



RULES AND REGULATIONS GOVERNING WASTEWATER FACILITIES

Sheridan County, Wyoming

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<i>Old Section</i>	<i>New Section</i>	<i>Description</i>
Title page "Sheridan County Regulations for a Permit to Construct, Install, or Modify Small Wastewater Facilities and Related Design Standards"	Title page	Changed to: "Rules and Regulations Governing Wastewater Facilities, Sheridan County, Wyoming"
Table of Contents		Adjusted page numbers
Page 3		Changed Title language as mentioned above.
Section 20, soil percolation rate Figures 1 through 7		Charts deleted. These are available to the public in Public Works Office
Vacant space between clauses		Deleted, to format two lines between clauses

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RULES AND REGULATIONS GOVERNING WASTEWATER FACILITIES

Section 1. Authority. This regulation is promulgated pursuant to the Wyoming Environmental Quality Act, W.S. 35-11-101 through W.S. 35-11-1207. Specifically, W.S. 35-11-301 stipulates that no person, except when permit authorized, shall: construct, install, modify or operate any small wastewater facility. W.S. 35-11-304 stipulates that to the extent requested, authority to enforce and administer W.S. 35-11-301 (a) (iii) shall be delegated to qualifying municipalities, water and sewer district or counties.

Section 2. Purpose. The purpose of these regulations is to prevent, reduce and eliminate pollution and enhance the waters of the State of Wyoming and to protect the health, safety and welfare of the environment and its inhabitants by ensuring that the design and construction of small wastewater systems meets the purpose of the Environmental Quality Act.

Section 3. Applicability. These regulations shall apply to all small wastewater systems as defined in Section 5 of these regulations within Sheridan County.

Section 4. Intent The design and construction standards included in these regulations are directed toward conventional small wastewater systems. These standards impose limiting values of design for which a construction, installation or modification permit application and plans and specifications can be evaluated by the Sheridan County Engineer.

The terms “shall” and “must” are used when practice is sufficiently standardized to permit specific delineation of requirements or when safeguarding public health or protection of water quality justifies such definite action. Other terms, such as “should”, “recommend”, and “preferred” indicate desirable procedures or methods which allows deviations provided the purpose of these regulations can be accomplished.

Section 5. Definitions. The following definitions supplement those definitions contained in Section 35-11-103 of the Wyoming Environmental Quality Act.

- a. “Absorption system” means a system constructed under the surface of the ground which receives and distributes effluent from a pretreatment device effectively filtering the effluent through soil or media.
- b. “Aerobic unit” means a covered, watertight receptacle which receives wastewater. The unit removes settleable solids, floatable material, and a part of soluble organic matter by the use of aerobic biological treatment.
- c. “Building drain” means the building drain is that part of the lowest piping of a drainage system which receive the discharge from soil, waste and other drainage pipes inside the walls of the building and conveys it to the building sewer beginning two feet (.6 meters) outside the building wall.

- d. "Building sewer" means the building sewer is that part of the horizontal piping of a drainage system which extends from the end of the building drain and which receives the discharge of the building drain and conveying it to the septic tank or other on site sewage disposal facility.
- e. "Cesspool" means a covered pit into which raw sewage is discharged for final disposal by leaching into the surrounding porous soil. Cesspools are not allowed under these regulations.
- f. "Distribution box" means a water-tight structure which receives liquid effluent from a septic tank and distributes such effluent in equal portions into two or more pipes leading to the disposal area.
- g. "Domestic sewage" means the liquid-and water-borne wastes derived from the ordinary living processes, free from industrial wastes, and of such character as to permit satisfactory disposal without special treatment.
- h. "Dosing system" means the system of tanks, pumps or siphons, and piping located between the septic tank and soil absorption systems, which is intended to apply a large quantity of settled wastewater to the absorption system in a short period of time.
- i. "Hydro geological study" means a study of the occurrence, distribution, quality and movement of the shallow most groundwater of the state and the potential impact of wastewaters on the groundwater.
- j. "Impermeable soil" means any soil which has a percolation rate greater than 60 minutes per inch.
- k. "Permit" means written authorization issued by the Sheridan County Engineer, duly executed which authorizes the permittee to construct, install, or modify the facilities as set forth in these regulations.
- l. "Privy" means a covered pit into which only urine and fecal material are discharged for final disposal by leaching into the surrounding soil or by hauling to an approved disposal site. Grey water or toilet carriage water may not be discharged into a privy
- m. "Pump Tank" means a tank in which the dosing pumps or siphons are installed.
- n. "Seasonal high groundwater table" is the highest elevation reached by the groundwater during the wet season of the year (usually spring or early summer).
- o. "Septic tank" means a liquid-tight receptacle which receives for storage and digestion, raw sewage from a building sewer, and which has been designed and constructed so as to retain the solids and to allow the liquids to discharge through a secondary system of piping into a disposal area.
- p. "Small wastewater system" means any sewerage system, disposal system or treatment works having simple hydrologic and engineering needs which is intended for wastes originating from a single residential unit serving no more than four families or which distributes 2,000 gallons or less of domestic sewage per day.

Section 6. Prohibitions. No person shall, except when authorized by permit issued pursuant to these regulations:

- a. Construct, install, or modify any small wastewater system.
- b. Construct, install, or modify any small wastewater system in non-compliance with the terms and conditions of an issued permit;

- c. Construct, install, or modify a small wastewater system with a permit that has expired or has been suspended or revoked.
- d. Discharge wastes into small wastewater system which is inconsistent with the type and/or quantity of wastes for which the facility is designed.

Section 7. Permit Required; Control of Construction, Installation and Modification Permits; Responsibility on Issued Permits; Exemptions.

