



Proposed Regulation Agency Background Document

Agency name	Board of Health – Virginia Department of Health
Virginia Administrative Code (VAC) citation	12VAC5-610
Regulation title	Sewage Handling and Disposal Regulations (“the Regulations”)
Action title	Establish requirements for the physical construction, design, and installation of gravelless material, and requirements for the physical construction, design, and installation of drip dispersal.
Date this document prepared	April 13, 2014

This information is required for executive branch review and the Virginia Registrar of Regulations, pursuant to the Virginia Administrative Process Act (APA), Executive Orders 14 (2010) and 58 (1999), and the *Virginia Register Form, Style, and Procedure Manual*.

Brief summary

In a short paragraph, please summarize all substantive provisions of new regulations or changes to existing regulations that are being proposed in this regulatory action.

The proposed revisions to the Regulations (12VAC5-610) will permanently incorporate the requirements for gravelless material and drip dispersal established by emergency regulations (January 2, 2014). These requirements can be summarized as follows:

- 1) Specifications for the physical construction of gravelless material including minimum exterior width, height, effluent storage capacity, and structural capacity.
- 2) Requirements for a permeable interface between gravelless material and trench sidewall soil surfaces for the absorption of effluent.
- 3) Criteria for the allowable slope, maximum length, minimum sidewall depth, and minimum lateral separation of gravelless material absorption trenches.
- 4) Criteria for determining the minimum absorption area required when utilizing gravelless material.

- 5) Criteria for the substitution of gravelless material in place of gravel for gravity percolation lines and low pressure distribution systems.
- 6) Specifications for the physical construction of drip dispersal system components.
- 7) Minimum requirements for the design of drip dispersal systems.
- 8) Minimum installation requirements for drip dispersal systems.

The proposed regulation has several minor revisions compared to the emergency regulations for gravelless material and drip dispersal. The revisions are based on public comments and comments from two technical advisory committees (the Chamber and Bundled Expanded Polystyrene Technical Advisory Committee, and the Drip Dispersal Technical Advisory Committee).

Acronyms and Definitions

Please define all acronyms used in the Agency Background Document. Also, please define any technical terms that are used in the document that are not also defined in the "Definition" section of the regulations.

Acronyms

CBEP TAC – the Chamber and Bundled Expanded Polystyrene Technical Advisory Committee

DD TAC – the Drip Dispersal Technical Advisory Committee

GMP – Virginia Department of Health Guidance, Memorandum, and Policies

OEHS – Virginia Department of Health's Office of Environmental Health Services

OSE – Licensed Onsite Soil Evaluator

PE – Licensed Professional Engineer

STE – Septic Tank Effluent

Definitions

Drip Dispersal means an onsite sewage system that applies wastewater in an even and controlled manner over an absorption area. Drip dispersal components may include treatment components, a flow equalization pump tank, a filtration system, a flow measurement method, supply and return piping, small diameter pipe with emitters, air/vacuum release valves, redistribution controls, and electromechanical components or controls.

Gravelless Material means a proprietary product specifically manufactured to disperse effluent within the absorption trench of an onsite sewage system without the use of gravel. Gravelless material may include chamber, bundled expanded polystyrene, and multi-pipe systems.

Legal basis

Please identify the state and/or federal legal authority to promulgate this proposed regulation, including (1) the most relevant citations to the Code of Virginia or General Assembly chapter number(s), if applicable and (2) promulgating entity, i.e., agency, board, or person. Your citation should include a specific provision authorizing the promulgating entity to regulate this specific subject or program, as well as a reference to the agency/board/person’s overall regulatory authority.

Va. Code Section 32.1-164.9 mandates the Board of Health (“the Board”) to promulgate regulations for physical construction, design, and installation of chamber and bundled expanded polystyrene systems. Additionally, the Board is authorized pursuant to Title 32.1-12 of the Code of Virginia to promulgate and enforce regulations. Title 32.1-164 of the Code authorizes the Board to promulgate regulations governing the collection, conveyance, transportation, treatment, and disposal of sewage by onsite sewage systems to protect public health, surface water, and ground water.

Purpose

Please explain the need for the new or amended regulation by (1) detailing the specific reasons why this regulatory action is essential to protect the health, safety, or welfare of citizens, and (2) discussing the goals of the proposal, the environmental benefits, and the problems the proposal is intended to solve.

The need for the proposed regulation is to implement Va. Code Section 32.1-164.9 and incorporate requirements for gravelless material and drip dispersal. The emergency regulations currently include construction, design, and installation requirements for gravelless material and drip dispersal systems. Since 2002, VDH has recognized through policies that gravelless material is an acceptable means of dispersing effluent. VDH has recognized through policies that drip dispersal is an acceptable means of transmitting effluent. The goal of the proposed regulation is to permanently add the construction, design, and installation standards for gravelless material and drip dispersal found in the emergency regulations. The regulations are essential in order to comply with the provisions of the Code of Virginia.

Substance

Please briefly identify and explain new substantive provisions (for new regulations), substantive changes to existing sections or both where appropriate. (More detail about all provisions or changes is requested in the “Detail of changes” section.)

No substantive changes were made to existing requirements of the emergency regulations.

The term “soil gravel or sand interface” used in sections 920 and 950(A) of the Regulations was modified to ensure inclusion of gravelless material and drip dispersal. The proposed regulation establishes minimum physical construction, design, and installation requirements for gravelless

material and drip dispersal. The proposed regulation permanently incorporates sections 930(F), 940(D), 950(D), Table 5.4, and 955 of the emergency regulations, with a few minor revisions.

Issues

Please identify the issues associated with the proposed regulatory action, including:

- 1) the primary advantages and disadvantages to the public, such as individual private citizens or businesses, of implementing the new or amended provisions;*
- 2) the primary advantages and disadvantages to the agency or the Commonwealth; and*
- 3) other pertinent matters of interest to the regulated community, government officials, and the public.*

If the regulatory action poses no disadvantages to the public or the Commonwealth, please indicate.

The proposed regulation poses no disadvantage to the public or the Commonwealth. The proposed revisions permanently incorporate the emergency regulations for gravelless material and drip dispersal. The proposed regulations provide a benefit to the public by providing a clear regulation for use of gravelless material and drip dispersal.

Requirements more restrictive than federal

Please identify and describe any requirements of the proposal, which are more restrictive than applicable federal requirements. Include a rationale for the more restrictive requirements. If there are no applicable federal requirements or no requirements that exceed applicable federal requirements, include a statement to that effect.

There are no applicable federal requirements.

Localities particularly affected

Please identify any locality particularly affected by the proposed regulation. Locality particularly affected means any locality which bears any identified disproportionate material impact which would not be experienced by other localities.

There are no known localities that would be particularly affected by the proposed regulation. The Regulations apply to all localities.

Public participation

Please include a statement that in addition to any other comments on the proposal, the agency is seeking comments on the costs and benefits of the proposal and the impacts of the regulated community.

In addition to any other comments, the Board is seeking comments on the costs and benefits of the proposal and the potential impacts of this regulatory proposal. Also, the Board is seeking

information on impacts on small businesses as defined in Va. Code Section 2.2-4007.1. Information may include 1) projected reporting, recordkeeping and other administrative costs, 2) probable effect of the regulation on affected small businesses, and 3) description of less intrusive or costly alternative methods of achieving the purpose of the regulation.

