Virginia Department of Health
Sewage Handling and Disposal Advisory Committee (SHADAC) Meeting

Date: March 24, 2021
Time: 10 am to 2 pm
Location: Webinar using Webex

SHADAC Members

Mike Lynn, Chairman – Home Builders Association of Virginia
Valerie Rourke – Department of Environmental Quality
Bill Timmins – At large
Alan Brewer – Virginia Association of Counties
John Schofield – siting in for Virginia Water Well Association
Scott Currie - - Manufacturer
Curtis Moore – Virginia Onsite Wastewater Recycling Association
Lance Gregory – Virginia Department of Health
Laura Farley – Virginia Realtors
Kim Harper – sitting in for Virginia Environmental Health Association
Matt Tolley – Virginia Association of Professional Soil Scientist

VDH Staff and Members of the Public

Reed Johnson	Dave Tiller	John Ewing	Josh Hepner
Marcia Degen	Tom Ashton	Joel Pinnix	John Sawdy
Jason Hackler	Sonal Iyer		

Administrative

1. Welcome and instruction on using Webex system.

Chairman Lynn welcomed the committee members and the public.

2. Approve agenda.

Mr. Gregory asked to add a segment to the agenda for Mr. Johnson to speak about a recent issue he observed.

Ms. Farley moved to approve the agenda. Mr. Brewer seconded the motion. All members were in favor.

3. Review summary from December 16, 2020 meeting.

Ms. Rourke provided revisions to summary. Mr. Timmons motioned to approve the summary with Ms. Rourke's edits. Ms. Rourke seconded the motion. All members were in favor.

Public Comment Period

There were no public comments.

Standing Agenda Items

1. Issues related to internal VDH policies and processes.
    a. Survey plat waivers for tank replacements; required Level 2.

Mr. Gregory shared recent concerns from a private consultant that was denied a survey plat waiver for a septic tank replacement. The proposed tank was going in an adjacent location to the existing tank and was well off of the property line. Mr. Gregory noted that Guidance Memorandum and Policies (GMP) 2017-01 could be revised to clarify conditions where a plat waiver should always be granted; for example tank replacement where tank is more than a set distance from the property line. Mr. Gregory also noted that GMP 2017-01 requires the local health department to perform a Level 2 review on all survey plat waivers, even if the matter is relatively straightforward.

Mr. Brewer suggested giving discretion to the Environmental Health Specialist regarding the Level 2 review, and taking a look at possible revisions to the regulations.

    b. Tank replacements; repair versus voluntary upgrade.

Mr. Gregory noted that on the same tank replacement case, there was a question of whether a tank replacement was a repair or a voluntary upgrade. He noted the regulations require a septic tank to be watertight, and therefore the replacement of any leaking tank could be considered a repair.

Mr. Brewer voiced concerned with modifying the standard of sewage on the ground, backing up, or pollution of ground water being considered failure

Dr. Degen noted the condition assessment is set up such that if a failure is observed and reported, then a repair permit is required.

Mr. Brewer commented that his memory is the term “not functioning as designed” is not a failure.

Mr. Pinnix noted that VDH has two existing policies that have a definition of failure identical to the regulatory definition of failure, and then a definition of “repair”. He suggested reconciling those definitions.

Chairman Lynn suggested circulating the definitions that Mr. Pinnix mentioned.

2. Reed Johnson

Mr. Johnson shared the background on a recent letter he sent to Mr. Gregory. Mr. Johnson was made aware of a homeowner that hired a private consultant to help build her dream house. She asked the soil scientist what it would cost to install that onsite system and he said $20,000. The

contractor goes out to provide an estimate, the house foundation is in, and finds he has to truck top soil to the top of the mountain. The contractor tells the owner the system will cost $40,000. The owner was shocked. Says she'll have to go to the bank to get more money, and the contractor never heard from the owner again. Mr. Johnson commented the industry needs to do better with homeowner education, as many designers are not providing owners with realistic cost estimates for their systems. He suggested a handout or video that could be given to owners, to identify who to ask about cost and what their maintenance cost will be.

Mr. Gregory agree that homeowner education is an issue, and suggested working with a university similar to a video for homeowners VDH worked with Virginia Tech to create.