- a. Construction, installation, or modification of small wastewater facilities shall be allowed only in accordance with the terms and conditions of permits issued pursuant to the provisions of these regulations.
- b. No construction, installation or modification of a small wastewater system be allowed unless a permit to construct, install or modify has been obtained from the Sheridan County Engineer.
- b. The issuance of a permit to construct does not relieve the permittee of its Responsibility to properly plan, design, construct, operate and maintain the facility described in the application and permit conditions.

Section 8. Application Requirements. The following procedures will be followed in applying for a permit:

- a. Any person who proposes to construct, install or modify a facility required to be permitted under Section 6 shall submit a written application on forms provided by the Sheridan County Engineer.
- b. The applications for a permit to construct, install or modify must be accompanied by three copies of plans, specifications, design data or other pertinent information covering the project, and any additional information required by the Sheridan County Engineer.
- c. All plans and specifications must conform to common engineering practices and include the following:
 - (1) Plans for small wastewater systems shall contain the following:
 - (a) A title showing the name of the owner and location of the project; a north arrow and drawing scale; and the name and seal or signature of the designing engineer (except on the plans for a single residential unit designed by the owner).
 - (b) Datum used shall be indicated.
 - (c) A site plan showing topography of the site, boundaries of the project and property nearby wells and waterlines, waterways, buildings, septic tank and drain field, including all dimensions and isolation distances.

1.
 - (d) Detailed drawings both plan and cross-section of septic tank and disposal field.
 - (e) Location of percolation test holes and soil test pit(s).
 - (f) Percolation test data.
- (2) Specifications for small wastewater systems shall include the following:
 - (a) The identification of the type, size, and strength of construction materials.
 - (b) The type, size, strength, operating characteristics, rating Or requirements and installation procedures for all mechanical and electrical equipment.
- d. All the plans and specifications must conform to the minimum design standards identified in Section 17 through 31.
- e. Fees. All applications shall be accompanied by the applicable fee as set by the Board of County Commissioners. These fees may be revised periodically by the Board of County Commissioners.

Section 9. Application Processing Procedures. All permit applications received will be processed in the following manner.

- a. The Sheridan County Engineer shall review each application and take final action within 15 days from the date the application is received.
- b. Incomplete applications will not be processed. The Sheridan County Engineer shall promptly notify the applicant of the deficiencies in the submitted permit application package.
- c. All plans and specifications must meet or exceed minimum design standards and these regulations.
- d. applications for a modification of an existing permitted facility to increase the capability to treat, hold or dispose of wastes may be approved requiring only the modification needed to meet the minimum design standards. Facilities not in compliance with these regulations will require additional modifications to other portions of the facility to bring the facility into compliance with these regulations.
- e. Each application must be submitted with all supporting data necessary for review. Processing of the application with respect to recommendations or required changes will e done in accordance with the provisions of applicable statues, rules and regulations.

- f. The Sheridan County Engineer shall promptly notify the applicant of the final action taken on the application. If the conditions of the permit are different from the proposed application submitted by the applicant for review, the notification shall include the reasons for the changes made.
- g. If, upon review of an application, the Sheridan County Engineer determines that a permit is not required, the Sheridan County Engineer Shall notify the applicant of this determination. Such notification shall constitute final action on the application
- h. If, upon review of an application, the Sheridan County Engineer determines that a permit should not be granted, the Sheridan County Engineer shall notify the applicant of the permit denial and state the reasons for denial.
- i. If the applicant is dissatisfied with the permit conditions or denial of any permit issued by the Sheridan County Engineer, he may request a hearing in accordance with Section 13.c.

Section 10. Construction and Operation in Compliance with Issued Permit. permittee shall:

- a. Conduct all construction, installation, or modification of any facility permitted consistent with the terms and conditions of the permit. unauthorized changes, deviations or modifications will be a violation of the permit. A new application or amended application must be filed with the Sheridan County Engineer to obtain modification of a permit. No modification shall be implemented until a new or modified permit has been issued or a waiver given pursuant to subsection b.
- b. Request authorization to utilize materials and/or procedures different from those specified in the terms of the issued permit. Such requests shall be directed to the Sheridan County Engineer. A waiver may be granted if materials and/or procedures specified in the permit cannot be obtained or accomplished and alternative materials and procedures meet minimum standards. In order to prevent undue delay during construction, the Sheridan County Engineer may grant a waiver orally, upon oral request, provided that this oral request if followed by a written request within five days. Any changes shall be noted on the permit.
- c. Conduct the operation in accordance with statements, representations, and procedures presented in the complete application and supporting documents, as accepted and authorized by the Sheridan County Engineer.

- d. Notify the Sheridan County Engineer at least 24 hours prior to backfilling of system. The Sheridan County Engineer will perform a final inspection of the installation to insure compliance with these regulations. The compliance section of the permit will then be signed. If the applicant does not notify the Sheridan County Engineer, the following actions may be taken or require by the Sheridan County Engineer.
 - (1) digging up the system to show compliance with these regulations,
 - (2) revocation of the permit,
 - (3) legal action, or
 - (4) all of the above

Section 11. Duration and Termination of Permits; Transfer of Permits

- a. The duration of construction, installation or modifications permits will be variable, but shall not exceed one year from the date of issuance. The expiration date will be recorded on each permit issued. Those permits issued without a specified expiration date will be in force no more than one year from date of issuance.
- b. Permits will be issued only to the official applicant of record, who must be the owner of the permitted facility, for only the type of construction of record and shall be automatically terminated:
 - (1) Within 60 days after sale or exchange of the facility unless application for transfer is received pursuant to subsection c of this section.
 - (2) When construction is completed. Except that conditions Included in the permit will remain in effect throughout the life of the facility.
 - (3) Upon issuance of a new, renewed or modified permit.
 - (4) Upon written request of the permittee.
- c. Permits shall be transferred to new owners by the new owner providing a written request to the Sheridan County Engineer.
- d. Any conditions established in a construction, installation or modification permit will be automatically transferred to the new owner whenever a transfer of ownership of the facility occurs.

