

NOTICES OF PROPOSED RULEMAKING

Unless exempted by A.R.S. § 41-1005, each agency shall begin the rulemaking process by first submitting to the Secretary of State's Office a Notice of Rulemaking Docket Opening followed by a Notice of Proposed Rulemaking that contains the preamble and the full text of the rules. The Secretary of State's Office publishes each Notice in the next available issue of the *Register* according to the schedule of deadlines for *Register* publication. Due to time restraints, the Secretary of State's Office will no longer edit the text of proposed rules. We will continue to make numbering and labeling changes as necessary.

Under the Administrative Procedure Act (A.R.S. § 41-1001 et seq.), an agency must allow at least 30 days to elapse after the publication of the Notice of Proposed Rulemaking in the *Register* before beginning any proceedings for adoption, amendment, or repeal of any rule. A.R.S. §§ 41-1013 and 41-1022.

NOTICE OF PROPOSED RULEMAKING

TITLE 4. PROFESSIONS AND OCCUPATIONS

CHAPTER 48. ARIZONA UNIFORM PLUMBING CODE COMMISSION

PREAMBLE

- 1. Sections Affected**

| | <u>Rulemaking Action</u> |
|------------|---------------------------------|
| R4-48-125 | Amend |
| R4-48-127 | New Section |
| Appendix A | New Appendix |
- 2. The specific authority for the rulemaking, including both the authorizing statute (general) and the statutes the rules are implementing (specific):**

Authorizing statute: A.R.S. § 41-619

Implementing statute: A.R.S. § 41-619
- 3. A list of all previous notices appearing in the Register addressing the proposed rule:**

Notice of Rulemaking Docket Opening: 6 A.A.R. 1803, May 19, 2000

Notice of Rulemaking Docket Opening: 5 A.A.R. 3618, October 1, 1999
- 4. The name and address of agency personnel with whom persons may communicate regarding the rulemaking:**

| | |
|------------|--|
| Name: | A. Hal Key, P.E., Chairperson Arizona Uniform Plumbing Code Commission |
| Address: | c/o Arizona Registrar of Contractors 800 West Washington, 6th Floor Phoenix, Arizona 85007 |
| Telephone: | (602) 542-1525, ext. 7445 |
| Fax: | (602) 542-1599 |
- 5. An explanation of the rule, including the agency's reasons for initiating the rule:**

This rulemaking revises Appendix G to make it consistent with the new Appendix I in R4-48-127.

The objective of Laws 1997, Ch. 112 is to ensure statewide adoption and implementation of The International Association of Plumbing and Mechanical Officials' (I.A.P.M.O.) 1994 Uniform Plumbing Code (UPC). Promulgation of Appendix I in R4-48-127 completes the state plumbing Code and meets this objective.

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6. A reference to any study that the agency relied on in its evaluation of or justification for the proposed rule and where the public may obtain or review the study, all data underlying each study, any analysis of the study and other supporting material:

None

7. A showing of good cause why the rule is necessary to promote a statewide interest if the rule will diminish a previous grant of authority of a political subdivision of this state:

Before February 1999, when Rule Title 4, Chapter 48 became final, Arizona was 1 of 5 states that did not have a statewide uniform set of product and installation standards for plumbing systems. At that time the Governors Regulatory Review Council removed Appendix I from the original rule and sent it back to the Arizona Uniform Plumbing Code Commission for further review. The Arizona Uniform Plumbing Code Commission and the Arizona Department of Environmental Quality reviewed the items in this rule package together. This rule package continues the work of the Arizona Plumbing Code Commission to develop one statewide set of uniform plumbing standards as mandated by the Arizona Legislature. These standards will significantly reduce the number of hours required for training and education about the standards, reduce the number of re-inspections by the administrative authorities (cities, counties, etc.), and reduce the quantity of rework performed by the industry (engineers, contractors, etc.). One set of uniform product and installation standards will reduce training time and costs, enhance public safety and health as a result of elimination of the existing convoluted and myriad regulation imposed by the political subdivisions of the state.

8. The preliminary summary of the economic, small business, and consumer impact:

Adoption and implementation of this rule will not adversely affect those administering the provisions of the rule, since this will not require any additional employees.

Small business will benefit because of a uniform statewide rule which will simplify their business practice with regard to compliance issues.

Consumers will benefit with the savings passed on from the businesses utilizing the uniform statewide rule.

9. The name and address of agency personnel with whom persons may communicate regarding the accuracy of the economic, small business, and consumer impact statement:

Name: Alan Felber
Arizona Uniform Plumbing Code Commission

Address: c/o Arizona Registrar of Contractors
800 West Washington, 6th Floor
Phoenix, Arizona 85007

Telephone: (602) 542-1525, ext. 7600

Fax: (602) 542-7852

10. The time, place, and nature of the proceedings for the making, amendment, or repeal of the rule, or if no proceeding is scheduled, where, when, and how persons may request an oral proceeding on the proposed rule:

Date: June 19, 2000

Time: 8:30 a.m.

Location: Industrial Commission Building Auditorium/Hearing Room A
800 West Washington, First Floor
Phoenix, Arizona

Nature: Public Hearing

Date: June 19, 2000

Time: 8:30 a.m.

Location: State Office Complex
400 West Congress, South Building, Room 5, the basement
Tucson, Arizona

Nature: Public Hearing

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Date: June 19, 2000
Time: 8:30 a.m.
Location: Registrar of Contractors
2708 North 4th Street, Suite C1
Flagstaff, Arizona
Nature: Public Hearing

11. Any other matters prescribed by statute that are applicable to the specific agency or to any specific rule or class of rules:

None

12. Incorporations by reference and their location in the rules:

Appendix G of the I.A.P.M.O. 1994 Uniform Plumbing Code, R4-48-125(A), p. 6

ASTM D-5879-95, "Standard Practice for Surface Site Characterization for On-Site Septic Systems", R4-48-127 Exhibit A, p. 10

ASTM D-5921-96, "Standard Practice for Subsurface Site Characterization of Test Pits for On-Side Septic Systems", R4-48-127 Exhibit A, p. 10

ASTM D-1452-80 (1990), "Standard Practice for Soil Investigation and Sampling by Auger Borings", R4-48-127 Exhibit A, p. 10

ASTM C1227-00, "Standard Specification for Precast Concrete Septic Tanks", R4-48-127 Exhibit A, p. 10

IAPMO PS1-93, "Prefabricated Septic Tanks", R4-48-127 Exhibit A, p. 10

ACI 318 "Building Code Requirements for Structural Concrete", R4-48-127 Exhibit A, p.10

ACI 350R-89 "Environmental Engineering Concrete Structures", R4-48-127 Exhibit A, p. 10

13. The full text of the rules follows:

TITLE 4. PROFESSIONS AND OCCUPATIONS

CHAPTER 48. ARIZONA UNIFORM PLUMBING CODE COMMISSION

ARTICLE 1. ARIZONA UNIFORM PLUMBING CODE

Section

R4-48-125. Appendix G, Graywater Systems for Single Family Dwellings

R4-48-127. Appendix I, Private Sewage Disposal Systems

Appendix A. Modified Appendix I

TITLE 4. PROFESSIONS AND OCCUPATIONS

CHAPTER 48. ARIZONA UNIFORM PLUMBING CODE COMMISSION

ARTICLE 1. ARIZONA UNIFORM PLUMBING CODE

R4-48-125. Appendix G, Graywater Systems for Single Family Dwellings

A. Appendix G of the International Association of Plumbing and Mechanical Officials' (I.A.P.M.O.) Uniform Plumbing Code (1994 Edition) is incorporated by reference. This incorporation by reference does not include any later amendments or editions. Copies of the incorporated material are available from I.A.P.M.O. at 20001 Walnut Drive South, Walnut, CA, 91789-2825 and are on file with Arizona Uniform Plumbing Code Commission and the Office of the Secretary of State.

B. Appendix G, incorporated by subsection (A) is modified as follows:

1. Appendix G 1 (b) is modified to read: "The type of system shall be determined on the basis of location, soil type, absorption rate, soil classification ~~under American Society Testing and Materials (ASTM) D-5921-96~~, and depth to ground water below the land surface, and shall be designed to accept only graywater connected to the system from the residential building. The system, except as other wise approved, may consist of a holding tank or tanks and shall discharge graywater into subsurface irrigation/disposal fields."
2. No change.

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3. Appendix G 1 (g) is modified to read: “When making the initial site investigation and determining the soil characterization and soil absorption rates for graywater systems, the following ~~ASTM~~ standards, or methods or equivalent standards approved by the Administrative Authority are incorporated by reference and shall be used. The incorporations do not include later amendments or editions and are available from Registrar of Contractors and the Office of the Secretary of State:
 - a. ASTM D-5879-95, “Standard Practice for Surface Site Characterization for On-Site Septic Systems;”
 - b. ASTM D-5921-96, “Standard Practice for Subsurface Site Characterization of Test Pits for On-Site Septic Systems;” ~~and~~
 - c. ASTM D-1452-80 (1990), “Standard Practice for Soil Investigation and Sampling by Auger Borings,” ~~shall~~ may be used in areas where the depth to groundwater may be within the required vertical separation from the bottom of the subsurface disposal field for graywater systems.” or
 - d. Percolation testing as specified in Appendix I of this code.
4. No change.
5. No change.
6. No change.
7. Appendix G 4 (c) is modified to read: “A log of soil formations, percentage of rock, texture, structure, consistence, and mottles as provided in ASTM D-5921-96, ~~and~~ depth to ground water below the land surface as determined by test holes dug in close proximity to any proposed irrigated area ~~and soil classification~~. ~~The Administrative Authority may require an additional determination of water absorption characteristics of the soil at the proposed site by approved percolation tests or by alternate means (e.g. published groundwater data, subdivision reports, or relevant well data), soil classification, or percolation test results to determine equivalent function of subsurface irrigation/disposal field. Other information acceptable to the Administrative Authority may be utilized to determine soil performance equivalent to that achieved by the standards or methods specified in Section G 1 (g).~~”
8. No change.
9. No change.
10. No change.
11. No change.
12. No change.
13. No change.
14. No change.
15. Appendix G 8 (c) is modified to read: “When a percolation test is ~~required~~ used, no graywater system shall be permitted if the test shows the absorption capacity of the soil is outside the range of 2 minutes per inch (0.79 minutes per cm) to 60 minutes per inch (23.6 minutes per cm). Soils with excessively high or low permeability are unsuitable.”
16. No change.
17. No change.
18. No change.
19. No change.
20. No change.
21. No change.
22. No change.
23. No change.
24. No change.
25. No change.
26. No change.
27. No change.
28. No change.
29. No change.
30. No change.
31. No change.
32. No change.
33. No change.
34. No change.
35. No change.
36. No change.
37. No change.
38. No change.