Ms. Rourke suggested that the Virginia Department of Agriculture and Consumer Services (VDACS) might be able to help. VDACS has a consumer outreach branch.

Ms. Farley stated she would be happy to get education out to Virginia Realtor members. Virginia Realtors does a weekly podcast. Happy to have a guest on about what a home buyer needs to know. Virginia Realtors also uses Facebook live.

Mr. Johnson noted that VOWRA would be more than willing to host a video for people to view.

Chairman Lynn suggested working with EPA to pay for a video as part of Septic Smart Week.

Old Business

1. Proposed Fast-track Amendments to the Sewage Handling and Disposal Regulations

Dr. Degen walked through updated proposed fast tract amendments to the Sewage Handling and Disposal Regulations (see attached and also at https://www.vdh.virginia.gov/environmental-health/onsite-sewage-water-services-updated/news-of-interest/). Dr. Degen commented the purpose behind the amendments is to try to pull in components of GMP 147, so we have clearer process for designs covered under that policy. She noted that formal plans were not required for system designs under GMP 147.

In section 880, Dr. Degen noted that after discussion during last meeting, VDH left the two feet per second for general pumps, and simplified by adding a "general" section for force mains. VDH also struck language regarding control start and stop pumps "based on water level" since sometime we are using timers. A new sections for pump integral to treatment allows for the reduction to one foot per second for those types of pumps.

On that section, Mr. Johnson ask suggested adding "C" to "moving wastewater within the treatment unit, and out of the treatment unit, A and B do not apply". He stated there are recirculating systems that do not require quarter day storage on the back end, because the storage is on the front end. GMP 112 113 allowed to use a pump basin that didn't have quarter day storage. He also suggested that control panels should be a minimum of 30-40 inches above grade.
Mr. Ashton commented that if you have a pressurized system, the regulations provide for enhanced flow, but it also has to be the peak daily design flow divided by 4.

Reed – Whitepaper from James Converse, he talks about for highly treated effluent that it is better to dose 40-50 gallons at a time as opposed to enhanced flow slugs. Might want to look at that.

Mr. Johnson observed that in the field many engineers based designs on peak flow, but the timer settings are for 80% of peak. If you do large volumes for time dosing, you may still only send one dose a day.

Dr. Degen noted the section on going below a restriction was not in GMP 147 but is something VDH gets a request to address frequently. Suggested adding that the design for conventional systems would be based on most limiting horizon within 36 inches.

Dr. Degen noted that Mr. Pinnix has raised the question whether direct dispersal of effluent to ground water would apply for treated effluent below a restriction; would it be in conflict with direct dispersal language.

Mr. Moore encourage VDH to get away from using the term soil horizon, or use soil horizon(s), as it could be a subjective term.

Ms. Rourke ask if VDH was asking if we support the language. She commented it is a good idea to include "that is not a perched water table or free standing water".

Dr. Degen asked, if we add that language for TL-2 and TL-3, should we also include that limitation for septic tank effluent.

Mr. Moore commented the LGMI should have to extend 10 feet on both sides of the trench, not just one side.

Mr. Rourke noted some inconsistencies between the Sewage Handling and Disposal Regulations (SHDR) and the Regulations for Alternative Onsite Sewage Systems (AOSS Regulations) regarding the term absorption area. Section 12VAC5-610-950 can also apply to alternative systems that produce septic tank effluent; however, the AOSS Regulations use the term soil dispersal area. She suggested VDH define absorption area to include soil treatment or soil dispersal area. Absorption area isn't used anywhere in the AOSS regulations, but can apply to alternative systems.

Mr. Pinnix asked whether VDH has given any thought to creating a maximum depth for septic tank effluent. At some point in the soil column you are going to lose oxygen transfer. He suggested perhaps 48 inches might be a maximum.

Mr. Schofield commented that if you go very deep because of the texture of the soil, just vent the system so there is a mechanism for getting oxygen down deep.

Dr. Degen noted that proposed revisions also have a new proposed sizing table for TL-2 and TL-3 effluent.

Chairman Lynn asked whether the risk based approach justifies using vertical standoff for the entire infiltrative surface (K.2) for TL-2, TL-3, if you're not doing it for septic tank effluent. He also asked why VDH would require 1:4 rise/run when we don't do it for septic tank effluent.