Section 12. Renewal of a Permit. A permit may be renewed where construction has not been completed by contracting the Sheridan County Engineer stating that there will not be any changes in the plans for construction, installation, or modification of a permitted facility no less than 30 days prior to the expiration date of the permit.

Section 13. Denial of a Permit

- a. The Sheridan County Engineer may deny a permit for any of the following reasons:
 - (1) The application is incomplete or does not meet applicable minimum design and construction standards as specified in these regulations.
 - (2) The project, if constructed, will cause violation of applicable state surface or groundwater standard.
 - (3) The project does not comply with applicable state and local water quality management plans as specified in Section 16 of these regulations.
 - (4) No new small wastewater system shall be approved for a building to which connection to a sanitary sewer is cost effective, and the connection is allowed by the controlling authority for the sanitary sewer.
 - (5) Other justifiable reasons.
- b. If the Sheridan County Engineer proposes to deny issuance of a permit, the applicant shall be notified of the intent to deny and the reason for denial.
- c. In the case of the denial or conditioning of a permit by the Sheridan County Engineer, the applicant, if he so desires, may request a hearing before the Board of County Commissioners. A request for hearing shall be made in writing within 20 days of notification of the denial to the Board of County Commissioners and shall state the grounds for the request. Any hearing shall be conducted pursuant to the regulations of Sheridan County. The Board of County Commissioners may not issue a waiver from the design standards of these regulations.

Section 14. Modification of a Permit Either before construction is completed upon a permitted small wastewater system, or during the review of a proposed facility application, the Sheridan County Engineer may, for good cause, modify a construction permit.

- a. When reviewing an application or before construction on a facility is completed, the Sheridan County Engineer may modify a permit due to the following reasons:

- (1) existing, unknown or changing site conditions which would prevent construction and resultant operation from complying with these regulations; or
 - (2) receipt of additional information; or
 - (3) incomplete application on review items where the applicant agrees with the modification; or
 - (4) review items not in compliance with minimum standards where the applicant agrees with the modification; or
 - (5) any other reason necessary to effectuate applicable statutes, standards or regulations.
- b. The Sheridan County Engineer shall notify the permittee by registered or certified mail of intent to modify the permit.
 - c. Such notification shall include the proposed modification and time frame to have modification constructed, installed or operational. Modification requirements shall be implemented before construction, installation, or modification of a facility is completed.
 - d. The modification shall become final within 20 days from the date of such notice unless within that time the permittee requests a hearing before the Board of County Commissioners. Such request for hearing shall be made in writing to the Board of County commissioners and state the grounds for the request. Any hearing held shall be conducted pursuant to the regulations of Sheridan County.
 - e. A copy of the modified permit shall be forwarded to the permittee as soon as the modification becomes effective.

Section 15. Suspension or Revocation of a Permit. The Sheridan County Engineer may suspend or revoke a permit before construction, installation, or modification of a facility is completed for the reasons set forth below, in item b.

- a. Before a permit may be suspended or revoked, the permittee shall be given an opportunity to show compliance with all lawful requirements for the retention of the permit.
- b. The Sheridan County Engineer shall notify the permittee of its intent to suspend or revoke the permit in the event that it becomes necessary due to :
 - (1) non-compliance with the terms of the permit; or
 - (2) unapproved modifications in design or construction; or
 - (3) false information submitted in the application; or

- (4) changing site conditions which would result in violation of applicable regulations:
 - (5) non-compliance with any requirements of these regulations; or
 - (6) any other reason necessary to effectuate applicable statutes, standards or regulations
- c. The notification shall include the reasons for suspension or revocation.
 - d. The suspension or revocation shall become final 20 days from the date of such notice unless within that time the permittee requests a hearing before the Board of County Commissioners. Such a request for hearing shall be made in writing to the Sheridan County Engineer and shall state the grounds for the request. Any hearing held shall be conducted pursuant to the applicable regulations.

Section 16. Compliance with State and Local Water Quality Management Plans. No permit may be issued for any facility which is in conflict with an approved water quality management plan prepared under Section 303, 208 and/or 201 of the Federal Clean Water Act, as amended.

Section 17. Facilities and systems not specifically covered by these standards. This section is provided to encourage new technology and equipment and provide a process for evaluation and permitting of designs which deviate from these regulations. The construction of innovative facilities and processes not in compliance with these regulations will be permitted provided that the facility, when constructed, can operate meeting the purpose of these regulations.

- a. Each application for a permit to construct a facility not in compliance With these regulations shall be evaluated jointly by the Sheridan County Engineer and the Department of Environmental Quality, Water Quality Division on a case-by-case basis using the best available technology. The following information should be included with the application:
 - (1) Data obtained from a full scale, comparable installation which demonstrates the acceptability of the design and/or
 - (2) Data obtained from a pilot plant operated under the design condition for a sufficient length of time to demonstrate the acceptability of the design and/or
 - (3) Data obtained from a theoretical evaluation of the design which demonstrated a reasonable probability of the facility meeting the design objectives; and
 - (4) An evaluation of the flexibility of making corrective changes to the constructed facility in the event it does not function as planned.

- b. If and applicant wishes to construct a pilot plant to provide the data necessary to show the design will meet the purpose of the act, a permit to construct must be obtained.