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R4-48-127. Appendix I. Private Sewage Disposal Systems

In accordance with A.R.S. § 41-619(B)(4), the Arizona Uniform Plumbing Code Commission adopts Appendix I of the International Association of Plumbing and Mechanical Officials' (I.A.P.M.O.) Uniform Plumbing Code (1994 Edition) as modified in Exhibit A.

Appendix A. Modified Appendix I

This rule is adopted under A.R.S. § 41-619, which provides for the adoption statewide of the Uniform Plumbing Code ("Code"). The rule does not specify the entities that will be responsible for implementation and enforcement of the Code or the procedures by which the Code will be enforced, which may be governed by other provisions of state law. The rule also does not supersede, restrict, or negate the authority of any State agency, City, or County authority to administer, delegate, or enforce laws, statutes, rules, or ordinances within their respective jurisdiction.

I.1 Private Sewage Disposal - General

- (a) Where permitted by Section 713.0, the building sewer may be connected to a private sewage disposal system complying with the provisions of this appendix. The type of system shall be determined on the basis of location, soil absorption rate, soil classification, and depth to the ground water below the land surface and shall be designed to receive all sewage from the property. The system, except as otherwise approved, shall consist of a septic tank with effluent discharging into a subsurface disposal field, into 1 or more seepage pits, or into a combination of subsurface disposal field and seepage pits. The Administrative Authority may grant exceptions to the provisions of this appendix for permitted structures which have been destroyed due to fire or natural disaster, and which cannot be reconstructed in compliance with these provisions.
- (b) Where the quantity or quality of the sewage is such that the above system cannot be expected to function satisfactorily; for commercial, agricultural, and industrial plumbing systems; for installations where appreciable amounts of industrial or indigestible wastes are produced; for occupancies producing abnormal quantities of sewage or liquid waste; or when grease interceptors are required by other parts of this Code, the method of sewage treatment and disposal shall be first approved by the Administrative Authority. Special sewage disposal systems for minor, limited, or temporary uses shall be first approved by the Administrative Authority. These provisions apply only to systems with an inflow of 3000 gallons (11,355 L) per day or less.
- (c) Disposal systems shall be designed to utilize the most porous or absorptive portions of the soil formation. Where the depth to the ground water extends to within the specified minimum vertical separation for the type of proposed system, a private sewage disposal system shall not be installed.
- (d) The minimum vertical separations from the bottom of the disposal field or terminus of the seepage pit shall be as specified in Tables I-4 (A), I-4 (B), I-5 or I-7.
- (e) When making the initial investigation and determining the soil characterization and soil absorption rates for private sewage disposal systems and alternative private sewage treatment and disposal systems, the following standards, (1) through (7), incorporated by reference, or methods or equivalent standards approved by the Administrative Authority shall be used. The incorporated standards do not include later amendments or editions and are available from the Registrar of Contractors and the Office of the Secretary of State:
 - (1) ASTM D 79-95, "Standard Practice for Surface Site Characterization for On-Site Septic Systems";
 - (2) ASTM D-5921-96, "Standard Practice for Subsurface Site Characterization of Test Pits for On-Site Septic Systems";
 - (3) ASTM D-1452-80 (1990), "Standard Practice for Soil Investigation and Sampling by Auger Borings" shall be used in areas where the depth to groundwater may be within the required vertical separation from the bottom of the subsurface disposal field for the private sewage disposal system;
 - (4) ASTM C1227-00, "Standard Specification for Precast Concrete Septic Tanks";
 - (5) IAPMO PS1-93, "Prefabricated Septic Tanks";
 - (6) ACI 318, "Building Code Requirements for Structural Concrete";
 - (7) ACI 350R-89, "Environmental Engineering Concrete Structures", or
 - (8) Percolation testing as specified in Section I 15.
- (f) The initial investigation shall include a log of soil formations, percentage of rock, texture, structure, consistence, and motles as provided in ASTM D-5921-96, depth to ground water below the land surface as determined by test holes dug in close proximity to any proposed disposal field or seepage pit (e.g. published groundwater data, subdivision reports, or relevant well data), soil classification, or percolation test results. Other information acceptable to the Administrative Authority may be utilized to determine soil performance equivalent to that achieved by the standards or methods specified in Section I 1 (e).
- (g) All private sewage disposal systems shall be so designed that additional seepage pits or subsurface drain fields, equivalent to at least 100% of the required original system, may be installed if the original system cannot absorb all the sewage. No division of the lot or erection of structures on the lot shall be made if such division or structure impairs the usefulness of the 100% expansion area.
- (h) No property shall be improved in excess of its capacity to treat and dispose of sewage effluent by the means provided in this Code.

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- (i) No private sewage disposal system, or part thereof, shall be located in any lot other than the lot which is the site of the building or structure served by such system; nor shall any private sewage disposal system or part thereof, be located at any point having less than the minimum distances indicated in Table I-1. Nothing in this Code shall be construed to prohibit the use of all or part of an abutting lot to provide additional space for a private sewage disposal system or part thereof, when proper cause, transfer of ownership, or change of boundary not in violation of other requirements has been first established to the satisfaction of the Administrative Authority. The instrument recording such action shall constitute an agreement with the Administrative Authority which shall clearly state and show that the areas so joined or used shall be maintained as a unit during the time they are so used. Such agreement shall be recorded in the office of the County Recorder as part of the conditions of ownership of said properties, and shall be binding on all heirs, successors, and assigns to such properties. A copy of the instrument recording such proceedings shall be filed with the Administrative Authority.
- (j) No building permit shall be issued until the Administrative Authority has approved the site for a private sewage disposal system.
- (k) Nothing contained in this appendix shall be construed to prevent the Administrative Authority from requiring compliance with statutes, ordinances, or rules having higher requirements than those contained herein, where such statutes, ordinances, or rules are essential to maintain a safe and sanitary condition.
- (l) Exception: The Administrative Authority may, at its discretion, approve an alternative private sewage treatment and disposal system.

I 2 Definitions

- (a) Aggregate - Clean graded hard rock or gravel. Aggregate shall have not more than 2% fines by weight. Aggregate shall be of uniform size, 3/4 inches (19.1 mm) to 2 1/2 inches (63.5 mm) in diameter, and shall offer 30% or more void space. The aggregate shall have a hardness value of 3 or greater on the Moh's Scale of Hardness (aggregate that can scratch a copper penny without leaving any residual rock material on the coin would be a hardness of 3 or more on the Moh's Scale of Hardness). Volcanic rock that meets the above criteria may be substituted for hard rock or gravel.
- (b) Bedroom - A habitable room providing privacy and used for sleeping purposes. For the purposes of this Code, a loft or a basement shall be considered a bedroom.
- (c) Disposal Area - Area within the horizontal plane that is delineated by a simple figure that encompasses the soil absorption components of a wastewater system.
- (d) Disposal Bed - A type of bottom area absorption system that uses an area up to 12 feet (3.7 m) wide, partially filled with aggregate. Piping distributes the effluent evenly throughout the entire bed.
- (e) Disposal Field (Drainfield) - An aggregate-filled underground bed or trench into which effluent is discharged for final treatment and disposal. A soil absorption system is constructed to permit the discharge of treated sewage effluent into native soil. Construction is performed following site-specific specifications including soil excavation and the installation of disposal piping, aggregate, and other specified components and materials. The plan view of a drainfield shows the disposal area. The soil absorption area of a drainfield is the total surface within a drainfield that is accepted by the Administrative Authority for the discharge of treated sewage effluent into the native soil.
- (f) Disposal Pipe - Pipe that is placed in disposal trenches, beds, or pit to disperse effluent to the soil absorption surfaces.
- (g) Disposal Pit (Seepage Pit) - A type of sidewall absorption system that uses a vertical, cylindrical underground excavation so constructed as to permit disposal of effluent by soil absorption through its walls.
- (h) Disposal Trench - A type of absorption trench that uses an area, excavated 1 foot (.3 m) to 3 feet (.9 m) in width, which contains aggregate and a single effluent disposal pipe.
- (i) Distribution Box - A watertight structure that receives and distributes effluent in equal portions to 2 or more conveyance pipes leading to the disposal pipes.
- (j) Domestic Water Source Intake - A point of water intake or suction pipeline from any stream, lake, or reservoir that is used for the purpose of providing water for human consumption.
- (k) Dosing Tank - A watertight receptacle located between the treatment unit and the drainfield that is equipped with a pump or siphon, to store and deliver doses of treated sewage effluent to the drainfield.
- (l) Dry Wash - A watercourse that only flows in direct response to precipitation and whose channel at all times is above the watertable.
- (m) Effective Absorption Area - Area of native soil that is accepted by the Administrative Authority for the absorption of treated sewage effluent in a disposal trench, pit, or other approved drainfield.
- (n) Failure - The inability of any disposal system component to function as designed.
- (o) Five-Day Biochemical Oxygen Demand (BOD) - The quantity of oxygen used in the biochemical oxidation of organic matter in 5 days at 20 degrees Centigrade under specific conditions and reported as milligrams per liter (mg/l).
- (p) Groundwater - Water that is in the zone of saturation and under pressure equal to or greater than atmospheric pressure.
- (q) Impermeable layer - A soil zone with a percolation rate numerically greater than 120 minutes per inch or soils classified as impermeable (i.e. clay or rock).

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- (r) Live stream - A watercourse with perennial flow or where surface water is present at least 10% of the time during a calendar year, based upon historic flow or weather records.
- (s) Mottles - Soil color patterns caused by alternating saturated (anaerobic) and unsaturated (aerobic) soil conditions.
- (t) Percolation Test - An empirical test used to estimate the rate effluent is absorbed by the soil.
- (u) Repair - The extension, alteration, replacement, or relocation of existing components of a private sewage disposal system.
- (v) Rock - The body of consolidated or partially consolidated material composed of minerals at or below the land surface. Rock includes bedrock (fractured or unfractured) and partially weathered rock that is relatively hard and cannot be dug with a hand shovel.
- (w) Septage - All sludge, scum, liquid, and any other material from a private sewage disposal system.
- (x) Site - The location of an existing or proposed private sewage disposal system.
- (y) Site Investigation - The practice of investigating, evaluating, and reporting on soil, topographical, and locational conditions that affect the design and function of the private sewage disposal system.
- (z) Soil Evaluation - The practice of investigating, characterizing, and reporting on the properties of soil for the purpose of absorbing treated sewage effluent in a zone of unsaturated flow.
- (aa) Soils - The naturally occurring, unconsolidated mineral and organic material on the land surface developed from rock and other parent material that consists of sand, silt, and clay-sized particles and variable amounts of organic matter. In a zone of transition between two types of soil, the soil will be classified according to those soil characteristics that represent 51% or more of the total zone.
- (ab) Soil Profile - A vertical cross-section of the undisturbed soil showing the characteristic soil horizontal layers or soil horizons of the soil that have formed as a result of combined effects of parent material, topography, climate, biological activity, and time.
- (ac) Total Suspended Solids (TSS) - Solids in wastewater that can be removed readily by standard filtering procedures in a laboratory and reported as milligrams per liter (mg/l).

