

Chapter 25 Clean Version 6/9/2016

Section 3, Line Numbers 36 and 37:

Text changed from “New construction following the effective date of this regulation must obtain authorization under a new permit or modification of existing permitted facilities” to “New construction or modification of existing facilities following the effective date of this regulation must obtain authorization under a new permit.

Section 17, Line Number 1109

Text changed from “A permit by rule requires the owner to submit the information contained in paragraph (e) of this section to the Wyoming Department of Environmental Quality, Water Quality Division prior to constructing or installing the system” to “A permit by rule requires the owner to submit the information contained in paragraph (e) of this section to the Wyoming Department of Environmental Quality, Water Quality Division prior to constructing, modifying, or installing the system.”

Chapter 25

SEPTIC TANKS, SOIL ABSORPTION SYSTEMS, AND OTHER SMALL WASTEWATER SYSTEMS

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CHAPTER 25**SEPTIC TANKS, SOIL ABSORPTION SYSTEMS, AND OTHER SMALL WASTEWATER SYSTEMS****Section 1. Authority.**

This rule is promulgated pursuant to Wyoming Statutes (W.S.) 35-11-101 through 35-11-1904, specifically 35-11-302(a)(iii).

Section 2. Objective.

This Chapter contains the minimum standards for the design and construction of small wastewater systems that are defined by W.S. 35-11-103(c)(ix). In addition, this Chapter contains the minimum standards for the design and construction of Underground Injection Control (UIC) Class V facilities 5C1-5C3, 5C6, 5D1, 5E1, 5E3-5E5 as defined in Chapter 27, Appendices C and D.

The following situations will require the application package to be sealed, signed, and dated by a professional engineer (PE): non-domestic wastewater from commercial and industrial facilities, high strength wastewater, individual permits to construct, or standard soil absorption systems with a soil percolation rate that is either less than 5 minutes per inch (mpi) or more than 60 minutes per inch (mpi).

These standards pertain to permits required pursuant to Chapters 3 and 25, Wyoming Water Quality Rules and Regulations. The installation of all components of a small wastewater system require a permit to construct. Permits to construct are specified throughout this chapter as general permits, described in Chapter 3, Section 7; permit by rule, described in Chapter 3, Section 8; or as individual permits to construct, described in Chapter 3, Section 6.

Section 3. Timing of Compliance with These Regulations.

Any Chapter 3 permit-to-construct issued for facilities subject to this chapter prior to the effective date of these regulations, and any facility authorized under the Division's "General Permit to Construct, Install, Modify or Operate a Small Wastewater Facility" shall remain covered under those permits. New construction or modification of existing facilities following the effective date of this regulation must obtain authorization under a new permit.

Section 4. Definitions

(a) **"100 year floodplain"** means a tract of land throughout a watershed that has a one-in-one hundred chance or occurrence of flooding in any given year or a return period of once every 100 years, as determined by the United States Geological Survey (USGS), Federal Emergency Management Agency (FEMA) or a local planning and development authority.

(b) **"Absorption surface"** means the interface where treated effluent infiltrates into native or fill soil.

- 49 (c) **“Bed”** means a soil treatment and dispersal system where the width is greater than
50 three (3) feet.
51
- 52 (d) **“Bedrock”** means geological layers, of which greater than fifty percent (50%) by
53 volume consist of unweathered in-place consolidated rock or rock fragments. Bedrock also
54 means weathered in-place rock that cannot be hand augered or penetrated with a knife blade.
55
- 56 (e) **“Bedroom”** means any room that is or may be used for sleeping.
57
- 58 (f) **“Blackwater”** means water containing fecal matter and/or urine.
59
- 60 (g) **“Five day biochemical oxygen demand (BOD5)”** means a measurement of the
61 dissolved oxygen used by microorganisms in the biochemical oxidation of organic matter during
62 a five (5) day period.
63
- 64 (h) **“Building sewer”** means the pipe that carries wastewater from the building.
65
- 66 (i) **“Chamber”** means a domed open bottom structure that is used in lieu of perforated
67 distribution pipe and gravel media.
68
- 69 (j) **“Delegated small wastewater program”** means a local governmental entity,
70 delegated by the Administrator, with the authority to administer the provisions of W.S. 35-11-
71 301(a) (iii) for small wastewater systems pursuant to the provisions of W.S. 35-11-304.
72
- 73 (k) **“Direct human consumption food crops”** are crops consumed directly by humans.
74 These include but are not limited to fruits, vegetables, and grains grown for human consumption.
75
- 76 (l) **“Domestic wastewater”** means a combination of the liquid or water-carried wastes
77 from residences, business buildings, institutions, and other establishments arising from normal
78 living activities.
79
- 80 (m) **“Domestic septage”** means liquid or solid material removed from a waste treatment
81 vessel that has received only wastes from residences, business buildings, institutions, and other
82 establishments arising from normal living activities.
83
- 84 (n) **“Dosing tank”** means a tank equipped with an automatic siphon or pump designed
85 to discharge effluent on an intermittent basis.
86
- 87 (o) **“Effluent”** means liquid flowing out of a septic tank, other treatment vessel, or
88 system.
89
- 90 (p) **“Effluent filter”** means a removable, cleanable device inserted into the outlet piping
91 of a septic tank or other treatment vessel designed to trap solids that would otherwise be
92 transported to the soil absorption system or other downstream treatment components.
93
- 94 (q) **“Evapotranspiration”** means the combined loss of water from soil by evaporation
95 from the soil or water surface and by transpiration from plants.
96

97 (r) **“Greywater”** means untreated wastewater that has not been contaminated by any
98 toilet discharge; that is unaffected by infectious, contaminated, or unhealthy bodily wastes; and
99 does not present a threat from contamination by unhealthful processing, manufacturing, or
100 operating wastes. “Greywater” includes but is not limited to wastewater from bathtubs, showers,
101 washbasins, clothes washing machines (unless soiled diapers are serviced), laundry tubs, and
102 kitchen sinks.

103
104 (s) **“Grease interceptor”** means a device designed to separate fats, oils, and grease
105 from wastewater.

106
107 (t) **“Groundwater”** means subsurface water that fills available openings in rock or soil
108 materials such that they may be considered water saturated under hydrostatic pressure.

109
110 (u) **“High groundwater”** means seasonally or periodically elevated levels of
111 groundwater.

112
113 (v) **“High strength wastewater”** means a wastewater stream with a BOD5 higher than
114 200 mg/L.

115
116 (w) **“Holding tank”** means a watertight receptacle designed to receive and store
117 wastewater.

118
119 (x) **“Manifold”** means a non-perforated pipe that distributes effluent to individual
120 distribution pipes.

121
122 (y) **“Mound system”** means an onsite wastewater system where any part of the
123 absorption surface is above the elevation of the existing site grade and the absorption surface is
124 contained in a mounded fill body above the grade.

125
126 (z) **“Mulch basin”** means an excavated area that has been refilled with a highly
127 permeable media, organic and inorganic materials intended to distribute greywater to irrigate
128 vegetation.

129
130 (aa) **“Pathogens”** are disease-causing organisms. These include, but are not limited to
131 certain bacteria, protozoa, viruses, and viable helminth ova.

132
133 (bb) **“Percolation rate”** means the time expressed in minutes per inch required for water
134 to seep into saturated soil at a constant rate.

135
136 (cc) **“Pipe invert”** means the bottom of the internal surface of the pipe.

137
138 (dd) **“Percolation test”** means the method used to measure the percolation rate of water
139 into soil as described in Appendix A.

140
141 (ee) **“Permit by rule”** means an authorization included in these rules that does not
142 require either an individual permit or a general permit. A facility that is permitted by rule must
143 meet the requirements found in this chapter, but is not required to apply for and obtain a permit to
144 construct and operate the facility.

145 (ff) “**Pressure distribution**” means a network of pipes in which effluent is forced
 146 through orifices under pressure.

147
 148 (gg) “**Restrictive layer**” means a nearly continuous layer that has one or more physical
 149 or chemical properties that significantly impede the movement of water and air through the soil or
 150 that restrict roots or otherwise provide unfavorable root conditions. Examples are bedrock,
 151 cemented layers, and dense layers.

152
 153 (hh) “**Septage**” means liquid or solid material removed from a waste treatment vessel
 154 that has received wastes from residences, business buildings, institutions, and other
 155 establishments.

