

RULE MAKING OUTREACH DOCUMENT

Responses to Oral Comments

Received July 25, 2014

Water and Waste Advisory Board Meeting

Wyoming Water Quality Rules and Regulations

Chapter 25

Small Wastewater Systems



WYOMING

May 5, 2015

List of Commenters

Lorie Cahn, Water and Waste Advisory Board
Calvin Jones, Water and Waste Advisory Board
John Drinnon, Casper-Natrona County Health Department
April Gindulis, Casper-Natrona County Health Department

Comments and Responses

General Comments

Entity: Calvin Jones, Water and Waste Advisory Board

Comment: Mr. Jones noted that he received comments from the Big Horn Basin noting that the new draft of the regulations is longer than the old version. He pointed out that the Governor had requested agencies to streamline their regulations.

Response: The proposed revision to Chapter 25 is longer than the previous version. However, part of the increased volume is due to addition of Appendix B, which had previously been located in Chapter 15. As you may recall, other than relocating the old Appendix C from Chapter 15 to new Appendix B in Chapter 25, the language in Chapter 15 is proposed to be eliminated. By reducing the language in Chapter 15, WDEQ/WQD eliminates approximately 53 pages and reduces our number of chapters by one. This reduction is part of WDEQ/WQD's overall plan of streamlining, which we have reported to Governor Mead.

Entity: Calvin Jones, Water and Waste Advisory Board

Comment: Mr. Jones wondered why some of the applications require a PE to sign off when WDEQ has a professional engineer review the application. Requiring applicants to hire a PE for their applications is an increased cost.

Response: Water Quality Rules and Regulations Chapter 3 specifies that individual and general permits are required to be sealed, signed, and dated by a professional engineer under W.S. Title 33, Chapter 29 or by a professional geologist under W.S. Title 33, Chapter 41. The treatment systems covered by this chapter are primarily covered by the WDEQ's general permit for small wastewater facilities. These systems can be designed by filling out forms that have been developed by DEQ staff professional engineers (PE), which fulfills the requirement that all plans and specifications associated with a permit application be signed and sealed by a PE.

The proposed revision of Chapter 25 requires individual permits when the wastewater is non-domestic wastewater from commercial or industrial facilities, the wastewater has a BOD₅ higher than 200mg/L and is considered high-strength, for installation areas with soil percolation rates less than 5 minutes per inch or greater than 60 minutes per inch, or for systems not specifically covered by the rule. Systems not covered by the rule are not covered by the general permit because the technology or equipment used in the system is new and has not been previously demonstrated for general permit coverage. Systems requiring an individual permit are significantly more complicated, more costly, and more time consuming than the systems covered under the general permit. The vast majority of small wastewater systems will be eligible for coverage under the general permit, without the requirement of the

PE to sign/stamp/and seal, provided the WDEQ forms are properly completed and the components are properly installed.

Entity: Lorie Cahn, Water and Waste Advisory Board

Comment: Ms. Cahn again noted her concern that the percolation test procedure had been modified. She is concerned that the differences in drop in head between the old method and the proposed method will lead to an inaccurate test result.

Response: As requested, WQD has provided the calculations spreadsheet which demonstrates that the revised percolation test procedure provides consistent results. WQD evaluated the traditional percolation test method and proposed changes that maintain accuracy, but which are easier for homeowners to use the test method. We believe the proposed method (Appendix A) is more practical. Three test holes are required under both methods. Under the traditional method, each hole must be tested one at a time. However the proposed method allows testing of all three holes simultaneously. The measurements are easier to apply under the proposed method—instead of guessing when to take a measurement, the new procedure directs measurements every ten minutes.

Ms. Cahn’s concern is valid--the percolation rate determined under the proposed method is faster. However, when incorporating the slightly faster rates with the other additional factors required to determine the appropriate size of a system, Wyoming’s proposed percolation test method does not significantly alter the end size. WQD is confident that the proposed method will contribute to accurately sized systems.