Mr. Moore asked whether it is a new interpretation that you can use septic tank effluent in a mound.

Dr. Degen noted you can still build a Wisconsin Mound if it meets all of the requirements, but if you are in the Chesapeake Bay you would need a treatment waiver for nitrogen.

Ms. Rourke noted the pad section H needs clarification of what is intended regarding contour, may help to add "elevation".

Mr. Moore comment that VDH also needs to anticipate whether we mean the lower part of the pad to be along contour. He noted it could be almost impossible to get both the top and bottom of the pad on contour without making it an irregular shape. He suggested that on contour be along the bottom.

Chairman Lynn commented that as long as you are meeting the separation distance, what difference does it make if you are deeper along the contour, as long as you maintain the standoff.

Regarding next steps, Dr. Degen commented that VDH is shooting to get the proposal before the Board of Health in September and asked for comments by April 15th.

2. Environmental Health Database Update

Ms. Iyer reported the interface between VDH's operation and maintenance portal and Online RME and Carmody is working. The data is starting to come in. When bulk reports are coming in there are a few glitches. We are seeing an uptick on the number of venders creating a login for the portal. We removed the requirement for operators to have to log into two different systems. There is also a payment portal through each of the third parties.

She reported that VDH is also meeting with a focus group, which has met a few times. VDH is scheduling the next meeting for the focus group. A lot of the features that the focus group request are possible for development, but they would be a product wide change. We also want to start talking about conventional system operation and maintenance report submissions. VDH needs a portal that can support that, so we need to figure out what data fields are needed for that portal.

Mr. Brewer asked if for the upgrades to the system that were not in the original scope of work, is there an option to expand the scope of work.

Ms. Iyer reported yes, and we are willing to push for that additional funding.

3. Senate Bill 1396

Mr. Gregory provided an overview of Senate Bill 1396 and the next steps for implementation. The bill establishes a Commonwealth policy to prioritize access to wastewater treatment that protects public health and the environment. That policy include improved public education, collaborate and coordinated grants, innovative use of funding, a preference for community based projects, and integrated solutions across sewage and onsite.

The bill also codifies the Wastewater Infrastructure Workgroup, and continues the group until 2030. Additional support was added to the group from external stakeholders, and additional funding was provided to expand current mapping efforts with VIMS. The bill also directs VDH to incorporated considerations for the impacts of climate change in the SHDR. This will be part of the broader effort to revise the regulations.

The bill also allows VDH to use the indemnification fund for loans and grants for to assist low income households with septic repairs. Funding was provided for VDH to hire a Wastewater Infrastructure Manager. That position will be tasked with developing the framework for the grant and loan program.

4. Revising the Sewage Handling and Disposal Regulations, 30,000 foot view.

Mr. Gregory then provide presentation on developing a strategic plan for the onsite program to assist in directing the overall revisions to the regulations (see attached). He covered whey developing a strategic plan is important, whether the purpose of the program has changed, the idea of thinking about the program in the broad context of wastewater infrastructure and not strictly onsite wastewater, and shared initial thoughts on the plan from VDH staff.

Mr. Brewer noted a 2017 exercise completed by the SHADAC to identify areas of need, where there was a common theme of regulatory reform. The SHADAC put together a subcommittee and that was memorialized in a memorandum. He suggested looking back at that. He thought it important that the SHADAC put effort into safe wastewater for everyone, adequate wastewater is a human right as well. He commented on communities with straight pipes, where homes are worth $30-40K, and a community solution is millions of dollars and ends the project right off the bat.

Mr. Johnson commented on a project inquiry from Columbia, Virginia. What he ran across is direct discharge for large flows is no longer accepted. With nitrogen credit scheme, it is hard to get credits, and that is what shoots these jobs in the foot. Small communities can be handled at a reasonable price per gallon if we can look at direct discharges for small systems. The limits designers have to hit dictate whether we can help someone.

Chairman Lynn commented that every time we make a major change we haven't involved localities enough, and suggested more to involve them on this revision. Lots of opposing views.

Mr. Moore noted that VDH should consider a place in the rules for existing systems to have a different standard.
Mr. Tolley commented that VDH is no longer doing a lot of work. Seems VDH staff should continue to do repairs, which would keep VDH staff trained.

