

RULE MAKING DOCUMENT
Responses to Written Comments
Written Public Comment Period Ending June 24, 2015
Environmental Quality Council
Docket 15-3101

Wyoming Water Quality Rules and Regulations
Chapter 25
Small Wastewater Systems



July 2, 2015

List of Commenters

Fremont County Planning and Rural Addressing

Campbell County Department of Public Works

Louis Harmon, LS PE PG

Vaughn Concrete Products, Inc.

Infiltrator Water Technologies

Lorie Cahn, PG

Comments and Responses

General Comments

Entity: Fremont County Planning and Rural Addressing

Comment: Fremont County would like for DEQ to recognize constructed wetlands as an alternative for slow percolating soils where conditions or preference do not allow for the use of wastewater lagoons.

Response: WDEQ/WQD reviewed this request and the article included with the comment letter. WDEQ/WQD has been pleased to assist Fremont County in permitting the alternative constructed wetlands. However, this alternative is still new enough to our program that we are not prepared at this time to fully implement it into Chapter 25 as a standalone option with specific guidance, as we do other established systems. We believe it is appropriate that permits for constructed wetlands follow the process outlined in Section 5, Systems Not Specifically Covered by This Rule. We look forward to working with delegated authorities to develop guidance.

Entity: Louis Harmon

Comment: Mr. Harmon believes the proposed regulations are unnecessarily complex and too restrictive, in certain instances. He would prefer less technical jargon.

Response: WDEQ/WQD realizes that Chapter 25 is used by individual home or property owners who are unfamiliar with the technical jargon. However, this chapter is also used by the professional staff of the regulated community as well as private engineering consultants. WDEQ/WQD has worked throughout the advisory board process of this rulemaking to minimize the technical language, but in some instances it cannot be avoided. In those cases we have added definitions to help readers understand. WDEQ/WQD's concern is that if the content is over simplified and generalized some of the important considerations will be lost, leading to the possibility that functionality, health and safety will be jeopardized.

Section 3

Entity: Fremont County Planning and Rural Addressing

Comment: Fremont County requests the addition of “distribution box”, “serial distribution”, and “soil exploration pit” to the definitions section.

Response: WDEQ/WQD reviewed this request. We will add a definition of "serial distribution," but we believe that "distribution box" and "soil exploration pit" are self-explanatory and do not require additional clarification.

Section 4

Table 1

Entity: Fremont County Planning and Rural Addressing

Comment: Fremont County disagrees with the flows for unfinished basements. Fremont County believes that instead of counting unfinished basements as two additional bedrooms, that unfinished basements should only count as one bedroom or should be considered on a case-by-case basis.

Response: WDEQ/WQD is proposing that basements count as two bedrooms instead of one to prevent under sizing of systems. Quite often, unfinished basements are later finished into bedrooms. The proposed flow rate for basements is simply building in a factor of safety.

Entity: Campbell County Department of Public Works

Comment: Campbell County disagrees with the flow rates in Table 1. Campbell County, as a delegated authority for small wastewater systems, requires a higher flow rate of 200 gpd per bedroom, instead of 150 gpd with a graduated amount per additional bedroom, as proposed by WDEQ/WQD. Campbell County is concerned that the flow rates proposed by WDEQ/WQD will result in more system failures.

Response: Table 1 reflects the peak daily usage for residences and represents the middle range of flows from *Wastewater Engineering Treatment and Reuse*, Metcalf and Eddy, 2003 Edition. The installation of low flow plumbing fixtures and energy efficient appliances has reduced flows in a portion of the systems in Wyoming. As a delegated authority, Campbell County may adopt flow rates that are more stringent than those of the State. However, WDEQ/WQD believes that the proposed flow rates will result in appropriately sized systems and that we will not see system failures due to the flow rate change.

Entity: Fremont County Planning and Rural Addressing

Comment: Fremont County believes there are discrepancies in Table 1 of Section 4. Table 1 indicates a flow rate of 550 gpd for a five bedroom home. In Section 9(a)(iii)(A), the minimum liquid volume of a septic tank is 1000 gallons for residences up to four bedrooms. Additional capacity of 150 gpd is required for each bedroom over four. The previous regulation listed the flow rate for a four

bedroom home at 600 gpd. Fremont County wonders why a 1,000 gallon tank cannot be used for a five bedroom home under the new regulation.