Anyone wishing to submit written comments may do so via the Regulatory Town Hall website (<http://www.townhall.virginia.gov>), or by mail, email or fax to **Lance Gregory, Environmental Health Coordinator, 109 Governor Street, Richmond, Virginia, 23219, (804) 864-7491 (phone), (804) 864-7476 (fax), or lance.gregory@vdh.virginia.gov (email).** Written comments must include the name and address of the commenter. In order to be considered, comments must be received by midnight on the last date of the public comment period.

A public hearing will be held after this regulatory stage is published in the *Virginia Register of Regulations* and notice of the hearing will be posted on the Virginia Regulatory Town Hall website (<http://www.townhall.virginia.gov>) and on the Commonwealth Calendar website (<http://www.virginia.gov/cmsportal3/cgi-bin/calendar.cgi>). Both oral and written comments may be submitted at that time.

Economic impact

Please identify the anticipated economic impact of the proposed new regulations or amendments to the existing regulation. When describing a particular economic impact, please specify which new requirement or change in requirement creates the anticipated economic impact. Please keep in mind that we are looking at the impact of the proposed changes to the status quo.

<p>Description of the individuals, businesses or other entities likely to be affected (positively or negatively) by this regulatory proposal. Think broadly, e.g., these entities may or may not be regulated by this board</p>	<p>The proposed regulation may affect applicants for onsite sewage system construction permits and businesses providing services related to onsite sewage systems; onsite soil evaluators, professional engineers, onsite sewage system installers, and product manufacturers. Applicants and service providers are only affected when gravelless material or drip dispersal components are selected.</p>
<p>Agency’s best estimate of the number of (1) entities that will be affected, including (2) small businesses affected. Small business means a business, including affiliates, that is independently owned and operated, employs fewer than 500 full-time employees, or has gross annual sales of less than \$6 million.</p>	<p>In calendar year 2013, the agency processed approximately 13,000 applications.</p> <p>The agency estimates that there are approximately 400 licensed individuals providing site evaluation and design services for onsite sewage systems. Additionally, there are approximately 215 individuals licensed to</p>

	install onsite sewage systems. The vast majority of these service providers are small businesses.
Benefits expected as a result of this regulatory proposal.	The proposed regulation provides a benefit to both the public and the agency by providing a clear regulation for use of gravelless material and drip dispersal.
Projected cost to the state to implement and enforce this regulatory proposal.	None
Projected cost to localities to implement and enforce this regulatory proposal.	None
All projected costs of this regulatory proposal for affected individuals, businesses, or other entities. Please be specific and include all costs, including projected reporting, recordkeeping, and other administrative costs required for compliance by small businesses, and costs related to real estate development.	The proposed regulation does not create any new costs for individuals or small business. The proposed regulation simply codifies additional onsite sewage system component options previously covered under agency policies, and currently covered under the emergency regulations for gravelless material and drip dispersal.

Alternatives

Please describe any viable alternatives to the proposal considered and the rationale used by the agency to select the least burdensome or intrusive alternative that meets the essential purpose of the action. Also, include discussion of less intrusive or less costly alternatives for small businesses, as defined in §2.2-4007.1 of the Code of Virginia, of achieving the purpose of the regulation.

None. Va. Code Section 32.1-164.9 mandates that the Board must promulgate regulations for physical construction, design, and installation of chamber and bundled expanded polystyrene systems. Drip dispersal technology could be addressed through agency policy but regulations are required by the Code of Virginia.

Regulatory flexibility analysis

Pursuant to §2.2-4007.1B of the Code of Virginia, please describe the agency’s analysis of alternative regulatory methods, consistent with health, safety, environmental, and economic welfare, that will accomplish the objectives of applicable law while minimizing the adverse impact on small business. Alternative regulatory methods include, at a minimum: 1) the establishment of less stringent compliance or reporting requirements; 2) the establishment of less stringent schedules or deadlines for compliance or reporting requirements; 3) the consolidation or simplification of compliance or reporting requirements; 4) the establishment of performance standards for small businesses to replace design or operational standards required in the proposed regulation; and 5) the exemption of small businesses from all or any part of the requirements contained in the proposed regulation.

The proposed regulation provides applicants and designers additional options when selecting onsite sewage system components. The proposed regulation directly implements Va. Code Section 32.1-164.9.

Public comment

Please summarize all comments received during the public comment period following the publication of the NOIRA, and provide the agency response.

Commenter	Comment	Agency response
<p>W.R. Russell</p>	<p>The commenter stated there is no scientific basis for reduced sizing, and no national standard for gravelless material.</p> <p>The commenter believes VDH has no expertise in the evaluation of onsite sewage system components, has a poor track record of follow up to assure components are effective, and must prove they have the capacity to determine if a product can deliver the performance defined by the manufacturer.</p> <p>The commenter does not disagree that gravelless materials have a use, but stated it is unclear whether the proposed absorption area reductions will result in “premature failure from insufficient capacity”.</p> <p>The commenter stated the Board should interview private onsite soil evaluators and professional engineers that refuse to allow any reduction in absorption area sizing when using gravelless material, as well as VDH field staff that have evaluated failing systems that use gravelless material.</p> <p>The commenter stated some manufacturers do not agree with using reduced absorption area sizing, and will not warranty their product.</p>	<p>Thank you for your comment. The agency reviewed experiences from other jurisdictions, available technical literature, and scientific reports as part of the development of agency policies and the emergency regulations for gravelless material. VDH engineering staff review product efficacy, including relevant literature, product manuals, and applicable national standards.</p> <p>The National Sanitation Foundation (NSF) Standard 240 was recently established to evaluate minimum material, design, construction and performance requirements for dispersal drainfield products used as alternatives to traditional stone or gravel trenches.</p> <p>All manufacturers of gravelless material were represented on the CBEP TAC, and all were supportive of the proposed minimum absorption area sizing.</p>
<p>Karl Rudolph</p>	<p>The commenter stated that the emergency regulations for gravelless material specify very minimal standards when enhanced flow distribution is <u>required</u> for open bottom gravelless materials (e.g. chambers). However, the emergency regulations do not address instances where enhanced flow distribution is not required, but is incorporated by the designer. The commenter suggested that the regulations should specify a maximum pump dose and a</p>	<p>Thank you for your comment. The CBEP TAC was reconvened following the end of the public comment period. A revision to 12VAC5-930.F.7 was made to address this comment.</p> <p>The minimum 400 square foot absorption area sizing also applies to conventional systems using gravelless material.</p>