Section 18. Design Flows. The sewerage system, treatment works and disposal system shall have a minimum absorption area based on the minimum peak design flows listed in Table 1.

Table 1
Quantities of Domestic Sewage Flows

Type of Establishment	Flow
Residential Units	
Single Family Dwellings	150/bedroom
Multiple Family Dwelling (with laundry capabilities)	150/bedroom
Multiple Family Dwelling (without laundry capabilities)	120/bedroom
Cottages	50/persons
Mobile Home Parks	350/home*
Commercial Facilities	
Airports (without restaurants)	4/passengers
Bar	3/patron
Bathhouses and swimming pools	10/persons
Campgrounds (individual sewer outlets available)	100/sites
Campgrounds (service building only)	75/sites
*Must consider flow into the soil absorption system from mobile homes where taps are allowed to run to prevent freezing.	
Church (no food preparation or dishwashing)	5/seat
Church (food preparation and/or dishwashing)	7/seat
Country Club	100/member
Factories (domestic waste only)	30/employee
Hospital (domestic waste only)	200/bed
Motels	80/double bed 40/single bed
Office Building	30/employee
Rest Home	100/resident
School	
Boarding	100/resident student
Day, without gyms, cafeterias, or showers	15/student
Service Stations (domestic waste only)	10/vehicle served
Shopping Center	2/parking space
Store, Retail	30/employee
Theaters: Movie	5/seat
Drive-in	15/vehicle space

Section 19. Isolation.

- a. The isolation distances listed below apply when domestic wastewater is the only wastewater present and the flow is less than 2000 gallons per day (gpd). The minimum isolation distance (in feet) shown in Table 2 shall be maintained.

Table 2

<u>From</u>	<u>To Septic Tank or Equivalent</u>	<u>To Absorption System</u>
Wells (includes neighboring wells)	50	100
Property lines	10	10
Building foundation (without foundation drains)	5	10
(with foundation drains)	5	25
Potable water pipes	25	25
Septic tank		10
Stream or Surface Body of Water (including seasonal and intermittent)	50	50

- b. Location. Absorption systems shall not be located beneath buildings, parking lots, roadways or other similarly compacted areas.

Section 20. Site Suitability.

- a. Soil Exploration. Soil exploration to a minimum depth of four feet below the proposed absorption system shall be made to provide information on subsoil conditions.
- b. Soil Evaluation.
- (1) No less than three percolation tests shall be run in the proposed absorption system location. Additional percolation tests may be required at the discretion of the Sheridan County Engineer. The percolation tests shall be performed in accordance with Appendix A. The type of soil encountered at the percolation test location shall be specified.

- (2) An evaluation of the soil texture by a person experienced in soils classifications may be used to estimate the percolation rate, but at least one percolation tester shall be performed.

c. Groundwater Protection and Bedrock or Impermeable Soil Separation.

- (1) For single family homes, the depth to bedrock or impermeable soil Must be at least four feet from the bottom of the absorption system stone and the natural ground surface. The depth to seasonally high groundwater must be at least four feet from the bottom of the absorption system stone and at least two feet from the natural ground surface.
- (2) For all single-family homes, the depth to bedrock or impermeable soil must be at least four feet from the bottom of the absorption system stone and the natural ground surface. The depth to seasonally high groundwater must be at least four feet from the bottom of the absorption system stone and at least two feet from the natural ground surface. Also, a minimum of three feet of unsaturated sol shall be maintained between the bottom of the absorption system stone and the estimated groundwater mound imposed on seasonally high groundwater table. The height of the groundwater mound may be estimate from Figures 1 through 6. The average daily flow should be used and may be estimated as 0.6 times the flow determined from Table 1.

- d. Excessively Permeable Soils. Soils having a percolation rate of one minute per inch or less are unsuitable for subsurface sewage disposal. These soils may be used if a six-inch layer of soil having a percolation rate of five minutes pre inch or greater is placed between the leach system stone and the existing soil. The soil absorption system shall be sized based on the percolation rate of the fill material.

e. Sloping Ground Installations

- (1) Absorption systems shall not be located in an area where the natural slope is steeper than stated below. The following are the maximum permissible slopes on which an absorption system may be constructed.

Percolation Rate (min/inch)	Maximum Slope*
Faster than 5	25%
6-45	20%
46-60	15%

- (2) All absorption systems must be located at least 15 feet from the top Of any break in slope which exceeds the maximum allowed in subsection 1 above.

Section 21. Building Sewer Pipes.

- a. Building drainpipe. All building drain pipe shall comply with the standards Published in the Uniform Plumbing Code-1982 or other locally approved, nationally recognized plumbing code.
- b. Building sewer pipe. All building sewers shall be installed in accordance with The Uniform Plumbing Code-1982 or other locally approved nationally recognized plumbing code. In the absence of an approved plumbing code, the building sewer shall comply with the following:
 - (1) Material. Polyvinyl Chloride (PVC), Acrylonitrile-Butadiene-Styrene (ABS), cast or ductile iron, Portland cement, or vitrified clay pipe shall be used for sewer pipes. The septic tank inlet and outlet pipes shall be cast or ductile iron or schedule 40 PVC and shall extend past the septic tank excavation to solid ground.
 - (2) Size. Building sewer pipes shall not be smaller than four inches in diameter. They shall be sized to handle the peak hourly flow from the building.
 - (3) Slope. Building sewer pipes should be laid at a minimum slope of 1/4 inch per foot, but shall not be flatter than 1/8 inch per foot.
 - (4) Alignment. Building sewer pipes should be laid in a straight line. Any single change or cumulative change of alignment of 22 ½ degrees

*Flatter slopes may be required where the effluent may surface down slope.