156
 157 (ii) “**Septic tank**” means a watertight tank designed and constructed to receive and treat
 158 raw wastewater

159
 160 (jj) “**Serial distribution**” means a group of trenches arranged so that the total effective
 161 absorption area of one trench is used before liquid flows into the next trench.

162
 163 (kk) “**Service provider**” means a person authorized and trained by a system
 164 manufacturer or their vendor to operate and maintain any proprietary system.

165
 166 (ll) “**Soil absorption system**” means a shallow, covered, excavation surface, or mound
 167 made in unsaturated soil into which wastewater effluent from the septic tank is discharged
 168 through distribution piping for application onto absorption surfaces through porous media or
 169 manufactured components.

170
 171 (mm) “**Trench**” means an absorption surface with a width of three (3) feet or less.

172
 173 **Section 5. Design Flows.**

174
 175 The volume of wastewater shall be determined by one of the following:

- 176
 177 (a) Tables 1 and 2 provided in this section.
 178
 179 (b) Metered water supply data from the facility.
 180
 181 (c) Metered water supply data from another facility where similar water demands have
 182 been demonstrated.

183
 184 **Table 1. Residential Design Flow Rates per Bedroom (gallons per day, gpd)¹**

1 bedroom	150
2 bedrooms	280
3 bedrooms	390
4 bedrooms	470
5 bedrooms	550
6 bedrooms	630

185 ¹An unfinished basement is considered two (2) additional bedrooms.

186 ²The design flow shall be increased by eighty (80) gpd for each additional bedroom over six (6).

187

Table 2. Non-Residential Wastewater Design Flow Rates¹

Facility	Unit	Flow (gallons/unit/day)
Airports	person	4
Apartment	bedroom	120
Automobile Service Station	vehicle served	10
Bars	seat	20
Bathhouses and swimming pools	person	10
Campgrounds (w/ toilets only)	person	25
Campgrounds (w/shower facility)	person	45
Church	person	4
Country Club	member	25
Day School, Office Building, Retail Store, Warehouse (no showers)	person	15
Hospital	bed	250
Industrial Building (sanitary waste only)	employee	20
Laundry (self-service)	machine	450
Mobile Home	bedroom	see table 1
Motel, Hotel, Resort	bedroom	140
Recreational Vehicle	each	100
Rest Home, Care Facility, Boarding School	bed	100
Restaurant	meal	10
Restaurant (kitchen waste only)	meal	6
Theater	seat	3

188

¹Values shown in the above table are the typical flow rates from *Wastewater Engineering Treatment and Reuse*, Metcalf and Eddy, 2003.

189

190

191

Section 6. Systems Not Specifically Covered by This Rule.

192

193

194

195

196

197

This section is provided to encourage new technology and equipment and provide a process for evaluating and permitting designs that deviate from this rule. The proposed construction of facilities and processes not in compliance with this rule may be permitted provided that the facility, when constructed and operated, meets the objective of these rules.

198 (a) Each application for a permit to construct shall include an engineering design report,
199 detailed construction plans, and technical specifications for all piping, tanks, and equipment. All
200 of the documents shall have a suitable title showing the owner's name and the Wyoming
201 registration number, seal, and signature of the engineer.
202

203 (b) Each application for a permit to construct will be evaluated on a case-by-case basis
204 using the best available technology. The application shall include at least one of the following:
205

206 (i) Data obtained from a full scale, comparable installation that demonstrates the
207 acceptability of the design.
208

209 (ii) Data obtained from a pilot plant operated under the design condition for a
210 sufficient length of time to demonstrate the acceptability of the design.
211

212 (iii) Data obtained from the theoretical evaluation of the design that demonstrates a
213 reasonable probability the facility will meet the design objectives.
214

215 (iv) An evaluation of the flexibility of making corrective changes to the constructed
216 facility in the event it does not function as planned.
217

218 (c) If an applicant wishes to construct a pilot plant to provide data necessary to show the
219 design will meet the purpose of the act, a permit to construct must be obtained.
220

221 **Section 7. Site Suitability.**
222

223 (a) Small wastewater systems must be located where the surface drainage is sufficient to
224 allow proper operation of the small wastewater system. Avoid depressions and bases of slopes
225 and areas in the path of runoff from roofs, patios, driveways, or other paved areas unless surface
226 drainage is provided. Small wastewater systems shall not be located beneath buildings, parking
227 lots, roadways, driveways, irrigated landscaping, or compacted areas.
228

229 (b) The site must include area for both the proposed soil absorption system and a future
230 replacement soil absorption system. Both the proposed and replacement soil absorption systems
231 shall be sized to receive one-hundred (100%) percent of the wastewater flow. If a trench system
232 is used, the replacement soil absorption system may be located between the trenches of the
233 proposed soil absorption system if there is at least nine (9) feet of spacing between trench
234 sidewalls.
235

236 (c) For standard soil absorption systems, effective suitable soil depth shall extend at least
237 four (4) feet below the bottom of the soil absorption system to any restrictive layer, fractured
238 rock, or highly permeable material.
239

240 (d) The depth to high groundwater shall be at least four (4) feet below the bottom of the
241 absorption surface for all treatment systems except pressure distribution. For pressure distribution
242 systems, the depth to high groundwater shall be at least three (3) feet below the bottom of the
243 absorption surface if the percolation rate of the soil is five (5) minutes per inch or greater (5-60
244 mpi).
245
246

(e) Slope

(i) Table 3 shows the maximum permissible slopes of the site on which an absorption system may be constructed

Table 3. Slope and Percolation Rates for Absorption Systems

Percolation Rate (minutes/inch)	Maximum Slope ¹
5	25%
6-45	20%
46-60	15%

¹ Flatter slopes may be required where the effluent surfaces downslope.

(ii) Serial distribution, with the use of drop boxes or approved fittings, is the preferred installation method for sloping terrain. The bottom of individual trenches shall be level and the trenches shall be constructed to follow the contours of the land.

(iii) The placement of multiple trenches, with each subsequent trench down slope of the previous trench shall be avoided when the addition of effluent to the soil absorption system trenches may lead to either an unstable slope or seepage down slope.

(iv) All absorption surfaces must be located at least 15 horizontal feet from the top of any break in slope that exceeds the maximum slope allowed.

(f) Soil Exploration Pit and Percolation Tests

(i) Delegated small wastewater programs shall require a percolation test in addition to the soil exploration pit.

(ii) A minimum of one soil exploration pit within the proposed soil absorption system location shall be excavated to a minimum depth of four (4) feet below the bottom of the proposed soil absorption system to evaluate the subsurface conditions.

(iii) The percolation test shall be performed in accordance with Appendix A of this chapter. An evaluation of the soil texture, in the proposed soil absorption system location, by a person experienced in soils classification, may be used as an additional tool to confirm the percolation rate.

289 (g) Minimum horizontal setback distances (in feet) are as follows:
 290
 291

Table 4. Minimum Horizontal Setbacks for Domestic Wastewater in Feet^{1,2}

From	To Septic Tank Or Equivalent	To Absorption System
Wells (includes neighboring wells)	50	100
Public Water Supply Well	100	200 ²
Property Lines	10	10
Foundation Wall (w/o drains)	5	10
Foundation Wall (with drains)	5	25
Potable Water Pipes	25	25
Septic Tank	N/A	10
Surface Water, Spring (including seasonal and intermittent)	50	50
Cisterns	25	25

292 ¹ For disposal of non-domestic wastewater, the setback distance shall be determined by a
 293 hydrogeological study in accordance with Section 17(b) of Chapter 3, but shall not be less than
 294 the distances shown in Table 4.

295
 296 ² Small wastewater systems that discharge to the same aquifer that supplies a public water supply
 297 well and are located within Zone 1 or 2 (Attenuation) of the public water supply well, as
 298 determined by *Wyoming Department of Environmental Quality Source Water Assessment Project*
 299 *(2004)* or as established in Section 2 of the [Wyoming Wellhead Protection Guidance Document](#)
 300 [\(1997\)](#), shall provide additional treatment. These systems will be required to obtain an individual
 301 permit to construct and will require that a PE sign, stamp, and date the application, as stated in
 302 Section 2 of this chapter. The additional treatment shall be in accordance with Chapter 3 Section
 303 2(b)(ii). The treatment system shall be designed to reduce the nitrates to less than 10 mg/L of
 304 NO₃- as N and provide 4-log removal of pathogens before the discharge leaves the property
 305 boundary of each small wastewater system.