	<p>maximum pumping rate for open bottom gravelless material.</p> <p>The commenter asked whether a septic tank effluent gravel and pipe drainfield, sized at 400 square feet, can be reduced by 15 percent down to a 340 square foot gravelless material drainfield?</p> <p>The commenter asked whether a treatment level 2 or treatment level 3 gravel and pipe drainfield, sized at 320 square feet, can be reduced by 15 percent down to a 272 square feet gravelless material drainfield?</p>	<p>“Double dipping”, taking reductions for both treatment and the use of gravelless material, was not supported by the CBEP TAC or the agency, and would not be allowed by the proposed regulation.</p>
<p>Anonymous Onsite Sewage System Designer</p>	<p>The commenter stated that for the past 20 years the footprint of a drip dispersal system absorption area has been equivalent in size to low pressure distribution absorption area footprints. Drip dispersal footprints were increased in size due to slope, similar to low pressure distribution. The emergency regulation for drip dispersal eliminates the slope correction factor which will dramatically decrease the size of a drip dispersal absorption area footprint.</p> <p>The commenter asked what empirical evidence was used to make this decision. This is significantly different from previous agency policies.</p> <p>The commenter suggested eliminating the slope factor for designs under Va. Code Section 32.1-163.6. Designs under Va. Code Section 32.1-163.5 should include the slope correction.</p>	<p>Thank you for your comment. In developing the emergency regulations, stakeholders and experts reported that the landscape linear loading rate is the critical design component. The proposed regulation includes revisions to set specific landscape linear loading rate requirements.</p>
<p>OSE</p>	<p>The commenter asked the following questions: In the past 12 years how many gravel and pipe, and gravelless material drainfields were installed in Virginia? How many of those systems failed?</p> <p>How many practicing OSEs and gravelless manufacturers were on the TAC?</p> <p>Why are there so many private sector OSEs who will not use gravelless material, or allow a reduction for gravelless material?</p> <p>Why has negative anecdotal evidence regarding chambers been ignored?</p> <p>Why does this regulation discriminate against</p>	<p>Thank you for your comments. A number of factors can lead to an onsite sewage system failure, and in many cases it is a combination of factors that creates a system failure. To better understand and track these causes, the agency has developed a “malfunction report” to allow field staff to enter additional data on system failures.</p> <p>The CBEP TAC consisted of representatives from each of the gravelless material manufacturers with approved products in Virginia, a private sector OSE representing VOWRA, a private sector OSE representing VAPSS, two</p>

	<p>gravel manufacturers?</p> <p>The commenter suggested providing gravel and pipe systems the same reduction as gravelless material.</p>	<p>Environmental Health Managers representing VDH staff, a representative for onsite sewage system installers, a PE representing VSPE, and a PE representing ACECVA.</p>
<p>Multiple - VDH Employee; OSE VDH, anonymous EHS, anonymous</p>	<p>The commenter asked why VDH OSEs are forced to allow a design change while private sector licensees are not.</p>	<p>Thank you for your comment. Agency employees must approve designs and products that meet minimum regulatory requirements.</p>
<p>homeowner</p>	<p>“As a concerned owner and user for one of these systems, I would like to say no to changing the design. We had this done at our home in 2006. Within months, we began having problems. The company did come back and add additional area to our septic which should have been there according to our permit and we also paid to have the area installed. Talk to your licensed professional before you agree to any changes by your contractor. In our case, we were told that these were the only systems being approved by the county.</p> <p>I feel we were misled by the county health department and our contractor. No one told us what the impacts making the septic design smaller would do and that it was at the discretion of the contractor. How could the person responsible for the design not be able to stop this?”</p>	<p>Thank you for your comment. Shifting policy into regulations will provide a clear framework for use of gravelless material, and reduce inconsistency.</p> <p>A number of factors can lead to premature failure of an onsite sewage system, and in many cases it is a combination of factors that creates a system failure.</p>
<p>Paul Davis</p>	<p>The commenter stated the following in regards to proposed section 12VAC5-610-955.L: “Why should the regulations mandate a inspection for drip systems? Is this because one of the sponsors of this nonsense charges almost \$2000.00 for their start up inspection? This sets a bad precedent about disclosure to the process. Inspections should be detailed in the design so an owner understands what he/she is paying for.”</p>	<p>Thank you for your comment. The Regulations require that all onsite sewage systems be inspected prior to operation of the system. Members of the DD TAC stated that a startup inspection is part of any drip dispersal inspection, that it is important to verify the design, and that the startup inspection provides vital information for system operators. A revision to the emergency regulation language is proposed.</p>
<p>Kym Harper</p>	<p>The commenter stated that VDH should publish the scientific documentation that warrants an across the board 25 percent reduction in absorption area sizing for gravelless material.</p>	<p>Thank you for your comments. The proposed regulations provide a 15 percent reduction for gravelless material in texture group IV soils.</p>

	<p>“As a private sector AOSE I rarely spec gravelless systems and I never take a reduction.”</p> <p>The commenter stated she had two experiences with premature failures of gravelless material systems, and is concerned with the lack of restrictions due to site and soil conditions.</p> <p>The commenter asked whether it would be appropriate to take a 25 percent reduction on a site with a very shallow water table.</p> <p>The commenter asked whether it would be appropriate to take a 25 percent reduction in combination with other reductions for water saving devices or secondary treatment.</p> <p>The commenter asked for more investigation on the reduction. “The only person that truly loses when these systems prematurely fail is the Home Owner.”</p>	<p>The agency reviewed experiences from other jurisdictions, available technical literature, and scientific reports as part of the development of agency policies and the emergency regulations for gravelless material.</p> <p>As previously stated, a number of factors can lead to premature failure of an onsite sewage system, and in many cases it is a combination of factors that creates a system failure.</p> <p>As previously stated, “double dipping”, taking reductions for both treatment and the use of gravelless material, was not supported by the CBEP TAC or the agency, and would not be allowed by the proposed regulation. However, the combination of water saving devices and gravelless material is not considered “double dipping”, as the overall design flow of the system is reduced. This reduces the minimum required absorption area for any onsite sewage system design. Additionally, designs based on water saving devices result in the issuance of a conditional permit which is recorded into the land records.</p>
<p>Bob Marshall</p>	<p>The commenter asked the following questions:</p> <p>Given GMP #116 was rescinded on the effective date of the Board’s emergency regulations, what has become of VDH’s requirement for manufacturer’s to warranty gravelless material?</p> <p>Given GMP #116 was rescinded on the effective date of the Board’s emergency regulations, what has become of VDH’s requirement for responsibility resting with the person who designed the “Substituted System” or with the contractor who installed the system?</p> <p>Given GMP #116 was rescinded on the effective date of the Board’s emergency regulations, what has become of VDH’s requirement for the owner to preserve and maintain the total area required for a gravel and pipe system, and not disturb the area in any manner?</p>	<p>Thank you for your comment. The requirement for a manufacturer warranty is not authorized by Va. Code Section 32.1-164.9. The Regulations do not require a warranty for any other onsite sewage system component that has received general approval from the agency.</p> <p>The CBEP TAC discussed the suggested revision to section 930.F.2.e and the term “effluent” was added.</p> <p>The CBEP TAC discussed the proposed revision to section 930.F.2.f, and several members felt that the proposed revision would be redundant with existing regulations. No changes were made to this section.</p> <p>The CBEP TAC members considered</p>

	<p>The commenter suggested 12VAC5-610-930.F.2.e of the emergency regulations be amended as follows: “Gravelless material shall also be constructed to maintain structural integrity such that it will be non-degradable by wastewater effluent.”</p> <p>The commenter suggested 12VAC5-610-930.F.2.f of the emergency regulations be amended as follows: “All gravelless materials must be capable of withstanding typical construction equipment and residential use loads without deformation, cave-in, subsidence, or collapse.”</p> <p>The commenter suggested a new section, 12VAC5-610-930.F.9, be added as follows: “Gravelless systems must be supplied with observation or access ports, which allow for post construction inspection access to head off clogging events, and future access for cleaning out any sludge accumulation in the absorption trenches. Locate access ports in or near the middle third of the trench and both upstream and downstream of the absorption area.”</p> <p>The commenter stated that the amended language under 12VAC5-610-950.D.2 of the emergency regulations bases the minimum area requirement on the width of a trench excavation without knowing the amount of “overdig” in the excavation. The commenter suggested this section be revised to read as follows: “When gravelless material is proposed, the design width of the trench shall be used to calculate minimum area requirements for absorption trenches.”</p> <p>The commenter suggested that 12VAC5-610-920 be revised as follows to better describe the application of effluent to the area over which that effluent is being distributed: “The term distribution methods refers to the piping, flow splitting devices, gravel, and other appurtenances beginning at the point of flow splitting and ending at the application of effluent to the soil absorption area.”</p>	<p>the idea of access ports, but no consensus for change developed.</p> <p>Revisions to sections 950.D.2 and 920 of the Regulations are proposed.</p>
<p>John Q Public</p>	<p>The commenter voiced concern that the substitution of gravelless material by a contractor will result in a shorter lifespan of the onsite sewage system. The commenter suggested that owners always insist that</p>	<p>Thank you for your comment. The commenter did not provide a specific revision the regulation.</p>

