

**Virginia Department of Health**  
**Sewage Handling and Disposal Advisory Committee (SHADAC) Meeting**  
**June 17, 2021**

**Location:** Virtual meeting using Webex

**List of Attendees:**

SHADAC Members

Alan Brewer – Virginia Association of Counties  
Colin Bishop – Manufacturer, System Installer  
Curtis Moore – Virginia Onsite Wastewater Recycling Association  
Laura Farley – Virginia Association of Realtors  
V'Lent Lassister – Chesapeake Bay Local Assistance Department  
William Johnson – American Council of Engineering Companies  
Scott Currie – Manufacturer  
James Grandstaff – Virginia Water Environment Association  
Lance Gregory – Virginia Department of Health  
Valerie Rourke – Virginia Department of Environmental Quality  
John Schofield – Sitting in for the Virginia Water Well Association

VDH Staff and Members of the Public

Dave Tiller	Tanya Pettus	Adam Herman	Joshua Anderson
Tom Ashton	Anna Killius	David Morgan	Marcia Degen

Mr. Gregory reviewed GMP 2017-02 on Voluntary Upgrades and Repairs. Mr. Gregory led a discussion concerning when must a repair to an AOSS include nitrogen reduction within the Chesapeake Bay Watershed. The concern is that when the requirement is triggered, the owner has to spend extra money on a nitrogen reducing treatment unit for this repair. Discussions included the clarity of the nitrogen-reducing requirements, whether an owner should be required to include a nitrogen-reducing component to a repair design within and out of the Chesapeake Bay Watershed. Chairman Lynn had requested the topic, but was unable to attend the meeting. As a result, the decision was made to include the nitrogen requirement topic at the next meeting.

Mr. Gregory discussed the upgraded hardship guidelines (GMP 2019-01). Mr. Gregory shared a PowerPoint presentation with the members. Mr. Gregory will provide data on the number of Safe, Adequate and Proper (SAP) requests verses the number of permits.

Dr. Degen presented changes from the last version of the proposed fast track-amendments to the Sewage Handling and Disposal Regulations.

- The height of a control panel in 12VAC5-610-880 was discussed. The recommendation was to include a reference to the electrical code verses creating a new requirement to

avoid duplication or conflict. The discussion included aesthetics along with practical access to the panel.

- 12VAC5-610-880C is a proposed section for pumps that are integral to treatment units. The purpose of this amendment is to allow pumps without regulatory restrictions that are for treatment. The Sewage Handling and Disposal Regulations (*Regulations*) should allow pumps that work internally in a treatment unit without meeting all requirements of the *Regulations* for pumps to force mains. Dr. Degen included a statement to allow storage within a treatment tank provided the maximum level is measured 1” below the invert of the invert from the septic tank.
- 12VAC5-610-880.D is a proposed section for conveyance pumps. Dr. Degen discussed whether the proposed language for conveyance pumps is adequate and includes proper sections of the *Regulations*. Examples included 2.5 times the average daily flow; pumps that are used for enhanced flow must be capable of 36 gallons per minute, Low-Pressure Distribution (LPD) systems shall be sized in accordance with Section 940. The general recommendation was to include the references for enhanced flow and LPD,

Proposed modifications to 12VAC5-610-950 C regarding placement of treated effluent below a soil restriction from the proposed fast-track amendments was removed as controversial

- Dr. Degen discussed whether the minimum depth of gravel in trenches receiving TL-2 or better effluent should be reduced to eight inches in texture group 1 and 2 soils to match the depth of gravel pads. No comment from the group.
- Additional description was suggested for the term ‘soil cover’ to more clearly state the purpose. The discussion included what the required depth of cover should be (no objections to 6 inch minimum cover from SHADAC); if qualifying language should be included to the type of the soil cover or make a statement that the cover will support vegetative growth.
- Sand lined treatment systems have a dispersal component. The proposed regulations allow those to deviate from the minimum installation depth and timed-dosing when tested in that configuration. The discussion included NSF testing for approval and the need for the manufacturers to approve any deviations.
- A requirement for pressure dosing has been clarified for elevated sand mound designs.
- Dr. Degen led a discussion regarding the separation between multiple pads on a site. The discussion centered on language concerning how the separation distance must be measured perpendicular to the slope of the site. The committee suggested VDH prepare a graphic to aid in the understanding on how the separation is measured for SHADAC’s review.

- At the last meeting, a maximum number of doses to a pad was suggested. After discussion with SHADAC, a maximum number of doses would limit designs already in use and with no substantial reason to deviate.

Mr. Gregory led a discussion on what in the Sewage Handling and Disposal Regulation has a basis in the Code of Virginia.

#### 32.1-163.5

- Shall except designs from PE's and OSE's
- Evaluations and designs shall be certified as complying with the regulations.
- 15/60 day processing times; deemed approval.
- Only a PE can engage in the practice of engineering.

#### 32.1-163.6

- Shall accept design from PEs that are:  
Compliant with standard engineering practice, performance requirements, horizontal setbacks.
- Reflect skill and care of a PE.
- Appropriate for the soil and site.
- Meet or exceed quality standards.
- 21/60 day decision.
- Establish EDRP.
- All systems shall comply with operation, maintenance, and monitoring requirements in the regulations.

