~~subsurface~~ soil absorption systems (see 12 VAC 5-610-940); or

2. To provide more uniform distribution of effluent to large or multiple sectioned subsurface soil absorption systems which split the flow 12 or more times or contain 1200 linear feet or more of

percolation piping (see 12 VAC 5-610-930 A and B).

B. Materials. Materials for construction of dosing siphon chambers are the same as for septic tanks (see 12 VAC 5-610-810).

C. Number and sizing. Dosing siphons discharging to ~~subsurface~~ soil absorption systems shall have an average discharge rate greater than 2.5 times the average daily influent flow in gallons per minute but not less than 70 gallons per minute per 1200 linear feet of percolation lines. Twin alternating siphons are required where the system to be dosed exceeds 1800 linear feet in accordance with 12 VAC 5-610-930 B. The volume of the dosing chamber shall equal 0.6 the volume of the percolation piping for enhanced flow distribution. Actual dosing chamber volume is determined on a case-by-case basis where low pressure distribution is utilized (see 12 VAC 5-610-940 A).

D. Access. The siphon chamber shall terminate at or above the ground surface. The top of the chamber shall be removable to an extent to allow access for maintenance, repairs and removal of the siphon components.

E. Construction. Dosing chambers constructed of precast or poured in place concrete shall conform with the construction requirements contained in 12 VAC 5-610-815 E.

F. Force mains. Force mains used in conjunction with siphons shall meet the applicable criteria contained in 12 VAC 5-610-880 A.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

~~Article 5~~

Part VI.

Article V:

Subsurface Soil Absorption System

12 VAC 5-610-900. General.

Subsurface soil absorption systems ~~are sewage disposal systems which~~ utilize the soil to further treat and dispose of effluent from a treatment works in a manner that does not result in a point source discharge and does not create a nuisance, health hazard or ground or surface water pollution.

12 VAC 5-610-910. Scope.

~~For the purpose of this chapter, a~~ A "subsurface soil absorption system" shall refer to that part of a sewage ~~disposal~~ system beginning at the flow splitting device and extending through the absorption area or areas.

12 VAC 5-610-930. Gravity distribution.

Gravity distribution is the conveyance of effluent from a distribution box through the percolation lines at less than full flow conditions. Flow to the initial distribution box may be initiated by pump, siphon or gravity.

A. Enhanced flow distribution. Enhanced flow distribution is the initiation of the effluent flow to the distribution box by pump or siphon for the purpose of assuring more uniform flow splitting to the percolation lines. Enhanced flow distribution shall be provided on systems where ~~the flow is split~~ more than 12 ~~times~~ percolation trenches are used or the system contains more than 1200 linear feet of percolation lines. ~~For the purpose of this chapter, enhanced~~ Enhanced flow distribution is considered to produce unsaturated soil conditions.

B. System size. Distribution systems containing 1800 or more linear feet of percolation piping shall be split into multiple systems containing a maximum of 1200 linear feet of percolation piping per system.

C. Distribution boxes. The distribution box is a device for splitting flow equally by gravity to points in the system. Improperly installed distribution boxes are a cause for absorption field malfunction.

1. Materials. The preferred material for use in constructing distribution boxes is concrete (3000 psi). Other materials may be considered on a case-by-case basis. All materials must be resistant to both chemical and electrolytic corrosion and must have sufficient structural strength to contain sewage and resist lateral compressive and bearing loads.

2. Design. Each distribution box shall be designed to split the influent flow equally among the multiple effluent ports. All effluent ports shall be at the same elevation and be of the same diameter. The elevation of the effluent ports shall be at a lower elevation than the influent port.

The placement of the influent ports shall be such as to prevent short circuiting unless baffling is provided to prevent short circuiting. The minimum inside width of a gravity flow distribution box shall be equal to or greater than 12 inches. The inside bottom shall be at least four inches below the invert of the effluent ports and at least five inches below the invert of the influent port. A minimum of eight inches freeboard above the invert of the effluent piping shall be provided. The distribution box shall be fitted with a watertight, removable lid for access.

3. Installation. The hole for placement of the distribution box shall be excavated to undisturbed soil. The distribution box shall be placed in the excavation and stabilized. The preferred method of stabilizing the distribution box is to bond the distribution box to a four inch poured in place Portland cement concrete pad with dimensions six inches greater than the length and width dimensions of the distribution box. The box shall be permanently leveled and checked by water testing. Conduits passing through the walls of a distribution box shall be provided with a water stop.

D. Lead or header lines. Header or lead lines are watertight, semirigid or rigid lines that convey effluent from a distribution box to another box or to the percolation piping.

1. Size. The lead or header lines shall have an internal diameter of four inches.

2. Slope. Minimum slope shall be two inches per 100 feet.

3. Materials. The lead or header lines shall have a minimum crush strength of 1500 pounds per

foot and may be constructed of cast iron, plastic, vitrified clay or other material resistant to the corrosive action of sewage.

4. Appurtenances.

a. Joints. Lead or header lines shall have joints of the compressions type with the exception of plastic lead or header lines which may be welded sleeve, chemically fused or clamped (noncorrosive) flexible sleeve.

b. Adapters. Joining of lead or header lines of different size and/or material shall be accomplished by use of a manufactured adapter specifically designed for the purpose.

c. Valves. Valves shall be constructed of materials resistant to the corrosive action of sewage. Valves placed below ground level shall be provided with a valve box and a suitable valve stem so that it may be operated from the ground surface.

5. Construction.

a. Bedding. All lead or header lines shall be bedded to supply uniform support and maintain grade and alignment along the length of the lead or header lines. Special care shall be taken when using semirigid pipe.

b. Backfilling and tamping. Lead and header lines shall be backfilled and tamped as soon as possible after the installation of the lead or header lines has been approved. Material for

backfilling shall be free of large stones and debris.

6. Termination. Header or lead lines shall extend for a minimum distance of two feet into the absorption trenches.

E. Gravity percolation lines. Gravity percolation lines are perforated or open joint pipes that are utilized to distribute the effluent along the length of the absorption trenches.

1. Size. All gravity percolation lines shall have an internal diameter of four inches.

2. Slope. The slope of the lines shall be uniform and shall not be less than two inches or more than four inches per 100 feet.

3. Design. Effluent shall be split by the distribution system so that all gravity percolation lines installed shall receive an equal volume of the total design effluent load per square foot of trench, i.e., the fraction of the flow received by each percolation line divided by the length of the gravity percolation lines shall be equal for all gravity percolation lines in a system.

4. Length. No individual gravity percolation line shall exceed 100 feet in length.

5. Materials.

a. Clay. Clay tile shall be extra-strength and meet current ASTM standards for clay tile.

b. Perforated plastic drainage tubing. Perforated plastic drainage tubing shall meet ASTM standards. At not greater than 10 feet intervals the pipe shall be plainly marked, embossed or

engraved thereby showing the manufacturer's name or hallmark and showing that the product meets a bearing load of 1,000 lb. per foot. In addition, a painted or other clearly marked line or spot shall be marked at not greater than 10 feet intervals to denote the top of the pipe.

The tubing shall have three holes, 1/2 to 3/4 inch in diameter evenly spaced and placed within an arc of 130 degrees, the center hole being directly opposite the top marking.

Spacing of each set of three holes shall be at four inch intervals along the tube. If there is any break in the continuity of the tubing, an appropriate connection shall be used to join the tubing.

6. Installation

a. Crushed stone or gravel. Clean gravel or crushed stone having a size range from 1/2 inch to 1-1/2 inches shall be utilized to bed the gravity percolation lines.