Additionally, Fremont County believes that there is a discrepancy between the flow rates in Table 1 and the flow rate in Section 9 (a)(iii)(A). Table 1 shows a difference of 80 gpd between four and five bedrooms, but Section 9(a)(iii)(A) requires additional capacity of 150 gallons per bedroom for each bedroom over four.

Response: Table 1 reflects the peak daily usage for residences and represents the middle range of flows from *Wastewater Engineering Treatment and Reuse*, Metcalf and Eddy, 2003 Edition. The figures from Tables 1 and 2 are primarily used to size the total infiltration surface area of a soil absorption system, not the minimum septic tank size.

The septic tank capacity in Section 9(a)(iii)(A) is based on EPA's *Onsite Wastewater Treatment Systems Manual* (2002). Page 4-39 of EPA's *Onsite Wastewater Treatment Systems Manual* explains that "septic tanks must have sufficient volume to provide an adequate hydraulic residence time for sedimentation." If we allow a 1000 gallon tank for a 5 bedroom home and that home operates at peak flow for more than a day, the tank capacity will be exceeded, the hydraulic residence time for sedimentation will be reduced, and the system will not operate effectively, potentially leading to failure. The *Onsite Wastewater Treatment Systems Manual* discusses the *International Private Sewage Disposal Code* (1995) and lists the recommended tank size for a 5 bedroom home at 1,425 gallons. Using the requirement in our proposed 9(a)(iii)(A) would require a minimum tank size of 1000 gallons plus 150 additional gallons for a total minimum tank size of 1150 gallons.

Entity: Louis Harmon

Comment: Mr. Harmon states that the flows in Tables 1 and 2 have not been changed for forty years and is concerned that the flows listed do not account for reduced water use due to low flow plumbing fixtures and energy efficient appliances.

Response: WDEQ/WQD is proposing several updates (compared to the last time the flow rates were updated in 1984) of the flow rates found in Table 1 and 2. For instance, while a 1 bedroom residence requires a flow rate of 150 gallons in both the current version and the proposed version, the flows for additional bedrooms have changed. For residences with more than one bedroom, the current version requires 150 gallons for each additional bedroom. Under the current version of the chapter, a two bedroom home would require flows of 300 gallons; for three bedrooms 450 gallons, and for four bedrooms 600 gallons. But the proposed version requires 280 gallons for two bedrooms, and 390 gallons for three bedrooms, 470 gallons for four bedrooms. Residences with more than six bedrooms add an additional 80 gallons per day.

The proposed flows reflect the peak daily usage for residential and nonresidential units and represent the middle range of flows from *Wastewater Engineering Treatment and Reuse*, Metcalf and Eddy, 2003. The flow rates were chosen because WDEQ/WQD recognizes that while many homes and businesses have installed low flow plumbing fixtures and energy efficient appliances, not every home and business in the state has done so.

Section 6

6(f)

Entity: Fremont County Planning and Rural Addressing

Comment: Fremont County believes that soil exploration pits are not always necessary. They believe that using information from permits from neighboring properties on the same soil type along with NRCS soil surveys can be used to determine site suitability. Fremont County notes that exploration pits can be helpful in many instances to verify soil conditions.

Response: WDEQ/WQD agrees with Fremont County on the point that exploration pits can be helpful to verify soil conditions, which is why we are continuing to require them in addition to percolation tests. Our proposed changes to the section merely clarify the requirement. While WDEQ/WQD agrees that the NRCS soil surveys can be a helpful resource in determining the suitability of a site, we are hesitant to make the soil exploration pit optional. It is our experience that soil conditions can and often do change over small distances, including neighboring properties. The soil exploration pit, along with the percolation test, lead to a more accurate evaluation of the site.

Section 7

7(b)(i)(A)

Entity: Campbell County Department of Public Works

Comment: Campbell County noted that instead of limiting the sidewall for leach lines to 12 inches maximum, as WDEQ/WQD is proposing, that they use three feet and do not reduce the flow for multiple bedrooms. They believe their three-foot sidewall allowance works well for them.

Response: Delegated counties can always be more conservative or stringent than the minimum standards of the proposed Chapter 25. Larger flow rates will lead to larger absorption field footprints, which has been a concern for other counties in Wyoming. However, the depth of the trench can affect the effectiveness of the treatment, leading to anaerobic treatment conditions. WDEQ/WQD favors a smaller trench with the sidewall credit of 12 inches so that the trench offers optimal aerobic treatment.