Section 3

Entity: Lorie Cahn, Water and Waste Advisory Board

Comment: Ms. Cahn requested that the definition of pathogens no longer include e.coli as it is an indicator organism and is not in itself pathogenic.

Response: WDEQ/WQD changed the definition of pathogens as discussed.

Entity: April Gindulis, Casper-Natrona County Health Department

Comment: Ms. Gindulis requested clarification of the definition of soil absorption system as a small wastewater system and whether or not a small wastewater system includes pressure dosing systems or a mound system. She is concerned that as a delegated authority, Casper-Natrona County Health Department, may not be able to permit pressure dose or mound systems.

Response: WDEQ/WQD reviewed the comment and has determined no clarification is necessary. Under the delegation agreement between the Wyoming Department of Environmental Quality and Natrona County, Natrona County has delegated authority to regulate small wastewater facilities, which W.S. 35-11-103(c)(ix) defines as “any sewerage system, disposal system, or treatment works having simple hydrologic and engineering needs which is intended to for wastes originating from a single residential unit serving no more than four (4) families or which distributes two thousand (2,000) gallons or less of domestic sewage per day.” “Pressure dosing,” or “pressure distribution systems” as they are

termed in Chapter 25, and “mound systems” are both systems which can be used within the boundaries of the definition of small wastewater systems. For these systems located within the boundaries stated in the delegation agreement, Natrona County is the delegated authority and is the appropriate permitting entity. As we discussed at the July 25, 2014 meeting, design packages for both pressure distribution systems and mound systems are available for individuals to use for their application for coverage under the general permit for small wastewater systems. However, as Chapter 25 states, for cases of non-domestic wastewater from commercial and industrial facilities, high strength wastewater, or percolations rates less than 5 minutes per inch or greater than 60 minutes per inch, will not apply under Chapter 25.

Section 4

Table 1

Entity: John Drinnon, Casper-Natrona County Health Department

Comment: Mr. Drinnon noted the reduction in flows. Casper-Natrona County Health Department has flows set at 150 gallons per bedroom per day. Mr. Drinnon wondered about the source of the information leading to the flow reductions.

Response: The flow rates in the proposed revision to Chapter 25 are based on figures from the fourth edition of *Wastewater Engineering: Treatment and Reuse* by Metcalf and Eddy (McGraw-Hill, 2003).

Section 6

6(g)Table 4

Entity: John Drinnon, Casper-Natrona County Health Department

Comment: Mr. Drinnon is concerned about the 200 feet setback from an absorption system to a public water supply well. Some of the properties within his jurisdiction have been subdivided to a point that enforcement of the 200 feet setback from public water supply wells could potentially be challenging.

Response: The proposed setback is based on the *Wyoming Department of Environmental Quality Source Water Assessment Project* (2004). The setback distance is designed to prevent accidental contamination of public water supplies. In addition to the setback distance, systems located within Zone 2 will need to submit an individual application, requiring the stamp of a PE. The system will be required to provide additional treatment to ensure sanitary protection of the area. WDEQ/WQD understands that applicants may show concern towards the requirement; however it is our duty to protect the public water supply and we will encourage enforcement of this regulation as needed.

Section 7

Entity: Lorie Cahn, Water and Waste Advisory Board

Comment: Ms. Cahn again requested that the inclusion of sidewalls be eliminated in the calculation of standard trenches. She again noted her concern that the minimum spacing of trenches of three feet be increased to six or seven, as other states have done.

Response: As Ms. Cahn noted in her oral comment, EPA’s *Onsite Wastewater Treatment Systems Manual* does mention avoidance of sidewall infiltration in section 4.4.5, page 4-10: “Loss of the bottom surface for infiltration will cause the ponding depth to increase over time as the sidewall also clogs... If allowed to continue, hydraulic failure of the system is probable. Therefore, including sidewall area as an active infiltration surface in design should be avoided.”