Minimum depth of gravel or crushed stone beneath the percolation lines shall be six inches. Clean course silica sand (does not effervesce in presence of dilute hydrochloric acid) may be substituted for the first two inches (soil interface) of the require six inches of gravel beneath the percolation lines. The absorption trench shall be backfilled to a depth of two inches over the gravity percolation lines with the same gravel or crushed stone. Clean sand, gravel or crushed stone shall be free of fines, clay and organic materials.

b. Grade boards and/or stakes. Grade boards and/or stakes placed in the bottom or sidewalls of the absorption trench shall be utilized to maintain the grade on the gravel for placement of the

gravity percolation lines. Grade stakes shall not be placed on centers greater than 10 feet.

c. Placement and alignment. Perforated gravity percolation piping shall be placed so that the center hole is in the horizontal plane and interfaces with the minimum six inches of graded gravel. When open joint piping is utilized the upper half of the top of the 1/4-inch open space shall be covered with tar paper or building paper to block the entrance of fines into the pipe during the backfilling operation. All gravity percolating piping shall be placed in the horizontal center of the absorption trench and shall maintain a straight alignment and uniform grade.

d. Backfilling. After the placement of the gravity percolation piping the absorption trench shall be backfilled evenly with crushed stone or gravel to a depth of two inches over the piping. Untreated building paper, or other suitable material shall be placed at the interface of the gravel and soil to prevent migration of fines to the trench bottom. The remainder of the trench shall be backfilled with soil to the ground surface.

12 VAC 5-610-940. Low pressure distribution.

Low pressure distribution is the conveyance of effluent through the pressure percolation lines at full flow conditions into the absorption area with the prime motive force being a pump or siphon. Low pressure systems are limited to a working pressure of from one to four feet of head at the distal end of the pressure percolation lines. ~~For the purpose of this chapter low~~ Low pressure distribution is considered to provide unsaturated soil conditions.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

A. Dosing cycle. Systems shall be designed so that the effluent volume applied to the absorption area per dosing cycle is from seven to 10 times the volume of the distribution piping, however, the volume per dosing cycle should not result in a liquid depth in the absorption trench greater than two inches.

B. Manifold lines. Manifold lines are watertight lines that convey effluent from the initial point of flow splitting to the pressure percolation lines.

1. Size. The manifold line shall be sized to provide a minimum velocity of two feet per second and a maximum velocity of eight feet per second.

2. Materials. All pipe used for manifolds shall be of the pressure type with pressure type joints.

3. Bedding. All manifolds shall be bedded to supply uniform support along its length.

4. Backfilling and tamping. Manifold trenches shall be backfilled and tamped as soon as possible after the installation of the manifold has been approved. Material for backfilling shall be free of large stones and debris.

5. Valves. Valves for throttling and check valves to prevent backflow are required wherever necessary. Each valve shall be supplied with a valve box terminating at the surface.

C. Pressure percolation lines. Pressure percolation lines are perforated pipes utilized to distribute the flow evenly along the length of the absorption trench.

1. Size. Pressure percolation lines should normally have a 1-1/4 inch inside diameter.

2. Hole size. Normal hole size shall be 3/16 inch to 1/4 inch.

3. Hole placement. Center to center hole separation shall be between three and five feet.

~~4. Line length. Maximum line length from manifold should not exceed 50 feet.~~

~~5.~~ 4. Percent flow variation. Actual line size, hole size and hole separation shall be determined on a case-by-case basis based on a maximum flow variation of 10%~~6C~~ along the length of the pressure percolation lines.

~~6.~~ 5. Materials and construction. The preferred material is plastic, either PVC or ABS, designed for pressure service. The lines shall have burr free and counter sunk holes (where possible) placed in a straight line along the longitudinal axis of the pipe. Joining of pipes shall be accomplished with manufactured pressure type joints.

~~7.~~ 6. Installation.

a. Crushed stone or gravel. Clean gravel or crushed stone having a size range from 1/2 inch to 3/4 inch shall be utilized to bed the pressure percolation lines. Minimum depth of gravel or crushed stone beneath the percolation lines shall be 8-1/2 inches. Clean course silica sand (does not effervesce in the presence of dilute hydrochloric acid) may be substituted for the first two inches (soil interface) of the required 8-1/2 inches of gravel beneath the pressure percolation

lines. The absorption trench shall be backfilled to a depth of two inches over the pressure percolation lines with the same gravel or crushed stone. Clean sand, gravel or crushed stone shall be free of fines, clay and organic materials.

b. Grade boards and/or stakes. Grade boards and/or stakes placed in the bottom or sidewalls of the absorption trench shall be utilized to maintain the gravel level for placement of the pressure percolation lines. Grade stakes shall not be placed on centers greater than 10 feet.

c. Placement and alignment. Pressure percolation lines shall be placed so that the holes face vertically downward. All pressure percolation piping shall be placed at the same elevation, unless throttling valves are utilized, and shall be level. The piping shall be placed in the horizontal center of the trench and shall maintain a straight alignment. Normally the invert of the pressure percolation lines shall be placed 8-1/2 inches above the trench bottom. However, under no circumstance shall the invert of the pressure percolation lines be placed closer than 16-1/2 inches to the seasonal water table as defined in 12 VAC 5-610-950 A 3. When the invert of the pressure percolation lines must be placed at an elevation greater than 8-1/2 inches above the trench bottom, landscaping over the absorption area may be required to provide the two inches of gravel and six inches of fill over the pressure percolation lines required in subdivision 7 a of this subsection.

d. Backfilling. After the placement of the pressure percolation piping the absorption trench shall be backfilled evenly with crushed stone or gravel to a depth of two inches over the opening.

Untreated building paper or other suitable material shall be placed at the interface of the gravel and soil to prevent migration of fines to the trench bottom. The remainder of the trench shall be backfilled with soil to the ground surface.

~~8.~~ 7. Appurtenances. The distal (terminal) end of each pressure percolation lines shall be fitted with a vertical riser and threaded cap extending to the ground surface. Systems requiring throttling valves will be supplied with couplings and threaded riser extensions at least four feet long so that the flow may be adjusted in each line.

12 VAC 5-610-950. Absorption area design.

~~A. The absorption area is the undisturbed soil medium beginning at the soil gravel or sand interface which is utilized for absorption of the effluent. The absorption area includes the infiltrative surface in the absorption trench and the soil between and around the trenches.~~

~~B.~~ ~~Suitability~~ A. Identification of soil horizon. ~~The absorption trench bottom shall be placed in the soil horizon or horizons with an average estimated or measured percolation rate less than 120 minutes per inch.~~ Soil horizons ~~are to~~ shall be identified in accordance with 12 VAC 5-610-480. ~~The soil horizon must meet the following minimum conditions:~~

~~1. It shall have an estimated or measured percolation rate equal to or less than 120 minutes per inch.~~

~~2.~~ The soil ~~horizon or~~ horizons shall be of sufficient thickness so that at least 12 inches of

absorption trench sidewall is exposed to act as an infiltrative surface~~; and~~ in undisturbed and naturally occurring soil.

~~3. If no single horizon meets the conditions in subdivision 2 of this subsection, a combination of adjacent horizons may be utilized to provide the required 12-inch sidewall infiltrative surface. However, no horizon utilized shall have an estimated or measured percolation rate greater than 120 minutes/inch.~~

~~C.~~ ~~Placement of absorption trenches below soil restrictions.~~ B. Placement of the soil absorption trench bottom below soil restrictions ~~as defined in 12 VAC 5-610-490 D, whether or not there is evidence of a perched water table as indicated by free standing water or gray mottlings or coloration,~~ requires ~~a special design based on the following criteria:~~ the dispersal of secondary or better effluent.