306
 307

308 **Section 8. Soil Absorption System Sizing.**

309

310 (a) The total infiltration surface area of a soil absorption system shall be calculated by
 311 dividing the design flow rates (gpd) from Table 1 or Table 2 by the loading rate (gpd/ft²) found in
 312 Table 5.

313
 314
 315
 316
 317
 318

319

Table 5. Rates of Wastewater Application for Soil Absorption System Areas

Percolation Rate (mpi)	Loading Rate (gpd/ft²)	Percolation Rate (mpi)	Loading Rate (gpd/ft²)
5	0.80	21	0.45
6	0.75	22	0.44
7	0.71	23-24	0.43
8	0.68	25	0.42
9	0.65	26-27	0.41
10	0.62	28-29	0.40
11	0.60	30-31	0.39
12	0.58	32-33	0.38
13	0.56	34-35	0.37
14	0.54	36-37	0.36
15	0.52	38-40	0.35
16	0.50	41-43	0.34
17	0.49	44-46	0.33
18	0.48	47-50	0.32
19	0.47	51-55	0.31
20	0.46	56-60	0.30

320

321

(b) The total infiltration area shall be defined as follows:

322

323

324

(i) For standard trenches the total infiltration area shall be calculated based on the following formula:

325

326

$$A = L(W + 2S)$$

327

328

A = Total infiltration area

329

330

L = Total length of trench

331

332

W = Bottom width

333

334

S = Sidewall height of 12 inches or less

335

336

337

(A) The sidewall height is the depth below the flowline of the pipe to the bottom of the trench.

338

339

340

(B) The maximum credit for sidewall height shall not exceed twelve (12) inches even if the actual sidewall height exceeds twelve inches.

341

342

343

(ii) For chamber trenches, the total infiltration area shall be calculated based on the following formula:

344

345

346

347

348

349

350 $A = L(E + 2S)$

351

352 A = Total infiltration area

353

354 L = Total length of trench

355

356 E = Effective bottom width (Multiply width of the chamber by factor of 1.43 to
357 get effective bottom width)

358

359 S = Sidewall height of 12 inches or less

360

361 (A) The factor of 1.43 incorporates a thirty percent (30%) reduction of the
362 bottom area.

363

364 (B) The maximum credit for sidewall height shall not exceed twelve (12)
365 inches even if the actual sidewall height exceeds twelve (12) inches.

366

367 (C) The sidewall height is the height of the slotted sidewall of the chamber or
368 depth below the flow line of the inlet pipe, whichever is less.

369

370 (D) The total length of the trench is the number of chambers in a row
371 multiplied by the length of one piece of chamber.

372

373 (iii) For standard bed systems, the total infiltration area shall be calculated based
374 on the following formula:

375

$$A = LW$$

376

377 A = Total infiltration area

378

379 L = Total length of bed

380

381 W = Width of the bed

382

383 (A) The sidewall credit shall not be used in calculating the total infiltration area
384 for a bed system.

385

386 (iv) For chamber bed systems, the total infiltration area shall be calculated based
387 on the following formula:

388

$$A = L(E \times R)$$

389

390 A = Total infiltration area

391

392 L = Total length of bed

393

394 E = Effective bottom width of the chamber (Multiply width of the chamber by
395 factor of 1.43 to get effective bottom width)

396

397 R = Number of chamber rows (Multiply effective bottom width of chamber by
398 number of chamber rows to get effective bottom width of bed.)

399
400 (A) The factor of 1.43 incorporates a thirty percent (30%)
401 reduction of the bottom area.

402
403 (B) The total length is the number of chambers in a row
404 multiplied by the length of one piece of chamber.

405
406 (c) Coarse sand or soils having a percolation rate less than one (1) minute per inch (mpi)
407 are unsuitable for subsurface effluent disposal. These soils may be used if a one (1) foot layer of
408 fine sand or loamy sand is placed below the constructed soil absorption system. The soil
409 absorption system shall be sized based on the percolation rate of the fill material.

410

411 **Section 9. Building Sewer Pipes.**

412

413 All building sewers shall be installed in accordance with the 2012 International Plumbing
414 Code (IPC). In the absence of a locally approved plumbing code, and in addition to the IPC, the
415 building sewer shall comply with the following:

416

417 (a) Suitable building sewer pipe materials are polyvinyl chloride (PVC) or acrylonitrile-
418 butadiene-styrene (ABS). The septic tank inlet and outlet pipes shall be schedule 40 PVC or
419 ABS pipe and shall span the excavations for the septic tank and/or dosing chamber. American
420 Society for Testing and Materials (ASTM) D-3034 Standard Dimension Ratio (SDR) 35 plastic
421 pipe may be used if the void at the tank's side is filled with material that is granular, clean, and
422 compacted.

423

424 (b) Building sewer pipes shall be sized to handle the peak hourly flow from the building
425 and shall not be smaller than four (4) inches in diameter. When two different sizes or types of
426 sewer pipes are to be connected, a proper type of fitting or conversion adapter shall be used.

427

428 (c) Sewer pipe shall not decrease in size flowing downstream.

429

430 (d) Building sewer pipes shall be laid at a standard slope of 1/4 inch per foot, and shall
431 not be flatter than 1/8 inch per foot.

432

433 (e) Cleanouts shall be provided between the structure and the tank, at branch
434 connections, every change in alignment, and at least every 100 feet in straight runs.

435

436 (f) All sewer piping shall be laid on a firm bed throughout its entire length. It shall be
437 protected from damage due to rocks, hard lumps of soil, debris, and the like.

438

439 (g) Special care shall be used to prevent lateral movement or deformation during
440 backfill. The backfill material shall be compacted to a density at least equivalent to the trench
441 walls. Backfill over the pipe shall be of sufficient depth to protect the pipe from expected traffic
442 loads and the wastewater from freezing.

443

444 **Section 10. Septic Tanks and Other Treatment Tanks.**

445

446 (a) Septic Tanks

447

448 (i) Septic tanks shall be fabricated or constructed of concrete, fiberglass,
449 thermoplastic or an approved material. Tanks shall be watertight and fabricated to constitute an
450 individual structure, and shall be designed and constructed to withstand anticipated loads. As part
451 of the application review process, Department of Environmental Quality, Water Quality Division
452 (DEQ/WQD) or the delegated small wastewater program shall review the design of prefabricated
453 septic tanks for compliance with applicable construction standards.
454

455 (ii) The septic tank shall be placed on a level grade and a firm bedding to prevent
456 settling. Where rock or other undesirable protruding obstructions are encountered, the opening
457 for the septic tank shall be over excavated, as needed, and backfilled with sand, crushed stone, or
458 gravel to the proper grade.
459

460 (A) Septic tanks shall not be buried deeper than the tank manufacturer's
461 maximum designed depth for the tank. The minimum depth of soil cover over the top of the tank
462 is six (6) inches.
463

464 (B) Backfill around and over the septic tank shall be placed in such a manner
465 as to prevent undue strain or damage to the tank or connected pipes.
466

467 (C) Septic tanks shall not be placed in areas subject to vehicular traffic unless
468 engineered for the anticipated load.
469

470 (iii) Size
471

472 (A) The minimum liquid volume of a septic tank shall be 1000 gallons for
473 residences up to a four (4) bedroom capacity. Additional capacity of 150 gallons per bedroom
474 shall be provided for each bedroom over four (4).
475

476 (B) Septic tanks for high strength wastewater or non-residential units shall
477 have a minimum effective liquid capacity sufficient to provide at least 48 hour retention at design
478 flow or 1,000 gallons, whichever is greater.
479

480 (iv) Configuration
481

482 (A) Single compartment septic tanks shall have a length to width ratio of no
483 less than two (2) to one (1), or be partitioned to protect against short circuiting flow.
484

485 (B) For septic tanks with two (2) compartments or more, the inlet
486 compartment shall not be less than one-half (1/2) of the total capacity of the tank.
487

488 (C) The liquid depth shall be between three (3) feet and six (6) feet.
489

490 (D) The tank partition shall allow the venting of gases between
491 compartments and out through the vent stack on the plumbing system of the house.
492

493 (E) The inlet and outlet on all tanks or tank compartments shall be provided
494 with open-ended sanitary tees or baffles made of approved materials constructed to distribute
495 flow and retain scum in the tank or compartments.
496

497 (I) The tees or baffles shall extend above the liquid level a minimum
498 distance of five (5) inches.

499
500 (II) The inlet tees or baffles shall extend below the liquid level at least
501 eight (8) inches but no more than 40% of the liquid level. The outlet tees or baffles shall extend
502 below the liquid level at least ten (10) inches but no more than 45% of the liquid level.