The *Onsite Wastewater Treatment Systems Manual* acknowledges that the sidewall is part of the infiltrative surface area by the statement that “over time the sidewall also clogs”. Just as the bottom area clogs over time through the treatment of wastewater and the formation of a bio-mat, the sidewall clogs because it is also treating wastewater. By ignoring the sidewall area as part of the infiltrative surface area, the *Onsite Wastewater Treatment Systems Manual* requires more trenches or longer trenches for a required square footage of infiltrative area. The sidewall area then becomes a margin of safety, additional infiltrative area, which equates to more years of operation before possible failure. The division includes the sidewall as part of infiltrative surface area but adds a margin of safety through the use larger wastewater flows in calculating the required infiltrative surface area. Both methods of calculating the infiltrative surface area result in a similar margin of safety. The division has included the sidewall area in calculating the infiltrative surface area for many decades. The low failure rate of small wastewater systems in Wyoming, also noted in the *Onsite Wastewater Treatment Systems Manual*, supports our position that our margin of safety is adequate and that our design approach doesn’t result in premature failure of the absorption field.

The same EPA manual states there should be a minimum of eighteen (18) inches of soil for treatment adjacent to the sidewall of a trench. If there are two (2) trenches, the minimum distance is thirty-six (36) inches or three (3) feet.

The minimum distance between trenches is nine (9) feet if the space is to be used as a reserve area. The requirements from other states do not specify if the minimum separation distance includes the reserve area or for treatment of wastewater absorbed through the sidewall.

Section 9

9(a)(iii)

Entity: Calvin Jones, Water and Waste Advisory Board

Comment: Mr. Jones received a comment from someone who was concerned that the proposed septic tank sizes are inconsistent with other states. The commenter preferred larger tanks as they require less frequent cleaning and allow for future expansion of homes and increased flows due to visiting guests.

Response: WDEQ/WQD understands the commenter’s concern at reducing tank sizing requirements. However, the tank sizing was not reduced across the board. The current regulation requires a minimum capacity of 1000 gallons for residences with one to four bedrooms; Residences with additional bedrooms are required to add 250 gallons per bedroom to the tank size. The proposed regulation also requires a minimum tank size of 1000 gallons per bedroom for residences with one to four bedrooms, but reduces the additional capacity to 150 gallons per day per additional bedroom. The minimum tank size for commercial/industrial units is proposed at the same 1,000 gallon tank size as is currently required. However for these types of facilities, the proposed retention time has increased from 36 hours to 48 hours, which can potentially increase the tank size, depending on the peak flow rate.

The daily flow rates are in in the proposed revision adjust the residential rate from 150 gallons per day per bedroom to a scale, found in Table 1. A four bedroom home would be required to figure 600 gallons per day under the current regulation; the same home would be required to figure 470 gallons per day under the proposed revision. The reduced flow rates are based on figures from *Wastewater Engineering Treatment and Reuse*, Metcalf and Eddy, 2003. This industry standard reference explains that modern designs of common sources of wastewater such as washing machines, toilets, and dishwashers have shifted towards efficiency and conservation. Today, typical homes produce less wastewater than they would have produced thirty years ago, when the regulations in Chapter 25 were originally promulgated.

WDEQ/WQD compared our proposed revisions to the tank sizing requirements from Colorado, Utah, Idaho, Montana, and Nebraska. While we agree, that we are not completely consistent with these other states, our research indicates they are not completely consistent with one another either. Montana and Colorado's daily flow rates are less per bedroom than ours, but Utah, Idaho, and Nebraska's rates are higher. Idaho requires four bedroom homes to have a minimum of 1000 gallons for the septic tank, but additional bedrooms are 250 gallons. Colorado and Nebraska require four bedroom homes to install a 1250 gallon tank; Montana requires a 1500 gallon tank.