~~1. The soil horizon into which the absorption trench bottom is placed shall be a Texture Group I, II or III soil or have an estimated or measured percolation rate of less than 91 minutes per inch.~~

~~2.~~ 1. The soil ~~horizon~~ horizons shall be ~~a minimum of~~ at least three feet thick and shall exhibit no characteristics that indicate wetness ~~on~~ or restriction of water movement. The absorption trench bottom shall be placed so that at least two feet of the soil horizon separates the trench bottom from the ~~water table and/or rock~~. limiting factor. ~~At least one foot of the absorption trench side wall shall penetrate the soil horizon.~~

~~3.~~ 2. A lateral ground water movement interceptor (LGMI) shall be placed upslope of the absorption area. The LGMI shall be placed perpendicular to the general slope of the land. The invert of the LGMI shall extend into, but not through, the restriction and shall extend for a distance of 10 feet on either side of the absorption area (See 12 VAC 5-610-700 D 3).

~~4. Pits shall be constructed to facilitate soil evaluations as necessary.~~

~~D.~~ C. Sizing of absorption trench area.

~~1. Required area.~~ The total absorption trench bottom area required shall be based on ~~the average estimated or measured percolation rate for~~ the ~~soil horizon or~~ horizons into which the absorption trench is to be placed and the soil comprising the vertical separation distance. ~~If more than one soil horizon is utilized to meet the sidewall infiltrative surface required in subsection B of this section, the absorption trench bottom area shall be based on the average estimated or measured percolation rate of the "slowest" horizon.~~ The trench bottom area required in square feet per 100 gallons ~~(Ft²/100 Gals) of sewage applied for various soil percolation rates~~ is tabulated in Table ~~5.4~~. 5.3. ~~The area requirements are based on the equation:~~

~~log y = 2.00 + 0.008 (x)~~

~~where y = Ft²/100 Gals~~

~~x = Percolation rate in minutes/inch~~

SEWAGE HANDLING AND DISPOSAL REGULATIONS

Table 5.3

Minimum Trench Bottom Area for systems dispersing STE[1].

Ksat		Ft^2 / 100 GAL	
Inches/Day	Cm/Day	Gravity	LPD
> 19.7	> 50.0	198	198
9.8 - 19.7	25.0 - 50.0	216	216
6.9 - 9.8	17.4 - 25.0	238	238
6.3 - 6.9	15.9 - 17.4	263	263
5.7 - 6.3	14.6 - 15.9	284	284
5.2 - 5.7	13.3 - 14.6	313	295
4.7 - 5.2	12.0 - 13.3	344	306
4.3 - 4.7	11.0 - 12.0	376	317
3.9 - 4.3	10.0 - 11.0	412	333
3.6 - 3.9	9.1 - 10.0	452	347
3.3 - 3.6	8.3 - 9.1	495	371
3.0 - 3.3	7.6 - 8.3	544	391
2.7 - 3.0	6.9 - 7.6	596	410
2.5 - 2.7	6.4 - 6.9	653	432
2.3 - 2.5	5.8 - 6.4	716	452
2.0 - 2.3	5.2 - 5.8	787	472
1.9 - 2.0	4.8 - 5.2	862	491

1.7 - 1.9	4.4 - 4.8	945	511
1.6 - 1.7	4.0 - 4.4	1035	518
1.4 - 1.6	3.6 - 4.0	1136	569
1.3 - 1.4	3.3 - 3.6	1246	623
1.2 - 1.3	3.0 - 3.3	1366	682
1.0 - 1.2	2.6 - 3.0	1498	749
0.9 - 1.0	2.2 - 2.6	1642	821

1. Notwithstanding the above, the minimum absorption interface area for single family residential ~~dwellings~~ systems dispersing septic tank effluent shall be 400 square feet or 200 linear feet, including designs by an AOSE or professional engineer.

2. For designs by the Department that disperse secondary or better effluent, the absorption interface area shall comprise at least half of the footprint's total area.

~~2. Area reduction. See Table 5.4 for percent area reduction when low pressure distribution is utilized. A reduction in area shall not be permitted when flow diversion is utilized with low pressure distribution.~~

~~E.~~ D. Minimum cross section dimensions for absorption trenches.

1. Depth. The minimum trench sidewall depth as measured from the surface of the mineral soil shall be 12 inches when placed in a landscape with a slope less than 10%~~6C~~. The installation

depth shall be measured on the downhill side of the absorption trench. When the installation depth is less than 18 inches, the depth shall be measured from the lowest elevation in the microtopography. ~~All systems~~ Systems shall be provided with at least 12 inches of cover above the point of effluent application to prevent ~~frost penetration~~ freezing and provide physical protection to the absorption trench; however, this requirement for additional cover shall not apply to systems installed on slopes of 30%~~6C~~ or greater, or systems installed 18-inches or deeper. ~~Where additional soil cover must be provided to meet this minimum, it must be added prior to construction of the absorption field, and it must be crowned to provide positive drainage away from the absorption field~~. ~~The~~ For systems dispersing septic tank effluent, the minimum trench depth shall be increased by at least ~~five inches for every 10%6C~~ one-inch for every 2% increase in slope for slopes greater than 10%. Sidewall depth is measured from the ground surface on the downhill side of the trench. The depth to a limiting factor shall be measured from the uphill side of the trench.

2. Width. All absorption trenches utilized with gravity distribution shall have a width of from 18 inches to 36 inches. All absorption trenches utilized with low pressure distribution shall have a width of eight inches to 24 inches.

~~F.~~ E. Lateral separation of absorption trenches. The absorption trenches shall be separated by a center to center distance no less than three times the width of the trench ~~for slopes up to 10%6C~~. ~~However, where trench bottoms are two feet or more above rock, pans and impervious strata, the~~

~~absorption trenches shall be separated by a center to center distance no less than three times the width of the trench for slopes up to 20%6C. The~~ For systems dispersing septic tank effluent, the minimum horizontal separation distance shall be increased by one foot for every 10%~~6C~~ increase in slope. In no case shall the center to center distance be less than 30 inches.

~~G.~~ F. Slope of absorption trench bottoms.

1. Gravity distribution. The bottom of each absorption trench shall have a uniform slope not less than two inches or more than four inches per 100 feet.

2. Low pressure distribution. The bottom of each absorption trench shall be uniformly level to prevent ponding of effluent.

~~H.~~ G. Placement of absorption trenches in the landscape.

1. The absorption trenches shall be placed on contour.

2. When the ground surface in the area over the absorption trenches is at a higher elevation than any plumbing fixture or fixtures, sewage from the plumbing fixture or fixtures shall be pumped.

~~I.~~ H. Lateral ground water movement interceptors. Where subsurface, laterally moving water is expected to adversely affect an absorption system, a lateral ground water movement interceptor (LGMI) shall be placed upslope of the absorption area. The LGMI shall be placed perpendicular to the general slope of the land. The invert of the LGMI shall extend into, but not through, the

restriction and shall extend for a distance of 10 feet on either side of the absorption area.