#### 32.1-164

- Regulations shall govern collection, conveyance, transportation, treatment, disposal, maintenance (AOSS), inspection (AOSS), and reuse (AOSS).
- Regulations “designed to protect the public health and promote the public welfare”.  
Regulations may include:  
Requirement to obtain a permit prior to construction.  
Criteria for issuing/denying permits.  
Standards for design, construction, installation, modification, and operation.  
Standards for disposal on or in soils.  
Minimum setbacks (wells, lakes, ground water, etc.)  
Standards for approved water supply.  
Transportation standards.
- Prohibition against the discharge of untreated sewage onto land or into waters of the Commonwealth.
- Requirement that structures for human occupancy have approved systems.
- Criteria for approving effectiveness of AOSS.
- Procedures for certification letters.
- TN performance requirements for AOSS.
- Shall give consideration to economic cost of standards in accordance with APA.

- May require a survey plat for cert letters, may be recorded, and permit shall be issued unless substantial changes site conditions. Issued within 20 days.
- Shall establish O&M program for AOSS, and shall require:  
Owner to have system operated by a licensed operator.  
Visited in accordance with the OP.  
Operator shall provide a reports via web-based system.  
Web-based system to track O&M reports, capable of pre-notification of O&M to the operator or owner.  
“Any additional requirements deemed necessary by the Board”.
- Shall establish procedures for requiring survey plats as part of applications for a permit or letter, and procedures for waivers.  
32.1-164.1
- Conditional permits shall be recorded.  
“In adopting regulations prescribing criteria for the granting or denial of permits for septic tanks, the Board shall consider varying circumstances such as population density, extent of use of the septic tank and such other circumstances as may affect the stringency of the criteria necessary to protect the public health and promote the general welfare and may provide for the issuance of permits for septic tanks subject to such conditions as may be necessary to protect the public health.”
- OSE/PE shall inspect systems they design.

#### 32.1-164.1:1

- Permits shall be valid for 18 months.
- Permit may be extended for 18 months.
- Allowance for repair and voluntary upgrade waivers.

#### 32.1-164.1:3

- Owners shall apply for a voluntary upgrade when the system is not failing, provided purpose is for reducing threats to the public health.
- VDH shall attached a statement to the permit stating the upgrades are not required by law.
- May indemnify and hold harmless the Department of any voluntary upgrade.

#### 32.1-164.9

- Shall promulgate regulations for chambers and bundled expanded polystyrene systems.
- Shall include:  
Specification for physical construction (width, height, storage capacity, structural capacity).  
Requirement for permeable interface.  
Allowable slope, maximum length, min. sidewall, and lateral separation.  
Criteria for substitution.  
Minimum area requirements  
Other requirements as necessary.

#### 32.1-165

- Shall authorize issuance of building permits upon finding SAP system is or will be provided.
- Shall develop an application and procedure for evaluating and installed system to determine whether to authorize a building permit.
- Shall not prevent approving non-conforming treatment works.
- Shall not prevent an own from receiving a permit as a condition of nonconforming approval.
- May accept evaluations from PEs, OSEs, installers, operators, and NSF certified individuals.

32.1-248.2

- Shall adopt regulations regarding the use of gray water.
- Regulations shall:  
Describe conditions under which gray water may appropriately be used and for what purposes.  
Include categories of gray water that are appropriate for reuse.  
Include a definition of gray water that excludes used toilet water.

Baseline Criteria Addressed in Regulations

- Untreated or partially treated sewage on the land surface or water of the Commonwealth is a violation. However, need open discussion on whether gray water may be different.
- Requirement to obtain a permit (open to revising process).
- Horizontal separation distances unless provided with significant scientific basis for change.
- Vertical separation distances unless provided with significant scientific basis for change.
- Single ownership of systems (open to discuss RMEs)
- Design, construction, installation, modification, and operation requirements (in general, open to revision but some basics are necessary).

The committee asked the following questions and comments during Mr. Gregory's presentation:

What is VDH trying to accomplish with the regulation rewrite, resolve conflict with other regulations, address local ordinance issues, etc.?

What does it mean to protect public health and how do you know when you have accomplished it?

How does the Department view promoting the general welfare?

VDH should include sustainability in this discussion.

100% reserve will be a huge issue for realtors and current owners. Can we think about innovation or change that allows for flexibility?

**Adjourn**

# 2021 Hardship Guideline Review

# HB 888 Income Eligibility

Beginning July 1, 2019, (i) require means testing of applicants who petition the Department for evaluation and design services for onsite sewage systems and private wells and who are unable to demonstrate a hardship and (ii) provide evaluation and design services only to such applicants whose household income does not exceed 400 percent of the federal poverty guidelines established by the U.S. Department of Health and Human Services. The Department shall reduce such income threshold to 300 percent beginning July 1, 2020, **200 percent beginning July 1, 2021**, and 100 percent beginning July 1, 2022. Beginning July 1, 2023, the Department shall provide design and evaluation services only to an applicant who demonstrates a hardship in accordance with guidelines developed by the Department.

# Updated Income Eligibility

Persons in Household	200% Federal Poverty Guidelines
1	\$25,760
2	\$34,840
3	\$43,920
4	\$53,000
5	\$62,080
6	\$71,160
7	\$80,240
8	\$89,320



# Overview – Septic 5/1/2020 to 4/30/2020

- Total Applications – 15,810
  - New Construction – 11,040
  - Minor Modification – 872
  - Repair – 2134
  - Voluntary Upgrade – 543
- \* Includes denials (545) and blank status.