I.3 Capacity of Septic Tanks

The design liquid capacity of all septic tanks shall conform to Table I-2.

I.4 Area of Disposal Fields

The minimum effective absorptive area in disposal fields and estimated waste/sewage flow rate shall conform to Tables I-4 (A), I-4 (B) and I-7 and shall be as follows:

- (1) When disposal fields are installed, a minimum of 150 square feet (13.9 sq. m) of trench bottom shall be provided for each system exclusive of any hard pan, rock, clay, or other impervious formations. Sidewall area in excess of the required 12 inches (30.5 cm) and not to exceed 36 inches (91.4 cm) below the leach line may be added to the trench bottom area when computing absorption areas.
- (2) When leaching beds are installed in lieu of trenches, the area of each such bed shall be at least 50% greater than the tabular requirements for trenches. Perimeter sidewall area in excess of the required 12 inches (30.5 cm) and not to exceed 36 inches (91.4 cm) below the leach line may be added to the trench bottom area when computing absorption areas.
- (3) No excavation for a leach line or leach bed shall extend within the system's specified minimum vertical separation in order to ensure the system does not contaminate the underlying groundwater in excess of Arizona Aquifer Water Quality.
- (4) When leaching chambers are installed in lieu of pipe and filter material, an equivalent absorption area shall be provided based on the calculated effective chamber absorption area. The calculated effective chamber absorption area is the nominal open bottom absorption area times 1.43, plus the sum of the vertical height of the sidewalls times the chamber length. The sidewall chamber shall provide a minimum 35% open area for side wall credit to be allowed, and shall be constructed so as to minimize the movement of fines into the chamber area. The use of filter fabric or GEO textile against sidewall openings is prohibited. The required minimum absorption area shall be calculated using table I-4 (A), I-4 (B) or I-7.

Example:

The chamber to be used has an open bottom with geometry of 3 feet wide, 6 feet long, and 1 deep vertical foot (0.9 m, 1.8 m, and 0.3 m deep) of sidewall. The disposal system is for a 3-bedroom dwelling. The soil is loamy sand (N). Depth of chamber bottom is to be less than 5 feet (1.5 m) below the finished grade (that is, the installation is considered a shallow system).

The calculated effective chamber absorption area per chamber is:

3 x 6 square feet (0.9 x 1.8 m²) of open bottom area x 1.43 = 25.74 square feet (2.39 m²), plus

Sidewall credit of 2 sidewalls x 1 x 6 square feet = 12 square feet (0.56 m² = 0.12 m²).

This yields an effective chamber absorption area of 37.74 square feet (3.5 m²) per chamber. The number of chambers needed is calculated as follows:

Wastewater flow rate is 3 bedrooms x 150 gallons (568 Lpd) per day, or 450 gallons (1,703 Lpd) per day. The soil application rate for loamy sand [Table I-4 (A), Question N, Column A] is listed as 0.80 gallons (32.6 Lpd/ft²) per day per square foot. Dividing the flow rate, 450 gallons (1,703 Lpd) per day, by the soil application rate, 0.80 (32.6) yields a total absorption area of 562.5 square feet (52.3 m²). Since the effective chamber absorption area of each

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chamber is 37.74 square feet (3.5 m²), a total of 14.9 chambers are calculated (562.5 (52.3) divided by 37.74 (3.5)).
Round up to a total chamber requirement of 15 chambers.

I 5 Area of Seepage Pits

The minimum effective absorption area in seepage pits shall be predicated on estimated waste/sewage flow rates in Table I-3 and shall conform to Tables I-5 and I-6 as follows:

- (1) The minimum effective absorption area in any seepage pit shall be calculated as the excavated sidewall area below the inlet exclusive of any hardpan, rock, clay, or other impervious formations.
- (2) Seepage pit sizes may be computed from Table I-5 or using percolation tests prescribed in I 15.
- (3) The minimum required area of porous formation shall be provided in one or more seepage pits. No seepage pit excavation shall extend into the system's specified minimum vertical separation from the water table nor to a depth where sewage may contaminate the underlying groundwater that is protected by state law for domestic or drinking water purposes.
- (4) The applicant shall supply acceptable evidence of depth to groundwater to the Administrative Authority.
- (5) A boring log that describes soil from the seepage pit shall be submitted to the Administrative Authority.

I 6 Soil Testing

Seepage pit and disposal field sizes shall be computed from Tables I-4 (A), I-4 (B), I-5, I-6, and I-7.

I 7 Septic Tank Design and Construction

All septic tanks shall meet the specifications set forth in I 7, (b) through (q).

- (b) Septic tank designs shall produce a clarified effluent and shall provide adequate space for sludge and scum accumulations.
- (c) Septic tanks shall be constructed of solid durable materials, not subject to excessive corrosion or decay and shall be water-tight.
- (d) Septic tanks shall have a minimum of 2 compartments except when placed in series. The inlet compartment of any septic tank not placed in series shall be nominally 67% to 75% of the total required capacity of the tank. Septic tanks placed in series shall be considered as a unit and shall meet the same criteria as a single tank. The liquid depth of the septic tank shall not be less than 42 inches (1.07m). A septic tank of 1000 gallon capacity shall have a length of at least 8 feet (2.44m). For septic tanks of greater capacity, the tank length shall be at least 2 times but not more than 3 times the width.
- (e) Access to each septic tank interior shall be provided by at least 2 access openings 20 inches (50.8 cm) in minimum dimension. One access opening shall be located over the inlet and 1 access opening shall be located over the outlet. Whenever a 1st compartment exceeds 12 feet (3.7 m) in length, an additional access opening shall be provided over the baffle wall. Access openings and risers, if needed, shall be constructed to ensure accessibility within 6 inches (0.15 m) below grade. A permanent surface marker appropriate to the site shall be provided for locating the septic tank access openings for maintenance.
- (f) The inlet and outlet pipe openings shall be not less in size than the connecting sewer pipe. The vertical leg of a round inlet and outlet fittings shall not be less in size than the connecting sewer pipe nor less than 4 inches (10.1 cm). A baffle-type fitting shall have the equivalent cross-sectional area of the connecting sewer pipe and not less than a 4 inch (10.2 cm) horizontal dimension when measured at the inlet and outlet pipe inverts.
- (g) The inlet and outlet pipe or baffle shall extend 4 inches (10.2 cm) above and at least 12 inches (30.5 cm) below the water surface. The invert of the inlet pipe shall be at a level not less than 2 inches (5.1cm) above the invert of the outlet pipe.
- (h) Inlet and outlet pipe fittings or baffles, and compartment partitions shall have a free vent area equal to the required cross-sectional area of the house sewer or private sewer discharging therein to provide free ventilation above the water surface from the disposal field or seepage pit through the septic tank, house sewer, and stack to the outer air.
- (i) The sidewalls shall extend at least 12 inches (30.5 cm) above the liquid depth. The cover of the septic tank shall be at least 2 inches (5.1 cm) above the top of the inlet fitting vent opening.
- (j) Partitions or baffles between compartments shall be of solid, durable material and shall extend at least 4 inches (10.1 cm) above the liquid level. The opening area in the baffle shall be between 1 and 2 times the open area of the inlet pipe or for a horizontal slot, shall be no more than 6 inches in height, and shall be located at the midpoint of the liquid level of the baffle. Wooden baffles are prohibited.
- (k) Each tank shall be structurally designed to withstand all anticipated earth or other loads. All septic tank covers shall be capable of supporting an earth load of 300 pounds per square foot (14.4 kPa) for a minimum soil cover of 2 feet (0.61 m). When the top of the tank is greater than 2 feet (0.61 m) below finish grade, the septic tank and cover shall be capable of supporting an additional load of 150 pounds per square foot (7.2 kPa) for each additional foot of cover.
- (l) Septic tanks installed under concrete or black top paving shall have the required access openings extended to grade in a manner acceptable to the Administrative Authority.
- (m) The inlet and outlet ends of the tank shall be clearly and permanently marked on the outside of the tank with the terms "INLET" or "IN," and, "OUTLET" or "OUT," above, and to the right or left of the inlet and outlet openings, respectively.
- (n) It is permissible to have septic tanks placed in series to meet the minimum septic tank capacity requirements.
- (o) Materials
 - (1) Cast in Place Concrete Septic Tanks

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All concrete septic tanks shall be protected from corrosion by coating with an approved bituminous coating by construction with a concrete mix incorporating 15% to 18% fly ash, or by other acceptable means. The coating shall extend to at least 4 inches (101.6 mm) below the water line, and shall cover all of the internal area above that point. Septic tanks constructed in place shall comply with the American Concrete Institute (ACI) standards 318 and 350R-89.

(2) Steel Septic Tanks

The minimum wall thickness of any steel septic tank shall be No. 12 U.S. gauge (0.109 cm) and each tank shall be protected from corrosion, both externally and internally, by an approved bituminous coating or by other acceptable means.

(3) Prefabricated septic tanks

Materials for precast concrete septic tanks shall comply with ASTM C1227-00. Materials for fiberglass or polyethylene septic tanks shall comply with IAPMO PS1-93. If any conflict exists between this appendix and ASTM C1227-00 or IAPMO PS1-93, the requirements of this appendix shall apply.

(4) Alternative materials

Septic tanks constructed of alternative materials may be approved by the Administrative Authority if they comply with approved applicable standards in this Code.

(5) Prohibited Materials

Wooden, block, and bare steel septic tanks are prohibited.

(p) All tanks shall be clearly and permanently marked with the manufacturer's name and registered trademark, the month and year of manufacture, the maximum recommended depth of earth cover in feet or meters and the design liquid capacity of the tank. The markings shall be adequately protected from corrosion so as to remain permanent and readable over the life of the tank.

(q) A septic tank effluent filter approved by the Administrative Authority shall be installed on all new private sewage disposal systems. The filter shall prevent the passage of solids larger than 1/8 inch (3.2 mm) in diameter while under 2 feet (0.61 m) of hydrostatic head. The filter shall be constructed of materials that are resistant to corrosion and erosion and be of adequate size for the anticipated hydraulic and organic loading.