~~Table 5.4.~~

~~Area Requirements for Absorption Trenches.~~

~~Percolation Rate (Minutes/Inch)~~	~~Area Required (Ft^2/100 Gals)~~		~~Area Required (Ft^2/Bedroom)~~	
	~~Gravity~~	~~Low Pressure Distribution~~	~~Gravity~~	~~Low Pressure Distribution~~
~~5~~	~~110~~	~~110~~	~~165~~	~~165~~
~~10~~	~~120~~	~~120~~	~~180~~	~~180~~
~~15~~	~~132~~	~~132~~	~~198~~	~~198~~
~~20~~	~~146~~	~~146~~	~~218~~	~~218~~
~~25~~	~~158~~	~~158~~	~~237~~	~~237~~
~~30~~	~~174~~	~~164~~	~~260~~	~~255~~
~~35~~	~~191~~	~~170~~	~~286~~	~~260~~

~~40~~	~~209~~	~~176~~	~~314~~	~~264~~
~~45~~	~~229~~	~~185~~	~~344~~	~~279~~
~~50~~	~~251~~	~~193~~	~~376~~	~~293~~
~~55~~	~~275~~	~~206~~	~~412~~	~~309~~
~~60~~	~~302~~	~~217~~	~~452~~	~~325~~
~~65~~	~~331~~	~~228~~	~~496~~	~~342~~
~~70~~	~~363~~	~~240~~	~~544~~	~~359~~
~~75~~	~~398~~	~~251~~	~~596~~	~~375~~
~~80~~	~~437~~	~~262~~	~~656~~	~~394~~
~~85~~	~~479~~	~~273~~	~~718~~	~~409~~
~~90~~	~~525~~	~~284~~	~~786~~	~~424~~
~~95~~	~~575~~	~~288~~	~~862~~	~~431~~
~~100~~	~~631~~	~~316~~	~~946~~	~~473~~
~~105~~	~~692~~	~~346~~	~~1038~~	~~519~~

~~110~~	~~759~~	~~379~~	~~1138~~	~~569~~
~~115~~	~~832~~	~~416~~	~~1248~~	~~624~~
~~120~~	~~912~~	~~456~~	~~1368~~	~~684~~

~~J.~~ I. Controlled blasting. When rock or rock outcroppings are encountered during construction of absorption trenches the rock may be removed by blasting in a sequential manner from the top to remove the rock. Percolation piping and sewer lines shall be placed so that at least one foot of compacted clay soil lies beneath and on each side of the pipe where the pipe passes through the area blasted. The area blasted shall not be considered as part of the required absorption area.

12 VAC 5-610-960. Elevated sand mound.

A. An elevated sand mound ~~is a soil absorption system that~~ incorporates low pressure distribution and sand filtration to produce treated sewage prior to absorption in the natural underlying soil. The elevated sand mound utilizes less gross soil area than most other soil absorption systems.

B. Mound systems are considered Type ~~III~~ II systems (see 12 VAC 5-610-250 ~~C~~).

C. Mound systems shall be designed and constructed in accordance with the Wisconsin Mound Soil Absorption System Siting, Design and Construction Manual prepared by the Small Scale

Waste Management Project, School of Natural Resources, College of Agricultural and Life Sciences, University of Wisconsin-Madison dated January ~~1990.~~ 2000.

D. The ~~manual referred to in subsection C of this section~~ Wisconsin Sand-mound manual, January 2000, shall be used ~~for the designated construction of elevated sand mounds.~~ for construction of these systems. The following criteria are required for all elevated sand mound systems in addition to the requirements found in the manual.

1. The construction permit shall require permanent water saving devices; however, there shall be no corresponding reduction in the basal area. The construction permit shall be recorded and indexed in the grantor index under the holder's name in the land records of the clerk of the circuit court having jurisdiction over the site of the sewage disposal system ~~pursuant to 12 VAC 5-610-250 J~~.

2. The proposed mound site shall be fenced, roped or otherwise secured, and marked, to prevent damage by vehicular traffic. Activities on the mound site shall be severely limited in order to protect it to the greatest extent possible.

3. Formal plans and specifications, prepared by a licensed professional engineer ~~in accordance with 12 VAC 5-610-250 G,~~ shall be required and must be approved by the health department prior to any site-disturbing activities.

4. The local health department shall be notified at least 48 hours before any work begins on the

site, including delivery of materials. The mound must be constructed during dry weather and soil conditions. The contractor shall schedule a conference with the local health department to review the plans and specifications prior to beginning any phase of construction, including delivery of materials.

5. Wooded sites shall not be used unless it is ~~shown by the applicant that the wooded site is~~ the only site available, and if the applicant can demonstrate that the site can be properly prepared (plowed). If a wooded site is used, trees shall be removed by cutting them off at ground level, leaving the stumps in place. The cut trees shall be removed using methods that do not require driving equipment over the mound site and that do not result in the removal of any soil from the site. Larger basal areas may be required on wooded sites.

~~6. When the depth to a restriction, shrink-swell soils or a water table is less than 24 inches, pretreatment sufficient to produce a secondary quality effluent may be used to reduce these distances as shown in Table 4.4.~~

12 VAC 5-610-965. Sand-on-sand.

A. Sand-on-sand is a process of modifying a ~~soil absorption system~~ site using fill material which is similar in texture to the original, naturally occurring material. Filling is accomplished in a manner which allows for adequate treatment and disposal of effluent, protection from frost and traffic damage, and does not promote the creation of restrictive horizons. Sand-on-sand systems are considered Type II systems and are used to overcome limitations encountered with ~~certain~~

~~high water table soils~~ limiting factors. ~~A detailed description of the siting criteria used for sand-on-sand systems is found in 12 VAC 5-610-597.~~ See 12 VAC 5-610-597.

B. Site preparation. All surface vegetation and organic matter, including but not limited to grass, shrubs, trees, leaf litter, branches, limbs, and tree stumps shall be removed. Special consideration shall be given to site preparation to avoid soil compaction and other damage which may create discontinuities and restrictive horizons when the fill material is placed on the site.

C. Fill material. Fill material may be ~~added to such a site and~~ used for residential ~~onsite wastewater disposal for~~ flows up ~~to 1,000 G.P.D.~~ to eight bedrooms ~~on sites meeting the criteria established in 12 VAC 5-610-597~~ provided that:

1. The fill material used is the same texture as the underlying material;

2. The coarse fragment content of the fill material is neither greater than 10%~~6C~~ by volume nor noncarbonaceous and inorganic material greater than two mm in size;

3. The fill material is placed in such a manner as to prevent the formation of any restrictive horizons;

4. The fill material covers an area 10 feet greater in all horizontal dimensions than the soil absorption system;

5. The sides of the filled area are sloped at not greater than 1:10 (rise:run);

6. The fill material provides at least six inches of cover over all portions of the system; and

7. The fill material is stabilized to prevent surface erosion.

D. Application rate. ~~All sand-on-sand systems shall be designed on a 30 mpi loading rate and~~ Sand on sand systems shall use a method of pressure distribution which achieves unsaturated flow conditions.

E. Fill depth. All sand-on-sand systems utilizing gravel trench designs shall have a minimum of 25 inches of fill over the original site.

F. System placement. The drainfield trenches shall be placed so that there is six inches of fill, or more, beneath the trench bottom and six inches of fill over the trenches.

G. The remaining design and construction criteria for sand-on-sand systems are the same as ~~for~~ the design and construction of a similar system in original undisturbed soils.

~~Article 6~~

Part VI.

Article VI.

Privies

12 VAC 5-610-980. Types.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

A. Privies are divided into two categories, those that function as disposal facilities and those that function merely as holding facilities with ultimate disposal of the contents at another facility via pump and haul.