	<p>construction bids be based on the approved design.</p>	
<p>David Lentz</p>	<p>“The proposed rulemaking is related directly to an effort to consolidate and codify several long-standing GMPs, under which thousands of gravelless drainfield systems have been installed since VDH first began allowing chamber system installations in 1987. Moving gravelless system management from policy to regulation meets the intent of 12VAC5-610-448.(A), which addresses codification of technologies that have been granted general approval under a VDH-issued policy. In addition to broadening the single option Virginians have historically had for constructing a drainfield under the regulations, the effort also opens the door to future innovation, allowing VDH to adopt new gravelless technologies under a flexible rule structure.”</p> <p>“Infiltrator Systems supports the use [of] a uniform 25% reduction for all soil percolation rates. Industry does not support what is referred to as double dipping, or taking a reduction as allowed for gravelless technology on top of a reduction associated with advanced treatment.”</p> <p>The commenter stated that industry believes the collective changes from agency policies to regulations for sizing gravelless systems simplifies the use of gravelless products and represent a net improvement to the Commonwealth.</p> <p>The commenter stated that gravelless materials are approved in all 50 states and 10 Canadian provinces, with over 3 million system installed over the past 25 years.</p> <p>“The International Association of Plumbing and Mechanical Officials (IAPMO), allows a 30% sizing efficiency for gravelless technologies.”</p> <p>“The use of a sizing reduction for gravelless products compared to the size of a stone and pipe drainfield is a proven method that is supported by independent research... Taken as a whole, the weight of scientific evidence from these studies shows that the performance of reduced-size gravelless systems is consistent with that of conventional stone and pipe.”</p>	<p>Thank you for your comment. A uniform 25 percent reduction (extending also to texture group IV soils) was initially considered by the CBEP TAC. However, several CBEP TAC members voiced concern with such reductions for texture group IV soils, and stated that the 15 percent reduction previously allowed by GMP 135 is more appropriate. The CBEP TAC considered a uniform 25 percent reduction but no consensus for change developed.</p>

	<p>“The North Carolina Department of Environmental and Natural Resources (NC DENR) conducted a field performance study of 900 systems in total, including 303 stone and pipe, 303 chamber, and 306 expanded polystyrene systems in 2005....At a 95% upper confidence level, the NC DENR found no statistical difference in malfunction rates between stone and pipe and gravelless systems.”</p> <p>The commenter mentioned that North Carolina’s minimum trench bottom area requirements are consistently smaller than Virginia’s.</p> <p>“The University of Maine conducted a study on chamber systems at least 20, and up to 30 years in age. Regulatory agency records showed that, at a 95% upper confidence level, gravelless systems at a 50% sizing reduction compared to the sizing of a stone and pipe system outperformed stone and pipe relative to number of required repairs.”</p> <p>“The Colorado School of Mines conducted a treatment efficacy study on operating gravel and chamber systems aged up to 11 years...No significant difference was observed in hydraulic or treatment performance between the gravel and 50% reduced length chamber systems.”</p>	
<p>lady of justice</p>	<p>The commenter stated that it appears the agency is removing benefits to the Commonwealth for advantages to a manufacturer. The commenter included a reference from GMP 116: “VDH recognizes that installation of gravelless systems at manufacturer’s recommended specifications may provide benefits to consumers, provided the absorption area is adequate to assure the long-term treatment and dispersal of septic tank effluent or other treated effluents. Sizing a drainfield smaller than specified in the Regulations may not result in adverse effects to public health or groundwater because this does not change the fundamental processes by which septic effluent trenches function. Such sizing may, however, reduce the operational life of the soil absorption system (i.e. shorten the time to failure). As long as the overall absorption area is maintained “in reserve” replacing the clogged trenches becomes a matter of long-term</p>	<p>Thank you for your comment. The statement referenced in this comment is part of now rescinded GMP 116. GMP 116 allowed for up to a 50 percent reduction in absorption area sizing for gravelless material when compared with gravel and pipe sizing. This area reduction allowance was not carried over to the emergency regulations, and is not included in the proposed regulation based on work and recommendations from the CBEP TAC.</p>

	operation and management and not one of public health or environmental protection.”	
Tom Ashton	<p>“The Sewage Handling and Disposal Regulations is the prescriptive regulation. By definition, drip dispersal is not a conventional system and thus design/review is covered by Chapter 613 Regulations for Alternative Onsite Sewage Systems as a 163.6 submission. Engineering criteria for LPD and now drip are in the 610 regulations. Current application (design) of treatment and dispersal under site and sizing criteria in 613 has evolved from the criteria, the approach in 610 regarding the concepts in ground, shallow placed, and fill systems. Reference to those sections is incomplete and at best cumbersome.”</p> <p>The commenter suggested striking the first sentence of 12VAC5-610-955.B.3 of the emergency regulations and replacing with: “Drip systems designed to disperse septic tank effluent require at least 12 inches of soil cover over the soil treatment area”.</p> <p>“PE designs under 32.1-163.6 pursuant to the AOSS Regs (613), regarding STE must have an 18” separation to limitation from the point of application and a minimum of 12” cover. The AOSS regulations are silent as to depth of installation of STE and pretreated effluents.”</p> <p>“Why not have proprietary drip system packages that meet the regulations be reviewed and listed?”</p>	<p>Thank you for your comment. The DD TAC discussed these ideas. DD TAC members commented that the Regulations set expectations for the dispersal of septic tank effluent, and that the suggested revision would create a conflict within the regulations. Another DD TAC member commented that Va. Code Section 32.1-163.6 provides PEs latitude in designs, while designs completed under Va. Code Section 32.1-163.5 must adhere to prescriptive requirement contained within the Regulations.</p> <p>Listing package drip dispersal systems was also discussed. Several DD TAC members voiced concern that drip dispersal systems are site specific, and highly variable. Listing of package drip dispersal systems could not account for all of the site specific variables.</p>
anonymous	<p>“The notion that a government agency established to regulate an industry for the benefit of society acts instead for the benefit of the industry. In effect, the government agency is captured by the industry it is regulating. The capture theory of regulation indicates that government regulator acts as the decision-making head of a now monopolized industry.”</p>	<p>Thank you for your comment. The commenter did not suggest a specific revision to the regulation.</p>
anonymous, EHS	<p>The commenter asked how many gravelless material systems are installed in Virginia.</p> <p>“As it stands, the proposed regulations are going to require zero input from the licensed designer who works for VDH.”</p> <p>“VDH employees are being forced to ignore competence and professional experience issues</p>	<p>Thank you for your comment. The CBEP TAC included two VHD field staff. The DD TAC also included VDH field staff. Additional feedback was elicited from all Environmental Health Managers.</p> <p>As previously stated, agency employees must approve materials that</p>