I 8 Disposal Fields

(a) Distribution lines shall be constructed of clay tile laid with open joints, perforated clay pipe, perforated high density polyethylene pipe, perforated ABS pipe, perforated PVC pipe, or other approved materials, provided that sufficient openings are available for distribution of the effluent into the trench area.

(b) Before placing aggregate or drain lines in a prepared excavation, all smeared or compacted surfaces shall be removed from trenches by raking to a depth of 1 inch (2.5 cm) and the loose material removed. Aggregate shall be placed in the trench to the depth and grade required by this section. Drainpipe shall be placed on aggregate in an approved manner. The drain lines shall then be covered with aggregate to the minimum depth required by this section and this covered with landscape filter fabric, geotextile or similar porous material to prevent closure of voids with earth backfill. No earth backfill shall be placed over the aggregate cover until after inspection and acceptance.

Exception: Listed or approved leaching chambers may be used in lieu of pipe and filter material. Chamber installations shall follow the requirements of this Appendix I for disposal fields, where applicable, and shall conform to manufacturer's installation instructions.

(c) A grade board staked in the trench to the depth of aggregate shall be utilized when distribution line is constructed with drain tile or a flexible pipe material which will not maintain alignment without continuous support.

(d) Where 2 or more drain lines are installed, an approved distribution box of sufficient size to receive all lateral lines and flows shall be installed at the head of each disposal field. The inverts of all outlets shall be level and the invert of the inlet shall be at least 1 inch (2.5 cm) above the outlets. Distribution boxes shall be designed to insure equal flow and shall be installed on a stable level surface such as a concrete slab or natural or compacted soil. Concrete distribution boxes shall be protected from corrosion by coating with an appropriate bituminous coating, or constructed of concrete with a 15% to 18% fly ash content, or by other approved methods acceptable to the Administrative Authority.

(e) All laterals from a distribution box to the disposal field shall be approved pipe with watertight joints. Multiple disposal field laterals, wherever practicable, shall be of uniform length.

(f) Connections between a septic tank and a distribution box shall be laid with approved pipe with watertight joints on natural ground or compacted fill.

(g) Disposal fields and beds shall be constructed as specified in Tables I-4 (A) and I-4 (B) and the following criteria:

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| Gravity Trenches | Minimum | Maximum |
|--|---|----------------------------------|
| Number of trenches ¹ | 1 | = |
| Length of trench | = | 100 feet (30.5 m) |
| Bottom width of trench | 12 inches (30.5 cm) | 36 inches (91.4 cm) |
| Depth of cover over disposal pipe | 9 inches (22.9 cm) | 24 inches (61.0 cm) ² |
| Aggregate material under disposal pipe | 12 inches (30.5 cm) | = |
| Aggregate material over disposal pipe | 2 inches (5.1 cm) | 2 inches (5.1 cm) |
| Slope of disposal pipe | level | level |
| Disposal pipe diameter | 3 inches (7.6 cm) | 4 inches (10.1 cm) |
| Spacing of disposal pipe, or leaching | 2 x effective depth ³ or 5 feet (1.5 m) whichever is greater | |

Notes:

¹2 trenches are recommended.

²For more than 24 inches (61.0 cm), SDR 35 or equivalent strength pipe is required.

³The distance between the bottom of the disposal pipe and the bottom of the trench bed.

| Gravity Beds | Minimum | Maximum |
|--|---------------------|---------------------|
| Number of disposal pipes | 2 | = |
| Length of bed | = | 100 feet (30.5 m) |
| Distance between disposal pipes | 4 feet (1.2 m) | 6 feet (1.8 m) |
| Width of bed | 10 feet (3.0 m) | 12 feet (3.66 m) |
| Distance from pipe to sidewall | 3 feet (0.91 m) | 3 feet (0.91 m) |
| Depth of cover over disposal pipe | 9 inches (22.9 cm) | 14 inches (35.6 cm) |
| Aggregate material under disposal pipe | 12 inches (30.5 cm) | = |
| Aggregate material over disposal pipe | 2 inches (5.1 cm) | 2 inches (5.1 cm) |
| Slope of disposal pipe | level | level |
| Disposal pipe diameter | 3 inches (7.6 cm) | 4 inches (10.1 cm) |

Disposal fields, trenches and leaching beds shall not be paved over or covered by concrete or any material that can reduce or inhibit any possible evaporation of sewer effluent.

(h) When necessary on sloping ground to maintain a level disposal pipe, leach trenches or leach beds shall be stepped. The lines between each horizontal section shall be made with watertight joints. The lines between each horizontal leaching section shall be made with approved watertight joints and installed on natural or unfilled ground.

I 9 Seepage Pits

- (a) Seepage pits constructed in accordance with this appendix are considered a method of disposing of septic tank effluent. Criteria used for determining the suitability of a seepage pit are contained in table I 5. The capacity of seepage pits shall be based on the quantity of liquid waste discharging there into, and on the character and porosity of the surrounding soil and shall conform to the requirements of Section I 5 of this appendix.
- (b) Multiple seepage pit installations shall be served through an approved distribution box or be connected in series by means of a water tight connection laid on undisturbed or compacted soil. The outlet from the pit shall have an approved sanitary tee with the vertical leg extending at least 12 inches (30.5 cm) below the inlet fitting.
- (c) Each seepage pit shall be circular in shape and shall have an excavated diameter of not less than 4 feet (1.2 m). Approval shall be obtained prior to construction for any pit having an excavated diameter greater than 6 feet (1.8 m).
- (d) For gravel filled pits, the entire pit shall be backfilled with aggregate which shall be clean and of uniform gradation, 3/4 inch (1.9 cm) to 2 1/2 inches (6.4 cm) in diameter. Material used for backfill shall offer a minimum of 30% void space.

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Each pit shall have a breather/effluent conductor pipe, which shall consist of a perforated pipe at least 4 inches (10.2 cm), in diameter, placed vertically within the backfill of the pit. The pipe shall extend from the bottom of the pit to several inches below ground level.

- (e) Lined, hollow pits shall be lined with concrete liner, or other approved materials and shall be laid on a firm foundation. Excavation voids behind the liner shall have a minimum of 9 inches (22.9 cm) of aggregate which shall be clean and of uniform gradation, 3/4 inch (1.9 cm) to 2 1/2 inches (6.4 cm) in diameter.
- (f) The cover of a lined seepage pit shall be constructed of an approved 1 or 2 piece reinforced concrete slab of 2500 pounds per square inch (17,238 kPa) minimum compressive strength, not less than 5 inches (127 mm) thick and designed to support an earth load of not less than 400 pounds per square foot (19.2 kPa). Each cover shall be provided with a 12 inch (30.5 cm) minimum access hole with plug or cover and shall be coated on the underside with an approved bituminous or constructed of concrete with 15% to 18% fly ash content or other nonpermeable protective material. Each cover shall have a 4 inch (10.2 cm) minimum inspection pipe placed vertically to within several inches below ground level.
- (g) The top of the seepage cover must be at least 18 inches (45.7 cm) but not more than 4 feet (1.2 m) below the surface of the ground.
- (h) An approved vented inlet fitting shall be provided in every seepage pit so arranged as to prevent the inflow from damaging the sidewall.
Exception: When using a 1 or 2 piece concrete slab cover inlet, fitting may be a 1/4 bend fitting discharging through an opening in the top of the slab cover. On multiple seepage pit installations, the outlet fittings shall be per Section I 9 (b) of this appendix.
- (i) Seepage pit design details are shown in Figure I-1 and I-2.

I 10 Cesspools

The use of cesspools for waste disposal is prohibited.

I 11 Interceptor Design Criteria for Private Sewage Disposal Systems

- (a) When liquid wastes containing excessive amounts of grease, garbage, flammable wastes, sand, or other ingredients which may affect the operation of a private sewage disposal system, an interceptor for such wastes shall be installed.
- (b) Installation of such interceptors shall comply with Section 1008.0 of the Uniform Plumbing Code and their location shall be in accordance with Table I-1 of this appendix.
- (c) Sampling box shall be installed when required by the Administrative Authority.
- (d) Interceptors shall be of approved design and be of not less than 2 compartments. Structural requirements shall be in compliance with the applicable subparts of Section I 7 of this appendix.
- (e) Interceptors shall be located as close to the source as possible and be accessible for servicing. All necessary manholes for servicing shall be at grade level and be gas-tight.
- (f) Waste discharge from interceptors may be connected to a septic tank or other primary system or be disposed into a separate disposal system.
- (g) Recommended Design Criteria. Minimum design criteria for grease and garbage, commercial kitchens; sand-silt oil, auto washers; and silt-lint grease, laundries, and laundromats. (Formulae may be adopted to other types of occupancies with similar wastes or as determined by the Administrative Authority rules.)

| <u>Grease and Garbage, Commercial Kitchens</u> | | | | | | | | | |
|---|---|------------------|---|------------------|---|----------------|---|--------------------------|--|
| <u>Number of Meals</u> | | <u>Waste</u> | | <u>Retention</u> | | <u>Storage</u> | | <u>Interceptor Size</u> | |
| <u>per peak hour</u> | x | <u>Flow Rate</u> | x | <u>Time</u> | x | <u>Factor</u> | ≡ | <u>(liquid capacity)</u> | |

| <u>Sand-Silt Oil, Auto Washers</u> | | | | | | | | | |
|---|---|------------------|---|------------------|---|----------------|---|--------------------------|--|
| <u>Number of Vehicles</u> | | <u>Waste</u> | | <u>Retention</u> | | <u>Storage</u> | | <u>Interceptor Size</u> | |
| <u>per peak hour</u> | x | <u>Flow Rate</u> | x | <u>Time</u> | x | <u>Factor</u> | ≡ | <u>(liquid capacity)</u> | |

| <u>Sand-Lint Grease, Laundries, Laundromats</u> | | | | | | | | | |
|--|---|------------------|---|------------------|---|----------------|---|--------------------------|--|
| <u>Number of</u> | | <u>Waste</u> | | <u>Retention</u> | | <u>Storage</u> | | <u>Interceptor Size</u> | |
| <u>Machines</u> | x | <u>Flow Rate</u> | x | <u>Time</u> | x | <u>Factor</u> | ≡ | <u>(liquid capacity)</u> | |
| | | <u>2 cycles</u> | | | | | | | |
| | | <u>per hours</u> | | | | | | | |

Waste Flow Rate

See Table I-3 of this appendix for estimated flow rates.