Ms. Rourke noted that we have gone down this road before with trying to revise regulations. What is it that this group, the SHADAC, does? How do we make amendments that address all of these different things? Do we write a regulation that tries to address the majority of the problems, or all of the problems?

Adjourn

Virginia Department of Health
Sewage Handling and Disposal Advisory Committee (SHADAC) Meeting
Agenda

Date: March 24, 2021
Time: 10 am to 2 pm
Location: Webinar using Webex (use instructions below to join)

You can access the meeting on your computer, phone, or mobile device with the meeting link below.

https://vdhoep.webex.com/vdhoep/j.php?MTID=mb4b4527e5b21953baf0cf0d5e1407a19

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Agenda

Administrative (15 minutes)
1. Welcome and instruction on using Webex system. (5 minutes)
2. Approve agenda. (5 minutes)
3. Review summary from December 16, 2020 meeting. (5 minutes)

Public Comment Period (15 minutes)

Standing Agenda Items (30 minutes)
1. Issues related to internal VDH policies and processes. (30 minutes)
    a. Survey plat waivers for tank replacements; required Level 2. (15 minutes)
    b. Tank replacements; repair versus voluntary upgrade. (15 minutes)

Break (5 minutes)

Old Business (60 minutes)
1. Proposed Fast-track Amendments to the Sewage Handling and Disposal Regulations (40 minutes)
2. Environmental Health Database Update (20 minutes)

Break (5 minutes)

Continue Old Business (45 minutes)
3. Senate Bill 1396 (45 minutes)

Break (5 minutes)

Continue Old Business (60 minutes)

4. Revising the Sewage Handling and Disposal Regulations, 30,000 foot view. (60 minutes)

Adjourn

12VAC5-610 New Definitions Proposed:

"Treatment level 2 effluent" or "TL-2 effluent" means secondary effluent as defined in 12VAC5-610-120 that has been treated to produce BOD_5 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_5 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.

NOTES: ‘settled sewage’ dropped from previous version

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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.

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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.

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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.

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

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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 system are pumps that move wastewater within the treatment unit. 12VAC5-610-880.A and B do not apply to these integral pumps that are internal to a treatment unit.

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.

3. When timed dosing is required by this chapter, the working volume shall be a minimum of ¾ of the daily design flow volume.

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

5. 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.

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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 for septic tank effluent and shall exhibit no characteristics that indicate wetness on 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. The design loading rate shall be based on the most limiting percolation rate in the 36 inch profile below the restriction.

3. The soil horizon below the soil restriction (that is not a perched water table or free standing water?) shall be a minimum of 30 inches thick for TL2 effluent with disinfection and shall exhibit no characteristics that indicate wetness or restriction of water movement. The absorption trench bottom shall be placed so that at least 18 inches of the soil horizon separates the trench bottom from any indication of wetness or restriction. At least one foot of the absorption trench side wall shall penetrate the soil horizon. The design loading rate shall be based on the most limiting percolation rate in the 30 inch profile below the restriction.

Commented [DM(1]: Would allowing to go below a perched water table conflict with the definition of direct dispersal? Should we limit to restrictions without a perched or free water table for any type of effluent or just TL2 and TL3? Seems that if you limit it for treated effluent, you should definitely limit it for STE.

FYI "Direct dispersal of effluent to ground water" means less than six inches of vertical separation between ground water and the point of effluent application or the bottom of an effluent-dispersal trench or other excavation. Other excavation excludes the following: minor tillage of the soil surface without soil removal; replacement of fill material with better quality fill material as determined by the department to improve the ability of the site to treat wastewater; house foundations; tank excavations; force main and header line excavations; and soil disturbances, including preexisting drainfields installed prior to July 17, 2017, that are not designed for surface or ground water drainage, and do not create a direct conduit to ground water.

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4. The soil horizon below the soil restriction (that is not a perched water table or free standing water?) shall be a minimum of 24 inches thick for TL3 effluent with disinfection and shall exhibit no characteristics that indicate wetness or restriction of water movement. The absorption trench bottom shall be placed so that at 12 inches of the soil horizon separates the trench bottom from any indication of wetness or restriction. At least one foot of the absorption trench side wall shall penetrate the soil horizon. The design loading rate shall be based on the most limiting percolation rate in the 24 inch profile below the restriction.