	<p>in designing conventional onsite septic fields that are to be replaced by these proprietary options.”</p> <p>“Both the Technical Advisory Committee and Sewage Handling and Disposal Advisory Committees voiced strong and consistent opposition in allowing anyone other than the licensed professional responsible for preparing the design to make any changes. Exploiting VDH to enforce ministerial duties that are less than or in conflict with actual design requirements is not in the public’s best interest.”</p>	<p>meet minimum regulatory requirements.</p>
Wesle B. Lower	<p>The commenter voiced concern that gravelless material, installed with a reduced footprint, do not provide all of the necessary components for onsite sewage systems to function properly. Additionally, the commenter stated that the majority of failed systems result from contractor substitution of gravelless material for gravel and pipe. The commenter stated the NC DENR study revealed a higher rate of failure with gravelless material.</p> <p>The commenter voiced concern regarding a lack of data, and commented that several localities restrict the use of gravelless material.</p> <p>“As the single largest design firm staff is compelled to utilize these products despite production by a sole manufacturer and only two nationwide distributors.”</p> <p>“The field of designers is concerned and surprised that the conflict of interest revealed within this process has not attracted the attention of the AG, or the press.”</p>	<p>Thank you for your comment. The commenter did not suggest a specific revision to the regulation.</p>
owner	<p>“Who pays for this in the end; the owner does! Indemnification will protect agency staff from any wrong doing or lack of guidance provided during the consultation for designing the septic design. Only the manufacturers win this game. The broke of unfunctioning [<i>sic</i>] system will be paid for by the consumer.”</p>	<p>Thank you for your comment. The commenter did not suggest a change to the regulations.</p>
VDH Employee	<p>“Based on my years of experience drainfields with chambers have a much higher rate of failure (with or without a reduction. The regulations should require an increase in drainfield size when using chambers.</p> <p>Why is EZflow, or any other similar product,</p>	<p>Thank you for your comment. The CBEP TAC discussed this comment and the proposed regulation represents consensus among the CBEP TAC.</p>

	<p>better than gravel? It's not. There should be a 1 for 1 substitution with this product.</p> <p>It's amazing how we've completely lost all leadership in the health department. The manufacturers and private sector now run the sewage and water programs. I feel sorry for the homeowners that get stuck with these products.</p>	
Owner	<p>"Everyone knows that this is one of the dumbest regulations ever proposed. But what do you expect from an agency that has no leadership. Get over it. Yes, this regulation will hurt homeowners. There will be more malfunctions. And, we may need to boil our drinking water to be safe. Or, we can just move to a state that has better environmental leadership."</p>	<p>Thank you for your comment. The commenter did not offer a change to the regulations.</p>
Engineer	<p>"Give a 50% reduction for the use of gravel and then let's see what VDH does next when the gravelless manufacturers cry foul."</p>	<p>Thank you for your comment. The proposed regulation represents stakeholder consensus.</p>
James B. Slusser	<p>The commenter suggested that 12VAC5-610-930.F.8 of the emergency regulations be revised to read as follows: "Gravelless material may be substituted for gravel in accordance with this chapter, provided that the certifying licensed professional engineer or onsite soil evaluator approves the substitution <u>in writing prior to system construction</u>. The certifying licensed professional engineer or onsite soil evaluator shall..."</p> <p>The commenter suggested that 12VAC5-610-950 of the emergency regulations be revised to read as follows: "<u>4. Any substitution that decreases the "Area Required per Bedroom" or "Area Required per 100 gallons" listed in Table 5.4 shall be supported by saturated hydraulic conductivity percolation testing.</u>"</p> <p>The commenter suggested that 12VAC5-610-940.C.7.c of the emergency regulations be revised to read as follows: "Placement and alignment. Pressure percolation lines shall be placed so that the holes face vertically downward <u>upward except the distal hole.</u>"</p>	<p>Thank you for your comment. The CBEP TAC discussed revision to the regulations. Revisions were made where consensus was reached.</p> <p>The term "certifying" is taken from the reference to section 330 of the Regulations. Section 330 of the Regulations is a reference to Va. Code Section 32.1-164.1.E which specifically uses the term "certifying". The proposed language provides the appropriate reference to existing language within the Regulations and the Code.</p>
EHS, STAFFORD CO	<p>"Table 5.4 conflicts with local ordinances for minimum sizing. Owners may be subject to larger size septic fields than what this table allows. Our local ordinance has been tested for more years than these new systems."</p>	<p>Thank you for your comment. The proposed regulation would set the minimum requirements for gravelless material and drip dispersal in the Commonwealth. Local ordinances are not addressed.</p>

<p>Ken Carbaugh</p>	<p>The commenter stated there is no conflict with the proposed regulations regarding drip dispersal.</p> <p>The commenter stated that he objects to an unauthorized substitution of materials. He added that health department staff issuing permits should be licensed, and should be given the same latitude to accept or reject the substitutions of materials.</p> <p>The commenter stated that he does not agree with reductions for expanded polystyrene or tire chips.</p> <p>The commenter stated his primary concern with chamber systems is the lack of pipe; splash plates are unacceptable. Additionally, the commenter stated that for pump to trench systems, a dosing volume equal to gravel is excessive. The commenter also voiced concern with the installation of chambers in various soil classes, specifically soils with high mica content.</p> <p>The commenter asked for more data to make an educated, public health based, decision. The commenter suggested that the reduction in footprint should require Ksat test to ensure suitability of the entire absorption area.</p> <p>The commenter objects to contractor substitutions.</p>	<p>Thank you for your comment. Tire chips are not an approved gravelless material.</p>
<p>Private sector OSE</p>	<p>“VDH must have a great deal of faith in these gravel replacement products to require their OSE’s to add the statement to all permits that gravelless material may be used in accordance with Table 5.4 (reductions). This decision should involve the permitting VDH OSE and a homeowner who has had the opportunity to be educated regarding the choices-particularly when it comes to reducing area. The contractor is given a blanket “go ahead” to make the decision to use the material of his choice, but will be relieved of responsibility for that choice. Who is running the show here? The contractors...the manufacturers?”</p>	<p>Thank you for your comment. The commenter did not identify a specific change. The proposed regulations represents consensus among the CBEP TAC.</p>

Private sector OSE	“I started designing with chambers years ago when they first published the GMP, and my GMP 135 systems are still working today. There is lots of opposition to the rules that came from that house bill last year, but its worked here in the Richmond area over the long haul. I stay the course.”	Thank you for your comment.
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Family impact

Please assess the impact of the proposed regulatory action on the institution of the family and family stability including to what extent the regulatory action will: 1) strengthen or erode the authority and rights of parents in the education, nurturing, and supervision of their children; 2) encourage or discourage economic self-sufficiency, self-pride, and the assumption of responsibility for oneself, one’s spouse, and one’s children and/or elderly parents; 3) strengthen or erode the marital commitment; and 4) increase or decrease disposable family income.

The proposed regulatory action will have no family impact.

Detail of changes

Please list all changes that are being proposed and the consequences of the proposed changes. If the proposed regulation is a new chapter, describe the intent of the language and the expected impact. Please describe the difference between existing regulation(s) and/or agency practice(s) and what is being proposed in this regulatory action.

If the proposed regulation is intended to replace an emergency regulation, please list separately (1) all differences between the pre-emergency regulation and this proposed regulation, and (2) only changes made since the publication of the emergency regulation.