503
504 (III) A minimum of one (1) inch of clear space shall be provided over
505 the top of the baffles or tees for venting.

506
507 (IV) The inlet pipe shall be at least two (2) inches higher than the outlet
508 pipe. The outlet elevation shall be designed to provide a minimum distance of nine (9) inches or
509 twenty (20) percent of the liquid depth between the top of the liquid and the bottom of the septic
510 tank cover for scum storage and the venting of gases.

511
512 (v) If additional septic tank capacity over 1,000 gallons is needed, it may be
513 obtained by joining tanks in series provided the following requirements are met:

514
515 (A) The inlet of each successive tank shall be at least two (2) inches lower
516 than the outlet of the preceding tank, and shall have no tee or baffle except for the inlet to the first
517 tank and the outlet for the last tank.

518
519 (B) The first tank or the first compartment of the first tank shall be equal to
520 fifty percent (50%) or larger of the total septic tank system volume.

521
522 (vi) An access opening shall be provided to each compartment of the septic tank for
523 inspection and cleaning.

524
525 (A) The access opening(s) in the cover/lid of the tank shall have a minimum
526 diameter of twenty (20) inches. Both inlet and outlet devices shall be accessible.

527
528 (B) The riser from the access opening shall terminate at a maximum of six
529 (6) inches below the ground surface. Riser covers terminating above grade shall have an
530 approved locking device.

531
532 (vii) Land application of domestic septage in remote areas that meet the conditions
533 found in Appendix B will be permitted as a permit by rule. Delegated small wastewater programs
534 may issue individual permits.

535
536 (viii) An effluent filter with an opening of 1/8-inch or smaller shall be provided on
537 the outlet of a septic tank or other tank that precedes a small diameter pressure distribution
538 system.

539
540 (b) Dosing Tanks

541
542 (i) Dosing tanks shall meet the same material and installation requirements as
543 septic tanks. Dosing tanks shall have a minimum 20-inch diameter access opening and it shall
544 have a riser from the access opening to the ground surface. The following table shall be used to
545 calculate the size of the dosing tank:

546

Table 6. Dosing Tank Volume (gallons)

Average Design Flows (gpd)	0-499	500-999	1000-1499	1500-2000
Between Pump “off” and Tank Inlet	350	700	1000	1300
Between Tank Inlet and Alarm Switch	200	400	600	800
Between Alarm switch and Pump “on”	50	100	100	100
Between Pump “on” and Pump “off”	100	200	300	400
Recommended Pump Capacity (gpm)	10	20	30	40

547

548

549

550

(ii) High water alarms shall be provided for all tanks that use pumps or siphons. The alarm device shall be an audible alarm or an indoor illuminated alarm or both.

551

552

(iii) The minimum effluent level shall achieve complete submergence of the pump.

553

554

555

(iv) Dosed systems using a siphon shall have a dose counter installed to check for continued function of the siphon.

556

557

(c) Holding Tanks

558

559

560

561

(i) Holding tanks shall meet the same material requirements as septic tanks. Holding tanks shall have a twenty (20)-inch minimum diameter access opening. A riser shall be brought to ground surface from the access opening.

562

563

564

565

(ii) 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 soil absorption system when other alternatives are unavailable.

566

567

568

569

(iii) Holding tanks must be located in an area readily accessible to the pump truck and where the tank itself will not float due to high groundwater. If seasonal high groundwater may be present, the tank shall be properly anchored.

570

571

572

(iv) The minimum liquid volume shall be the greater of 1,000 gallons or seven (7) days storage based upon flow rate determined from Section 5.

573

574

575

576

(v) All holding tanks shall be equipped with a high-water level alarm. The device shall be an audible alarm or an indoor illuminated alarm or both. The device shall be installed so that the alarm is triggered when the water level reaches 3/4 of the tank capacity.

577

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584

(vi) A design package for holding tanks is provided online at the Division’s website to assist the applicant in submitting a completed application for coverage under the general permit for small wastewater systems. The worksheet and calculations were prepared by a registered professional engineer employed by the Wyoming Department of Environmental Quality, Water Quality Division. The general design requirements stated in this section are incorporated into the worksheets such that by properly completing the forms and installing the components, the system will comply with these requirements.

585

586

(d) Grease Interceptors

587 (i) A commercial or institutional food preparation facility with a waste stream
588 containing fat, oil, and grease (FOG) in excess of 25 mg/L shall install an exterior grease
589 interceptor or a device approved by the delegated health department or county. Facilities that
590 typically have waste streams high in FOG are, but not limited to, restaurants, cafeterias,
591 slaughterhouses, and institutional kitchens.

592
593 (ii) Waste streams high in FOG shall be plumbed separately and directly to a
594 grease interceptor prior to the waste treatment process.

595
596 (iii) Waste streams from sanitary facilities such as bathrooms, toilets, urinals, or
597 other similar fixtures shall not be discharged into the grease interceptor. These sources must be
598 connected at least four to six (4-6) feet downstream of the grease interceptor's discharge. The
599 design shall prevent any backflow from the sanitary sources into the grease interceptor.

600
601 (iv) Only one source facility per grease interceptor shall be allowed.

602
603 (v) Grease interceptors shall be located so that they are easily accessible for
604 inspection, cleaning, and removal of the collected wastes. The interceptor shall not be closer than
605 fifteen (15) feet from the last discharging fixture and no further away than thirty-five (35) feet.

606
607 (vi) Grease interceptors shall have at least two (2) compartments with a 20-inch
608 minimum diameter access opening for each compartment for cleanout. Each access opening shall
609 have a riser brought to the surface and have a sealed lid that is rated for any anticipated load.
610 There shall be a means provided to sample the effluent.

611
612 (vii) There shall be no internal cleanout tees or bypasses.

613
614 (viii) The inlet and outlet of the grease interceptor shall be vented. The vent pipe
615 shall be at least two (2) inches in diameter. The inlet and outlet vents shall not be interconnected.

616
617 (ix) The outlet pipe invert shall be no more than two (2) inches lower than the inlet
618 invert.

619
620 (x) The dividing wall between compartments shall be the same height as the other
621 walls and the cover should contact the top of the dividing wall. If the partition/dividing wall does
622 not contact the cover, the outlet tee or baffle shall extend below the liquid level, 40-50% of the
623 total liquid depth.

624
625 (xi) The effluent from each compartment shall be drawn from the bottom of a riser
626 pipe that terminates at least eighteen (18) inches below the inlet pipe invert of that same
627 compartment.

628
629 (xii) Grease interceptors shall be accessible during normal business hours without
630 interrupting normal business operations.

631
632 (xiii) Grease interceptors shall be installed in accordance with the manufacturer's
633 instructions and applicable requirements of this section. A copy of the manufacturer's
634 instructions shall be submitted with every permit to construct application submitted to
635 DEQ/WQD.

(xiv) Grease interceptors shall be sized according to the following:

Kitchens (grease, garbage)

Number of meals per peak hour	X	Waste Flow rate*	X	Retention time**	X	Storage factor***	=	Interceptor size (liquid capacity)
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*Waste flow rate – see Table 2.

**Retention times

Kitchen waste:	
Dishwasher and/or disposal	2.5 hours
Single service kitchen:	
Single serving with disposal	1.5 hours

***Storage factors

Fully equipped commercial kitchen	8 hr. operation: 1 16 hr. operation: 2 24 hr. operation: 3
Single service kitchen:	1.5

(A) The minimum interceptor size (liquid capacity) shall be 750 gallons.

(e) Other Interceptors

(i) Interceptors are required for oil, grease, sand, and other substances harmful or hazardous to the building drainage system, or the small wastewater treatment system.

(A) Laundries

(I) Commercial laundries, laundromats, and dry-cleaners shall be equipped with an interceptor in order to reduce the quantity of lint and silt that enter the collection system.

(II) The system must be of adequate size and design to allow for cool-down of wastewater so that separation can be more readily achieved.

(III) The interceptor shall be installed with a wire basket or similar device. The wire basket or similar device shall be removable for cleaning and shall prevent passage into the drainage system of solids 1/2 inch (12.7 mm) or larger in size, such as string, rags, buttons, or other materials which are detrimental to the waste treatment system.