7(b)(iii)

Entity: Infiltrator Water Technologies

Comment: Infiltrator Water Technologies requests that Section 7(b)(iii) be modified to include a 30% reduction and be rewritten to state “For standard bed systems.” Infiltrator Water Technologies further requests that a new subsection be added to address chamber sizing in bed applications.

Response: WDEQ/WQD considered this request. We agree that the 30% reduction needs to be added in, so we will revise the subparagraph to reflect this. However, the remaining points of this concern are addressed in the design package that applicants submit for coverage under the general permit.

7(c)

Entity: Campbell County Department of Public Works

Comment: Campbell County is wondering how WDEQ/WQD proposes to perform percolation tests on the fill material for systems requiring additional fill material due to percolation rates of less than one minute per inch. Campbell County also notes that in these situations the percolation rate on the trench will be slow but the rate for the sidewalls will not be slow.

Response: All systems with percolation rates of less than one minute per inch will require design by a professional engineer, per Section 2 of this chapter. Section 7(c) does not require a percolation test; it requires the professional engineer to account for the percolation rate of the fill material in the system design.

Section 9

Entity: Louis Harmon, Vaughn Concrete Products, Lorie Cahn

Comment: Mr. Harmon, Vaughn Concrete Products, and Lorie Cahn are concerned that the changes in Section 9 will negatively affect precast concrete tank manufacturers in Wyoming and that the increased design cost will be passed to the consumer.

Response: WDEQ/WQD has reviewed the passage and we do not expect the proposed changes to significantly impact the precast concrete tank manufacturers. The proposed changes affect the baffles, which are plastic pipe, and do not affect the concrete forms. Precast baffles would be trimmed to size, as needed.

Entity: Vaughn Concrete Products, Inc.

Comment: Vaughn Concrete Products note that their standard precast concrete tanks are manufactured per ASTM C1227. They request that WDEQ/WQD state that all precast concrete septic tanks shall satisfy the requirements of ASTM C1227.

Response: WDEQ/WQD compared ASTM C1227 to our proposed regulations and we find that the two are largely aligned. However, one exception would be the baffle distance above the liquid level. Our proposed regulation, based on EPA's *Onsite Wastewater Treatment Manual* (2002), requires tees or baffles to extend above the liquid level a minimum distance of six (6) inches, to extend below the liquid level a distance equal to thirty to forty percent (30-40%) of the liquid depth, and requires a minimum of three (3) inches of clear space to be provided over the top of the baffles or tees. The ASTM C1227 standard, at section 7.4, requires that the inlet baffle or tee shall extend at least 8 inches below the liquid level and at least 5 inches above the liquid level, and the outlet. The ASTM standard requires an outlet filter device at the effluent pipe and requires that these filters extend below the liquid line at least 10 inches but not more than 40% of the depth of the liquid, and requires that it extend a minimum of 5 inches

above the liquid level line. We believe that the EPA recommendations are similar enough to the ASTM standard that we do not see justification for rewriting the section to incorporate the ASTM standard.

Entity: Vaughn Concrete Products

Comment: Vaughn Concrete Products requests that WDEQ/WQD require access openings in the lid/roof over the divider wall to allow the environment to equalize to promote the anaerobic process in both septic tanks and grease interceptors.

Response: WDEQ/WQD reviewed this request. We disagree that treatment needs to be promoted in a grease interceptor, since the function of the grease interceptor is to remove the fat, oil, and grease from the waste stream before sending the remaining wastewater to the septic tank for treatment. The passage will remain as written.

Entity: Lorie Cahn

Comment: Ms. Cahn is concerned that approved tank manufacturers are unaware of the proposed changes to the rule.

Response: WDEQ/WQD did not include tank manufacturers in the stakeholder process. Our stakeholder list was primarily comprised of our delegated authorities. However, WDEQ/WQD publicly noticed proposed changes to our rule via the Casper Star-Tribune and our automated Listserv on April 26, 2013; August 19, 2013; March 18, 2014; and June 10, 2014. During those comment periods we received comments from delegated authorities, members of industry who were interested in the rulemaking, and members of the public who were interested in the rulemaking. At the July 25, 2014 Water and Waste Advisory Board meeting, Casper-Natrona County Health Department submitted comments on behalf of Casper area tank manufacturers. We worked with the advisory board and the Casper-Natrona County Health Department to adjust the language to keep our intent but eliminated the problematic wording.