# Overview Septic 5/1/2020 to 4/30/2020

- 93.3% of All Designs by OSEs/PEs (84% last year)
- 6.6% of All Designs by VDH (16% last year)
- Approximately 10% by PEs, 83% by OSEs (12% and 72% last year)
- PE Designs – Avg. 10. Median 3. 8 PEs = 50% of Designs
- OSE Designs – Avg. 41. Median 21. 26 OSEs = 50% of Designs

2020 List of Localities

Alleghany	Smyth
Appomattox	Tazewell
Bland	Washington
Buchanan	Wise
Carroll	Wythe
Charles City	
Charlotte	
Craig	
Dickenson	
Grayson	
Highland	
Lee	
Lunenburg	
Lynchburg	
Nelson	
Pittsylvania	
Rappahannock	
Rockbridge	
Russell	
Scott	

2021 List of Localities Transitioning

Appomattox  
**Carroll**  
**Grayson**  
Lunenburg  
Nelson  
Pittsylvania  
Rappahannock  
Washington

2021 Remaining

Alleghany  
Bland  
Buchanan  
Charles City  
Charlotte  
Craig  
Dickenson  
Highland  
Lee  
Lynchburg  
Rockbridge  
Russell  
Scott  
Smyth  
Tazewell  
Wise  
Wythe

# Safe, Adequate, and Proper 5/1/2020 to 4/30/2021

- 1897 Total in EHD.
- 77.5% VDH
- 14.5% OSE
- 4.4% Installer
- 2.7% Operator
- 0.8% PE

# SAP Example

Goochland

EHS – 0

Operators – 4

NA – 2

Operator 1 – 1

Operator 2 – 1

Installers – 3

NA – 2

Installers – 1

OSE - 17

OSE 1- 1

OSE 2 - 4

OSE 3 - 2

OSE 4 - 1

OSE 5 – 1

OSE 6 - 1

OSE 7 – 6

OSE 8 - 1

12VAC5-610 New Definitions Proposed:

“Infiltrative surface” means the designated interface where effluent moves from distribution piping, media, and fill to natural soil.

"Treatment level 2 effluent" or "TL-2 effluent" means secondary effluent as defined in [12VAC5-610-120](#) that has been treated to produce BOD<sub>5</sub> and TSS concentrations equal to or less than 30 mg/l each.

"Treatment level 3 effluent" or "TL-3 effluent" means effluent that has been treated to produce BOD<sub>5</sub> and TSS concentrations equal to or less than 10 mg/l each.

"Treatment unit" or "treatment system" means a method, technique, equipment, or process other than a septic tank or septic tanks used to treat sewage to produce effluent of a specified quality before the effluent is dispersed to a soil treatment area.

“Working volume” means the volume in a pump tank between the pump off level and the high water alarm level.

\*\*\*\*\*

Pulled for REFERENCE for the development of the term ‘infiltrative surface’.

Related from 610

"Subsurface soil absorption" means a process which utilizes the soil to treat and dispose of effluent from a treatment works.

References to infiltrative surface from 610

700.A.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.

592.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.

950.A. The absorption area is the undisturbed soil medium 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 when trenches are used.

594.A. An in-ground system is a system which utilizes a natural, undisturbed soil horizon to treat and disperse effluent where the infiltrative surface is placed 18 inches or more beneath the

original surface of the ground. In-ground systems include, but are not limited to, conventional septic tank drainfield systems, chamber systems, alternative aggregate systems, enhanced flow systems, and pressure dosed systems.

597.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.

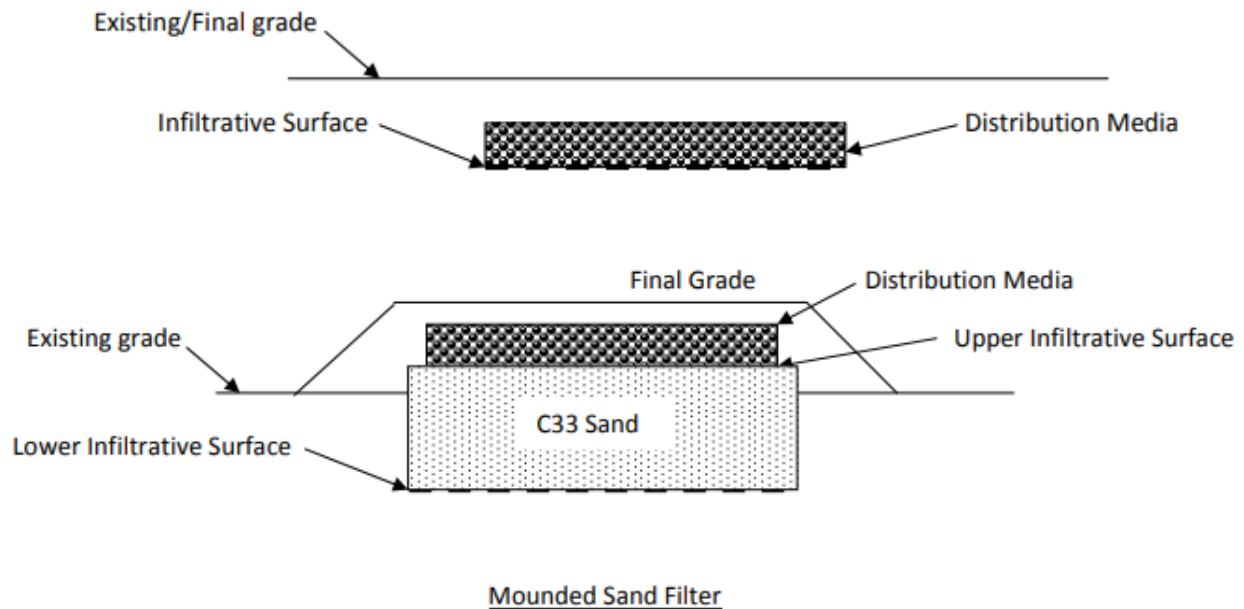
Related from 613

"Soil treatment area" means the physical location in the naturally occurring soil medium where final treatment and dispersal of effluent occurs.