- (5) Cleanouts. Cleanouts shall be provided every 100 feet maximum.
- (6) Backfilling. All sewer piping shall be laid on a firm bed throughout its entire length. It shall be protected from damage due to rocks, hard lumps of soil, debris and the like. Special care shall be utilized to prevent lateral movement or ovulation during backfilling. The backfill material shall be compacted to a density at least equivalent to the trench walls. Backfill over the pipe shall be of sufficient depth to protect the pipe from expected traffic loads and the wastewater from freezing.

Section 22. Soil Absorption System Sizing.

- a. Trench, bed and seepage pit systems. The total infiltrative surface of a soil absorption system shall be calculated based on the flow rate as determined by the criteria stated in Section 18 and with the allowable loading rate as determined by using Figure 7. The total infiltrative surface is the sum of the sidewall and bottom areas of the absorption system below the invert of the distribution pipe.
- b. Soils with a percolation rate of 60 minutes per inch or greater are unacceptable for standard absorption systems.

Section 23. Pretreatment.

a. Septic Tanks

- (1) **Material.** The septic tank shall be constructed of durable material not subject to excessive corrosion or decay and structurally capable of supporting the loads to which it will be subjected. The tank shall be watertight. Steel tanks are not recommended.
- (2) **Size.**
 - (a) Residential units serving no more than 4 families. Minimum liquid volume of septic tanks shall be 1000 gallons for residences through four bedroom capacity. Additional capacity of 250 gallons per bedroom shall be provided for each bedroom over four.
 - (b) Commercial/Industrial Units. Septic tanks shall have a Minimum effective liquid capacity sufficient to provide at least 36-hour retention at peak flow or 1,000 gallons, whichever is greater.
- (3) **Configuration.**
 - (a) The septic tank shall have length to width ratio of no less than two to one, or be so partitioned as to provide protection against short-circuiting of flow. The water depth shall be no less than four feet nor greater than six feet. The septic tank inlet shall be provided with a tee or baffle. The outlet shall be provided with a tee or baffle that extends into the middle third of the water depth to prevent floating or settled solids from carrying over into the disposal field or bed. The inlet pipe shall be at least three inches higher than the outlet pipe.
 - (b) If the septic tank is partitioned, the volume of the first compartment must be at least 50 percent of the total required volume. The partition shall allow venting of the tank.
 - (c) The outlet elevation shall be designed to provide a distance of 20 percent of the liquid depth between the top of the liquid and the bottom of the septic tank cover for scum storage.
- (4) **Access.** A manway access shall be provided to each compartment of the septic tank for inspection and cleaning. The manway access shall have minimum opening of 20 inches in the least dimension. Both inlet and outlet devices shall be accessible. A cleanout having a minimum diameter of six inches shall extend to the ground surface and be capped.

(5) Installation. The septic tank shall be placed on a level grade and a firm bedding to prevent settling.

b. Aerobic Units. Aerobic treatment units can be used as a pretreatment device for a single residential unit serving no more than four families provided the unit carries the seal of testing and approval from the National Sanitation Foundation (NSF) for the NSF Standard No. 40-1978. The unit shall be sized based on the flow quantities stated in Section 18. No reduction in the sizing of soil absorption systems or the final treatment systems shall be permitted if an aerobic unit is used instead of a septic tank. A maintenance agreement with a qualified maintenance firm must be shown for the life of the unit.

Section 24. Dosing Systems following the Septic Tank.

a. Pumping systems for flow up to 200 gallons per day.

(1) Pump tank. Where only one pump is provided, the pump tank shall have the minimum volume as required in Table 3 below. The tank shall comply with the material requirements for septic tanks. The pump tank shall be vented. The vent shall have a downward turn that terminates at least 12 inches above ground and shall be provided with a screen. The pump tank shall have an access manhole provided with an opening at least 20 inches in least dimension.

Table 3
Pump Tank
Volume (gallons) Required Between

Average Flows (gallons per day)	“Off” & “On” <u>Switch</u>	“On” & “Alarm” <u>Switch</u>	“Alarm” Switch & <u>Tank Inlet</u>	Pump Capacity (<u>gpm</u>)
0-499	100	50	200	10
500-999	200	100	400	20
1000-1499	300	100	600	30
1500-2000	400	100	800	40

(2) Pumps.

(a) Sizing. The pump shall have a flow rate of at least ten gallons per minute when installed. The pressure loss (feet of head) of the system can be calculated by adding: the elevation difference between the discharge outlet at the soil absorption system and the low water level in the pump tank; and the friction losses incurred in the pressure transfer pipe and distribution piping. Table 4 may be used to estimate the head loss of the pipe when pumping ten gallons per minute and using plastic pipe.

Table 4
Head Loss
 (for 10 gallons per minute)

<u>Diameter</u> <u>(inches)</u>	<u>Head Loss per 100 feet</u> <u>of pipe (in feet)</u>
1	12
1 ¼	4
1 ½	2

(b) Installation/removal. The pump shall be installed in the tank so that can be removed without entering the tank. This can be accomplished by (1) looping the pipe up near the access manhole with a pipe union provided at the top of the loop, (2) using a quick disconnect sliding coupler, or (3) using a pitless adapter. Chains, cable, or piping can be used to lift the pump out of the tank if designed for this loading. Setting the pump on an 8-inch block minimizes the transfer of any solids that may enter the pump tank.

(c) Electrical controls. The electrical control system for the wastewater pump shall consist of a “pump off” switch, a “pump on” switch, and a “high water alarm” switch which shall be located to provide the necessary volumes as stated in Table 3. All electrical controls (pump electrical cord, switches, etc.) shall comply with National Electrical code-1981, Class 1, Group D, Division 1 locations. All openings around the cables or cords entering the tank shall be sealed.