9(a)(i)

Entity: Infiltrator Water Technologies

Comment: Infiltrator Water Technologies requests that the passage be changed to “septic tanks shall be fabricated or constructed of concrete, fiberglass, thermoplastics, or an approved material...”

Response: WDEQ/WQD reviewed this request and declines Infiltrator Water Technologies' request to adjust the statement. Thermoplastics may be evaluated under Section 5 as a new technology.

9(a)(ii)(A)

Entity: Campbell County Department of Public Works

Comment: Campbell County requests the minimum cover depth change from 6 inches, as proposed by WDEQ/WQD, to 24 inches to decrease the chance of freezing at the top of the tank and at the inlet and outlet lines.

Response: Delegated counties may adopt more stringent standards than the minimum standards of the proposed Chapter 25. The proposed regulation states that the tanks need to be designed to withstand any anticipated loads. The passage will remain as written.

9(a)(iv)(A)

Entity: Fremont County Planning and Rural Addressing

Comment: Fremont County believes that a single compartment tank cannot be effectively partitioned in the field.

Response: The proposed regulation allows single compartment tanks as long as they have "a length to width ratio of no less than 2 to 1, or be so partitioned as to protect against short circuiting of flow. The intent of the passage was to give installers flexibility to handle a variety of circumstances. The passage will remain as written.

9(a)(iv)(E)(I)

Entity: Fremont County Planning and Rural Addressing

Comment: Fremont County believes that requiring the tees/baffles to extend above the liquid level a minimum of six inches is unreasonable. The tanks in Fremont County have three inches above the outlet baffle. Fremont County believes that requiring the extension of six inches creates a blockage potential.

Response: For clarification, the proposed rule only requires six inches of separation between the top of the tee and the liquid level. It does not require an extension of the top of the tee. The blockage concern that has been raised does not exist.

The requirement that the tee extend at least six inches above the liquid level can be met by the dimension of the tee itself.

9(a)(iv)(E)(III)

Entity: Vaughn Concrete Products

Comment: Vaughn Concrete Products notes that some of their tanks do not provide three inches over the top of the pipe at the inlet end. Their goal is to provide a minimum of ten percent free air space over the liquid level of the tank and a way for air to move between compartments. They typically extend the tees into the access openings to ensure three inches clear space over the top of the tees and baffle.

Response: WDEQ/WQD reviewed this comment and compared it to EPA's *Onsite Wastewater Treatment Systems Manual (2002)* and ASTM C1227. ASTM C1227 recommends in 7.21 that the air scum volume above the liquid shall be at least 12 1/2% of the volume of liquid but not less than 9 inches for the entire surface above liquid. EPA recommends on page 4-41, a clear space of at least 9 inches above the liquid depth to allow for scum storage and ventilation. They note that the rising leg of the tee should extend at least 6 inches above the liquid level to prevent the scum layer from plugging the inlet. WDEQ/WQD encourages Vaughn Concrete Products to continue extending the tees into the access

openings to ensure three inches of clear space over the top of the tees and baffle to allow ventilation and prevent inlet plugging by the scum layer.

Entity: Infiltrator Water Technologies

Comment: Infiltrator Water Technologies requests that the minimum clear space requirement over tees be reduced to one inch, but is not requesting that the regulation be altered with respect to baffles.

Response: WDEQ/WQD reviewed this request. We disagree that the minimum clear space requirement needs to be rewritten to one inch. We believe that the proposed requirement can be achieved through a riser or modification to the inlet tee.

9(d)(x)

Entity: Vaughn Concrete Products

Comment: Vaughn Concrete Products requests this passage be changed. They believe WDEQ/WQD should not require that the divider wall extend to the ceiling of the tank. They believe it is important to have free air space across the area over the liquid surface. They believe it is important to promote the anaerobic process, similar to a septic tank.