(IV) Sizing must be in accordance with the following formula:

675
676

Laundries (grease, lint, silt)

Total gallons per cycle	X	Cycles per hour	X	Retention time*	X	Storage factor**	=	Interceptor
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677
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*Retention times

Institutional laundries	2.5 hours
Standard commercial laundry	2.0 hours
Light commercial laundry	1.5 hours

680
681
682

**Storage factors

8 hours of operation	1.0
12 or more hours of operation	1.5

683
684

(B) Car Washes

685
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690

(I) Where automobiles are washed (including detail shops using hand-wash practices), separators shall have a minimum capacity of 1000 gallons for the first bay, with an additional 500 gallons of capacity for every other bay.

691
692
693
694

(II) Additionally, wash racks must be constructed to eliminate or minimize the impact of run-off from rain/storm events. Minimum requirements are roofed structures with at least two walls and appropriate grading to prevent stormwater infiltration into the sanitary sewer.

695
696
697

(III) An effluent sampling point is required.

698
699

(f) Abandonment of Septic and Holding Tanks

700
701
702

The following is the procedure to abandon septic tanks and holding tanks when the system is upgraded, equipment replacement is necessary, or central sewer lines are made available.

703
704
705
706
707

(i) The abandoned tank should be pumped and the septage hauled to a licensed facility approved to receive the waste or the septage pumped into the newly constructed septic or holding tank. Discharging to a central sewer requires coordination with, and the approval of, the owner/operator of the sewer system.

708
709
710
711

(ii) Once the abandoned tank is empty, it should be removed and the excavation backfilled. As an alternative to removing the tank, the access covers can be removed; the bottom drilled or broken up sufficient to drain; and the tank filled with native soil, pit run, or sand.

712
713
714

(iii) If the abandoned tank is part of a Class V UIC facility, the abandonment must also be in compliance with Chapter 27, Section 19.

Section 11. Effluent Distribution Devices.

Distribution boxes and flow divider tees are suitable for level or nearly level ground and are installed before the soil absorption system with the goal of splitting flows equally between soil absorption system laterals. Drop boxes are suitable for sloping ground and are installed to achieve serial loading.

(a) Distribution Boxes

(i) The distribution box shall be installed on a level, stable base to prevent tilting or settling, and to minimize movement from frost heave.

(ii) Boxes shall be watertight and constructed of concrete or other durable material.

(iii) Boxes shall be designed to accommodate the inlet pipe and the necessary distribution lines. The inlet piping to the distribution box shall be at least one (1) inch above the outlet pipes and all pipes shall have a watertight connection to the distribution box.

(iv) The box shall be protected against freezing and made accessible for observation and maintenance.

(v) Boxes shall have flow equalizers installed on each outflow.

(b) Flow divider tees may be used in place of distribution boxes.

(c) Drop boxes are suitable for sloping ground and are installed to achieve serial loading. The drop boxes shall meet the requirements in paragraphs (a)(i through v) of this section.

Section 12. Standard Soil Absorption Systems.**(a) General Design Requirements:**

(i) All soil absorption systems shall be designed in such a manner that the effluent is effectively filtered and retained below the ground surface. The absorption surface accepts, treats, and disperses wastewater as it percolates through the soil.

(ii) Soil absorption systems shall not be excavated when the soil is wet enough to smear or compact easily. Open soil absorption system excavations shall be protected from surface runoff to prevent the entrance of silt and debris. All smeared or compacted surfaces shall be raked to a depth of one (1) inch, and loose material removed before filter or filler material is placed in the soil absorption system excavation.

(iii) Soil absorption systems shall be designed to approximately follow the ground surface contours so that variation in excavation depths will be minimized. The trenches may be installed at different elevations, but the bottom of each individual trench shall be level throughout its length.

762 (iv) Shallow soil absorption system depths are encouraged to promote treatment
763 and evapotranspiration. The minimum soil cover depth over the soil absorption system is one (1)
764 foot. The maximum depth to the bottom absorption surface of a soil absorption system is five (5)
765 feet. Finished grading shall prevent ponding and promote surface water runoff.

766
767 (v) Pipes, chambers or other products shall be bedded on firm, stable material.
768 Heavy equipment shall not be driven in or over soil absorption systems during construction or
769 backfilling.

770
771 (vi) Standard trenches refer to perforated pipe embedded in aggregate-filled
772 trenches that shall conform to the following:

773
774 (A) The perforated pipe shall have a minimum diameter of 4 inches. Suitable
775 pipe materials include: ASTM D-2729-11 PVC, ASTM D-3034-08 PVC, Schedule 40 PVC
776 ASTM d1784-11, and ASTM F810-07 PE.

777
778 (B) The aggregate shall be crushed rock, gravel or other acceptable, durable
779 and inert material that is free of fines, and has an effective diameter between ½ inch and 2- ½
780 inches.

781
782 (C) Prior to backfilling, the aggregate shall be covered throughout with a
783 woven/non-woven geotextile material or a three (3) inch layer of straw.

784
785 (D) Aggregate shall extend the full width and length of the soil absorption
786 system to a depth of at least twelve (12) inches with at least six (6) inches of drain gravel under
787 the distribution pipe and at least two (2) inches over the distribution pipe.

788
789 (E) Maximum width of trench excavation is three (3) feet.

790
791 (F) Minimum spacing of trenches (wall to wall) is three (3) feet. Trench
792 spacing shall be increased to nine (9) feet when the area between each trench is considered as
793 reserve area. For clay loam soils that have percolation rates greater than 60 min/in., the nine (9)
794 foot spacing shall also be required but it is not considered as reserve area.

795
796 (vii) Standard beds shall conform to the same pipe and aggregate requirements for
797 trenches as found in subparagraphs (vi)(A through D) of this section. Standard beds shall also
798 conform to the following:

799
800 (A) The soils shall have percolation rates less than 60 minutes per inch (5-60
801 mpi). The bottom of the bed must be level, therefore the site shall be relatively flat, sloping no
802 more than one (1) foot from the highest to the lowest point in the installation area.

803

804 (B) Distribution laterals within a bed must be spaced on not greater than six
805 (6) feet centers. Sidewalls shall not be more than three (3) feet from a distribution lateral.

806

807 (C) Beds must not be wider than twenty-five (25) feet if gravity distribution
808 is used. Multiple beds must be spaced at one-half the bed width.

809

810 (D) Rubber tired vehicles must not be driven on the bottom surface of any
811 bed excavation.

812

813 (viii) Chambered trenches, when used in lieu of perforated pipe and aggregate, shall
814 be installed in conformance with the manufacturer recommendations. No cracked, weakened,
815 modified, or otherwise damaged chamber units shall be used in any installation.

816

817 (A) All chambers shall be an open, arch-shaped structure of durable, non-
818 degradable design, suitable for distribution of effluent without filter material.

819

820 (B) All chamber endplates shall be designed so that the bottom elevation of
821 the inlet pipe is at least six (6) inches from the bottom of the chamber.

822

823 (C) Inlet and outlet effluent sewer pipes shall enter and exit the chamber
824 endplates. Inspection ports shall be installed at all outlet effluent sewer pipes.

825

826 (D) All chambers shall have a splash plate under the inlet pipe or another
827 design feature to avoid unnecessary channeling into the trench bottom.

828

829 (E) The maximum width of the bottom absorption surface for a chambered
830 trench is three (3) feet. The excavation to install a chambered trench may exceed three (3) feet.

831

832 (F) Minimum spacing of trenches (wall to wall) is three (3) feet. Trench
833 spacing shall be increased to nine (9) feet when the area between each trench is considered as
834 reserve area. For clay loam soils that have percolation rates greater than 60 min/in., the nine (9)
835 foot spacing shall also be required but it is not considered as reserve area.

836

837 (ix) Chambered beds shall conform to the same requirements for chambered
838 trenches as found in subparagraphs (viii)(A through D) of this section. Aggregate, as specified in
839 subparagraph (vi)(B) of this section, or native soil shall be used to fill the space between the
840 chambers.

841

842 (x) Serial Sidehill Trench:

843

844 (A) A minimum of six (6) feet of undisturbed soil shall be maintained
845 between adjacent trench or bed side walls.

846

847 (B) The bottom of each serial trench or bed system shall be level.

848

849 (C) The overflow pipe between serial soil absorption systems shall be set no
850 higher than the mid-point of the upstream distribution pipe. The overflow pipe shall not be
851 perforated.

852

853 (b) A design package for standard soil absorption systems is provided online at the
854 Division's website to assist the applicant in submitting a completed application for coverage
855 under the general permit for small wastewater systems. The worksheet and calculations were
856 prepared by a registered professional engineer employed by the Wyoming Department of
857 Environmental Quality, Water Quality Division. The general design requirements stated in this
858 section are incorporated into the worksheets such that by properly completing the forms and
859 installing the components, the system will comply with these requirements.