"Subsurface drainfield" means a system installed within the soil and designed to accommodate treated sewage from a treatment works.

From Colorado:

"Infiltrative surface" means designated interface where effluent moves from distribution media or a distribution device into soil.



[No changes from 03 2021 version]

## **12VAC5-610-250. Procedures for Obtaining a Construction Permit for a Sewage Disposal System.**

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

Formal plans and specifications are waived for designs with design flows less than or equal to 1000 gallons per day that are exempt from the license requirements for professional engineers under §§ 54.1-402A.11.

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 [12VAC5-610-930 A](#)) or low pressure distribution (see [12VAC5-610-940](#)) is necessary, the system shall be considered a Type II system.

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 [12VAC5-610-930 A](#)) or low pressure distribution (see [12VAC5-610-940](#)) 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. 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. 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.

When high strength wastes are proposed for subsurface disposal, the treatment methodology shall comply with the requirements found in [12VAC5-580-10](#) et seq. of the Sewage Regulations.



## 12VAC5-610-880. Pumping.

880 is split into General and then 2 new pump categories. The <2 fps was eliminated from the general category and is only found in 'conveyance pumps' for final treated TL2 or TL3 treated effluent.

### A. Force mains. General.

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 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.
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. General.

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 [12VAC5-610-940 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 [12VAC5-610-930 A](#)) the working volume of the wet wall shall be 0.6 of the volume of the percolation piping.
2. Materials. Materials for construction of pumping stations are the same as for septic tanks (see [12VAC5-610-810](#)). 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 [12VAC5-610-815 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 [12VAC5-610-815 F](#).

6. Pumps. All pumps utilized shall be of the open face centrifugal, vertical turbine, or suction lift type designed to pump sewage. 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 [12VAC5-610-930 A](#)) shall have a minimum capacity of 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 [12VAC5-610-940 A](#). Dual alternating pumps are required on systems 1800 linear feet or greater in accordance with [12VAC5-610-930 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. The control panel shall be located to allow for access and shall be set a minimum of 30 to 42 inches above the finished ground surface elevation.

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

Commented [DM(1)]: From SHADAC meeting 03 2021

Commented [DM(2R1)]: Additional comments indicated a need for a minimum, not a maximum and to reference finished grade.

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.

C. Pumps Integral to Treatment Systems. Pumps integral to treatment systems are pumps that move wastewater within the treatment unit and are required to achieve the desired effluent quality. 12VAC5-610-880.A and B do not apply to these integral pumps that are internal to a treatment unit. Conveyance pumps that are located in units with multiple compartments are not considered integral to the treatment unit.

**Commented [DM(3)]:** Deleted as causing confusion.

D. Conveyance pumps and pump stations that move TL-2 or TL-3 final effluent to a soil dispersal system shall comply with the following.

1. 12VAC5-610-880.A. shall apply except that the minimum velocity in the force main may be reduced to 1 foot per second.

2. Pump station wet wells shall provide at least one quarter (1/4) day storage above the high level alarm set point. Alternatively, storage may be provided in a treatment tank such as a recirculation tank, but the maximum water level must be 1 inch below the invert from the septic tank.

3. 12-VAC5-610-880.B 2, 3, 4, 5, 7, 8 and 9 shall apply.

4. All pumps utilized shall be of the open face centrifugal, vertical turbine, or suction lift type designed to pump sewage. Dual alternating pumps are required on systems 1800 linear feet or greater in accordance with 12VAC5-610-930 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 anti-siphon 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.

**Commented [DM(4)]:** To address comment regarding alternative storage options. However, a suggestion to allow backups into the septic tank was not suggested. The purpose of the storage is to allow the owner to continue to accumulate sewage during the emergency. Backing up into the septic tank will create a higher potential for backup into the house and human health exposure.

**Commented [DM(5)]:** This section modified B6 from above to eliminate the references to enhanced flow and LPD requirements. Perhaps we should just keep the reference to B6 in its entirety? The below section was deleted.

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 12VAC5-610-930 A) shall have a minimum capacity of 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 12VAC5-610-940

12VAC5-610-950. Absorption area design.

A. The absorption area is the undisturbed soil medium 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 when trenches are used.

B. Suitability 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 be identified in accordance with [12VAC5-610-480](#). 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
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-. Placement of the soil absorption trench bottom below soil restrictions as defined in [12VAC5-610-490 D](#), whether or not there is evidence of a perched water table as indicated by free standing water ~~or~~ gray mottlings or redoxymorphic features ~~coloration~~, requires a special design based on the following criteria:

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. The soil horizon shall be a minimum of three feet thick and shall exhibit no characteristics that indicate wetness 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 or rock. At least one foot of the absorption trench side wall shall penetrate the soil horizon.
3. 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~~ both sides of the absorption area (See [12VAC5-610-700 D 3](#)).
4. Pits shall be constructed to facilitate soil evaluations as necessary.

D. Sizing of absorption trench area for septic tank effluent.

**Commented [DM(1):** At last meeting directed to drop changes to describe treated effluent. However, minor update in language retained.