Commented [DM(2]: This additional language is intended to avoid a conflict with 12VAC5-613-80.12 (need for mounding calculations)

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 side 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.

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^2/100 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 $y = Ft^2/100$ Gals

x = 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

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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.

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Table 5.4.
Area Requirements for Absorption Trenches Receiving Septic Tank Effluent.

Percolation Rate (Minutes/Inch)	Area Required (Ft²/100 Gals)			Area Required (Ft²/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

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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 in 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 form 12VAC5-610-950.E.1 and 12VAC5-610-950.F. 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.

Commented [DM(3]: Do we need to reference Table 2 in AOSS Regs?

3. The minimum cover over the absorption area is 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.

4. The minimum installation depth is not required to be increased for slope.

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5. 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.

6. When trenches are installed at less than 12 inches from the ground surface, timed dosing shall be used to disperse the effluent.

7. 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.

Commented [DM(4]: Picks up GMP 147 pg 10, letter D.

8. Designs supported by Division approved manufacturer's design manuals may deviate from 12VAC5-610-950.K5 and K6.

9. Not withstanding 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(5]: Preferred by VDH staff to maintain a minimum for SFH and did not see value in having two separate standards for STE and TL2/TL3

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

	TL-2 Effluent				TL-3 Effluent			
Percolation Rate (mpi)	Pressure Trench* Loading (gpd/ft^2)	Gravity Trench* Loading (gpd/ft^2)	Drip** Loading) (gpd/ft^2)	Pad/Mound Loading** (gpd/ft^2)	Pressure Trench* Loading (gpd/ft^2)	Gravity Trench* Loading (gpd/ft^2)	Drip** Loading (gpd/ft^2)	Pad/Mound Loading** (gpd/ft^2)
5	1.8	1.80	0.60	1.20	3.0	3.00	1.00	1.66
10	1.67	1.67	0.56	1.11	2.67	2.67	0.89	1.66
15	1.53	1.53	0.51	1.02	2.33	2.33	0.78	1.66
20	1.4	1.40	0.47	0.93	2.0	2.00	0.67	1.66
25	1.30	1.30	0.43	0.86	1.75	1.75	0.58	1.33
30	1.2	1.13	0.40	0.80	1.5	1.41	0.50	1.11
35	1.10	0.98	0.37	0.73	1.38	1.22	0.46	0.95
40	1.00	0.84	0.33	0.66	1.25	1.05	0.42	0.83
45	0.90	0.73	0.30	0.60	1.13	0.91	0.38	0.74
50	0.8	0.62	0.27	0.53	1.0	0.77	0.33	0.67
55	0.76	0.57	0.25	0.50	0.94	0.71	0.31	0.61
60	0.71	0.51	0.24	0.47	0.89	0.64	0.30	0.55

65	0.67	0.46	0.22	0.44	0.83	0.57	0.28	0.51
70	0.62	0.41	0.21	0.41	0.78	0.51	0.26	0.48
75	0.58	0.36	0.19	0.38	0.72	0.46	0.24	0.44
80	0.53	0.32	0.18	0.35	0.67	0.40	0.22	0.42
85	0.49	0.28	0.16	0.33	0.61	0.35	0.20	0.39
90	0.44	0.24	0.15	0.30	0.56	0.30	0.19	0.37
95	0.4	0.20	0.13	0.27	0.5	0.25	0.17	0.35
100	0.37	0.19	0.12	0.25	0.46	0.23	0.15	0.33
105	0.34	0.17	0.11	0.23	0.43	0.21	0.14	0.32
110	0.31	0.16	0.10	0.21	0.39	0.19	0.13	0.30
115	0.28	0.14	0.09	0.19	0.35	0.18	0.12	0.29
120	0.25	0.13	0.08	0.17	0.32	0.16	0.11	0.28

*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 may 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

Commented [DM(1]: Had a comment to move 960A and 966 A into definitions.

The guidance we've received from the Registrar is that if you use a term throughout the regulations, the definition should be in the "definition" section. But if you only use a term once, or in one section, then that section should serve as the definition for the term.

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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 ~~4.~~42 of 12VAC5-613.

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 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 Table 2.

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.

Commented [VP2]: Is it proper for us to reference to another regulations. I'm thinking we may need to incorporated the separation distances into the SHDR as well.