B. Disposal privies.

1. Pit privy.

a. Description. A pit privy consists of a lined earthen pit with a suitable rodent and insect proof structure and pit vent stack. The structure shall be provided with self-closing lid or lids on the seat riser. The pit privy is located exterior to a dwelling.

b. Location. Required separation distances from various structures and topographic features are the same as for ~~subsurface~~ soil absorption systems ~~and may be found in Table 4.2~~. The bottom of the pit privy shall be at least two feet above ~~the seasonal water table and any rock~~. a limiting factor. Location of pit privies shall also comply with 12 VAC 5-610-593 ~~1 through 6 and 10~~.

c. Utilization. The Uniform Statewide Building Code of Virginia ~~normally~~ prohibits the installation of pit privies at new homes. In case of hardship, unsuitable soil conditions or temporary recreational use, a privy can sometimes be constructed after obtaining the approval of the building official ~~with the approval of~~ and the department. A sewage disposal system meeting the requirements of 12 VAC 5-610-250 ~~A and B~~ shall be provided to treat other sewage ~~(wastewater)~~ generated from activities such as laundering, bathing, handwashing, and cooking.

Pit privies utilized at existing dwellings ~~should~~ shall be abandoned within one year ~~of the availability of~~ if sanitary sewers become available. Proper abandonment consists of removing the structure and covering the pit with at least two feet of soil. Pit privies are an acceptable means of sewage disposal at isolated areas such as primitive camping areas, public boat launching areas, recreation areas, state parks and wilderness areas where pressurized water systems are not provided.

2. Incinerator toilets.

a. Description. Incinerator toilets are devices that utilize electrical energy or burning gas to incinerate human excreta deposited directly into them. They function both as toilet and disposal facility and produce an inert ash. Incinerator toilets are located in the interior of a dwelling.

b. Utilization. ~~In addition to the conditions stated in subdivision 1 c of this subsection for pit privies, incinerator~~ Incinerator toilets shall not be ~~utilized~~ used where they are subjected to frequent use ~~and/or~~ or peak loading conditions.

c. Certification. All incinerator toilets must be certified by the National Sanitation Foundation as meeting the current Standard 41.

3. Composting toilets.

a. Description. Composting toilets are devices which incorporate an incline plane, baffles or other suitable devices onto which human excreta is deposited for the purpose of allowing aerobic

decomposition of the excreta. The decomposing material is allowed to accumulate to form a humus type material. These units serve as both toilet and disposal devices. Composting toilets are located interior to a dwelling.

b. ~~Utilization. In addition to the conditions stated in subdivision 1 c of this subsection for pit privies, all~~ All materials removed from a composting privy shall be buried. Compost material shall not be placed in vegetable gardens or on the ground surface.

c. Certification. All composting toilets must be certified by the National Sanitation Foundation as meeting the current Standard 41.

C. Holding privies.

1. ~~General. Due to the nature of these devices, i.e., they~~ Holding privies require routine pump and haul~~,~~ and special care shall be taken in selecting these devices for use. These devices are satisfactory for use at mass gatherings, transient worker populations, construction sites, recreation areas, etc.

2. Vault privy.

a. Description. A vault privy is similar to a pit privy except that, instead of an earthen pit, a water and corrosion proof containment vessel (vault) is provided. The vault shall be provided with access for periodic removal of the vault contents.

b. Location. Vault privies shall be located to prevent contamination of ground water or surface water. The elevation of the top of the vault or access port shall be placed two feet above the annual flood elevation. Separation distances from structures and topographic features will be determined on a case-by-case basis.

c. ~~Utilization.~~ Vault privies are an acceptable method of holding human excreta where ground water, surface water or other conditions prohibit the installation of other approved sewerage facilities. ~~The conditions contained in subdivision B 1 c of this section shall be met.~~ See 12 VAC 5-610.B.1.c.

3. Portable privies.

a. Description. A portable privy is a type of vault privy that is generally manufactured as a single unit and is easily transported.

b. Location. Location of portable privies should be determined on a case-by-case basis under the supervision of the district or local health department.

c. ~~Utilization.~~ Portable privies are normally used in association with mass gatherings, construction sites, etc., where temporary facilities are required.

d. Numbers required.

(1) When portable privies are used at mass gatherings, a minimum of one privy per 100 persons

shall be provided ~~as a minimum~~.

(2) When portable privies are used at construction sites or transient worker locations, a minimum of one privy per 25 persons shall be provided ~~as a minimum~~.

e. ~~Pumping.~~ The containment vessel of the portable privies shall be pumped as often as necessary to prevent overflow. It is recommended that they be pumped when 2/3 full.

~~Article 7~~

Part VI.

Article VII.

Storage Facilities Criteria for Pump and Haul of Sewage

12 VAC 5-610-1010. Design.

A. Capacity. Temporary storage facilities shall have sufficient capacity to store the projected flow for 48 hours.

B. Materials. The materials utilized shall be resistant to the corrosive action of sewage and shall be capable of withstanding the internal and external loads placed upon it.

C. Watertightness. The storage facility shall be watertight.

D. Access. The storage facility shall be easily accessible for the removal of the sewage. An

access manhole with minimum dimensions of 18 inches by 18 inches terminating at or above the ground surface shall be provided. The storage facility shall be a closed containment vessel and all access ports shall be provided with removable covers.

E. Venting. Adequate venting shall be provided in all storage facilities.

F. Level Alarm. All facilities shall be provided with an audiovisual alarm to be activated when the storage facility is ~~¾~~ full. Audiovisual alarms shall alarm at two locations, one that is manned 24 hours per day and the other at the site of the storage facility where the storage facility receives sewage on a 24-hour basis. When sewage flow is intermittent only one alarm at the storage facility is required.

~~Article 8~~

Part VI.

Article VIII.

Vehicle Specifications for Sewage Handling

12 VAC 5-610-1030. Vehicle identification.

The name and address of the owner shall be displayed on each side of the vehicle in letters at least four inches high. In addition, the sewage handling permit number shall be displayed immediately beneath the owners name, telephone number, and address ~~and~~ in plain sight.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

~~Article 9~~

Article IX.

Special Facilities

12 VAC 5-610-1080. Anaerobic lagooning of septage.

A. General. An anaerobic lagoon for the purpose of this chapter is a nondischarging facility consisting of an open impervious structure, constructed of earth or other material specifically designed for receiving and stabilizing septage and other sewage sludges. Industrial waste sludges and sludges containing toxic material shall not be placed in these lagoons.

B. General site requirements.

1. Engineering, geologic, soil and hydrologic evaluation. Geologic information required by the district or local health department and the division shall include, but not be limited to, soil characteristics, percolation information, maximum ground water table, direction of ground water movement and permeability.

2. Location.

a. Minimum setback distances for topographic features are the same as those for ~~subsurface~~ soil absorption systems and are contained in Table 4.2.

b. Buffer zone. Buffer zone criteria are contained in Appendix I.

c. Flood protection. The anaerobic lagoon and operational components shall be located at an elevation which is not subject to the 100-year flood/wave action or shall otherwise be adequately protected against the 100-year flood/wave action damage. The anaerobic lagoon shall remain fully operational during the 25-year flood/wave action.

d. Surface runoff. Adequate provisions shall be made to divert storm water around the anaerobic lagoon and otherwise protect the lagoon's embankments.

3. Access. An all weather access road shall be provided.

4. Fencing. The facility site to include treatment units and appurtenances shall be fenced with a five foot fence (woven wire plus barbed wire); gates and locks to provide controlled entry into the facility. The fence shall be posted with signs identifying the facility, safety and health dangers and trespass penalties. The fence shall not be constructed closer than 10 feet to the outside edge of any treatment unit or appurtenance.