Some states base their tank specifications on the International Plumbing Code or International Private Sewage Disposal Code, but others do not. EPA's 2002 *Onsite Wastewater Treatment Systems Manual* does not specifically outline standards for states to follow but does advise that "septic tanks must have sufficient volume to provide an adequate hydraulic residence time for sedimentation."

WDEQ/WQD believes that the figures proposed in the current revision contain enough of a factor of safety to adequately size septic tanks so that they are neither undersized nor oversized. However, the proposed regulation is written to allow flexibility for concerned installers and homeowners—the tank sizes outlined in the chapter are minimum requirements. Installation of larger tanks would still be compliant with the regulation.

9(a)(vi), 9(a)(vi)(A)

Entity: April Gindulis, Casper-Natrona County Health Department

Comment: Ms. Gindulis is concerned that changing the minimum riser diameter from 6 inches to 20 inches would require tank manufacturers in Natrona County to redesign their tanks to accommodate the regulation.

Response: Per our discussion at the July 25, 2014 meeting, WDEQ/WQD has edited the two passages to change the passage terminology from "riser" to "access" to accommodate the Natrona County manufacturers.

9(c)(ii)

Entity: John Drinnon, Casper-Natrona County Health Department

Comment: Mr. Drinnon is concerned that there is no definition or parameter for “seasonal” in the use of holding tanks. Mr. Drinnon would prefer that WDEQ/WQD define seasonal as a three-month period of time of periodic occupancy.

Response: WDEQ/WQD reviewed the request to add specificity to the use of “seasonal” in the passage. The passage was crafted to allow flexibility for a variety of circumstances where a holding tank would be needed. WDEQ/WQD disagrees with the request to specify a term for “seasonal.” If a property owner fails to pump the holding tank before it overflows, then they have violated the standard, whether or not we have specified how long the “season” of use may be.

Section 13
13(b)(i)

Entity: John Drinnon, Casper-Natrona County Health Department

Comment: Mr. Drinnon is concerned that the vertical separation to groundwater for mounding systems is insufficient. Casper-Natrona County requires an additional foot of vertical separation to groundwater for mounding systems.

Response: WDEQ/WQD compared the proposed rule to the Casper-Natrona County Health small wastewater regulations. While it is true that the Casper-Natrona County Health regulation requires that “in no case shall a mound system be installed in areas with less than twenty-four (24) inches of original permeable soil,” in Casper-Natrona County Chapter 6, Section 5(a), the total separation to groundwater is four feet, taking the finished mound into consideration, as noted in Casper-Natrona County Chapter 4, Section 4(a). The total separation to groundwater for proposed Water Quality Rules and Regulations Chapter 25, Section 13(c)(i)(C) states that “the sand mound shall have a combination of at least four (4) vertical feet of filter sand and unsaturated native soil above the high groundwater level. For standard soil mound systems, which are not using pressure distribution, WDEQ/WQD believes that the total separation of four vertical feet is adequate, whether that four feet is achieved through two additional feet or three additional feet of adequately percolating fill (5 to 60 minutes per inch).

Section 16

Entity: Lorie Cahn and Calvin Jones, Water and Waste Advisory Board

Comment: Ms. Cahn and Mr. Jones noted their concerns that the regulations for greywater systems are not encouraging enough of greywater reuse. Mr. Jones also wondered why the division needs to permit greywater systems if the effluent does not leave the property, as permitting and regulating this effluent is more costly for the consumer.

Response: WDEQ/WQD has worked to ensure that Section 16, Greywater Systems, is consistent with our current water reuse standards in order that we adequately protect human health. WDEQ/WQD has carefully considered the impact to homeowners who will be regulated under this proposed section.