Response: The function of a grease interceptor is to separate fats, oils, and grease from wastewater. Grease interceptors do not perform treatment in the same way that a septic tank does; therefore, air circulation is not essential for the operation of a grease interceptor. The divider wall of a grease interceptor ensures that the grease, fat, and oil stay in the first chamber. The remaining wastewater progresses to the second chamber, leaving behind the greasy components, then progresses on to the septic tank for treatment. In its white paper titled "*Design Consideration and Discussion of Precast Concrete Gravity Grease Interceptors*," the National Precast Concrete Association recommends that there should be at least one partition wall in an interceptor to keep floating grease away from the outlet." WDEQ/WQD will leave the passage as written.

Section 11

11(a)(vi)(F)

Entity: Fremont County Planning and Rural Addressing

Comment: Fremont County states that trenches cannot be used in soils that percolate greater than 60 mpi.

Response: WDEQ/WQD is not forbidding the use of trenches soils percolating at rates greater than 60 mpi; however, these soils would require that a professional engineer design the system and stamp the application for submission, per Section 2. The subparagraph is noting, for the professional engineer who will be designing systems for slow percolating soils, that the trenches (wall to wall) must increase to nine feet, and that this expansion cannot count as reserve area. The professional engineer who is required to

design systems for areas with percolation rates above 60 mpi can determine whether a trench system is appropriate for the site and design the system accordingly.

11(a)(viii)(C)

Entity: Fremont County Planning and Rural Addressing

Comment: Fremont County believes that the inspection port requirement should be optional.

Response: WDEQ/WQD disagrees with the idea of making the inspection port optional. Inspection ports provide for inspection of the system performance. If these are optional, and therefore are not included on each installation, inspection and troubleshooting would be much more difficult and time consuming. This additional difficulty would potentially raise the cost of operation and maintenance for homeowners, which we do not favor.

11(a)(viii)(F)

Entity: Fremont County Planning and Rural Addressing

Comment: Fremont County believes that chambered trenches should not be used in soils that percolate greater than 60 mpi.

Response: WDEQ/WQD has reviewed Fremont County's comment. However, we disagree. In soils with percolation rates above 60 mpi, professional engineers may elect to design systems with chambered trenches, as long as those systems meet the applicable design requirements in Chapter 25. As a delegated authority, Fremont County may adopt more conservative regulations. WDEQ/WQD declines the request to forbid chambered trenches for soils with percolation rates greater than 60 mpi.

Section 14

14(b)(i)

Entity: Fremont County Planning and Rural Addressing

Comment: Fremont County believes the 100 foot setback is too restrictive for many properties.

Response: WDEQ/WQD chose the 100 foot setback to prevent individuals from restricting their neighbors' property use.

14(b)(vii)

Entity: Fremont County Planning and Rural Addressing

Comment: Fremont County is concerned that the formula used for sizing will result in an oversized project. This oversizing leads to freezing problems in the winter and volume problems in the summer. Fremont County requests that DEQ allow a mass balance approach and partition dike in order to retain more water in the lagoon to allow it to function properly.

Response: Early in the advisory board process, WDEQ/WQD revised the formula for sizing lagoons by removing the 30% safety factor, which we believe has addressed the sizing issue. If applicants in Fremont County wish to apply for a lagoon system with a partition dike, they may do so with an alternate design that would be considered on a case by case basis.

14(b)(xiv)

Entity: Fremont County Planning and Rural Addressing

Comment: Fremont County believes the fencing requirement should include fence height for safety purposes.

Response: WDEQ/WQD reviewed this request. The proposed regulation requires the area around the small wastewater lagoon to be fenced to prevent entrance of livestock, pets, and humans; requires the fence to be equipped with a locking gate; and requires the gate to have a sign indicating “NO TRESPASSING – WASTEWATER LAGOON.” We believe the proposed requirements are prescriptive enough. If Fremont County wishes to adopt a more prescriptive regulation, it may do so as a delegated authority.

Section 15

Entity: Louis Harmon, Lorie Cahn

Comment: Mr. Harmon and Ms. Cahn believe privies should be regulated as permit by rule unless specific rules are developed by delegated authorities requiring permitting. Mr. Harmon believes privies should be restricted to properties not accessible to operated wastewater systems or permitted small wastewater systems.