Proposed revisions to the Sewage Handling and Disposal Regulations: Pre-emergency regulation.

Section number	Proposed requirements	Other regulations and law that apply	Intent and likely impact of proposed requirements
30	Identifies other potentially applicable regulations and clarifies areas of responsibility between the agency and the Department of Environmental Quality (DEQ).	9VAC25-31 9VAC25-32 9VAC25-740	Section 30 identifies other potentially applicable regulations and <u>clarify</u> areas of responsibility between the agency and DEQ.
920	“The term distribution methods refers to the piping, flow splitting devices, gravel, and other appurtenances beginning at the point of flow splitting and ending at the <u>soil gravel or sand interface application of effluent to the soil absorption area.</u> ”	NA	This revision ensures the changes address gravelless material and drip dispersal instead of only addressing gravel.

<p>930.F</p>	<p><u>“Gravelless material is a proprietary product specifically manufactured to disperse effluent within the absorption trench of an onsite sewage system without the use of gravel. Gravelless material may include chamber, bundled expanded polystyrene, and multi-pipe systems. The division shall maintain a list of all generally approved gravelless material. Gravelless material on the generally approved list may be used in accordance with Table 5.4 of 12VAC5-610-950.”</u></p>	<p>NA</p>	<p>This section provides a definition of gravelless material and identifies that the agency will maintain a list of approved gravelless materials.</p>
<p>930.F.1</p>	<p><u>“Gravelless material that received general approval as of December 12, 2013, shall retain such status when used in accordance with the requirements of this chapter. After December 12, 2013, the division shall review and evaluate new applications for general approval pursuant to the requirements of this chapter.</u></p> <p><u>a. Any manufacturer of gravelless material may submit an application for general approval to the division using a form provided by the division. A complete application shall include the manufacturer's contact information, product specifications, product approvals in other states or territories, installation manual, and other information deemed necessary by the division to determine compliance with this chapter.</u></p> <p><u>b. The manufacturer of gravelless material shall identify in the application for general approval any recommendation that deviates from the requirements of this chapter. If the recommendation is approved by the division, then the manufacturer shall include the deviation in the gravelless material's installation manual.”</u></p>	<p>NA</p>	<p>This section allows previously approved gravelless material to retain approval status, and to provide a process for evaluating new products.</p>
<p>930.F.2.a</p>	<p><u>“The minimum exterior width shall be at least 90 percent of the total width of the absorption trench. The exterior width of a chamber system shall be measured at the edge or outer limit of the product's contact with the trench bottom unless the division determines a different measurement is required based on the</u></p>	<p>NA</p>	<p>This section creates a minimum exterior width for gravelless material as required by Va. Code Section 32.1-164.9.</p>

	<u>gravelless material's design. The exterior width of bundled expanded polystyrene and multi-pipe systems shall be measured using the outside diameter of the bundled gravelless material unless the division determines a different measurement is required based on the gravelless material's design. The division shall establish the exterior width of any gravelless material that is not considered a chamber, bundled expanded polystyrene, or multi-pipe system.</u>		
930.F.2.b	<u>“Gravelless material shall have a minimum height of eight inches to provide a continuous exchange of air through a permeable interface.”</u>	NA	This section creates a minimum height requirement for gravelless material as required by Va. Code Section 32.1-164.9.
930.F.2.c	<u>“Gravelless material shall have a permeable interface that shall be located along the trench bottom and trench sidewalls within the absorption trench.”</u>	NA	This section creates a requirement for a permeable interface between gravelless material and the trench sidewall as required by Va. Code Section 32.1-164.9.
930.F.2.d	<u>“Gravelless material shall provide a minimum storage capacity of 1.3 gallons per square foot of trench bottom area.”</u>	NA	This section creates a minimum storage capacity requirement for gravelless material as required by Va. Code Section 32.1-164.9. The required storage capacity is equivalent to the storage capacity below the pipe in a gravel trench system.
930.F.2.e	<u>“Gravelless material shall pose no greater risk to surface water and groundwater quality than gravel in absorption trenches. Gravelless material shall be constructed to maintain structural integrity such that it does not decay or corrode when exposed to effluent.”</u>	NA	This section creates a minimum structural capacity requirement for gravelless material as required by Va. Code Section 32.1-164.9.
930.F.2.f	<u>“Gravelless material shall have a minimum load rating of H-10 or H-20 from the American Association of State Highway and Transportation Officials or equivalent when installed in accordance with the manufacturer's specifications and minimum specified depth of cover in non-traffic or traffic areas, respectively.”</u>	NA	This section creates a minimum structural capacity requirement for gravelless material as required by Va. Code Section 32.1-164.9.
930.F.3	<u>“For designs using gravelless material, the absorption trenches shall receive an equal volume of effluent per square foot of trench. Trench bottom area shall be</u>	NA	This section requires that effluent be dispersed evenly throughout a gravelless system and that the trench bottom be

	<u>equal to or greater than the minimum area requirements contained in Table 5.4 of 12VAC5-610-950. Trench sidewall shall not be included when determining minimum area requirements. When open-bottom gravelless material is utilized, it shall provide a splash plate at the inlet of the trench or other suitable method approved by the manufacturer to reduce effluent velocity.”</u>		protected from erosion. These requirements are based on current requirements in the Regulations and comments from the CBEP TAC.
930.F.4	<u>“Installation of gravelless material shall comply with this chapter unless the department grants a deviation pursuant to 12VAC5-610-660 or the division has granted a deviation identified in the installation manual.”</u>	NA	Requires gravelless material to be designed and installed in compliance with existing requirements contained in the Regulations. This section allows gravelless material installations to deviate from the Regulations if approved by the division as part of the product’s general approval or if granted an exception pursuant to 12VAC5-610-660. This section implements Va. Code Section 32.1-164.9.
930.F.5	<u>“Gravelless material shall contain a pressure percolation line along the entire length of the trench when low pressure distribution is utilized pursuant to 12VAC5-610-940 D.”</u>	12VAC5-613	This section, along with 940.D, sets minimum requirements for low pressure distribution systems that use gravelless material to bed the pressure percolation lines. These minimums are based on requirements in previous agency policies and recommendations from the CBEP TAC. This section is also intended to meet requirements of Va. Code Section 32.1-164.9.
930.F.6 & 7	<u>“6. When pumping effluent to overcome gravity, any open-bottom gravelless material shall provide a high-flow splash plate at the inlet of the trench or other suitable method approved by the manufacturer to reduce effluent velocity.</u> <u>7. When enhanced flow distribution is used, open-bottom gravelless material shall contain a percolation pipe that extends a minimum of 10 feet from the trench's intersection with the header line. The percolation pipe shall be installed in accordance with the manufacturer's</u>	NA	Section 930(F)(6) and 930(F)(7) set minimum requirements for pump-to-gravity, open-bottom gravelless material. These requirements ensure that effluent velocity is reduced prior to entering the absorption. Dosing volume requirements are based on 12VAC5-610-890.C.