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. 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 (Ft<sup>2</sup>/100 Gals) of sewage applied for various soil percolation rates is tabulated in Table 5.4. The area requirements are based on the equation:

$$\log y = 2.00 + 0.008 (x)$$

where  $y = \text{Ft}^2/100 \text{ Gals}$

$x = \text{Percolation rate in minutes/inch}$

Notwithstanding the above, the minimum absorption area for single family residential dwellings shall be 400 square feet.

2. Area reduction. See Table 5.4 for area reduction when gravelless material or low pressure distribution is utilized. A reduction in area shall not be permitted when flow diversion is utilized with low pressure distribution. When gravelless material is utilized, the design width of the trench shall be used to calculate minimum area requirements for absorption trenches.

E. 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%. 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 shall be provided with at least 12 inches of cover to prevent frost penetration and provide physical protection to the absorption trench; however, this requirement for additional cover shall not apply to systems installed on slopes of 30% or greater. 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 minimum trench depth shall be increased by at least five inches for every 10% increase in slope. Sidewall depth is measured from the ground surface on the downhill 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. 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%. 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%. The minimum horizontal separation distance shall be increased by one foot for every 10% increase in slope. In no case shall the center to center distance be less than 30 inches.

G. 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. 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. 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 Receiving Septic Tank Effluent.

Percolation Rate (Minutes/Inch)	Area Required (Ft <sup>2</sup> /100 Gals)			Area Required (Ft <sup>2</sup> /Bedroom)		
	Gravity	Gravity Gravelless	Low Pressure Distribution	Gravity	Gravity Gravelless	Low Pressure Distribution
5	110	83	110	165	124	165
10	120	90	120	180	135	180
15	132	99	132	198	149	198
20	146	110	146	218	164	218

25	158	119	158	237	178	237
30	174	131	164	260	195	255
35	191	143	170	286	215	260
40	209	157	176	314	236	264
45	229	172	185	344	258	279
50	251	188	193	376	282	293
55	275	206	206	412	309	309
60	302	227	217	452	339	325
65	331	248	228	496	372	342
70	363	272	240	544	408	359
75	398	299	251	596	447	375
80	437	328	262	656	492	394
85	479	359	273	718	539	409
90	525	394	284	786	590	424
95	575	489	288	862	733	431
100	631	536	316	946	804	473
105	692	588	346	1038	882	519
110	759	645	379	1138	967	569
115	832	707	416	1248	1061	624
120	912	775	456	1368	1163	684

J. 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.

Section K establishes that all trenches must be constructed using standard methods and materials. The shallowest sidewall on a gravel trench is 12 inches. The shallowest sidewall on a gravelless product is 8 inches. It reiterates that timed dosing is required when trenches are less than 12 inches deep. There is an allowance for approved manufacturer products to deviate from the sidewall and the dosing. To date these have been sand lined treatment products that are being used for dispersal.

K. Trenches receiving TL-2 or better quality effluent are exempt from the increase in trench depth with slope and the cover requirements as found in 12VAC5-610-950.E. The following additional requirements shall apply.

1. Soil dispersal loading rates shall not exceed the values in Table 5.5.
2. The minimum vertical standoff to a limiting feature shall be maintained under the entire infiltrative surface in accordance with 12VAC5-613
3. The minimum cover over the absorption area is 6 inches.— On sloping sites, cover shall be tied back into the existing slope to facilitate stabilization of the slope and maintenance of the site. Soil cover material shall support vegetative growth.
4. The minimum installation depth is equal to the sidewall of the dispersal system construction as defined in 12VAC5-930.F, 12VAC5-610-950.E.1, and 12VAC5-610-940 (gravelless). On sloping sites, the minimum installation depth is measured on the downhill side.
5. When trenches are installed at less than 12 inches from the ground surface, timed dosing shall be used to disperse the effluent.
6. For slopes up to 15 percent slope, there are not any soil texture group limitations for shallow placed trenches receiving TL-2 or TL-3 effluent. For slopes over 15 percent, trench systems installed in Texture Group III and IV soils, are limited to a 12 inch or greater installation depth.
7. Designs supported by Division approved manufacturer's design manuals may deviate from 12VAC5-610-950.K4 and K5.
9. Notwithstanding the above, the minimum absorption area for a single family residential dwelling receiving TL-2 or better quality effluent shall be 400 square feet.

**Commented [DM(2):** We reduced the depth for gravel pads to 8 inches when in TG I or II soils. Is there justification to do the same for trenches?

**Commented [DM(3):** VDH increased the minimum soil cover from 4 inches in GMP 147 to 6 inches to facilitate better grass growth for greater public health protection.

From VT Extension Publication 426-718 Establishing Lawns

The subgrade should slope away from buildings, and the area should be allowed to settle through two or more rains before planting. Low spots in the yard where water collects should be filled with additional soil. All building debris, large rock, and rotting wood should be removed from the site. If the topsoil has been stockpiled, it should be spread uniformly over the entire lawn area. Ideally, there should be a minimum of 6 to 8 inches of topsoil. Where topsoil is limited, mix the available topsoil into the upper inch of subsoil by tilling. Once the soil is prepared, care should be taken not to disturb it.

**Commented [DM(4):** Allows for deviations from depth and timed dosing for approved products. OK? These are ones where the manufacturer stands behind the deviation and has tested the given configuration.