860

861 **Section 13. Pressure Distribution Systems.**

862

863 (a) General Design Requirements:

864

865 (i) The basic elements of a pressure distribution system include a dosing tank,
866 filter, and a means to deliver specified doses to a small diameter pipe network within a soil
867 absorption system. Pressure distribution is required for mound systems or for bed systems with a
868 width greater than twenty-five (25) feet.

869

870 (ii) Pumps must be sized to match the distribution system curve or demand.
871 Pumps shall be designed for sewage pumping applications and be accessible from the ground
872 surface.

873

874 (iii) The control system for the pump and dosing tank shall, at a minimum, consist
875 of a "pump off" switch, a "pump on" switch, and a "high liquid alarm".

876

877 (A) All electrical connections must be made outside of the chamber in either
878 an approved weatherproof box or an explosion-proof junction box.

879

880 (B) The wiring from the junction box to the control box must pass through a
881 sealing fitting to prevent corrosive gases from entering the control panel.

882

883 (C) All wires must be contained in solid conduit from the dosing chamber to
884 the control box.

885

886 (iv) The pressure transport piping between the tank and the soil absorption system
887 shall be designed to prevent freezing.

888

889 (A) The ends of lateral piping shall be constructed with long sweep elbows or
890 an equivalent method to bring the end of the pipe to finished grade. The ends of the pipe shall be
891 provided with threaded plugs, caps, or other devices to allow for access and flushing of the
892 lateral.

893

894 (B) All joints in the manifold, lateral piping, and fittings shall be solvent-
895 welded using the appropriate joint compound for the pipe material. Pressure transport piping
896 may be solvent-welded or flexible gasket jointed.

897
898 (C) Where automatic siphons or other devices are used, they shall be
899 designed to empty the dosing tank in less than ten (10) minutes.

900
901 (v) The pressure distribution system shall have a combination of at least three (3)
902 vertical feet of filter sand and/or unsaturated native soil above the high groundwater level. The
903 filter sand shall conform to ASTM C-33, with less than 2% passing the #200 sieve.

904
905 (b) A design package for pressure distribution systems is provided online at the
906 Division's website to assist the applicant in submitting a completed application for coverage
907 under the general permit for small wastewater systems. The worksheet and calculations were
908 prepared by a registered professional engineer employed by the Wyoming Department of
909 Environmental Quality, Water Quality Division. The general design requirements stated in this
910 section are incorporated into the worksheets such that by properly completing the forms and
911 installing the components, the system will comply with these requirements.

912
913 **Section 14. Sand Mound Systems.**

914
915 The sand mound consists of a sand fill, an aggregate bed and a soil cap.

916
917 (a) Selection Criteria:

918
919 The high groundwater level, bedrock, or impervious clay layer is less than four (4) feet below the
920 bottom of the soil absorption system excavation.

921
922 (b) Site Requirements:

923
924 (i) A minimum of one (1) foot of vertical separation of the native soil is required
925 between the bottom of the sand fill and the top of the high groundwater level, any restrictive
926 layer, or any highly permeable material.

927
928 (ii) The percolation rate of the native soil at the interface of the sand fill shall be
929 greater than five (5) and less than sixty (60) minutes per inch (5-60 mpi). The percolation shall
930 be measured in the top twelve (12) inches of native soil.

931
932 (c) General Design Requirements:

933
934 (i) Sand Layer

935
936 (A) Filter sand shall conform to ASTM C-33, with less than two percent
937 (2%) passing through the #200 sieve.

938

939 (B) The minimum depth of sand below the aggregate bed surface shall be
940 one (1) foot.

941
942 (C) The sand mound shall have a combination of at least four (4) vertical feet
943 of filter sand and unsaturated native soil above the high groundwater level.

944
945 (I) For sand mounds using pressure distribution systems, the depth
946 to high groundwater shall be three (3) feet below the bottom of the absorption surface if the
947 percolation rate of the soil is five (5) minutes per inch or greater (5-60 mpi).

948
949 (D) The top of the sand layer under the aggregate bed shall be level in all
950 directions.

951
952 (E) The sand layer shall fill around the perimeter of and to the top of the
953 aggregate bed.

954
955 (F) The slope of all sides shall be three (3) horizontal to one (1) vertical or
956 flatter. The side slopes shall be graded to prevent seepage and/or ponding at the bottom of the
957 slope.

958
959 (G) The infiltration area, which is the bottom of the sand fill, shall be
960 calculated by dividing the design flowrates (gpd) from Table 1 or Table 2 by the loading rate
961 (gpd/ft²) found in Table 5.

962
963 (ii) Aggregate Bed

964
965 (A) The aggregate shall be crushed rock, gravel or other acceptable, durable
966 and inert material that is free from fines, and has an effective diameter between one-half (1/2)
967 inch and two and one half (2 ½) inch.

968
969 (B) The aggregate bed depth shall not be less than nine (9) inches with a
970 minimum of six (6) inches of clean aggregate placed below the distribution pipe and two (2)
971 inches above the distribution pipe. The aggregate shall be covered with an approved geotextile
972 material after installation and testing of the pressure distribution system.

973
974 (C) The design shall be a long, narrow bed design with a maximum width of
975 twenty-five (25) feet.

976
977 (D) The infiltration area, which is the bottom of the aggregate bed, shall be
978 calculated by dividing the design flowrates (gpd) from Table 1 and Table 2 by the loading rate of
979 0.8 gpd/ft².

980
981

982 (iii) Soil Cover

983
984 (A) The soil cap shall be constructed of a sandy loam, loamy sand, or silt
985 loam. The depth of the soil cap shall be at least six (6) inches at the edges to twelve (12) inches
986 at the center. The slope of all sides shall be three (3) horizontal to one (1) vertical or flatter.

987 (B) A layer of top soil at least six (6) inches thick shall be placed over the
988 entire sand mound area. The sand mound should be planted with vegetation that does not require
989 watering and will not establish deep roots. Native grasses are commonly used.

990
991 (d) A design package for sand mound systems is provided online at the Division's
992 website to assist the applicant in submitting a completed application for coverage under the
993 general permit for small wastewater systems. The worksheet and calculations were prepared by a
994 registered professional engineer employed by the Wyoming Department of Environmental
995 Quality, Water Quality Division. The general design requirements stated in this section are
996 incorporated into the worksheets such that by properly completing the forms and installing the
997 components, the system will comply with these requirements.

998
999 **Section 15. Small Wastewater Lagoons.**

1000
1001 (a) Selection Criteria:

1002
1003 (i) Lagoons shall only be considered in areas of Wyoming where the annual
1004 evaporation exceeds the annual precipitation during the active use of the lagoon.

1005
1006 (ii) Lagoons shall only be allowed when the percolation rate exceeds sixty (60)
1007 minutes per inch and the soil extends vertically down at least two (2) feet from the bottom of the
1008 lagoon to the seasonal high groundwater table or bedrock formations.

1009
1010 (iii) A lagoon shall not be constructed within the 100 year floodplain.

1011
1012 (b) General Design Requirements:

1013
1014 (i) Beyond the horizontal setback distances requirements specified in Section 7(g)
1015 of this rule, the lagoon shall not be placed within one hundred (100) feet of the owner's property
1016 line.

1017
1018 (ii) The use of a septic tank that meets the specifications in Section 9 of this rule
1019 shall be required before the small wastewater lagoon.

1020
1021 (iii) The lagoon shall be located and constructed so it will not receive surface runoff
1022 water.

1023 (iv) The slope of the lagoon site shall not exceed five percent (5%).

1024
1025 (v) The lagoon site must be located in an area of maximum exposure to sun and
1026 wind.

1027
1028 (vi) The lagoon shall be designed for complete retention.

1029
1030 (vii) The area of the lagoon shall be calculated based on the following formula.

1031

$$1032 \quad A = \frac{584 \times Q}{(365 \times S) + (E - P)}$$

1033

1034 A = Area of the lagoon (in square feet) at the maximum operating depth of five (5) feet.

1035

1036 Q = Average daily sewage flow, gallons per day. (Multiply values from Table 1 or 2 by
1037 0.6 to get average daily flow.)