WDEQ/WQD’s water reuse standards, applicable to “any person who prepares or applies treated wastewater from domestic sewage”, are currently located in Chapter 21, Standards for the Reuse of

Treated Wastewater, and outline three classes of wastewater treatment. Class A would require removal of fecal coliform down to 2.2 /100 mL and would apply to land having a high potential for public exposure and irrigation of direct human consumption food crops. Class B would require the equivalent of secondary treatment and disinfection of fecal coliform to 200/100 mL for irrigation of lands having a moderate public exposure potential and direct human consumption food crops. Class C would require disinfection of fecal coliform to 1000/100 mL for irrigation of lands having low public exposure potential and indirect human food crop consumption. While the total coliform concentration in greywater is less than is typically found in domestic blackwater, the concentration levels are still potentially harmful when humans are exposed to it.

At the December 5, 2013 Water and Waste Advisory Board meeting the division presented a handout titled *Critical Review: Regulatory Incentives and Impediments for Onsite Greywater Reuse in the United States*. The figures in Table 1 of this handout demonstrate that the total coliform for mixed greywater can range from 5.6×10^5 to 1×10^8 CFU/100-mL for systems generating 127-151 L/capita-day. The division considered these figures while drafting the proposed greywater regulations and came to the conclusion that the most reasonable, but protective, approach would be to propose to regulate greywater similar to the way the division currently regulates Class B wastewater reuse.

WDEQ/WQD believes that regulating greywater similarly to the current Class B wastewater regulations is a flexible approach. Homeowners may choose a system to fit their needs, but they must operate it in a way that is protective of human health. Just as the water reuse standards in Chapter 21 require additional treatment and setback distances as the potential increases for human exposure, the proposed rule also requires additional measures for systems with increased risk of human exposure. For instance, the proposed greywater regulations require a 30 foot setback for surface irrigation, such as flood irrigation, and do not require setbacks for subsurface irrigation, such as drip systems. The proposed greywater regulations require disinfection for surface irrigation; however, the proposed regulations do not require disinfection for subsurface irrigation. States such as Montana, Idaho, and Utah prohibit surface irrigation use, with or without disinfection.

During the advisory board process of the rulemaking for this proposed greywater section, WDEQ/WQD received several comments of concern over the cost and burden of disinfection. Our clarification of the section points out that disinfection is only required for those systems using surface irrigation, such as flood irrigation. Under WQD's proposed rule, surface irrigation systems are required to disinfect to a Chapter 21 Class B level of maximum fecal coliform levels of 200/100 mL or less. The surface irrigation disinfection can be economically achieved through the use of chlorine, iodine, or bromine. Chlorine bleach or chlorine tablets commonly used to disinfect swimming pool water are examples of economical, yet effective disinfection chemicals for surface irrigation from greywater. While the cost is more than that of chemical disinfection, individuals wishing to disinfect via ultraviolet systems are allowed to do so under the proposed rule, if they so choose. Subsurface irrigation systems, such as drip irrigation systems, require no disinfection.

WDEQ/WQD believes the proposed greywater section is appropriately detailed. The greywater systems section covers only 5 pages of the total rule, whereas the sections related to installing blackwater systems total 21 pages, excluding appendices. The proposed greywater section is prescriptive of design criteria, but the proposed design criteria are flexible and provide direction for different types of systems.

The proposed greywater section does not allow permit by rule, but does cover greywater systems under the general permit for small wastewater systems, which is less burdensome and costly than requiring an individual permit to construct. Because greywater systems are allowed for coverage under the general permit, only an application for coverage is required. Applicants are required to plan their design and submit it to WQD's professional engineering staff for review. This application process, when the applicants use WQD's design packages, allows the applicant to bypass the costly and time consuming process of hiring an outside professional engineer or professional geologist, as required by the individual permit process. The review process ensures the greywater system design is protective of the waters of the state, human health, and will adequately meet the needs of the applicant. Additionally, application for coverage under the general permit does not require a permit fee.

WDEQ/WQD believes that the proposed greywater regulations fulfill a number of directives. The greywater design standards are consistent with existing division rules and regulations (Chapter 21). The greywater regulations allow homeowners the freedom to safely design and install the system of their choosing. Lastly, the greywater regulations enable the state to adequately enforce standards which are protective and prevent pollution.