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| <u>Estimated Retention Times</u> | |
|---|------------------|
| Commercial kitchen waste: _____ Dishwasher and/or disposal | <u>2.5 hours</u> |
| Single Service kitchen: _____ Single serving with disposal | <u>1.5 hours</u> |
| Sand-silt-oil | <u>2.0 hours</u> |
| Lint-silt (laundry) | <u>2.0 hours</u> |

| <u>Estimated Storage Factors</u> | | |
|---|--------------------------|------------|
| Fully equipped commercial kitchen | 8 hour operation: | <u>1.0</u> |
| | 16 hour operation: | <u>2.0</u> |
| | 24 hour operation | <u>3.0</u> |
| Single service kitchen | | <u>1.5</u> |
| Auto washers | Self-serve | <u>1.5</u> |
| | Employee operated | <u>2.0</u> |
| Laundries, Laundromat's | (allows for rock filter) | <u>1.5</u> |

I 12 Inspection and Testing

- (a) Private sewage disposal systems shall be inspected and tested prior to operation.
- (b) Inspection shall be for the following purposes:
 - (1) To verify soil characteristics used for the basis of the design.
 - (2) To verify the installation of approved equipment and materials.
 - (3) To verify that construction was performed in accordance with the permit.
 - (4) To verify watertightness of the septic tank and other components.
- (c) Infield testing shall include:
 - (1) Septic tank watertightness – Watertightness shall be established prior to inspection. A tank failing the watertightness test must be repaired or replaced, and cannot be operated until it complies with watertightness requirements and has been inspected.
 - (2) Water test procedures – Tanks shall be filled to the invert of the outlet. Water shall be left standing for at least 24 hours prior to beginning the inspection. After 24 hours, refill the tank, if necessary. Concrete may absorb some water. At the start of the inspection, record the initial water level and time. After 1 hour, record the time and the corresponding water level. A tank shall pass a watertightness test if the water level has dropped less than ¼ of an inch. A visible leak (flowing water) shall be considered a failure. A damp or wet spot that is not flowing is not considered a failure.
 - (3) Vacuum testing procedures – Vacuum testing may be used to determine watertightness in lieu of a water test. The tank shall be sealed and empty. A vacuum of 2 inches (5.1 cm) of mercury (1 psi or 69.1 gm/sq. cm) shall be applied and stabilized. The vacuum shall drop no more than 0.2 inches (0.5 cm) of mercury (0.1 psi or 6.9 gm/sq. cm) during the 1 hour test period.
 - (4) A flow test shall be performed through the system to the point of effluent disposal. All lines and components shall be watertight. Capacities, required air space, and fittings shall be in accordance with the provisions set forth in this appendix.

I 13 Abandoned Sewers and Sewage Disposal Facilities

- (a) Every abandoned building (house) sewer, or part thereof, shall be plugged or capped in an approved manner within 5 feet (1.5 m) of the property line.
- (b) Every cesspool, septic tank, alternative sewage disposal system, and seepage pit which has been abandoned or has been discontinued otherwise from further use or to which no waste or soil pipe from a plumbing fixture is connected, shall have the sewage removed therefrom, shall have all electrical and mechanical components disconnected and abandoned per the appropriate procedures in the uniform building and/or electrical code, and be completely filled with earth, sand, gravel, concrete, or other approved material.
- (c) The top cover or arch over the cesspool, septic tank, or seepage pit shall be removed before filling and the filling shall not extend above the top of the vertical portions of the sidewalls or above the level of any outlet pipe until inspection has been

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called and the cesspool, septic tank, or seepage pit has been inspected. After such inspection, the cesspool, septic tank, or seepage pit shall be filled to the level of the top of the ground.

- (d) No person owning or controlling any cesspool, septic tank, or seepage pit on the premises of such person or in that portion of any public street, alley, or other public property abutting such premises, shall fail, refuse, or neglect to comply with the provisions of this section or upon receipt of notice so to comply from the Administrative Authority.
- (e) Where disposal facilities are abandoned consequent to connecting any premises with the public sewer, the permittee making the connection shall fill all abandoned facilities as required by the Administrative Authority within 30 days from the time of connecting to the public sewer.

I 14 Drawings and Specifications

The Administrative Authority may require any or all of the following information before a permit is issued for a private sewage disposal system:

- (1) A site specific plot plan drawn to scale completely dimensioned, showing direction and approximate slope of surface (2 foot (0.6 m) contour lines), location of all present or proposed retaining walls, drainage channels, water supply lines or wells, paved areas and structures on the plot, number of bedrooms or plumbing fixtures in each structure and location of the private sewage disposal system with relation to lot lines and structures.
- (2) Details of construction including system profile and construction sections necessary to assure compliance with the requirements of this appendix together with a full description of the complete installation including specifications describing all materials, equipment, construction, workmanship, and methods of assembly and installation.
- (3) A log of the soil formations, percentage of rock, texture, structure, consistence, and mottles as provided in ASTM D-5921-96, or other practice acceptable, and depth to the groundwater below the land surface as determined by established records or test holes dug in close proximity to any proposed seepage pit or disposal field, together with a statement of water absorption characteristics of the soil at the proposed site as determined by site investigation and soil evaluation.

I 15 Percolation Testing, Soil Application Rate and Minimum vertical separation

- (a) The following procedures are to be used for determining the system soil absorption rate and minimum vertical separation:
 - (1) Establish the primary area based on site suitability review including proposed improvements.
 - (2) Establish the reserve area based on site suitability review and the type of system.
 - (3) Excavate the test hole to the depth necessary to confirm soil conditions for the design of the proposed disposal trench, bed or seepage pit. For disposal trenches and beds, a minimum of one test hole at both the primary disposal area and the reserve area is required. For seepage pits, one test hole is required at the primary disposal area.
 - (4) For disposal trenches and beds, testing shall be performed at appropriate locations and depths within the soil profile to determine the rate at which the soil will absorb effluent. Percolation tests should be performed at each obvious strata change that would significantly effect the design, soil application rate or minimum vertical separation.
 - (5) For seepage pits, discount the thickness of any relatively impermeable soil profiles while determining the soil absorption rate.
 - (6) A test hole shall not be excavated within 3 feet (0.9 m) of a ledge in an observation pit. Care should be taken to assure adjacent features impacting the absorption rate are avoided.
 - (7) The test report shall include a site evaluation map locating the test hole(s).
- (b) Disposal Trenches and Beds
 - (1) Area Preparation
 - (i) Dig a 12 inch square by 12 inches (30.5 cm x 30.5 cm) deep hole or a 15 inch round by 12 inches (38.1 cm x 30.5 cm) deep hole in undisturbed soil.
 - (ii) Scarify any smeared soil surfaces.
 - (iii) Remove loosened materials from the bottom of hole.
 - (2) Presoaking the Test Hole
 - (i) A system, such as a perforated bucket, can be used to support the sidewalls of the test hole if necessary. Fill any voids between the walls of the hole and the bucket with pea gravel.
 - (ii) Fill the test hole to 12 inches (30.5 m) above the bottom of the hole with clean water.
 - (iii) Observe the rate water drops in the hole and determine the time to drain away completely.
 - (iv) If the hole drains in less than 60 minutes, repeat the procedure. If it takes less than an additional 60 minutes, repeat the procedure a third time.
 - (v) Proceed immediately with testing if the hole drains 3 times in less than 60 minutes each time.
 - (vi) If the hole does not drain after the third refill, keep the test hole constantly filled with water to a minimum depth of 9 inches (22.9 cm) for a minimum of 4 hours. Wait for a minimum of 16 hours and no more than 24 hours before proceeding with the test.
 - (3) Conducting the Test
 - (i) Clean out the test hole of any materials that have sloughed into the hole to be sure that the test hole is to the dimensions indicated above.

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- (ii) Fill the hole with clean water to exactly 6 inches (15.2 cm) above the bottom of the percolation test hole.
 - (iii) Measure the time it takes the water to drop exactly 1 inch (2.5 cm) from a fixed reference point. Any number of methods can be used to record the drop in water in the test hole. Care should be used to be sure that the measurement method will not have a significant impact on determination of the absorption rate.
 - (iv) Determine the stabilized rate for the test hole. The approximate rate can be determined by repetitively measuring the absorption rate until 3 subsequent values are within 10%. If subsequent values are not approaching a steady rate or if that rate is close to a restrictive limit, an alternate method based on a graphical solution of the test data approximating the final stabilized rate is recommended.
 - (v) Record the test rate based on the above procedure.
- (c) Seepage Pits
- (1) Area Preparation
 - (i) Drill the test hole a minimum of 18 inches (45.7 cm) in diameter to the depth of the bottom of the proposed seepage pit. The minimum hole depth is 30 feet (9.1 m). Subsequent to the test, the diameter of the test hole may be enlarged to allow construction of the seepage pit at the same location.
 - (ii) Scarify any smeared soil surfaces.
 - (iii) Remove loosened materials from the bottom of the hole.
 - (2) Presoaking the Test Hole
 - (i) Fill the bottom 6 inches (15.2 cm) of the test hole with gravel, if necessary, to prevent scouring.
 - (ii) Fill the test hole with clean water up to 3 feet (0.9 m) below grade.
 - (iii) Observe the rate water drops in the hole and determine the time to drain away completely.
 - (iv) If the hole drains in less than 4 hours, repeat the procedure.
 - (v) Proceed immediately with testing if the hole drains in less than 4 hours after the second refill.
 - (vi) If the test hole does not drain within 4 hours after the second refill, refill the hole a third time and wait for a minimum of 16 hours and a maximum of 24 hours before proceeding with the test.
 - (vii) If there is still standing water in the hole after the presoaking has been completed, the water shall not be removed from the hole.
 - (3) Conducting the Test
 - (i) Fill the hole with clean water up to 3 feet (0.9 m) below grade.
 - (ii) Measure the rate of fall from a fixed reference point every 10 minutes until a stabilized rate of fall is obtained.
 - (iii) Determine the stabilized rate by repetitively measuring the absorption rate until 3 subsequent values are within 10%. If subsequent values are not approaching a steady rate or if that rate is close to a restrictive limit, an alternate method based on a graphical solution of the test data approximating the final stabilized rate is recommended.
 - (iv) Do not use test results from any relatively impermeable soil profiles while determining the stabilized soil absorption rate.
 - (v) Record the rate based on the above procedure.