1038

1039 E = Average annual lake evaporation in inches per year. (Note: lake evaporation is less
1040 than pan evaporation; lake evaporation equals pan evaporation times a pan coefficient of 0.7)

1041

1042 P = Average annual precipitation rate in inches per year.

1043

1044 S = Seepage rate in decimal form, in inches per day.

1045

1046 (viii) The slopes of the dikes shall not be steeper than three (3) horizontal to one (1)
1047 vertical. The minimum width of the top of the dike shall be four (4) feet.

1048

1049 (ix) All fill shall consist of impervious material that is well compacted and free of
1050 rocks, frozen soil, or other large material.

1051

1052 (x) The minimum operating depth shall be two (2) feet. The dikes shall provide a
1053 minimum freeboard of two (2) feet.

1054

1055 (xi) The floor of the lagoon shall be level and maintained free of all vegetation.

1056

1057 (xii) The influent line into the lagoon must discharge near the center.

1058

1059 (xiii) A cleanout, with a tightly fitting cap, ~~or manhole~~ shall be provided in the
1060 influent line near the dike.

1061

1062 (xiv) The area around the small wastewater lagoon shall be fenced to preclude the
1063 entrance of livestock, pets, and humans. The fence shall be equipped with a locking gate. The
1064 gate shall have a sign indicating "NO TRESPASSING – WASTEWATER LAGOON".

1065

1066 (c) A design package for a small wastewater lagoons is provided online at the Division's
1067 website to assist the applicant in submitting a completed application for coverage under the
1068 general permit for small wastewater systems. The worksheet and calculations were prepared by a
1069 registered professional engineer employed by the Wyoming Department of Environmental
1070 Quality, Water Quality Division. The general design requirements stated in this section are
1071 incorporated into the worksheets such that by properly completing the forms and installing the
1072 components, the system will comply with these requirements.

1073 **Section 16. Privies or Outhouses.**

1074
1075 Privies or outhouses that meet the requirements of this section are permitted by rule. A
1076 permit by rule requires the owner to submit the information contained in paragraph (g) of this
1077 section to the Wyoming Department of Environmental Quality, Water Quality Division prior to
1078 constructing or installing the facility. By submission of the required information, the owner
1079 acknowledges and certifies they will comply with the requirements contained in this section.

1080
1081 Pre-fabricated privies or outhouses shall be sealed, water-tight vaults and shall meet the
1082 following conditions.

1083
1084 (a) The horizontal setback distance requirements for sealed privies or outhouses shall
1085 comply with Section 7(g) for septic tanks.

1086
1087 (b) The depth to seasonally high groundwater from the bottom of a water tight vault shall
1088 be sufficient to prevent floatation of the empty vault.

1089
1090 (c) The vault must have sufficient capacity for the dwelling served, and must have at
1091 least 27 cubic feet or 200 gallons of capacity.

1092
1093 (d) Privies or outhouses must be insect tight; must have a self-closing door; the privy or
1094 outhouse seat must include a cover; and all exterior openings, including vent openings, shall be
1095 screened.

1096
1097 (e) Privies or outhouses must be adequately vented.

1098
1099 (f) Privies or outhouses shall not be constructed within the 100 year floodplain.

1100
1101 (g) Owner's name, address, phone number, legal description of privy or outhouse
1102 (address, latitude/longitude, or ¼ ¼ section), and the date construction or installation will begin.

1103
1104 **Section 17. Greywater Systems.**

1105
1106 Greywater systems that meet the requirements of this section are permitted by rule. A
1107 permit by rule requires the owner to submit the information contained in paragraph (e) of this
1108 section to the Wyoming Department of Environmental Quality, Water Quality Division prior to
1109 constructing, modifying, or installing the system. By submission of the required information, the
1110 owner acknowledges and certifies they will comply with the requirements contained in this
1111 section.

1112
1113 (a) Greywater Operation and Requirements

1114
1115 (i) Restrictions

1116
1117 (A) Greywater shall not leave the property on which it is generated.
1118 Ponding or runoff is prohibited.

1119
1120 (B) Greywater systems shall not be installed in a delineated floodplain.

1121

1122 (C) The volume of greywater shall not exceed an average of 2000 gallons
1123 per day.

1124 (D) Greywater shall not come in direct contact with or adversely impact
1125 surface or groundwater.
1126

1127 (E) Food crops for direct human consumption should not be harvested for
1128 30 days after application of greywater.
1129

1130 (ii) Odor control of the greywater system shall meet the requirement of
1131 Wyoming DEQ Air Quality Regulations Chapter 2, Section 11.
1132

1133 (iii) If the greywater system is to be used during the winter, the greywater system
1134 shall be designed to prevent freezing.
1135

1136

1137 (b) Estimating Greywater Discharge

1138

1139 (i) The greywater discharge for single family and multi-family dwellings shall be
1140 calculated by estimates of greywater use based on water use records, or the following procedure:

1141

1142 (A) The number of occupants of each dwelling unit shall be calculated as 2
1143 occupants per bedroom.

1144

1145 (B) The estimated greywater flows of each occupant shall be calculated in
1146 gallons per day (gpd) as follows:

1147

1148 Showers, bathtubs and wash basins – 25 gpd/occupant

1149

1150 Laundry – 15 gpd/occupant

1151

1152 (ii) The total number of occupants shall be multiplied by the applicable estimated
1153 greywater discharge as provided above and the type of fixtures connected to the greywater
1154 system.

1155

1156 (c) Greywater System Configurations

1157

1158 (i) All greywater systems shall have means to direct greywater to either the
1159 blackwater system or the greywater system.

1160

1161 (ii) Diverter valves shall not have the potential to allow backflow from the
1162 blackwater system into the greywater system.

1163

1164 (iii) Greywater used for surface irrigation should be disinfected. The disinfection
1165 should achieve a fecal coliform level of 200 cfu/100 mL or less.

1166

1167 (d) Setbacks

1168

1169 (i) A 30 foot buffer zone is required between the greywater application site and
1170 adjacent property lines and any public right-of-way.

1171
1172 (ii) A 30 foot separation distance is required between greywater application sites
1173 and all surface waters.

1174
1175 (iii) A 100 foot separation distance is required between greywater application sites
1176 and all potable water supply wells.

1177
1178 (e) Owner's name, address, phone number, legal description of greywater system
1179 (address, latitude/longitude, or ¼ ¼ section), and the date construction or installation will begin.

1180 **Section 18. Operation and Maintenance.**

1181
1182 (a) For any system that disposes of wastewater through land application or subsurface
1183 filtration, the owner shall not add any chemical or biochemical additive to the system that would
1184 adversely affect the quality of the groundwater as stated in the WDEQ Water Quality Rules &
1185 Regulations, Chapter 8.

1186
1187 (b) Septic tanks shall be pumped as needed to prevent solids carryover into the soil
1188 absorption system.

1189
1190 (c) Holding tanks and sealed vaults shall be pumped prior to reaching their maximum
1191 capacity.

1192
1193 (d) Any service provider that pumps septic tanks, holding tanks, or sealed vaults, shall
1194 dispose of the wastewater contents at a permitted wastewater treatment facility or in a manner
1195 approved by the Division or delegated authority.

1196
1197 (e) Damaged fittings and broken, crushed or plugged piping associated with any small
1198 wastewater system shall be replaced in a timely manner.

1199
1200 (f) Composting or non-discharging toilets, where permitted, shall have their waste
1201 disposed of at a permitted wastewater treatment facility or landfill, or in a manner approved by
1202 the Division or delegated authority.

1203
1204 **Section 19. Commercial and Industrial Wastes and/or Domestic Wastes Greater**
1205 **Than 2000 Gallons per Day.**

1206
1207 (a) Commercial/industrial wastewater systems or combination commercial/industrial and
1208 domestic wastewater systems are subject to applicable requirements listed in sections 1 through
1209 15 of this chapter, in addition to requirements in this section.

1210
1211 (b) If the wastewater is classified as, or determined to be hazardous, toxic, and/or contain
1212 petroleum products, the applicant shall demonstrate to the administrator that any discharge or
1213 seepage from the wastewater facility will not cause a violation of the surface and/or groundwaters
1214 of the state in accordance with Chapter 1, "Quality Standards for Wyoming Surface Waters" and
1215 Chapter 8, "Quality Standards for Wyoming Groundwaters."

1216

1217 (c) If the impact of the hazardous, toxic, and/or petroleum products cannot be
 1218 determined and mitigated, disposal of the wastewater using a soil absorption system shall be
 1219 prohibited.