Response: WDEQ/WQD disagrees with Mr. Harmon and Ms. Cahn’s opinions that privies should be regulated as permit by rule. Privies are currently regulated under general permit and WDEQ/WQD has committed to offering a design package to applicants, which reduces the cost and burden of the design. Changing privies to permit by rule would eliminate our ability to review and approve the design prior to construction. WDEQ/WQD previously expressed our concern that there are already a significant number of inadequate applications submitted under the current regulations; relaxing the regulation is not going to increase the adequacy of the designs. WDEQ/WQD researched the regulations and policies of other Western states, as well as Midwestern and Eastern states, and found that the majority of those surveyed require a permit before installation or otherwise regulate through a review and approval process. The Division is satisfied with the current regulation as it is mindfully protective of groundwater and surface water, as well as consistent with practices in neighboring states.

Section 16

Entity: Fremont County Planning and Rural Addressing

Comment: Fremont County is concerned that performing bacterial counts will be impractical and costly and wonders who will be responsible for conducting these.

Response: Any cost burden would be on the applicant who elected to install a greywater system with surface irrigation. Subsurface irrigation does not require treatment of fecal coliform to Class B levels. The

testing process is similar to the testing encountered by homeowners who wish to test their private water wells. Testing of fecal counts ensures that the humans exposed to the surface irrigation of greywater are exposed to a less dangerous level of fecal coliform.

Entity: Louis Harmon, Lorie Cahn

Comment: Mr. Harmon and Ms. Cahn believe the section on greywater is too restrictive. Mr. Harmon would prefer that these systems be permitted by rule. He believes the proposed regulations eliminate any legal use of greywater. He disagrees with WDEQ/WQD's requirement to divert water used to wash diapers or similarly soiled or infectious garments and would prefer that soiled diapers not be an exception in the definition of greywater. Ms. Cahn would prefer that the technical aspects be moved to a guideline.

Response: WDEQ/WQD reviewed Mr. Harmon and Ms. Cahn's comments. We disagree that the greywater section is too restrictive and that greywater systems should be permitted by rule. Our research process indicates that the level of pathogens commonly found in greywater require some boundaries for greywater systems, so that we protect homeowners' health and the health of their families and neighbors.

Critical Review: Regulatory Incentives and Impediments for Onsite Graywater Reuse in the United States (Water Environment Research, Volume 85, Number 7), explains that greywater permits can be an "effective instrument that encourages compliance and promotes effective graywater reuse with the goal of fostering environmental protection." This review points out that public education and assistance by regulators is essential "in order for the permitting process to be beneficial to homeowners." WDEQ/WQD has committed to assisting applicants by posting online a simple greywater systems design package so that the system design does not require the costly process of hiring an outside professional engineer to design and stamp the application before it is submitted to WDEQ/WQD for approval. This design package and accompanying guidance material ensure that applicants are properly designing and siting their system. The ensuing review and approval process allows for a chance by WDEQ/WQD or the delegated authority to answer homeowner questions and educate them on their greywater system. The design application does not prescribe which type of system a homeowner may chose.

The rule, as proposed, does not eliminate the legal use of greywater. The proposed rule allows untreated greywater to be used for subsurface irrigation, such as drip irrigation, and if a homeowner chooses to bring greywater to the surface for irrigation, it needs to be disinfected to reduce the fecal coliform to a level of 200/100 mL or less, which is consistent with our rules for treated domestic wastewater, found in Water Quality Rules and Regulations, Chapter 11, Part H.

Critical Review: Regulatory Incentives and Impediments for Onsite Graywater Reuse in the United States also asserts, "Laundry graywater generated during wash cycles is the most contaminated of the various nonkitchen graywater sources." Even though households are using laundry detergent, laundry water is still the most contaminated source of greywater. Allowing soiled diapers to contribute to a household's greywater increases the potential for human exposure to pathogenic bacteria and viruses. The condition will remain as written.

Ms. Cahn believes that the technical requirements should be moved to our guidance document. When we leave our expectations in guidance, it removes our ability to pursue enforcement actions in circumstances

where we need to protect the waters of the state through legal means. If we encounter a greywater system that is clearly damaging the waters of the state and/or is damaging the health of the citizens of the state, we would be more limited in our legal means to compel individuals to correct their violation.

16(b)(i)(A)

Entity: Campbell County Department of Public Works

Comment: Campbell County disagrees with prohibiting spray irrigation of greywater for grassy areas in large yards or pastures. Campbell County believes the combination of eliminating spray irrigation and cost of the greywater system will be prohibitive.