Commented [VP3]: See previous comment.

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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. The minimum standoff to a limiting feature in accordance with 12VAC5-613 is to be met under the entire infiltrative surface.

Commented [DM(1]: Can we reference 613 or should we put Table 2 in here?

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. A system may contain one or more pads, but the combined area of all pads in a system may not exceed 1,200 square feet.~~

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.

E. Pads shall be limited to sites with slopes 10% or less.

F. All pads must be dosed. Pad systems over 1,000 gallons per day must be pressure dosed.

G. When pads are installed at less than 12 inches from the ground surface, timed dosing shall be used to disperse the effluent.

H. Pads must be installed on contour with the longest dimension of the pad along the contour. Every effort should be made to minimize the linear loading rate.

I. When multiple pads are used on a site, the pads must be separated by the width of the pad across contour.

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

J. The minimum installation depth is equal to the sidewall of the dispersal system construction. Gravel pads shall have a minimum installation depth of 12 inches. Pads using gravelless materials shall have a minimum installation depth equal to the height of the gravelless material being used. On sloping sites, the minimum installation depth is measured on the downhill side. Designs supported by a Division approved manufacturer's design manual may deviate in accordance with the approved manual.

K. No portion of the pad bottom or the sidewall may be installed in fill material.

L. The minimum cover over the absorption area is 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.

Developing Strategic Plans for Our Programs

Why develop a strategic plans for our programs?

- Climate change is impacting systems today.
- Inequities in waste disposal and access to clean water become better understood; willingness to address.
- Privatization above 85%.
- Sewage Handling and Disposal Regulations – revisions about to begin.
- Private Well Regulations – proposed stage.
- Rainwater Harvesting Regulations – developing complete new program.
- SWIFT – First full scale project under development.
- Marinas – Significant discussion about Bay wide no discharge zone.
- Becoming more increasingly involved in new and novel environmental health issues (e.g. wastewater surveillance).

Has our purpose change?

- ***SB1396 - It is the policy of the Commonwealth to prioritize universal access to wastewater treatment that protects public health and the environment and supports local economic growth and stability.***

- ***HJ538 - Access to clean, potable water in amounts that will ensure an acceptable standard of living is a necessary human right;***

- ***HB2074 - "Meaningful involvement" means the requirements that (i) affected and vulnerable community residents have access and opportunities to participate in the full cycle of the decision-making process about a proposed activity that will affect their environment or health and (ii) decision makers will seek out and consider such participation, allowing the views and perspectives of community residents to shape and influence the decision.***
- So what does this mean for us?

Wastewater Program

- Not just onsite.
- “Wastewater treatment that protects public health and the environment”.
- Determine wastewater treatment that is fully protective for each particular situation.
- Requires identification of wastewater infrastructure needs.
- Requires identification of community based vs. individual solutions.
- Requires significant increase in funding for improvements.

Initial Thoughts

- What does it mean for a system to be protective of public health?
- Regulations that take into account the useful life of a system.
  - Considerations for climate change.
  - Eliminate the “set it an forget it” mindset.
- Consider how regulations impact cost for end users versus public health impacts.
  - Consider different, more efficient, processes for permitting (e.g. risk based, general permits for simple systems).
  - Redundant child protection for tank risers.
- Less emphasis on design, more emphasis on operation.
  - Are the systems we’ve permitted working, are they protecting the health of their users and their communities.
  - Build trust in the private sector.

Initial Thoughts

- Accountability for private sector providers.
  - Increased trust come with increased accountability.
  - Addressing poor design submissions.
  - Make processes clearer to reduce hand holding.
- Focus on community solution as opposed to individuals.
  - Considering community needs when working individual repairs.
  - Wastewater infrastructure management areas.
- Finding other beneficial uses of onsite systems.
  - Uses of green spaces provided by community systems.
- Improved up front awareness of cost and requirements.
  - Owners don’t understand the cost, O&M requirements.
- Responsible management entity model.

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Initial Thoughts

- Modernize enforcement strategies.
  - Identifying failing system with highly treated effluent.
- Seek additional resources for LHDs and system owners.
- Changing the way we provide training.
- Improve data and data integration.

Next Steps

- Survey seeking LHD feedback.
- Looking for volunteers.
- Discussion with SHADAC.

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