(3) Pressure Transfer Pipe. The pressure transfer piping between the tank and the leach system shall be designed to drain after each pump cycle to prevent freezing. This can be accomplished by either eliminating the check valve at the pump or by providing a weep hole in the pipe in the tank. If the pipe is long, the tank shall be enlarged by the volume of the pipe to accommodate the volume of liquid drained from the pipe.

(b) Siphons. Where automatic siphons are used, they shall be designed to empty the siphon tank in less than 20 minutes. The siphon tank shall be sized in accordance with subsection 24.1.1 above.

Section 25. Distribution Boxes.

a. General. When distribution box is used it shall be provided with a means of access and shall be installed between the tank and disposal area. Distribution boxes shall be watertight and constructed of concrete or other durable material. They shall be designed to accommodate the necessary distribution piping leading to the disposal area to provide equal distribution of sewage liquids.

b. Distributing piping. The inlet piping to the distribution box shall be at least one inch above the outlet pipes.

c. The distribution box shall be of a construction approved by the Sheridan County Engineer.

Section 26. Subsurface Treatment and Disposal Systems.

a. General Requirements.

- (1) Replacement Area. An area shall be designated and shown on the plans for future installation of a replacement absorption system. If a trench system is used, the replacement area may include the area between the trenches if sufficient spacing has been provided. At least three feet of undisturbed soil shall remain between existing and replacement trench side walls.
- (2) Protection. Effort shall be made to protect the natural absorptive properties of the soil. Soil absorption systems shall not be installed during adverse weather or soil conditions. Rain, severely cold temperatures, or excessively moist soils are considered adverse weather or soil conditions. All smeared or compacted shall be restored to their original infiltrative conditions prior to placement of the stone.
- (3) Runoff. Surface runoff shall be diverted around or away from all soil absorption systems.
- (4) Stone. Soil absorption system stone shall be sized between ½ inch to 2 ½ inches. at least two (2) inches of stone shall be placed over the distribution pipe, and at least six (6) inches of stone shall be placed under and beside the distribution piping. A minimum of twelve (12) inches of stone shall be placed between a seepage pit wall and structural liner. The stone shall be free from sand, silt and clay.
- (5) Gravity pipe. All plastic gravity absorption system pipes shall have a minimum diameter of four (4) inches and shall conform to ASTM standard D2729. Piping in all horizontally constructed absorption systems shall be laid with the holes centered around the vertical axis at the bottom of the pipe. All field tile pipe shall be spaced ¼ inch apart. Piping in horizontally constructed absorption systems shall have maximum slope of three (3) inches per one hundred (100) feet. It is recommended that the ends of the drain field pipe shall be capped or hooked together to form a complete circuit.
- (6) Pressure pipe. All pressure distribution piping shall be designed to withstand the anticipated pressures with a safety factor to two, provide uniform application of the wastewater, and have non-clogging orifices.
- (7) Distribution box. If a distribution box is used, it shall be installed to provide uniform distribution of the wastewater and shall be placed so that it will not be subject to frost heave and in accordance with Section 25.
- (8) Stone cover. A suitable cover such as untreated building paper, filter cloth, or straw shall be placed over the stone prior to backfilling the system. If straw is used, the uncompacted depth should be six to eight inches.

(9) Earth cover. A minimum of 12 inches of earth shall be placed over the absorption system stone. The earth shall be permeable soil that will allow aeration of the system and will support the growth of grass. The earth cover shall be graded to insure that water will not pond on the surface.

(10) Levelness. The bottom of soil absorption systems and each segment of a sidehill system shall be level.

b. Special Requirements of Seepage Pits. If a structural lining is needed to support stone in a seepage pit, it shall be constructed of durable material not subject to excessive corrosion or decay and structurally capable of supporting the loads to which it will be subjected. The lining shall be perforated or otherwise designed to allow the passage of wastewater. Seepage pits shall be separated by a minimum distance equal to 3 times their diameter.

c. Special Requirements for Mounded Systems.

(1) Sizing.

(a) The infiltrative surface between the stone and the fill material shall be sized based on the flow rate as determined by Section 18 and the allowable loading rate as determined by Figure 7 of Section 22 for the percolation rate of the fill. The total infiltrative surface is the sum of the sidewall and bottom areas of the stone-soil interface below the distribution pipe.

(b) The interface area between the fill soil and the native soil shall be sized based on the infiltration rate of the native soil as determined by Figure 7 of Section 22 but shall not be smaller than a system designed to the requirements of subsection 2 below.

(2) Grade. The finished grade shall extend at least three feet horizontally beyond the stone and then be sloped to the parent soil at a grade no steeper than four horizontal to one vertical.

(3) Fill Soil. The fill soil that is placed between the native soil and the stone shall have a minimum percolation rate of five minutes per inch. Topsoil shall be placed over the mound to promote vegetative cover.

(4) Preparation. All trees, roots and other organic matter shall be removed from the area to be occupied by the mound.

d. Special Requirements for Serial Sidehill Trench or Bed Systems.

(1) Separation. A minimum of three (3) feet of undisturbed soil shall be maintained between adjacent trench or bed side walls.

(2) Levelness. The bottom of each serial trench or bed system shall be level.

(3) Overflow. The overflow pipe between serial leach systems shall be set no higher than the mid-point of the upstream distribution pipe. The overflow pipe shall not be perforated.

- f. Special Requirements for Bed Systems. The distribution system piping shall be spaced no more than ten feet apart.

Section 27. Evapotranspiration Beds.