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Table I-1
Location of Sewage Disposal System

| <u>Point of Beginning for Setback Distance</u> | <u>Minimum Horizontal Setback</u> | |
|---|-----------------------------------|--|
| | <u>Distances in feet (meters)</u> | |
| | <u>Septic Tank</u> | <u>Disposal Trench/Bed or Seepage Pit</u> |
| <u>Buildings¹</u> | <u>10 (3.0)</u> | <u>10 (3.0)</u> |
| <u>Any property line shared with adjoining land not served by a community water system or an existing well</u> | <u>5 (1.5)</u> | <u>5 (1.5)</u> |
| <u>Any property line shared with adjoining land served by a community water system or an existing well²</u> | <u>5 (1.5)</u> | <u>5 (1.5)</u> |
| <u>Well (Public Water Supplies)</u> | <u>100 (30.5)</u> | <u>100 (30.5)</u> |
| <u>Wells (Private)³</u> | <u>100 (30.5)</u> | <u>100 (30.5)</u> |
| <u>Live Streams⁴</u> | <u>100 (30.5)</u> | <u>100 (30.5)</u> |
| <u>Lake or Reservoir⁵</u> | <u>100 (30.5)</u> | <u>100 (30.5)</u> |
| <u>Domestic Water Source Intake</u> | <u>200 (61.0)</u> | <u>200 (61.0)</u> |
| <u>Dry Wash/Drainage Easement⁶</u> | <u>50 (15.2)</u> | <u>50 (15.2)</u> |
| <u>Transmission Distribution Water Line</u> | <u>10 (3.0)</u> | <u>10 (3.0)</u> |
| <u>Domestic service Water Line⁷</u> | <u>5 (1.5)</u> | <u>5 (1.5)</u> |
| <u>Cut on Sloping downgradient Terrain, Culverts and Roadway Ditches⁸</u> | <u>15 (4.6)</u> | <u>15 (4.6)</u> <u>or 4 x the elevation difference between the finished grade at the point of beginning and the elevation at the cut bank bottom, ditch bottom, or culvert invert, whichever is greater, up to 50 feet (15.2 m)</u> |
| <u>Driveway⁹</u> | <u>5 (1.5)</u> | <u>5 (1.5)</u> |
| <u>Swimming Pool¹⁰</u> | <u>5 (1.5)</u> | <u>5 (1.5)</u> |
| <u>Any Easements (other than drainage easements)¹¹</u> | <u>5 (1.5)</u> | <u>5 (1.5)</u> |

Notes:

¹Including porches, decks and steps, whether covered or uncovered, breezeways, roofed patios, carports, covered walks, covered driveways, swimming pools, and similar structures and appurtenances.

²Community water system includes circumstances where a well-sharing agreement or other water supply agreement has been recorded against all of the properties involved and the water supply facilities exist.

³For unaltered lots in a subdivision approved prior to October 1, 1986.

⁴Measured from the nearest boundary of peak streamflow from a 10 year 24 hour precipitation event.

⁵Measured from the elevation of high water line from a peak flow from a 10 year, 24 hour precipitation event at the spillway.

⁶50 foot (15.2 m) setback is measured from the edge of the defined natural channel bank of a drainage area of at least 5 acres or a drainage easement whichever is less. Setback may be reduced to 25 feet (7.6 m) up gradient from the system, if channel erosion protection is provided (naturally or man-made) and approved by the Administrative Authority.

⁷Water pipes crossing sewer or drainage piping constructed of clay or materials that are not approved for use within a building shall be laid a minimum of 12 inches (30.5 cm) beside the sewer or drain pipe.

⁸Measure the setback from the outside of the private sewage disposal system component to the top of the cut bank or ditch, or to the nearest sidewall of a culvert.

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²Measured from the edge of the driveway to the nearest edge of septic tank excavation. A properly reinforced septic tank and cover may be placed at any location relative to a driveway if access openings, risers, and covers carry the design load and are protected from inflow.

¹⁰Setback may be increased due to soil loading and stability concerns.

¹¹5 feet (1.5 m) minimum unless other setback requirements govern as provided herein.

Table I-2

Design Liquid Capacity (Size) of Septic Tanks

| <u>No. of Bedrooms</u> | <u>No. of Occupants</u> | <u>No. of Baths</u> | <u>Maximum Fixture Count</u> | <u>Recommended Septic Tank Size in Gallons (L)</u> | <u>Minimum Septic Tank Size in Gallons (L) (+ or - 5%)</u> |
|------------------------|-------------------------|---------------------|------------------------------|--|--|
| 2 | 4 | 1 | 12 | 1000 (3785) | 1000 (3785) |
| 2 | 4 | 2 | 18 | 1000 (3785) | 1000 (3785) |
| 3 | 6 | 1 | 18 | 1250 (4731) | 1000 (3785) |
| 3 | 6 | 2 | 18 | 1250 (4731) | 1000 (3785) |
| 4 | 8 | 2 | 24 | 1500 (5678) | 1250 (4731) |
| 4 | 8 | 3 | 25 | 1500 (5678) | 1250 (4731) |
| 5 | 10 | 2 | 30 | 2000 (7570) | 1500 (5678) |
| 5 | 10 | 3 | 30 | 2000 (7570) | 1500 (5678) |
| 5 | 10 | 4 | 32 | 2000 (7570) | 1500 (5678) |
| 6 | 12 | 3 | 36 | 2500 (9463) | 2000 (7570) |
| 6 | 12 | 4 | 36 | 2500 (9463) | 2000 (7570) |
| 6 | 12 | 5 | 39 | 2500 (9463) | 2000 (7570) |
| 7 | 14 | 3 | 42 | 2500 (9463) | 2000 (7570) |
| 7 | 14 | 4 | 42 | 2500 (9463) | 2000 (7570) |
| 7 | 14 | 5 | 42 | 2500 (9463) | 2000 (7570) |

Table I-3

Estimated Waste/Sewage Flow Rates

Because of the many variables encountered, it is not possible to set absolute values for waste/sewage flow rates for all situations. The designer should evaluate each situation and, if figures in this table need modification, they should be made with the concurrence of the Administrative Authority.

| <u>Type of Occupancy</u> | <u>Gallons/Liters Per Day</u> |
|---|--|
| 1. Airports | 15 (56.7) per employee 5 (18.9) per passenger |
| 2. Auto Washes | Per manufacturer's specification |
| 3. Bowling Alleys (snack bar only) | 75 (283.9) per lane |
| 4. Camps | |
| <u>Campground with central comfort station with flush toilets, no showers</u> | 35 (132.4) per person 25 (94.6) per person |
| <u>Day camps (no meals served)</u> | 15 (56.7) per person |
| <u>Summer and seasonal</u> | 50 (189.2) per person |

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|---|---|
| 5. Churches (Sanctuary) with kitchen waste | 5 (18.9) per seat 7 (26.4) per seat |
| 6. Dance halls | 5 (18.9) per person |
| 7. Factories No showers With showers Cafeteria, add | 25 (94.6) per employee 35 (132.4) per employee 5 (18.9) per employee |
| 8. Hospitals Kitchen waste only Laundry waste only | 250 (946.3) per bed 25 (94.6) per bed 40 (151.4) per bed |
| 9. Hotels (no kitchen waste) | 60 (227.1) per bed (2 person) |
| 10. Institutions (Resident) Nursing home Rest home | 75 (283.9) per person 125 (473.1) per person 125 (473.1) per person |
| 11. Laundries, self service (minimum 10 hours per day) Commercial | 50 (189.2) per wash cycle Per manufacturer's specification |
| 12. Motel with kitchen | 50 (189.2) per bed space 60 (227.1) per bed space |
| 13. Offices | 20 (75.7) per employee |
| 14. Parks, mobile homes picnic parks (toilets only) recreational vehicles- without water hook-up with water and sewer hook-up | 250 (946.3) per space 20 (75.7) per parking space 75 (283.9) per space 100 (378.5) per space |
| 15. Restaurants- cafeterias toilet kitchen waste add for garbage disposal add for cocktail lounge kitchen waste- disposal service | 20 (75.7) per employee 7 (26.4) per customer 6 (22.7) per meal 1 (3.7) per meal 2 (7.5) per customer 2 (7.5) per meal |
| 16. Schools - Staff and office Elementary students Intermediate and high with gym and showers, add with cafeteria, add Boarding, total waste | 20 (75.7) per person 15 (56.7) per person 20 (75.7) per student 5 (18.9) per student 3 (11.3) per student 100 (378.5) per person |
| 17. Service station, toilets | 1000 (3785.4) for 1st bay 500 (1892.7) for each additional bay |
| 18. Stores public restrooms, add | 20 (75.7) per employee 1 per 10 sq. ft. of floor space (3.79 L per 9290.3 sq. cm of floor space) |
| 19. Swimming pools, public | 10 (37.8) per person |
| 20. Theaters, auditoriums drive-in | 5 (18.9) per seat 10 (37.8) per space |

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|---|---|
| 21. Single Family Residential Dwellings | 150 gallons (567.7 L) per day per bedroom or 25 gallons (94.6 L) per day per fixture unit whichever is greater |
| 22. For structures and facilities not specifically addressed in the above table, flow rates available from other standard books and literature may be approved. | 22. For structures and facilities not specifically addressed in the above table, flow rates available from other standard books and literature may be approved. |

- (a) **Recommended Design Criteria.** Sewage disposal systems, for uses other than single family residential dwellings, sized using the estimated waste/sewage flow rates should be calculated as follows:
 (1) Waste/sewage flow, up to 3000 gallons/day (11,355 L/day)
 $\text{Flow} \times 2.1 = \text{septic tank size}$
- (b) Also see Section I 3 of this appendix.
- (c) Additional treatment of sewage is required if sewage quality that exceeds 430 mg/l (7,362 gr/gal) for total suspended solids, 380 mg/l (6,506 gr/gal) for the 5 day biochemical oxygen demand, 75 mg/l (1,284 gr/gal) for fats, oils and greases, or the sewage includes wastes other than those originating from domestic toilet flushing, food preparation, non-occupational laundry, and personal hygiene, or wastes originating from an operation utilizing any hazardous substance or creating a hazardous waste as defined in the statutes or rules of the Arizona Department of Environmental Quality.