Response: WDEQ/WQD carefully considered the issue of spray irrigation of greywater during the revision process. Our goal is to balance protection of human health with the benefits of greywater reuse, statewide. We were concerned that spray irrigation would be difficult to control, especially on windy days. One of the boundaries we set to prevent human exposure was to limit irrigation to subsurface/drip and surface irrigation, in order to prevent exposure to greywater, especially in urban or suburban areas.

WDEQ/WQD understands the concern that the cost of replacing existing greywater irrigation systems. However, we believe the overall impact on Wyoming citizens would be minimal and applied to a small subset of the population.

Section 17

17(f)

Entity: Fremont County Planning and Rural Addressing

Comment: Fremont County is wondering why the waste from composting toilets is required to be disposed at a permitted treatment facility. Fremont County understands that compost from these types of toilets is safe to apply on the ground.

Response: WDEQ/WQD believes that land application of the septage would be allowed under the last half of the passage, "in a manner approved by the Division or delegated authority" as long as the compost had been properly treated. Improper composted septage would be required to be disposed at a permitted wastewater treatment facility to prevent surface and groundwater contamination. WDEQ/WQD will draft a clarifying policy to advise parties interested in composting and the delegated authorities. The passage will remain as written.

Appendix A

Entity: Lorie Cahn

Comment: Ms. Cahn disagrees with WDEQ/WQD's proposed changes to the percolation method. Ms. Cahn believes that WDEQ/WQD has improperly assumed the same bottom flow rate for the proposed method, in the percolation test procedure spreadsheet. She is concerned that this assumption will possibly

lead to an inaccurate conclusion that the proposed method is equivalent to the traditional method. Ms. Cahn believes that soil texturing is a simple alternative to the proposed percolation test method.

Response: WDEQ/WQD has reviewed Ms. Cahn's comment. WDEQ/WQD acknowledges that the proposed procedure contains some changes compared to the method in the current regulation. The proposed changes use the existing method as a starting point and incorporate changes to make the results easier and more accurate to determine in the field. The proposed changes include altering the diameter of the test hole from a range of four to twelve inches to only twelve inches, and adjusting the depth of the water in the test hole from twelve inches to eighteen inches, which leads to an overall tighter tolerance.

Ms. Cahn is correct--the bottom flow rate was the same for both methods; however, the bottom flow rate for the proposed method was calculated rather than directly assumed. The bottom flow rate for the proposed method was calculated using the same soil properties as the current testing method, including hydraulic conductivity of the soil, which is a measure of the soil's ability to transmit water. The soil properties were assumed to be fully saturated conditions due to the presoaking requirements. Since the comparison used the same hydraulic conductivity for both methods, the bottom flow rate was calculated to be the same for both methods. The bottom flow rate is controlled by the soil's hydraulic conductivity under saturated conditions.

The head or pressure affecting the bottom flow rate includes the water in the hole and the saturated soil column underneath. The impact of the difference in water levels is greatly reduced because of the saturated soil column to the point that it becomes insignificant. If a soil had a percolation rate of 10mpi, presoaking the hole for 24 hours would result in a column of saturated soil over 200 inches deep. If the driving force was only the water in the test hole, we would agree that the head difference from 12 inches to 18 inches is significant.

WDEQ/WQD is still not yet confident to substitute soil texturing for percolation tests. At this time, the soil texturing method is still new enough (compared to the percolation test method) that there is a lack of individuals who are certified to conduct the analysis and a lack of resources available to inexperienced individuals wishing to learn how to soil texture. The Natural Resources Conservation Service (NRCS), a federal program under the US Department of Agriculture, presented a soil texturing overview to WDEQ/WQD in 2014. The presenter, Acting State Soil Scientist James Bauchert, explained that there is no national certification process for soil texturing. Texturing specialists become qualified through an unspecified number of classroom hours and an unspecified number of hours of field training. Texturing is learned over time, with hands on instruction from a technical expert. Soil texturing is not as simple as mixing soil with water, kneading, and squeezing. While these simple techniques are certainly part of the overall texturing method, inexperienced individuals need to be taught how to interpret their results. It is very easy for an inexperienced individual to misinterpret their ribbon. NRCS reserves their texturing resources for larger projects, due to staffing and budget restraints. Due to this limitation of available qualified individuals and the lack of uniform and easily accessible training opportunities for interested individuals, WDEQ/WQD is maintaining our choice to allow soil texturing as a supplement to the required percolation test, but not as a replacement to the percolation test.