- a. Sizing. The area of evapotranspiration beds shall be determined using the following formula:

$$\text{Area} = 586 \left(\frac{Q}{\text{Pet}-P} \right)$$

where:

Area = Area of the evapotranspiration bed at the ground surface in square feet.

Q = Average daily sewage flow, gallons per day, (0.6 times the flow determined from Table 1).

PET = Potential evapotranspiration rate in inches per year.

P = Annual precipitation rate in inches per year.

- b. Construction.

- (1) If an impervious barrier is necessary for the protection of groundwater it shall be installed between the evapotranspiration bed and the native soil. It shall be a polyvinyl chloride sheet with a minimum thickness of 20 mils or equivalent. A three (3) inch layer of sand shall be placed under and over the liner.
- (2) The bottom 12 inches of the bed shall be filled with clean stone ½-2 ½ inches in diameter.
- (3) Perforated pipe complying with Section 26.a.5 shall be placed in the stone.
- (4) Four (4) inches of pea gravel (less than ¼-inch in diameter) or durable filter cloth shall be placed over the stone.
- (5) A twenty-four (24) inch uniform sand layer in the size range of D50 (0.10mm) shall be placed on top of the pea gravel or filter cloth.
- (6) A six inch layer of sandy topsoil shall be placed on top of the evapotranspiration bed.
- (7) The bed should be vegetated with small shrubs and/or grasses such as fescue, brome or alfalfa.

- (8) the evapotranspiration bed shall be placed at a depth sufficient to prevent surcharging of the septic tank.

Section 28. Holding Tanks.

a. Uses. Holding tanks shall not be used for residential systems when other alternative systems are available, except on a temporary, seasonal or intermittent basis, or when used to correct a failed subsurface disposal system when other alternatives are unavailable. Use of holding tanks for new construction is prohibited. Where holding tanks are allowed, they shall be sized on the basis of seven days storage at the flow rate determined from Table 1.

b. Acceptance. A letter of verification from the receiving agency, denoting acceptance of the wastewater generated shall be submitted with the plans.

c. Location. The location and construction of holding tanks shall meet the requirements for septic tanks in Section 19.a. and Section 23.1.1 respectively.

d. Vent. Each holding tank shall be provided with a two (2) inch minimum diameter vent ending in a return elbow above final grade. The vent shall terminate at least 30 feet from any door, window or fresh air inlet. The vent should be screened.

e. Alarm. All holding tanks shall be equipped with a high water level alarm. The device shall be an audible alarm or an indoor illuminated alarm. The alarm level shall be placed at $\frac{3}{4}$ the depth of the tank.

f. Pump out. A six (6) inch pump out pipe which extends to the surface shall be provided. It shall be capped at all times.

Section 29. Privies.

a. General Requirements.

- (1) All privies shall be designed and constructed to prevent access by flies and rodents.

- (2) If indoor plumbing is installed, the grey water disposal method shall meet the requirements of Section 18 through 28. the minimum design flow for grey water shall be obtained from Table 1 with a reduction of 33 percent allowed for the elimination of black wastes.

- (3) the privy shall consist of a vault and an outhouse building.

b. Isolation. The isolation requirements for privies shall comply with Section 19.1. for absorption systems.

c. Soil Exploration. Soil exploration to a minimum depth of four (4) feet below the bottom of the proposed vault shall be made to provide information on subsoil conditions.

d. Groundwater and Bedrock Separation. The depth to seasonally high groundwater shall be sufficient to prevent floatation of an empty water-tight vault, and at least four (4) feet from the bottom of an unlined vault

e. Sizing. Vaults shall have a minimum capacity of five hundred (500) gallons per riser and shall be a minimum of four and one half (4 ½) feet deep.

f. Construction.

(1) The vault shall be constructed and installed to resist breakage and damage imposed by frost heave, uplift pressures from a fluctuating water table, loads imposed by the outhouse building and soils, and damage that may be caused by vandalism or rough cleaning procedures. The vault shall be constructed to prevent access by flies.

(2) Materials used for vault construction shall be resistant to alkali attack, hydrogen sulfide gas, and other corrosive elements associated with decomposing waste.

(3) A clean-out manhole shall be installed and shall have a minimum opening of twenty (20) inches in the least dimension. The manhole shall be located outside of the outhouse building and be equipped with a tight-fitting secure cover.

(4) The vault shall be ventilated to a point outside and above the outhouse building. The outhouse building shall have a set of vents installed near the floor on two opposite side of the building and a roof vent that has a rain cap. All vents shall be screened.

g. Vault Additives. No chemical or biological additive shall be placed in the vault that may adversely effect the operation of a sewage treatment facility where the vault waste will ultimately be disposed or that may adversely impact the quality of the groundwater as specified in Chapter VIII, "Quality Standards for Groundwater of Wyoming"

Section 30. Chemical Toilets.

a. General requirements. Chemical toilets shall only be used in the containment of body wastes. These requirements apply only to the use of chemical toilets for permanent structures.

b. Greywater. If indoor plumbing is installed, a separate grey water disposal is required and shall meet the requirements of Section 18 through 28. The minimum design flows for greywater shall be obtained from Table 1 with a reduction of 33 percent allowed for the elimination of blackwater wastes.

c. Disposal. All chemical toilet wastes shall be disposed of at an approved wastewater facility. A letter of verification from the receiving agency, denoting acceptance of the wastewater generated shall be submitted with the plans. These wastes shall not be discharged into a soil absorption system.

- d. Construction. Chemical toilets shall be constructed and installed to resist breakage or damage from routine usage. Outdoor chemical toilets shall be adequately stabilized and secured to prevent overturning. Materials used shall be resistant to the sewage wastes and the chemicals encountered. The holding compartment of the toilet shall be constructed to prevent accessibility by the public and by flies and rodents.
- e. Additives. No chemical or biological additive shall be placed in the toilet that may adversely affect the operation of a sewage treatment facility where the toilet waste will ultimately be disposed or that may adversely impact the quality of the groundwater as specified in Chapter VIII, "Quality Standards for Groundwater of Wyoming."