	<u>approved installation manual. The dosing volume shall be a minimum 39 gallons per 100 linear feet of absorption trench.”</u>		
930.F.8	<u>“Gravelless material may be substituted for gravel in accordance with this chapter, provided that the certifying licensed professional engineer or onsite soil evaluator approves the substitution. The certifying licensed professional engineer or onsite soil evaluator shall identify the substitution on the inspection report submitted in accordance with 12VAC5-610-330. A new construction permit pursuant to 12VAC5-610-310 is not required for the substitution.”</u>	NA	This section sets criteria for the substitution of gravelless material in lieu of gravel when gravelless material is not specified as part of the system design. Substitution of gravelless material does not require a new permit and requires approval by the certifying PE or OSE. This section implements Va. Code Section 32.1-164.9.
940.C.7.c	<u>“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 12VAC5-610-950-A-3 12VAC5-610-470 D.”</u>	NA	This revision removes an inaccurate reference to the definition of “seasonal water table”.
940.D	<u>“Gravelless material with general approval may be used for low pressure distribution in accordance with the manufacturer's approved installation manual, Table 5.4 of 12VAC5-610-950, and the applicable requirements of this chapter.”</u>	12VAC5-613	This section, along with 930.F.5, sets minimum requirements for low pressure distribution systems that use gravelless material to bed the pressure percolation lines. This section implements Va. Code Section 32.1-164.9.
950.A	<u>“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 <u>when trenches are used.</u>”</u>	NA	This revision ensures inclusion of gravelless material and drip dispersal within the Regulations.
950.D.2	<u>“Area reduction. See Table 5.4 for percent area reduction when <u>gravelless material or</u> low pressure distribution is utilized. A reduction in area shall not be permitted when flow diversion is utilized with low pressure distribution. <u>When gravelless material is utilized, the design width of the trench shall be used to calculate minimum area requirements for absorption trenches.</u>”</u>	NA	This section, along with Table 5.4, sets criteria for determining the minimum area requirements for gravelless material.
Table 5.4	Revisions to Table 5.4 include minimum sizing for gravelless material equivalent	NA	This section, along with section 950.D.2, sets criteria for

	to a 25 percent reduction when compared to gravel and pipe sizing in texture group I, II, and III soils, and equivalent to a 15 percent reduction when compared to gravel and pipe sizing in texture group IV soils.		determining the minimum area requirements for gravelless material. This section implements Va. Code Section 32.1-164.9.
955.A	<u>“Drip dispersal applies wastewater in an even and controlled manner over an absorption area. Drip dispersal system components may include treatment components, a flow equalization pump tank, a filtration system, a flow measurement method, supply and return piping, small diameter pipe with emitters, air/vacuum release valves, redistribution control, and electromechanical components or controls.”</u>	12VAC5-613	This section provides a definition of drip dispersal.
955.B	<u>“Drip dispersal system tubing shall be color coded and certified by the manufacturer as designed and manufactured for the dispersal of wastewater. All drip dispersal system tubing shall be equipped with emitters approved for use with wastewater. For the application of septic tank effluent, the tubing must have self cleaning emitters.”</u>	12VAC5-613	This section sets minimum physical construction criteria for drip dispersal system.
955.B.1	<u>“The minimum linear feet of tubing in the system shall be one-half of the minimum soil absorption area in square feet.”</u>	12VAC5-613	This section sets minimum design criteria for drip dispersal system.
955.B.2	<u>“All tubing shall be placed on contour.”</u>	12VAC5-613	This section sets minimum design criteria for drip dispersal system.
955.B.3	<u>“Except as provided by 12VAC5-613, drip systems dispersing septic tank effluent shall comply with the requirements of 12VAC5-610-594. Drip systems dispersing secondary effluent or better require a minimum of six inches of cover over the tubing. Cover may be achieved by a combination of installation depth and Group II or Group III soil cover or other approved material over the drip field.”</u>	12VAC5-613	This section sets minimum design criteria for drip dispersal system.
955.B.4	<u>“The discharge rate of any two emitters shall not vary by more than 10 percent in order to ensure that the effluent is uniformly distributed over the entire drip field or zone.”</u>	12VAC5-613	This section sets minimum design criteria for drip dispersal system.

955.B.5	<u>“The emitters shall be evenly spaced along the length of the drip tubing at not less than six inches or more than 24 inches apart.”</u>	12VAC5-613	This section sets minimum design criteria for drip dispersal system.
955.B.6	<u>“The system design shall protect the drip emitters and system from the effects of siphoning, or backflow through the emitters.”</u>	12VAC5-613	This section sets minimum design criteria for drip dispersal system.
955.C.1	<u>“For the dispersal of septic tank effluent, the minimum soil absorption area for a drip system shall be calculated by multiplying the trench bottom area required for a low pressure distribution system in Table 5.4 of this chapter, by three.”</u>	12VAC5-613	This section sets minimum design criteria for drip dispersal system.
955.C.2	<u>“For the dispersal of secondary or better effluent, the minimum soil absorption area shall be calculated by multiplying the trench bottom area for pressure distribution systems in accordance with 12VAC5-613-80.10 by three.”</u>	12VAC5-613	This section sets minimum design criteria for drip dispersal system.
955.C.3	<u>“Landscape linear loading rates shall be considered for sloping absorption areas. For sites where effluent flow is primarily horizontal, linear loading rates shall be less than 4 gallons per day per linear foot. For sites where the flow is primarily vertical, the linear loading rates shall be less than 10 gallons per day per linear foot.”</u>	12VAC5-613	This section sets minimum design criteria for drip dispersal system.
955.C.4	<u>“Air/vacuum release valves shall be located at the high points of the supply and return manifolds to each zone.”</u>	12VAC5-613	This section sets minimum design criteria for drip dispersal system.
955.D	<u>“All drip dispersal systems shall be equipped with devices or methods to restrict effluent from draining by gravity to portions of a zone or laterals lower in elevation. Variable distribution due to gravity drainage shall be 10 percent or less within a zone.”</u>	12VAC5-613	This section sets minimum design criteria for drip dispersal system.
955.E	<u>“A minimum of six hours of emergency storage above the high water alarm in the pump chamber shall be provided. The equalization volume shall be equal to 18 hours of storage. The equalization volume shall be measured from the pump off level to the high water alarm level. An</u>	12VAC5-613	This section sets minimum design criteria for drip dispersal system.

	<u>audio/visual alarm meeting the requirements of 12VAC5-610-880.B.8 shall be provided for the pump chamber.”</u>		
955.F	<u>“Each drip dispersal zone shall be time-dosed over a 24 hour period. The dose volume and interval shall be set to provide unsaturated flow conditions. Demand dosing is prohibited. Minimum dose volume per zone shall be 3.5 times the liquid capacity of the drip laterals in the zone plus the liquid capacity of the supply and return manifold lines (which drain between doses) accounting for instantaneous loading and drain back.”</u>	12VAC5-613	This section sets minimum design criteria for drip dispersal system.
955.F.1	<u>“At each dosing cycle, the system design shall only allow a full dose volume to be delivered.”</u>	12VAC5-613	This section sets minimum design criteria for drip dispersal system.
955.F.2	<u>“For design flows greater than 1,000 gallons per day, a means to take each zone off line separately shall be provided. The system shall have the capability to bypass each zone that is taken out of service such that each subsequent dose is dispersed to the next available zone in sequence.”</u>	12VAC5-613	This section sets minimum design criteria for drip dispersal system.
955.G	<u>“Filtration shall be provided to remove suspended solids and prevent clogging of emitters. The filtration design shall meet the drip tubing manufacturer’s particle size requirements for protection of the emitters at a flow rate equal to or greater than the rate of forward flushing. Filter flush water shall be returned to the treatment system at a point where the residuals and volume of the flush water do not negatively impact the effluent quality or exceed the hydraulic design capacity of the treatment system.”</u>	12VAC5-613	This section sets minimum design criteria for drip dispersal system.
955.H	<u>“A means for measuring or estimating total flow dispersed to the soil absorption area and to verify field dosing and field flushing rates shall be provided.”</u>	12VAC5-613	This section sets minimum design criteria for drip dispersal system.
955.I	<u>“The system shall provide forward field flushing to achieve scouring velocity as specified by the drip tubing manufacturer. Field flushing shall occur on a routine schedule to prevent excessive solids accumulation and</u>	12VAC5-613	This section sets minimum design criteria for drip dispersal system.