Table I-4 (A)

Soil Application Rate and Minimum Vertical Separation for Shallow Disposal Field Systems by Soil Evaluation Method¹

Instructions: Read questions in sequence beginning with A. The maximum soil loading rate shall be determined from column A or B that corresponds to the first "yes" response to the questions.

| | A Gal/Day per Sq. Ft. (lpd/sq.m) | B Sq. Ft./ 100 Gal/Day (sq.m/100 lpd) | Percolation Rate Range Min/Inch (min/cm) |
|--|---|--|---|
| A. Is the horizon gravelly coarse sand or coarser? | 0 (0) | 0 (0) | = |
| B. Is the structure of the horizon moderate or strongly platy? | 0 (0) | 0 (0) | = |
| C. Is the texture of the horizon sandy clay loam, clay loam, silty clay loam, or finer and structure weak platy? | 0 (0) | 0 (0) | = |
| D. Is the moist consistence stronger than firm or any cemented class? | 0 (0) | 0 (0) | = |
| E. Is texture sandy clay, clay, or silty clay of high clay content and structure massive or weak? | 0 (0) | 0 (0) | = |
| F. Is texture sandy clay loam, clay loam, silty clay loam, or silty loam and structure massive? | 0 (0) | 0 (0) | = |
| G. Is the texture of the horizon loam or sandy loam and the soil structure massive? | .20 (8.15) | 500 (12.3) | 16-45 (6.3-17.7) |
| H. Is texture sandy clay, clay, or silty clay of low clay content and the structure moderate or strong? | .20 (8.1) | 500 (12.3) | 45-60 (17.7-23.6) |
| I. Is texture sandy clay loam, clay loam, or silty clay loam and structure weak? | .20 (8.15) | 500 (12.3) | 45-60 (17.7-23.6) |
| J. Is texture sandy clay loam, clay loam, or silty clay loam and structure moderate or strong? | .40 (16.30) | 250 (6.1) | 45-60 (17.7-23.6) |

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|--|--------------|-------------|------------------|
| K. Is texture sandy loam, loam, or silty loam and structure weak? | .40 (16.30) | 250 (6.1) | 16-45 (6.3-17.7) |
| L. Is texture sandy loam, loam, silt loam and structure moderate or strong? | .60 (24.45) | 166.7 (4.1) | 16-45 (6.3-17.7) |
| M. Is texture fine sand, very fine sand, loamy fine sand, or loamy very fine sand? | .40 (16.30) | 250 (6.1) | 10-30 (3.9-11.8) |
| N. Is texture loamy sand or sand? | .80 (32.59) | 125 (3.1) | 10-20 (3.9-7.9) |
| O. Is texture coarse sand? ² | 1.20 (48.89) | 83.3 (2.0) | 2-10 (0.8-7.9) |

Notes:

¹Shallow trench and bed systems are less than 5 feet (1.52 m) deep and shall have a minimum vertical separation of 4 feet (1.22 m) to rock, fractured rock, soils with greater than 50% rock fragments and a 5 foot (1.52 m) zone of unsaturated soil to groundwater.

²Shallow trench and bed systems are less than 5 feet (1.52 m) deep and shall have a minimum vertical separation of 10 feet (3.04 m) to rock, fractured rock, soils with greater than 50% rock fragments and a 10 foot (3.04 m) zone of unsaturated soil to groundwater.

Example: Three-bedroom dwelling, wastewater flow rate = 450 gpd (1,703 Lpd), soil texture is loamy sand (N).

Using Column A – Effective Area = Divide the flow rate (450 gpd) (1,703 Lpd) by the soil application rate (0.8 gpd/sq. ft) = (450/0.8) = 562.5 sq. ft (32.6 Lpd = (1,703/32.6) = 52.3 m²).

Using Column B – Effective Area = Multiply the flow rate (450 gpd) (1,703 Lpd) by the soil application rate (125 sq. ft./100 gpd) = (450 x 125/100) = 562.5 sq. ft (11.6 m² = (11.6 x 1,703/378.5) = 52.3 m²).

Table I-4 (B)

Soil Application Rate and Minimum Vertical Separation for Deep Disposal Field Systems by Soil Evaluation Method¹

Instructions: Read questions in sequence beginning with A. The maximum soil loading rate shall be determined from column A or B that corresponds to the first “yes” response to the questions.

| | A Gal/Day per sq. ft. (lpd/sq.m) | B Sq. Ft./ 100 gal/day (sq.m/100 lpd) | Percolation Rate Range min/ inch (min/cm) |
|--|---|--|--|
| A. Is the horizon gravelly coarse sand or coarser? | 0 (0) | 0 (0) | = |
| B. Is the structure of the horizon moderate or strongly platy? | 0 (0) | 0 (0) | = |
| C. Is the texture of the horizon sandy clay loam, clay loam, silty clay loam, or finer and structure weak platy? | 0 (0) | 0 (0) | = |
| D. Is the moist consistence stronger than firm or any cemented class? | 0 (0) | 0 (0) | = |
| E. Is texture sandy clay, clay, or silty clay of high clay content and structure massive or weak? | 0 (0) | 0 (0) | = |
| F. Is texture sandy clay loam, clay loam, silty clay loam, or silty loam and structure massive? | 0 (0) | 0 (0) | = |
| G. Is the texture of the horizon loam or sandy loam and the soil structure massive? | .13 (5.3) | 769 (18.9) | 16-45 (6.3-17.7) |
| H. Is texture sandy clay, clay, or silty clay of low clay content and the structure moderate or strong? | .13 (5.3) | 769 (18.9) | 45-60 (17.7-23.6) |
| I. Is texture sandy clay loam, clay loam, or silty clay loam and structure weak? | .13 (5.3) | 769 (18.9) | 45-60 (17.7-23.6) |

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| | | | |
|--|-------------------|--------------------|--------------------------|
| J. Is texture sandy clay loam, clay loam, or silty clay loam and structure moderate or strong? | <u>.27 (11.0)</u> | <u>370.4 (9.1)</u> | <u>45-60 (17.7-23.6)</u> |
| K. Is texture sandy loam, loam, or silty loam and structure weak? | <u>.27 (11.0)</u> | <u>370.4 (9.1)</u> | <u>16-45 (6.3-17.7)</u> |
| L. Is texture sandy loam, loam, silt loam and structure moderate or strong? | <u>.40 (16.3)</u> | <u>250 (6.1)</u> | <u>16-45 (6.3-17.7)</u> |
| M. Is texture fine sand, very fine sand, loamy fine sand, or loamy very fine sand? | <u>.27 (11.0)</u> | <u>370.4 (9.1)</u> | <u>10-30 (3.9-11.8)</u> |
| N. Is texture loamy sand or sand? | <u>.53 (21.6)</u> | <u>188.7 (4.6)</u> | <u>10-20 (3.9-7.9)</u> |
| O. Is texture coarse sand? | <u>0 (0)</u> | <u>0 (0)</u> | <u>2-10 (0.8-7.9)</u> |

Notes:

¹Deep trench systems are greater than or equal to 5 feet (1.52 m) and less than 10 feet (3.0 m) deep and shall have a minimum vertical separation of 5 feet (1.52 m) to rock, fractured rock, soils with greater than 50% rock fragments and a 5 foot (1.52 m) zone of unsaturated soil to groundwater.

Example: Three-bedroom dwelling, wastewater flow rate = 450 gpd (1,703 Lpd), soil texture is loamy sand (N).
Using Column A – Effective Area = Divide the flow rate (450 gpd) (1,703 Lpd) by the soil application rate (0.53 gpd/sq. ft) = (450/0.53) = 849 sq. ft. (21.6 Lpd/m² = (1,703/21.6) = 78.9 m²).

Using Column B – Effective Area = Multiply the flow rate (450 gpd) (1,703 Lpd) by the soil application rate (188.7 sq. ft./100 gpd) = (450 x 188.7/100) = 849 sq. ft. (17.5 m²/378.5 Lpd = (1,703 x 17.5/378.5) = 78.9 m²).

Table I-5

Soil Application Rate and Minimum Vertical Separation for Seepage Pits

| Soil Characteristics | Percolation Test Rates | Maximum Soil Application Rate | Minimum Vertical Separation to Groundwater | |
|--|----------------------------------|---|---|--------------------------|
| | | | Gravel Seepage Pit | Lined Seepage Pit |
| | <u>Min/Inch (min/cm)</u> | <u>Gallons/SF/Day (L/m²/d)</u> | <u>FT (m)</u> | <u>FT (m)</u> |
| <u>Gravelly Coarse Sands</u> | <u><1.00 (0.39)</u> | <u>NOT PERMITTED</u> | <u>=</u> | <u>=</u> |
| <u>Coarse to Medium to Fine Sands</u> | <u>1.00 – 1.99 (0.39 – 0.78)</u> | <u>1.40 (57.0)</u> | <u>60 (18.3)</u> | <u>60 (18.3)</u> |
| <u>Medium to Fine Sands And Silty Sands</u> | <u>2.00 – 2.99 (0.77 – 1.18)</u> | <u>1.10 (44.8)</u> | <u>60 (18.3)</u> | <u>60 (18.3)</u> |
| | <u>3.00 – 3.99 (1.18 – 1.57)</u> | <u>1.00 (40.7)</u> | <u>60 (18.3)</u> | <u>60 (18.3)</u> |
| | <u>4.00 – 4.99 (1.57 – 1.96)</u> | <u>0.90 (36.7)</u> | <u>60 (18.3)</u> | <u>60 (18.3)</u> |
| | <u>5.00 – 5.99 (1.96 – 2.36)</u> | <u>0.75 (30.6)</u> | <u>60 (18.3)</u> | <u>60 (18.3)</u> |
| <u>Fine to Very Fine Sands and Loamy Sands</u> | <u>7.00 – 9.99 (2.75 – 3.93)</u> | <u>0.63 (25.7)</u> | <u>25 (7.6)</u> | <u>25 (7.6)</u> |

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| | | | | |
|---|-----------------------------|----------------------|----------|----------|
| <u>Sandy to Silty Loams, Loam</u> | 10.00 – 14.99 (25.4 – 38.1) | 0.50 (20.4) | 25 (7.6) | 25 (7.6) |
| | 15.00 – 19.99 (38.1 – 50.8) | 0.44 (17.9) | 25 (7.6) | 25 (7.6) |
| | 20.00 – 24.99 (50.8 – 63.5) | 0.40 (16.3) | 25 (7.6) | 25 (7.6) |
| | 25.00 – 30.00 (63.5 – 76.2) | 0.36 (14.7) | 25 (7.6) | 25 (7.6) |
| <u>Strongly Structured Loams and Clayey Soils</u> | >30.00 (76.2) | <u>NOT PERMITTED</u> | = | = |

- a. Seepage pits shall be bored 5 feet (1.5 m) deeper than the proposed pit depth to verify underlying soil characteristics, unless water table evidence or bedrock is encountered sooner. The 5 feet (1.5 m) of overdrill shall then be backfilled with low permeability drill cuttings or other suitable material.
- b. Seepage pits that terminate in gravelly, coarse sand stratas shall be backfilled 5 feet (1.5 m) above the beginning of such strata with low permeability drill cuttings or other suitable material.