Section 31. Small Waste Stabilization Ponds.

a. General Requirements.

(1) The use of this section for small waste stabilization ponds applies only to those systems defined as small wastewater systems. All other treatment systems shall meet the requirements of Part B or Part C of Chapter XI of the Wyoming Water Quality Rules and Regulations as applicable.

(2) Small Waste stabilization ponds shall only be constructed in soils where the percolation rate exceeds 60 minutes per inch and the soil is at least one (1) foot thick on both the sides and bottom of the pond. If the 60 minute per inch percolation rate cannot be obtained, a sufficient clay shall be incorporated into the top foot of soil until the 60 minute per inch percolation rate is reached. An artificial impermeable liner of 20 mils in thickness may be substituted.

- b. Isolation. The isolation distance shall meet the requirements for absorption systems as specific in Section 19.a.
- c. Groundwater protection and bedrock or impermeable soil separation.
- d. Sizing

(1) The area of the lagoon shall be calculated based on the following formula:

$$A = \frac{584 \times Q}{(365 \times S) + (E - P)} \times 1.30$$

A= Area of the lagoon at the five (5) foot water level in square feet.

Q= Average daily sewage flow (0.6 times the flow determined from Table 1)

S= Soil permeability in inches per day. "S" cannot be greater than 0.25 inches per day. "S" shall equal zero for an artificial liner or for bedrock.

E= Annual evaporation rate in inches per year.

P= Annual precipitation rate in inches per year.

(2) A minimum water level of a least two (2) feet shall be maintained in the pond at all times, including start-up.

(3) A minimum free board of two (2) feet shall be provided between the lowest Embankment berm and the maximum water level. The maximum water level shall not be less than five (5) feet.

e. Construction requirements.

(1) The slopes of the inside dikes shall not be steeper than three (3) horizontal to one (1) vertical nor flatter than four (4) horizontal to one (1) vertical. The slopes of the outside dikes shall not be steeper than three (3) horizontal to one (1) vertical and shall not allow surface runoff to enter the pond.

(2) All organic material and debris shall be removed from the pond site prior to construction.

(3) All fill material shall consist of impervious material that is well compacted and free of rocks, frozen soil, or other large material.

(4) The minimum top width of the dike shall be eight (8) feet.

(5) The pond area shall be enclosed with a six (6) foot high fence which has a maximum opening of six (6) inches. The fence shall be topped with two (2) strands of barbed wire. An access gate shall be provided for maintenance equipment. The gate shall provide the security equivalent to the fence.

(6) A minimum of one (1) sign shall be placed on each side of the pond and shall be attached to the fence. The sign shall describe the facility and advise against trespassing.

Section 32. Validity Clause. If any section, subsection, sentence, clause, or phrase of these rules and regulations is for any reason held to be unconstitutional or invalid, such decision shall not affect the validity of the remaining portions of these rules and regulations.

Section 33. Enforcement. Any person, firm or corporations violating the provisions of this regulation shall be deemed guilty of a misdemeanor. Each and every day or portion thereof during which any violation of any of the provisions of the regulation is committed, continued or permitted shall be considered a separate offense. Upon conviction of any such violation, such a person may be punished as provided by law with a fine of up to \$50 and 10 days in jail per day of violation.

APPENDIX A

Percolation Test Procedure

- a. **Location.** The percolation test holes shall be spaced uniformly over the proposed absorption field site. A minimum of three (3) holes are required.
- b. **Preparation.** A four (4) inch to twelve (12) inch hole shall be dug or bored to the proposed depth of the absorption field. The walls shall be vertical. To expose a natural soil surface, the sides and bottom shall be scraped with a sharp pointed instrument and the loose material shall be removed from the hole. Coarse sand or gravel shall be placed in the bottom of the hole to prevent it from scouring and sealing.
- c. **Presoaking.** The purpose of presoaking is to have the water conditions in the soil reach a stable condition similar to that which exists during continual wastewater soil conditions but must be sufficiently long so that the water seeps away at a constant rate. The following presoaking instructions are usually sufficient to obtain a constant rate.

1. In sandy soils, place twelve (12) inches of water in the hole and allow it to seep away. Fill the hole again with twelve (12) inches of water and if the water seeps away in ten (10) minutes or less, it indicates that the soil is excessively permeable and requirement in Section 20.d. of these regulations shall be followed. If the water remains after ten (10) minutes, additional saturation is necessary. Refer to section c.2. below.
 2. In other soils, maintain twelve (12) inches of water in the hole for at least four (4) hours. After the four (4) hours of water contact, allow the soil to settle for twelve (12) hours before starting the percolation rate measurement as stated in section d. below.
- d. **Percolation rate measurement.** The water level should be adjusted to six (6) inches above the gravel initially and after each time interval measurement when necessary.

1. In other soils, establish a fixed reference point and measure the drop in water level at constant intervals. The water level drop should be measured to the nearest 1/8 of an inch. The test may be terminated when the water drop is consistent for three (3) consecutive measurements.
2. The percolation rate for each hole is calculated as follows:

$$\frac{\text{Time Interval (Minutes)}}{\text{Final Water Level Drop (inches)}}$$

If only three (3) to five (5) percolation tests are performed, the design percolation rate for the absorption system is the slowest rate from all the holes tested. If six (6) or more percolation tests are performed, the design percolation rate for the absorption system is the average of all holes tested as determined by the above formula.