	<u>clogging. Flush water shall be returned to the treatment system at a point where the residuals and volume of the flush water do not negatively impact the effluent quality or exceed the hydraulic design capacity of the treatment system.”</u>		
955.J	<u>“Electrical components shall be Underwriters Laboratory (UL) listed for the intended purpose. The designer shall provide a description with a schematic diagram of the electrical and control functions in the operation and maintenance manual. The electrical control equipment shall be mounted within a National Electrical Manufacturers Association (NEMA) 4X rated enclosure with a rigid latching door. All switches shall be clearly identified and all internal wiring shall be factory installed. All wiring shall be installed according to applicable electrical safety codes and the manufacturer’s installation schematic.”</u>	12VAC5-613	This section sets minimum design criteria for drip dispersal system.
955.K	<u>“All components in a drip dispersal system shall be rated to withstand contact with wastewater and recommended for this application by the manufacturer. All components shall be protected from freezing.”</u>	12VAC5-613	This section sets minimum physical construction criteria for drip dispersal system.
955.L	<u>“The startup inspection conducted by the designer of the drip dispersal system shall verify the dosing rates, the flushing rates, and other parameters critical to the proper operation of the system. A summary of the startup inspection shall be included in the operation and maintenance manual and shall include, at a minimum, the dosing volume; the forward flow flushing rate; the pressure head of the system; and verification of proper cycling between zones.”</u>	12VAC5-613	This section sets minimum installation inspection criteria for drip dispersal system.

Proposed changes made since the publication of the emergency regulations.

Current section number	Proposed new section number, if applicable	Current requirement	Proposed change, intent, rationale, and likely impact of proposed requirements
920		Current regulatory language: “The term distribution methods refers to the piping, flow splitting devices, gravel, and other appurtenances beginning at the point of flow splitting and ending at the point of effluent application to the soil absorption area.”	Proposed revision: “The term distribution methods refers to the piping, flow splitting devices, gravel, and other appurtenances beginning at the point of flow splitting and ending at the point of effluent application of <u>effluent</u> to the soil absorption area.” This revision addresses a public comment, as agreed to by the CBEP TAC.
930.F.1.a		Current regulatory language: “Any manufacturer of gravelless material may submit an application for general approval to the division using the form provided by the division.”	Proposed revision: “Any manufacturer of gravelless material may submit an application for general approval to the division using the <u>a</u> form provided by the division.”
930.F.2.a		Current regulatory language: “The minimum exterior width shall be at least 90% of the total...”	Proposed revision: “The minimum exterior width shall be at least 90% <u>percent</u> of the total...”
930.F.2.e		Current regulatory language: “Gravelless material shall pose no greater risk to surface water and groundwater quality than gravel in absorption trenches. Gravelless material shall be constructed to maintain structural integrity such that is does not decay or corrode when exposed to sewage.”	Proposed revision: “Gravelless material shall pose no greater risk to surface water and groundwater quality than gravel in absorption trenches. Gravelless material shall be constructed to maintain structural integrity such that is does not decay or corrode when exposed to <u>sewage effluent</u> .” This revision addresses a public comment, as agreed to by the CBEP TAC.
930.F.2.f		Current regulatory language: “Gravelless material shall have a minimum load rating of H-10 or H-20 from the American Association of State Highway and Transportation Officials or equivalent when installed in accordance with the manufacturer’s minimum specified depth of compacted cover in non-traffic or traffic areas, respectively.”	Proposed revision: “Gravelless material shall have a minimum load rating of H-10 or H-20 from the American Association of State Highway and Transportation Officials or equivalent when installed in accordance with the manufacturer’s <u>specifications and</u> minimum specified depth of <u>compacted</u> cover in non-traffic or traffic areas, respectively.” This revision addresses a comment from the CBEP TAC. The addition of “specifications and”

			conveys the need to adhere to all manufacturer instructions, not just depth of cover.
930.F.7		Current regulatory language: “When enhanced flow distribution is required by this chapter,…”	Proposed revision: “When enhanced flow distribution is required by this chapter <u>used</u> ,…” This revision addresses a public comment.
940.C.7.c		Current regulatory language: “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.”	Proposed revision: “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 <u>as defined in 12VAC5-610-470 D.</u> ” This revision addresses a comment from the CBEP TAC that a reference to the definition of seasonal water table is necessary. Under the emergency regulations an inaccurate reference to 12VAC5-610-950.A.3 was removed.
950.D.2		Current regulatory language: “When gravelless material is utilized, the width of the trench excavation shall be used to calculate minimum area requirements for absorption trenches.”	Proposed revision: “When gravelless material is utilized, the <u>design</u> width of the trench excavation shall be used to calculate minimum area requirements for absorption trenches.” This revision addresses a public comment, as recommend by the CBEP TAC.
955.B.4		Current regulatory language: “The discharge rate of any two emitters shall not vary by more than 10% in order to…”	Proposed revision: “The discharge rate of any two emitters shall not vary by more than 10% <u>percent</u> in order to…”
955.B.6		NA	Proposed revision: “ <u>The system design shall protect the drip emitters and system from the effects of siphoning or backflow through the emitters.</u> ” This revision addresses a comment from the DD TAC that several drip dispersal systems, designed in accordance with GMP 107 (the basis for the emergency regulations), malfunctioned during rain events because surface runoff was back flowing into the drip tubing on shallow sloping sites; clogging the emitters with uniform fine sand particles. Designers had determined several methods for eliminating this issue, but felt it necessary to make other designers aware of potential backflow issues.

<p>955.C.3</p>		<p>Current regulatory language: “Landscape linear loading rates shall be considered for sloping absorption areas to the greatest extent possible. The landscape linear loading rate is the volume of effluent (gallons) applied per day per linear foot of the system along the natural contour (gallon per day/foot).”</p>	<p>Proposed revision: “Landscape linear loading rates shall be considered for sloping absorption areas to the greatest extent possible. The landscape linear loading rate is the volume of effluent (gallons) applied per day per linear foot of the system along the natural contour (gallon per day/foot). <u>For sites where effluent flow is primarily horizontal, linear loading rates shall be less than 4 gallons per day per linear foot. For sites where the flow is primarily vertical, the linear loading rates shall be less than 10 gallons per day per linear foot.</u>”</p> <p>This revision is based on comments from the DD TAC that the proposed regulations should set specific prescriptive requirements. “[T]o the greatest extent possible” is vague and does not set an enforceable requirement.</p>
<p>955.L</p>		<p>Current regulatory language: “The designer of the drip dispersal system shall conduct a startup inspection that verifies the dosing rates, the flushing rates, and other parameters critical to the proper operation of the system.”</p>	<p>Proposed revision: “The designer of the drip dispersal system shall conduct a startup inspection that <u>verifies</u> the dosing rates, the flushing rates, and other parameters critical to the proper operation of the system <u>at the startup inspection.</u>”</p>