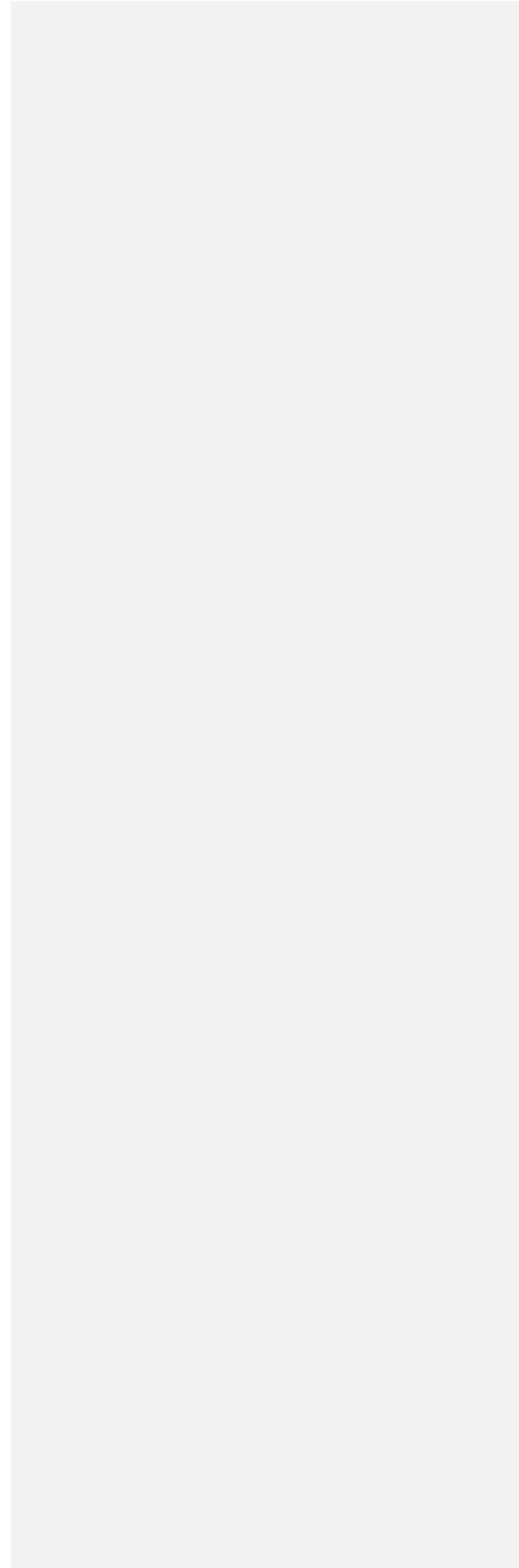
Table 5.5 Soil Absorption Area Loading Rates for Systems Receiving TL-2 or TL-3 Effluent