C. Design requirements (see Figure V-1 for typical sections).

1. Receiving facilities.

a. An impervious pad or sufficient strength to support a loaded tank truck and with drainage to the lagoon shall be provided at the point or points where the contents of the tank truck is offloaded into the lagoon or receiving facilities.

b. The receiving and inlet facilities shall be designed to transport the septage into the lagoon, to distribute the septage as evenly as possible throughout the lagoon and to minimize generation of odors and suspension of solids.

2. Treatment units.

a. Anaerobic lagoons.

(1) Number and capacity. A minimum of two lagoons shall be provided. The combined total capacity of the lagoons shall provide eight months storage based on the average daily discharge into the lagoon.

(2) Operating depth. The normal operating depth shall be from three to five feet.

(3) Lagoon bottom. The lagoon bottom shall be level, constructed of impervious material (10%~~686~~ sm/sec) and be a minimum of two feet above the seasonal water table or at the original ground surface.

(4) Lagoon embankments. Embankments and/or dike walls shall be impervious and structurally stable. They shall be designed to permit access of equipment by appropriate lining or internal barriers necessary for sludge removal in a nuisance free and safe manner, and to minimize risk, supervision, operation and maintenance. Earthen embankments shall be sloped (minimum 1:3) and seeded with proper cover, subject to soil characteristics, to minimize erosion.

(5) Freeboard. A minimum freeboard of two feet above the normal depth shall be provided.

(6) Shape. A uniform shape shall be provided, i.e., round, square, or rectangular with no narrow or elongated portions. The lagoon shall not contain islands, peninsulas or coves unless they are part of the inlet/outlet design.

b. Sludge dewatering. When sludge dewatering units are provided they shall be designed in accordance with 12 VAC 5-580-700, Sludge Dewatering, Virginia Sewerage Regulations.

3. Supernatant disposal. Normally the lagoon supernatant should be included in the sludge mixed liquor which is disposed of on the land. When a system is designed to provide for separate supplemental supernatant disposal it shall be by ~~subsurface~~ soil absorption system. The minimum ~~subsurface~~ soil absorption system field size shall be based on the anticipated average daily supernatant generation rate and shall meet all applicable criteria contained in ~~Article 1 (12 VAC 5-610-450 et seq.) of Part III and Article 5 (12 VAC 5-610-900) of~~ this part. The lagoon outlet shall be designed to minimize the solids content of the supernatant withdrawn for disposal in the subsurface soil absorption system and shall be provided with a means to control the rate and quantity of supernatant withdrawal.

~~12 VAC 5-610-1090. Lime stabilization of septage.~~

~~A. General. Lime stabilization of septage is a process consisting of the addition of hydrated lime in sufficient quantity usually 50 pounds per 1000 gallons, to raise the pH and hold it at 12 or~~

~~higher for at least 30 minutes before dewatering or land spreading. The process normally requires mixing during the lime addition process as well as a mixing tank to facilitate the holding and mixing requirement.~~

~~B. Mixing equipment.~~

~~1. Mixing may be accomplished by recirculation through the pump truck. Mixing through the pump truck is limited to operations where no more than one load at a time is processed. In this case a mixing tank is not required.~~

~~2. When a mixing tank is required a minimum capacity of 2000 gallons shall be provided. Mixing tank volume in excess of 2000 gallons may be required on a case-by-case basis. When separate mixing capability is necessary it may be accomplished by either mechanical mixing or air diffusion.~~

~~a. Mechanical mixers shall be capable of maintaining the bulk fluid velocity above 26 ft/minute and an impeller Reynolds number greater than 1000.~~

~~b. Diffused air requirements range from 150 to 250 CFM/1000 Ft of tank volume for course bubble diffusers. The diffusers shall be mounted such that a spiral roll is established in the mixing tank away from the point of lime addition.~~

~~C. pH. Suitable methods of measuring pH values in excess of 12 shall be provided and maintained to measure the pH of the septage-lime mixture.~~

~~D. Dewatering. Dewatering is required prior to landfilling lime stabilized septage and may be desirable before land spreading. Criteria for dewatering facilities may be found in 12 VAC 5-580-700 of the Sewerage Regulations. In addition all filtrate from the dewatering facilities must be:~~

~~1. Disposed of in a subsurface soil absorption system; or~~

~~2. Collected in an impervious container or earthen basin for ultimate disposal in an approved sewerage system or treatment works or by land spreading.~~

~~E. Storage facilities. Regardless of the equipment used to land spread the lime stabilized septage, there will be extended time periods, particularly during winter, when the septage cannot be land applied. Therefore, storage facilities shall be provided. The design and construction of the storage facilities shall adhere to the following criteria:~~

~~1. General site requirements. If the storage facilities are to be constructed of manufactured materials, i.e., steel or concrete, the site requirements shall conform to 12 VAC 5-610-1080 B 2. Where an earthen storage facility is to be provided site requirements shall conform with 12 VAC 5-610-1080 B 1 and 2.~~

~~2. Design requirements.~~

~~a. Transfer facilities. When the storage facilities are located adjacent to the mixing facilities described in subsection B of this section the piping shall be arranged in such a manner to~~

~~eliminate spillage, reduce splashing and facilitate distribution of the septage through the storage unit.~~

~~b. Receiving facilities. When the storage facilities are remote from the mixing facilities and require vehicular transport of the lime stabilized septage the receiving facilities shall conform to 12 VAC 5-610-1080 C 1.~~

~~c. Capacity. The storage volume shall be based upon a mass balance which considers as a minimum monthly pumping rates (number of loads pumped per month), number, location and nature of land spreading sites including soil type, crop cover and topography and seasonal application to cropped or pastured land. In no case shall the storage capacity be less than 60 days.~~

~~d. Storage facilities. When the storage facility is of a manufactured material (steel, concrete, etc.) it shall be watertight and fitted with appropriate piping and appurtenances to facilitate removal of the stored material. When the storage facility is of earthen construction it shall adhere to the design requirements contained in 12 VAC 5-610-1080 C 2 a (2), (3), (4), (5), and (6) above. See Appendix P.~~

~~12 VAC 5-610-1100. Storage facilities for unstabilized septage.~~

~~Unstabilized septage storage facilities shall conform to 12 VAC 5-610-1090 E above as applicable.~~

SEWAGE HANDLING AND DISPOSAL REGULATIONS

~~Article 10~~

Part VI.

Article X.

Sewage Dump Stations

12 VAC 5-610-1130. Design.

A dump station shall consist of the following features:

A. A four inch sewer pipe trapped below the frost line and connected to an approved sewerage system.

B. The sewer inlet shall be surrounded by a concrete pad sloped to drain to the sewer inlet. The pad shall have minimum dimensions of 60 inches by 36 inches by six inches thick. The sewer inlet shall be at least six inches below the lip of the pad and located not more than ~~&frac14~~; one-fourth the length from one end of the pad. The end of the pad where the sewer inlet is located shall be curbed with a four inch curb.

C. The sewer inlet shall be fitted with a fly tight cover.

D. A water supply properly protected against cross connection and backflow shall be provided to facilitate washdown of the pad area. The water outlet shall be posted with a sign stating "Notice: Unsafe Water Outlet. This water for washdown purposes only".

E. The sewer line shall meet the material and construction specifications contained in ~~Part IV, Article 2 of this chapter~~. 12 VAC 5-610-720.

~~Article 11~~

Part VI.

Article XI.