1220
 1221 (d) Pre-treatment of the wastewater to remove the hazardous, toxic, and/or petroleum
 1222 products shall be required prior to disposal if deemed necessary to protect the groundwater(s) and
 1223 surface water(s) of the state.

1224
 1225 (e) The minimum horizontal setback distances (in feet) shown in Table 7 shall be
 1226 maintained for commercial and industrial wastes and/or wastes greater than 2000 gallons per day
 1227 but less than 10,000 gallons per day.

1228
 1229
 1230

Table 7. Minimum Horizontal Setbacks for Commercial and Industrial Wastes in Feet¹

From	To Septic Tank Or Equivalent	To Absorption System
Wells (includes neighboring wells)	50	200
Public Water Supply Well	100	500 ²
Property Lines	10	10
Foundation Wall (w/o drains)	5	10
Foundation Wall (with drains)	5	50
Potable Water Pipes	25	50
Septic Tank	N/A	10
Surface Water, Spring (including seasonal and intermittent)	50	100
Cisterns	50	50

1231 ¹ For systems larger than 10,000 gallons per day, the isolation distance shall be determined by a
 1232 hydrogeological study in accordance with Section 17(b) of Chapter 3, but shall not be less than
 1233 those shown in Table 7.

1234
 1235 ² Wastewater systems that discharge to the same aquifer that supplies a public water supply well
 1236 and are located within Zone 1 or 2 (Attenuation) of the public water supply well, as determined
 1237 by [Wyoming Department of Environmental Quality Source Water Assessment Project \(2004\)](#) or
 1238 as established in [Section 2 of the Wyoming Wellhead Protection Guidance Document \(1997\)](#),
 1239 shall provide additional treatment. These systems will be required to obtain an individual permit
 1240 to construct and will require that a PE sign, stamp, and date the application, as stated in Section 2
 1241 of this chapter. The additional treatment shall be in accordance with Chapter 3, Section 2(b)(ii).
 1242 The treatment shall reduce the nitrates to less than 10 mg/L of NO₃- as N and provide 4-log
 1243 removal of pathogens before the discharge leaves the property boundary of each small wastewater
 1244 system.

APPENDIX A Percolation Test Procedure

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Section 1. Purpose

(a) Percolation tests are used to determine absorption system site suitability and to size the absorption system.

Section 2. Procedure

(a) General Requirements:

(i) Percolation tests shall not be conducted in test holes that extend into groundwater, bedrock, or frozen ground.

(ii) The percolation test shall be conducted only after the soil exploration pit has been dug and examined.

(iii) A minimum of three (3) percolation test holes are required.

(iv) The percolation test holes shall be spaced uniformly over the proposed soil absorption system site.

(b) Preparation

(i) A twelve (12) inch diameter hole shall be dug or bored to the proposed depth of the soil absorption system.

(ii) The walls shall be vertical, with the natural soil surface exposed without smearing.

(iii) The sides and bottom shall be scarified with a sharp pointed instrument and the loose material shall be removed from the hole.

(iv) Two (2) inches of gravel or coarse sand shall be placed in the bottom of the hole to prevent it from scouring and sealing during water addition.

(c) Presoaking

(i) 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 application. The minimum time of presoaking varies with 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.

(A) Fill each hole with clear water to a level at least eighteen (18) inches above the gravel or coarse sand. If the eighteen (18) inches of water seeps away in eighteen (18) minutes or less, add eighteen (18) inches of water a second time. If the second filling of eighteen (18) inches of water seeps away in eighteen (18) minutes or less, this indicates the soil is sandy

1293 and is excessively permeable. The soil absorption system shall meet the requirements of Section
1294 8 (c).

1295
1296 (B) If either the first or second fillings of eighteen (18) inches of water does
1297 not seep away in ninety (90) minutes, eighteen (18) inches of water must be maintained in the
1298 hole for at least four (4) hours to presoak the test hole. After the four (4) hours of water contact
1299 time, wait at least twelve (12) hours before starting the percolation rate measurement.

1300
1301 (d) Percolation Rate Measurement

1302
1303 (i) Fill each test hole with twelve (12) inches of water and allow the soil to
1304 rehydrate for fifteen (15) minutes prior to any measurements.

1305
1306 (ii) Establish a fixed reference point to measure the incremental water level drop at
1307 constant time intervals. The water level drop should be measured to the nearest $\frac{1}{8}$ of an inch and
1308 the minimum time interval is ten (10) minutes.

1309
1310 (iii) Refill the test hole to twelve (12) inches above the gravel before starting the
1311 measurements. Continue to measure the incremental water level drop at a constant time interval
1312 until a consistent incremental water level drop is achieved. A consistent water level drop is
1313 achieved when three (3) consecutive water level drops are within $\frac{1}{8}$ inches of each other.

1314
1315 (iv) Before the water level drops below one (1) inch above the gravel, refill the test
1316 hole to twelve (12) inches and continue to measure the incremental water level drop.

1317
1318 (v) The percolation rate is calculated for each hole using the following formula:

1319

$$\frac{\text{Time Interval (Minutes)}}{\text{Final Water Level Drop (inches)}} = \text{Percolation Rate (minutes/inch)}$$

1320 (vi) If only three to five percolation tests are performed, the design percolation rate
1321 for the absorption system is the largest rate from all the holes tested. If six or more percolation
1322 tests are performed, the design percolation rate for the absorption system is the average of all the
1323 holes tested as determined by the above formula.

1324 (e) The following information shall be recorded:

1325
1326 (i) Date(s) of test(s);

1327
1328 (ii) Location, diameter, and depth of each test hole;

1329
1330 (iii) Duration of presoak;

1331
1332 (iv) Time of day for beginning and end of each water-level drop interval;

1333
1334 (v) Each water-level drop measurement;

1335
1336 (vi) Calculated percolation rate;

1337
1338

- 1339 (vii) Name and signature of person performing test;
- 1340
- 1341 (viii) Name of owner or project name; and
- 1342
- 1343 (ix) Certification that the percolation test was done in accordance with Wyoming
- 1344 Water Quality Rules and Regulations Chapter 25 Appendix A.
- 1345

APPENDIX B Land Application of Domestic Septage in Remote Areas

Section 1. Restrictions and Requirements

To qualify for the land application of domestic septage in remote areas, the following conditions must be met.

(a) Location restrictions:

(i) Domestic septage generated on a specific property may be land applied on said property, and shall not be transported to another location for land application.

(ii) No land application of domestic septage shall occur within 1,000 feet of all adjacent properties.

(iii) No land application of domestic septage shall occur within 300 feet of a public road, permanent surface water body, or intermittent stream.

(b) Site restrictions:

(i) The land application of domestic septage shall only occur on those sites with established vegetation such as rangeland, pasture or hay meadows.

(ii) No more than 5,000 gallons of domestic septage per acre per year shall be land applied.

(iii) No land application of domestic septage shall occur where the site's slope exceeds five percent (5%) or where the depth to groundwater is less than four (4) feet.

(iv) The land application of domestic septage shall not occur between November 1 and May 1, or any other time when frozen or saturated ground conditions exists.

(v) No public access shall be allowed to any site where domestic septage has been applied for at least one (1) year following application.

(vi) No grazing animals shall be allowed access to any site where domestic septage has been land applied for at least thirty (30) days following application.

(c) Crop restrictions:

(i) No root crops shall be harvested from soils where domestic septage has been land applied for at least thirty-eight (38) months following application

(ii) No truck crops (harvested parts touch land surface) shall be harvested from soils where domestic septage has been land applied for at least fourteen (14) months following application.

1393 (iii) No commodity crops (other food, feed, and fiber crops whose harvested parts
1394 do not touch land surface) from soils where domestic septage has been land applied shall be
1395 harvested for at least thirty (30) days following application.

1396
1397 (iv) No turf shall be harvested from soils where domestic septage has been land
1398 applied for at least one (1) year following application.

1399
1400 (d) Reporting Requirements:

1401
1402 (i) The property owner shall notify the appropriate Department of Environmental
1403 Quality, Water Quality Division (DEQ/WQD) District Engineer prior to the land application of
1404 domestic septage to confirm the requirements and to arrange a possible DEQ/WQD inspection of
1405 the land application.

1406
1407 (ii) All records related to each septage application will be maintained for at least
1408 five (5) years.

1409
1410 (iii) There is a worksheet provided online at the Division's website that must be
1411 completed, signed, and returned to the DEQ/WQD, or the appropriate delegated local permitting
1412 authority, within 15 days of the land application.