Percolation Rate (mpi)	TL-2 Effluent				TL-3 Effluent			
	Pressure Trench* Loading (gpd/ft <sup>2</sup> )	Gravity Trench* Loading (gpd/ft <sup>2</sup> )	Drip** Loading (gpd/ft <sup>2</sup> )	Pad/Mound Loading** (gpd/ft <sup>2</sup> )	Pressure Trench* Loading (gpd/ft <sup>2</sup> )	Gravity Trench* Loading (gpd/ft <sup>2</sup> )	Drip** Loading (gpd/ft <sup>2</sup> )	Pad/Mound Loading** (gpd/ft <sup>2</sup> )
<u>5</u>	<u>1.8</u>	<u>1.80</u>	<u>0.60</u>	<u>1.20</u>	<u>3.0</u>	<u>3.00</u>	<u>1.00</u>	<u>1.66</u>
<u>10</u>	<u>1.67</u>	<u>1.67</u>	<u>0.56</u>	<u>1.11</u>	<u>2.67</u>	<u>2.67</u>	<u>0.89</u>	<u>1.66</u>
<u>15</u>	<u>1.53</u>	<u>1.53</u>	<u>0.51</u>	<u>1.02</u>	<u>2.33</u>	<u>2.33</u>	<u>0.78</u>	<u>1.66</u>
<u>20</u>	<u>1.4</u>	<u>1.40</u>	<u>0.47</u>	<u>0.93</u>	<u>2.0</u>	<u>2.00</u>	<u>0.67</u>	<u>1.66</u>
<u>25</u>	<u>1.30</u>	<u>1.30</u>	<u>0.43</u>	<u>0.86</u>	<u>1.75</u>	<u>1.75</u>	<u>0.58</u>	<u>1.33</u>
<u>30</u>	<u>1.2</u>	<u>1.13</u>	<u>0.40</u>	<u>0.80</u>	<u>1.5</u>	<u>1.41</u>	<u>0.50</u>	<u>1.11</u>
<u>35</u>	<u>1.10</u>	<u>0.98</u>	<u>0.37</u>	<u>0.73</u>	<u>1.38</u>	<u>1.22</u>	<u>0.46</u>	<u>0.95</u>
<u>40</u>	<u>1.00</u>	<u>0.84</u>	<u>0.33</u>	<u>0.66</u>	<u>1.25</u>	<u>1.05</u>	<u>0.42</u>	<u>0.83</u>
<u>45</u>	<u>0.90</u>	<u>0.73</u>	<u>0.30</u>	<u>0.60</u>	<u>1.13</u>	<u>0.91</u>	<u>0.38</u>	<u>0.74</u>
<u>50</u>	<u>0.8</u>	<u>0.62</u>	<u>0.27</u>	<u>0.53</u>	<u>1.0</u>	<u>0.77</u>	<u>0.33</u>	<u>0.67</u>
<u>55</u>	<u>0.76</u>	<u>0.57</u>	<u>0.25</u>	<u>0.50</u>	<u>0.94</u>	<u>0.71</u>	<u>0.31</u>	<u>0.61</u>
<u>60</u>	<u>0.71</u>	<u>0.51</u>	<u>0.24</u>	<u>0.47</u>	<u>0.89</u>	<u>0.64</u>	<u>0.30</u>	<u>0.55</u>
<u>65</u>	<u>0.67</u>	<u>0.46</u>	<u>0.22</u>	<u>0.44</u>	<u>0.83</u>	<u>0.57</u>	<u>0.28</u>	<u>0.51</u>
<u>70</u>	<u>0.62</u>	<u>0.41</u>	<u>0.21</u>	<u>0.41</u>	<u>0.78</u>	<u>0.51</u>	<u>0.26</u>	<u>0.48</u>
<u>75</u>	<u>0.58</u>	<u>0.36</u>	<u>0.19</u>	<u>0.38</u>	<u>0.72</u>	<u>0.46</u>	<u>0.24</u>	<u>0.44</u>
<u>80</u>	<u>0.53</u>	<u>0.32</u>	<u>0.18</u>	<u>0.35</u>	<u>0.67</u>	<u>0.40</u>	<u>0.22</u>	<u>0.42</u>
<u>85</u>	<u>0.49</u>	<u>0.28</u>	<u>0.16</u>	<u>0.33</u>	<u>0.61</u>	<u>0.35</u>	<u>0.20</u>	<u>0.39</u>
<u>90</u>	<u>0.44</u>	<u>0.24</u>	<u>0.15</u>	<u>0.30</u>	<u>0.56</u>	<u>0.30</u>	<u>0.19</u>	<u>0.37</u>
<u>95</u>	<u>0.4</u>	<u>0.20</u>	<u>0.13</u>	<u>0.27</u>	<u>0.5</u>	<u>0.25</u>	<u>0.17</u>	<u>0.35</u>
<u>100</u>	<u>0.37</u>	<u>0.19</u>	<u>0.12</u>	<u>0.25</u>	<u>0.46</u>	<u>0.23</u>	<u>0.15</u>	<u>0.33</u>
<u>105</u>	<u>0.34</u>	<u>0.17</u>	<u>0.11</u>	<u>0.23</u>	<u>0.43</u>	<u>0.21</u>	<u>0.14</u>	<u>0.32</u>
<u>110</u>	<u>0.31</u>	<u>0.16</u>	<u>0.10</u>	<u>0.21</u>	<u>0.39</u>	<u>0.19</u>	<u>0.13</u>	<u>0.30</u>
<u>115</u>	<u>0.28</u>	<u>0.14</u>	<u>0.09</u>	<u>0.19</u>	<u>0.35</u>	<u>0.18</u>	<u>0.12</u>	<u>0.29</u>
<u>120</u>	<u>0.25</u>	<u>0.13</u>	<u>0.08</u>	<u>0.17</u>	<u>0.32</u>	<u>0.16</u>	<u>0.11</u>	<u>0.28</u>

\*Loading rates to trenches, whether gravity or pressure dosed, are based on the gallons per day of wastewater applied to the bottom of the trench.

\*\*Loading rates to drip systems, pads, and mounds are based on the infiltrative surface area provided and are on an aerial basis.

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12VAC5-610-960. 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. Elevated sand mounds differ from pads in that they follow the natural contour of the site, are always an above ground system, may receive septic tank effluent and always require pressure distribution.

~~B. Mound systems are considered Type III systems (see 12VAC5-610-250 C).~~

C. Mound systems receiving septic tank effluent 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 ~~or its successor~~. Drip dispersal or low pressure distribution shall be used.

D. The manual referred to in subsection C of this section shall be used for the designated construction of elevated sand mounds. 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 12VAC5-610-250 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 12VAC5-610-250 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~~ TL-2 or better quality effluent may be used to reduce these distances as shown in Table X4.4.

7. The minimum absorption area for single family residential dwellings shall be 400 square feet.

E. Elevated sand mounds receiving TL-2 or better quality effluent shall adhere to the following additional design criteria;

1. The basal area (interface of fill sand and original soil surface) loading rate shall not exceed the values found in Table 5.5 for pads/mounds.
2. The minimum sand depth under the dispersal system is 6 inches.
3. The minimum soil cover over the absorption area is 6 inches. The finished sideslopes cannot exceed 1:4 (rise:run); Soil cover material shall support vegetative growth.
4. Vertical separation to limiting features as found in 12VAC5-613 shall be maintained under the entire infiltrative surface of the basal area.
5. Designs supported by Division approved manufacturer's design manuals may deviate from pressure dosing but require dosing to a gravity distribution system at a minimum.