Nonpublic Drinking Water Supply Systems Utilized in Conjunction with Onsite Sewage Disposal Systems

12 VAC 5-610-1140. General.

A. Authority for this article is found in §32.1-164 B 6 of the Code of Virginia. This article pertains only to new construction where a nonpublic water supply, other than a private well, ~~is to~~ may be constructed and utilized in conjunction with an onsite sewage disposal system. Approval of the water supply is an integral part of the issuance of an operation permit for a sewage disposal system (see 12 VAC 5-610-340) and no separate permit is required. An approval of a water supply under this section connotes a water supply meeting the quantity, quality and construction standards of a satisfactory water supply at the time of approval. An approved water supply is not required to issue either a construction permit or operation permit for a sewage system.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

B. Quantity.

1. The system shall be capable of supplying water in adequate quantity for its intended usage. Failure to provide adequate capacity may cause intermittent flows and negative pressures which may cause contamination of the system through cross connections or other system deficiencies.

2. The source shall have a capacity to produce 150 gallons per bedroom per day for residential use.

3. The minimum system capacity (source plus storage) should be capable of delivering a sustained flow of five gallons per minute per connection for 10 minutes for ordinary residential use.

C. Quality.

1. Water sources described in this section shall be considered satisfactory if the water sample or samples test negative for coliform organisms. Sources with positive coliform counts, but with less than 100 MPN/100ml shall be provided with a means for continuous disinfection (chlorination).

2. A sample tap shall be provided at or near the water entry point into the system so that samples may be taken directly from the source; this requirement may be met by utilizing the first tap on the line near where the plumbing enters the house (may be a hose bib), provided the tap precedes any water treatment devices.

3. The entire water system including the well shall be disinfected prior to use. After operating the well to remove any remaining disinfectant, a sample of the water from the well shall be collected by the district or local health department for bacteriological examination. The sample may be collected by the owner, or an agent designated by the owner, provided the sample is submitted to a private, certified ~~(by Division of Consolidated Laboratory Services)~~ laboratory for analysis.

4. If tests indicate that the water is unsatisfactory and no other approval source is available, adequate approved methods of water treatment shall be applied. The district or local health department shall be consulted when treatment is necessary.

D. Approval. All water supplies covered by this chapter shall be approved by the district or local health department before being placed into service as a satisfactory water supply.

12 VAC 5-610-1160. ~~Springs.~~ Springs and cisterns are not considered satisfactory water supplies.

~~A. Sanitary survey. Only springs which are found acceptable following a sanitary survey (12 VAC 5-610-1150 B) will be considered for use as a source of potable water. The following shall be considered when making the sanitary survey:~~

~~1. The spring's source should be an aquifer which is not subject to pollution;~~

~~2. The spring should not be subject to flooding;~~

~~3. Consideration should be given to fencing an adequate area completely around the spring to prevent contamination by people and/or animals;~~

~~4. Consideration should be given to diverting surface water away from the spring; and~~

~~5. The distance from other sources of pollution shall be the same as for subsurface soil absorption systems contained in Table 4.4 and 12 VAC 5-610-810 A.~~

~~B. Construction of springs and/or reservoirs.~~

~~1. The spring shall be completely enclosed. The walls and cover shall be constructed of durable watertight material.~~

~~2. All springs and/or reservoirs shall be accessible for cleaning and maintenance. When access is through the top, the opening shall have a minimum dimension of 24 inches. The opening shall be fitted with a solid, watertight cover which overlaps the framed opening and extends vertically down around the frame at least two inches (shoe box).~~

~~3. The top of the cover frame shall be at least two 12 inches above the surrounding ground surface.~~

~~4. Overflows shall be screened to prevent entrance of undesirable materials (See 12 VAC 5-610-1170 C 9).~~

~~12 VAC 5-610-1170. Cisterns.~~

SEWAGE HANDLING AND DISPOSAL REGULATIONS

~~A. General. Cisterns shall be considered only when no other source of potable water is feasible.~~

~~B. Location and protection. The following precautions should be taken with regard to the location and protection of cisterns:~~

~~1. The distance from other sources of pollution shall be the same as for subsurface soil absorption systems contained in Table 4.4 and 12 VAC 5-610-810 A; and~~

~~2. Cisterns shall be located in a manner that will not subject them to flooding.~~

~~C. Construction.~~

~~1. The cistern shall be constructed of watertight, durable, structurally sound material, with a smooth interior surface.~~

~~2. When the cistern is filled by rainfall provisions shall be made to bypass, divert or otherwise remove the water that falls at the beginning of a rain.~~

~~3. Cisterns shall be accessible for cleaning.~~

~~4. Where a manhole cover is used, it shall be watertight and the manhole shall be at least 24 inches in diameter.~~

~~5. Where another type of cover is used, it shall be a solid, watertight cover which overlaps the framed opening and extends vertically down around the frame at least two inches.~~

~~6. The top of the cover frame shall be at least 12 inches above the surrounding ground surface.~~

~~7. All openings into the cistern shall be screened in order to prevent the entrance of insects, rodents and other animals and pollutants.~~

~~8. When screens and filters are utilized for filtering roof runoff, they shall be accessible for regular cleaning.~~

~~9. Drain and overflow pipes shall not be connected directly to any sewer, soil pipe, house drain or other waste pipe. An air gap shall be provided on all drains and overflow pipes. Drains and overflow pipes shall be suitably screened.~~

~~10. Asphaltic roofing material or painted roofs should not be utilized in conjunction with cisterns because of the potential leaching of toxic materials.~~

~~D. Potability. Cisterns cannot be relied upon to provide potable water without adequate treatment. Adequate treatment consists of removal of solids washed from the roof and continuous disinfection.~~

~~12 VAC 5-610-1150. (Repealed.)~~

~~Appendix A. (Repealed.)~~

~~Appendix B. (Repealed.)~~

~~Appendix C. (Repealed.)~~

SEWAGE HANDLING AND DISPOSAL REGULATIONS

~~Appendix D. (Repealed.)~~

~~Appendix E. (Repealed.)~~

~~Appendix M. (Repealed.)~~

~~Appendix N. (Repealed.)~~

~~Appendix O. (Repealed.)~~

~~FORMS~~

~~Application for a Sewage Disposal System Construction Permit, C.H.S. 200~~

~~Sewage Disposal System Construction Permit, C.H.S. 202A~~

~~Schematic Drawing of Sewage Disposal System and Topographic, C.H.S. 202B~~

~~Application for Sewage Handling Permit, B.W.E. 23-1.~~

~~Application for Pump and Haul, B.W.E. 25-1.~~

~~Pump and Haul Storage Facility Construction Permit, B.W.E. 26-1.~~

~~Soil Evaluation Form, C.H.S. 201~~

~~Soils Evaluation Percolation Test Data.~~

~~Completion Statement, C.H.S. 204~~

SEWAGE HANDLING AND DISPOSAL REGULATIONS

~~DOCUMENTS INCORPORATED BY REFERENCE~~

~~Standard Methods for the Examination of Water and Wastewater, American Public Health Association, American Waterworks Association, Water Pollution Control Federation, 1992.~~

~~Methods for Determination of Inorganic Substances in Environmental Samples, United States Environmental Protection Agency, August 1993.~~

~~Wisconsin Mound Soil Absorption System Siting, Design and Construction Manual, College of Agricultural and Life Sciences, University of Wisconsin-Madison, January 1990.~~

Part VII.

Operation and Maintenance.