## 12VAC5-610-966. Pads. [NEW section]

- A. A pad is an absorption area wider than 3 feet but not longer than 100 feet with a level infiltrative surface where the bottom of the pad meets the original soil. The minimum standoff to a limiting feature in accordance with 12VAC5-613 is to be met under the entire infiltrative surface.
- B. The minimum effluent quality dispersed to a pad is TL2 and pad bottom loading rates shall not exceed the values for pads noted in Table 5.5.
- C. Pads are generally installed on contour with the longest dimension of the pad following the contour. Minor deviations from surface contours are acceptable as long as the bottom of the pad is level (at the same elevation across the bottom of the pad), and intersects a similar soil horizon across its surface.
- D. Pads and trenches may be used together in a single system when each zone follows the design criteria found in this chapter and are separated by a minimum of 6 feet between the sidewall of the pad and the trench. When multiple pads are used on a site, the pads must be separated by the width of the pad as measured perpendicular to the slope along the contour. This separation applies to reserve pad areas as well. Reserve pad areas must be upslope of an active pad area.
- E. Pads shall be limited to sites with slopes 10% or less.
- ~~A-F.~~ F. Dosing. All pads must be dosed. Pad systems over 1,000 gallons per day must be pressure dosed. When pads are installed at less than 12 inches from the ground surface, timed dosing shall be used to disperse the effluent. Pads may be dosed a maximum of 6 times per day. Dose volume shall be less than or equal to 20% of the design wastewater flow [OR maximum of 6 doses per day.]
- G. The minimum absorption area for single family residential dwellings shall be 400 square feet.
- H. Pad Construction.
- a. Gravel pads shall have a minimum installation depth of 12 inches, unless in Texture Group I or II soils where the installation depth can be reduced to 8 inches. On sloping sites, the minimum installation depth is measured on the downhill side. The construction of the pad's gravity percolation line and gravel bedding shall follow 12VAC5-610-930E with the exception that the bottom of the pad is level and not sloping. Piping shall have a maximum center to center spacing of 9 feet.
- b. Gravel pads utilizing low pressure distribution shall follow 12VAC5-940 for construction and dosing cycle (volume). Gravel pads using low pressure distribution shall have a minimum installation depth of 12 inches, unless in Texture Group I or II soils where the installation depth can be reduced to 8 inches. On sloping sites, the minimum installation depth is measured on the downhill side. Piping shall have a maximum center to center spacing of 9 feet.
- c. Pads utilizing gravelless material as found in 12VAC5-610-930F shall follow 12VAC5-630F and the manufacturer's instructions on minimum depth of installation, but in no case shall a pad be installed at less than 8 inches from the original soil surface. Gravelless material shall have a maximum center to center spacing of 9 feet. On sloping sites, the minimum installation depth is measured on the downhill side.

Commented [DM(1)]: PLEASE REVIEW THIS CHANGE

Commented [DM(2)]: Received a comment that dosing should be addressed for pads. Options:  
(1) From 2001 Mound Component Manual for private onsite WWTS – 20% of design flow or less  
(2) Alternatively Alabama using a maximum of 6 doses per day.

Commented [DM(3)]: This modification allows a gravel pad (gravity or LPDO) to be installed as shallow as 8 inches in TG1 or II soils.

a.d. Designs supported by a Division approved manufacturer's design manual may deviate from depth of installation and timed dosing when the dispersal area is constructed in accordance with the approved manual.

Commented [DM(4)]: Same as for trenches.

- F. The minimum soil cover over the absorption area shall be 6 inches. If the cover is mounded above grade, the finished sideslope cannot exceed 1:4 (rise:run). Soil cover material shall support vegetative growth.

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Comments on May 2021 Draft of FAST Track to Amend Sewage Handling and Disposal Regulation, 12VAC5-610. Comments gathered from Sewage Handling and Disposal Regulation Advisory Committee meeting, emails, and VOWRA training event

880.B7 – Regarding height of control panel.

- The 30 to 42 inches from the ground surface is too specific.
- Suggest minimum of 30 inches from ground surface/final grade with no maximum
- Electrical code requires 28 inch minimum height from finish grade
- Some manufacturers will void warranty if less than 36 inches.

880.C – Pumps integral to treatment systems. “Conveyance pumps that are located in units with multiple compartments are not considered integral to the treatment unit”

- Concern that the statement in red does not restrict the use of recirculation pumps that recirculate and discharge (dual purpose)
- Intent is that often treatment units are sold with integral pump tanks for final dispersal. Those final dispersal/conveyance pumps are not integral to the treatment process and therefore are not eligible to be considered under this section.
- Consider “Pumps Integral to Treatment Systems including Recirculating/Discharge Combinations:”

800.D.2 – ¼ day emergency storage above high level alarm

- Recirculating media filters can store in the recirculation tank and this option should be considered and allowed. Should consider also backing up in the upstream septic tank as well.
- Suggestion: An alternative to quarter day storage can be provided elsewhere in the treatment train, however backup into the septic tank is not recommended. The purpose of the ¼ day storage in the pump tank is to allow flow to continue to accumulate without impacting the function of the septic tank.

950.C – installing below a restriction with treated effluent

- You can already go below a restriction with treated effluent. This amendment would gain a slight reduction in separation distance. Too controversial. Suggest dropping it.
- SHADAC polled – no objection to dropping this modification. No change to this section and will revert back to original language.

960.F. Alternate New Section – relating to dose volume

- This is for gravity dosing – make that clear.
- General agreement that a max of 6 doses per day is reasonable.

960.J. – Pad Construction

- Need to add minimum gravel depth like we have for trenches
- Is fabric required over gravel and distribution pipe?
- Does the distribution pipe need to be covered with gravel or just sit on top? Standard pipe like used in trenches w/ holes down?
- Amount of pipe required? right now the way I see it a 4" distribution pipe gets credit for 3' of dispersal area b/c that is what a gravel trench is. I don't know what a good number is but 3 may be too small and 9 is probably too much to achieve even-dispersal across the pad.

- Above commenter noted that referenced section should cover, but still thinks there should be a specification on how far from the edge of the pad and how much pipe is required. Suggests 4 feet of infiltrative surface (on either side) of 4 inch pipe.
- Cover should be 4 inches, not 6 inches.