Article I: Residential systems

12 VAC 5-610-1155. Operation and Maintenance Manual Required. All sewage systems receiving an Operation Permit under this Chapter shall have an Operation and Maintenance Manual. The Department or AOSE/PE shall provide the owner of the sewage system with a copy of the O&M manual before or within 30 days of receiving an operation permit from the Department. The AOSE/PE shall be responsible for providing the owner with a copy of the O&M manual for designs that they have certified as complying with the regulations and have recommended that the Department issue a construction permit.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

12 VAC 5-610-1156. Minimum Contents of the Operation and Maintenance Manual.

The Operation and Maintenance manual shall include (1) a list of the components comprising the sewage system, (2) a list of any control functions and how to use them; (3) a schedule for periodic monitoring and inspection; (4) the performance data sampling and reporting schedule; (5) the limits of the sewage system design and how to operate the system within those design limits; and (6) other information as deemed necessary or appropriate by the Department .

12 VAC 5-610-1165. System Inspection and Monitoring.

The following table shall determine the inspection, reporting, and performance monitoring requirements for sewage systems receiving an Operation Permit under this chapter. The performance monitoring required shall be a function of the sensitivity of the receiving environment and the complexity of the sewage system type. System complexity shall reflect the frequency and type of inspection reporting. The sensitivity of the receiving environment shall reflect the monitoring requirements.

	Point of effluent application to limiting factor is 18-inches or greater	Point of effluent application to limiting factor is 12 to 18 inches	Point of effluent application to limiting factor is less than 12 inches

SEWAGE HANDLING AND DISPOSAL REGULATIONS

No electrical components with gravity distribution or pump with gravity distribution	Inspection required once every three years. Informal monitoring required. Formal monitoring not required. [1]	Inspection required once every two years. Formal monitoring required once every three years. [2]	Inspection required once every year. Formal monitoring required once every two years.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

Pressure distribution such as LPD or Drip	Inspection required once every two years. Informal monitoring required. Formal monitoring not required. [1]	Inspection required once every two years. Formal monitoring required once every two years. [2]	Inspection required once every year. Formal monitoring required once every two years.

1. Formal monitoring may be required by the department if an inspection or informal testing (i) indicates that the system is not functioning properly or (ii) the effluent quality does not meet the permit requirements.

2. The Department may waive formal monitoring for a particular year if the informal testing, as identified on the inspection report by a certified wastewater treatment operator or the local health department, indicates that the effluent substantially complies with the permit conditions.

12 VAC 5-610-1165.1. Persons who inspect sewage systems. Persons licensed by the

Department of Professional and Occupational Regulations as wastewater treatment plant operators may recommend that the Department waive formal monitoring for a particular facility or for a particular year if informal testing performed by them indicates that the treatment system is operating in accordance with its permit and these regulations. All other inspectors shall be registered as required in section 1200.

12 VAC 5-610-1165.2. Monitoring Requirements.

A. Informal monitoring helps determine if the wastewater treatment works complies with its effluent limits. Odor, color, dissolved oxygen (DO), turbidity, settleable solids, and chemical oxygen demand (COD) are examples of sensory and non-sensory tests that may be performed to validate that a treatment works is functioning as designed.

B. Formal monitoring shall be specified by the operation permit or other Department notice and may include BOD_5, TSS, fecal coliforms, total nitrogen, or other tests as deemed necessary by the Department to protect public health and the environment.

12 VAC 5-610-1170. Operation and Maintenance required. If a sewage system fails, malfunctions, creates a nuisance, causes pollution, or does not operate as required by the Operation Permit, then the owner of the sewage system shall immediately report any malfunction to the local health department and promptly take corrective actions as specified by the Department. The owner of the sewage system shall return the sewage system to its proper performance standards within a reasonable time frame as specified by the Department. Any

failure to comply with the provisions of this section shall void the Operation Permit.

12 VAC 5-610-1180. Performance evaluation sampling and data collection required. All owners of a sewage system permitted under this chapter are required to submit data collection and performance evaluation samples to the local health department within 30 days from the date of sampling.

A. Performance evaluation samples and data collection shall be performed within the time frame and schedule specified by the Operation Permit or other Department notice. Failure to collect performance evaluation samples and data as specified shall void the Operation Permit.

B. The owner of a sewage system shall be responsible for assuring that all performance evaluation sampling and data collection as required by the Operation Permit, or when directed by the Department to do so, and within the Department's specified and reasonable time frame. For Management Level 4 or 5, the OME shall be responsible for assuring that all performance evaluation sampling and data collection is performed within the Department's specified and reasonable time frame.

12 VAC 5-610-1190. VDH shall register operation and maintenance providers.

A. Only persons properly registered with the Department shall perform operation and maintenance for sewage systems. Any person may apply to the Department for registration by filing a complete application in a form approved by the Division, including any associated fees.

B. The Department shall maintain a list of persons registered to perform such operation and maintenance. These persons may include, but are not limited to the following: (1) Persons holding National Sanitation Foundation (NSF) certification to perform such work; (2) Persons holding National Onsite Wastewater Recycling Association (NOWRA) certification to perform such work; (3) Persons holding a wastewater operator license; (4) Professional Engineers; (5) Authorized Onsite Soil Evaluators.

12 VAC 5-610-1200. Persons approved to perform Operation and Maintenance. The Department shall only approve and register those persons who establish that they possess the qualifications to perform operation and maintenance of onsite sewage systems.

A. Registered persons may inspect and perform operation and maintenance for only the types of systems that they are qualified to do.

B. The Sewage Handling and Advisory Board may provide recommendations for individuals and other Onsite Management Entities who wish to be registered by the Department to perform such work.

12 VAC 5-610-1210. Renewal of registration required. Persons who are registered to inspect and perform operation and maintenance shall be required to seek renewal of their registration, and provide the Department with supporting documentation. every two years establishing that they have the current knowledge, skills, and abilities to continue performing such work. The Department may refuse to renew the registration of any person or OME who fails to timely

submit a renewal application and supporting documentation. The Department may, at any time, remove persons from the registered list as necessary to protect public health and the environment , or to assure that only skilled persons perform operation and maintenance.

12 VAC 5-610-1215. Continuing Education Unit. All persons registered with the Department to perform operation and maintenance shall obtain at least twenty hours of training prior to renewal every two years in topics related to the inspection, evaluation, operation, and monitoring of sewage systems prior to renewal of their registration.

FORMS

Application for a Sewage Disposal System Construction Permit, C.H.S. 200

Sewage Disposal System Construction Permit, C.H.S. 202A

Schematic Drawing of Sewage Disposal System and Topographic, C.H.S. 202B

Application for Sewage Handling Permit, B.W.E. 23-1.

Application for Pump and Haul, B.W.E. 25-1.

Pump and Haul Storage Facility Construction Permit, B.W.E. 26-1.

Soil Evaluation Form, C.H.S. 201

Soils Evaluation Percolation Test Data.

SEWAGE HANDLING AND DISPOSAL REGULATIONS

Completion Statement, C.H.S. 204

DOCUMENTS INCORPORATED BY REFERENCE

Standard Methods for the Examination of Water and Wastewater, American Public Health Association, American Waterworks Association, Water Pollution Control Federation, 1992.

Methods for Determination of Inorganic Substances in Environmental Samples, United States Environmental Protection Agency, August 1993.

Wisconsin Mound Soil Absorption System Siting, Design and Construction Manual, College of Agricultural and Life Sciences, University of Wisconsin-Madison, January 2000.

Draft EPA Management Guidelines. September 26, 2000. Environmental Protection Agency.

Field Book for Describing and Sampling Soils: Version 1.1 by the National Soil Survey Center, Natural Resources Conservation Service, U.S. Department of Agriculture dated May 13, 1998.