Table I-6

Seepage Pit Effective Absorption Area

| <u>Effective Strata Depth Below Flow Line</u> | <u>Seepage Pit Effective Absorption Area, Square Feet (m²)</u> | | |
|---|---|---------------------|---------------------|
| | <u>Diameter of Seepage Pit</u> | | |
| <u>FT (m)</u> | <u>4 FT (1.2 m)</u> | <u>5 FT (1.5 m)</u> | <u>6 FT (1.8 m)</u> |
| <u>1 (0.3)</u> | <u>13 (1.2)</u> | <u>16 (1.5)</u> | <u>19 (1.8)</u> |
| <u>2 (0.6)</u> | <u>25 (2.3)</u> | <u>31 (2.9)</u> | <u>38 (3.5)</u> |
| <u>3 (0.9)</u> | <u>38 (3.5)</u> | <u>47 (4.4)</u> | <u>57 (5.3)</u> |
| <u>4 (1.2)</u> | <u>50 (4.6)</u> | <u>63 (5.9)</u> | <u>75 (7.0)</u> |
| <u>5 (1.5)</u> | <u>63 (5.9)</u> | <u>79 (7.3)</u> | <u>94 (8.7)</u> |
| <u>6 (1.8)</u> | <u>75 (7.0)</u> | <u>94 (8.7)</u> | <u>113 (10.5)</u> |
| <u>7 (2.1)</u> | <u>88 (8.2)</u> | <u>110 (10.2)</u> | <u>132 (12.3)</u> |
| <u>8 (2.4)</u> | <u>100 (9.3)</u> | <u>126 (11.7)</u> | <u>151 (14.0)</u> |
| <u>9 (2.7)</u> | <u>113 (10.5)</u> | <u>141 (13.1)</u> | <u>170 (15.8)</u> |
| <u>10 (3.0)</u> | <u>126 (11.7)</u> | <u>157 (14.6)</u> | <u>189 (17.6)</u> |
| <u>20 (6.1)</u> | <u>251 (23.3)</u> | <u>314 (29.2)</u> | <u>377 (35.0)</u> |
| <u>30 (9.1)</u> | <u>377 (35.0)</u> | <u>471 (43.8)</u> | <u>566 (52.6)</u> |
| <u>40 (12.2)</u> | <u>502 (46.6)</u> | <u>628 (58.3)</u> | <u>754 (70.0)</u> |
| <u>50 (15.2)</u> | <u>628 (58.3)</u> | <u>785 (72.9)</u> | <u>943 (87.6)</u> |

- a. Minimum Effective Depth of Pit = 10 feet (3.0 m).
- b. Sufficient area shall be provided for at least 2 bedrooms.
- c. Effective absorption surface for seepage pits includes sidewall areas only.

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Table I-7

Soil Application Rate and Minimum Vertical Separation for Disposal Field Systems by Percolation Test Results

| <u>Percolation Rate Value From Percolation Test, Minutes Per Inch (min/cm)</u> | <u>Shallow Disposal Field System² Soil Application Rate, Gal/Day Per Sq. Ft. (L/dm²)</u> | <u>Deep Disposal Field System³ Soil Application Rate, Gal/Day Per Sq. Ft. (L/dm²)</u> | <u>Minimum Vertical Separation⁴, Feet Below Bottom Of Disposal Field (m)</u> |
|---|---|--|--|
| less than 1.00 | Note ¹ | Note ¹ | Note ¹ |
| 1.00 to less than 3.00 (1.18) | 1.40 (57.0) | 0.93 (37.9) | 40.0 (12.2) |
| 3.00 (1.18) | 1.10 (44.8) | 0.73 (29.7) | 10.0 (3.0) |
| 4.00 (1.57) | 1.00 (40.7) | 0.67 (27.3) | 10.0 (3.0) |
| 5.00 (1.97) | 0.90 (36.7) | 0.60 (24.4) | 10.0 (3.0) |
| 7.00 (2.76) | 0.75 (30.6) | 0.50 (20.4) | 10.0 (3.0) |
| 10.0 (3.94) | 0.63 (25.7) | 0.42 (17.1) | 10.0 (3.0) |
| 15.0 (5.91) | 0.50 (20.4) | 0.33(13.4) | 5.0 (1.5) |
| 20.0 (7.87) | 0.44 (17.9) | 0.29 (11.8) | 5.0 (1.5) |
| 25.0 (9.84) | 0.40 (16.3) | 0.27 (11.0) | 5.0 (1.5) |
| 30.0 (11.81) | 0.36 (14.7) | 0.24 (9.8) | 5.0 (1.5) |
| 35.0 (13.78) | 0.33 (13.4) | 0.22 (9.0) | 5.0 (1.5) |
| 40.0 (15.75) | 0.31(12.6) | 0.21 (8.6) | 5.0 (1.5) |
| 45.0 (17.72) | 0.29 (11.8) | 0.20 (8.1) | 5.0 (1.5) |
| 50.0 (19.68) | 0.28 (11.4) | 0.19 (7.7) | 5.0 (1.5) |
| 55.0 (21.65) | 0.27 (11.0) | 0.18 (7.3) | 5.0(1.5) |
| more than 55.0 to 60.0 (21.65 to 23.62) | 0.25 (10.2) | 0.17 (6.9) | 5.0 (1.5) |
| more than 60.0 to 120 (23.62 to 47.24) | 0.20 (8.1) | 0.13 (5.3) | 5.0 (1.5) |

Notes:

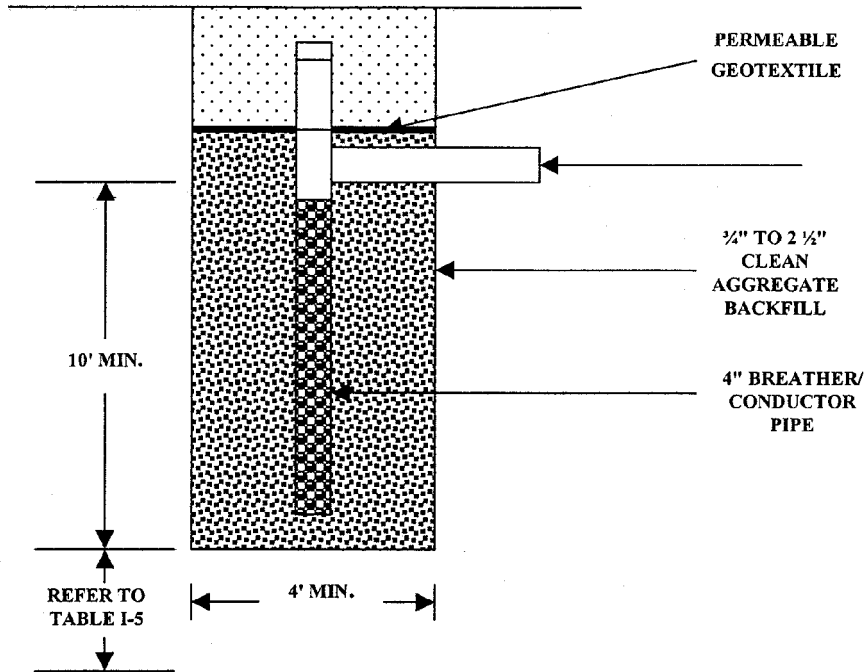
¹ Not permitted for septic tank effluent.

² Depth of bottom of disposal field below finished grade of soil is less than 5.00 feet (1.5 m).

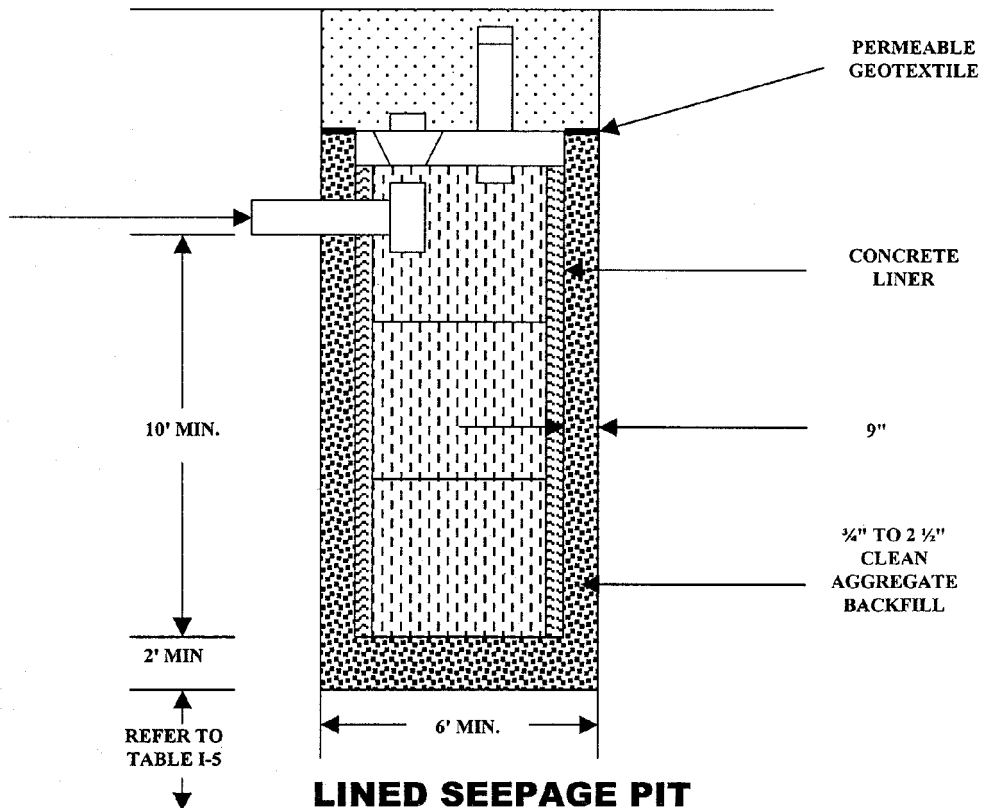
³ Depth of bottom of disposal field below finished grade of soil is 5.00 feet (1.5 m) or greater.

⁴ Minimum vertical distance required for achieving unsaturated flow is measured from the bottom of a constructed disposal field to the nearest restrictive soil condition including, but not limited to, the seasonal high water table capillary fringe, impermeable layer, rock, fractured rock, soils with greater than 50% rock fragments, and unacceptable soil.

SEEPAGE PIT DESIGN



GRAVEL FILLED SEEPAGE PIT



LINED SEEPAGE PIT

FIGURE I-1

SEEPAGE PIT LAYOUT

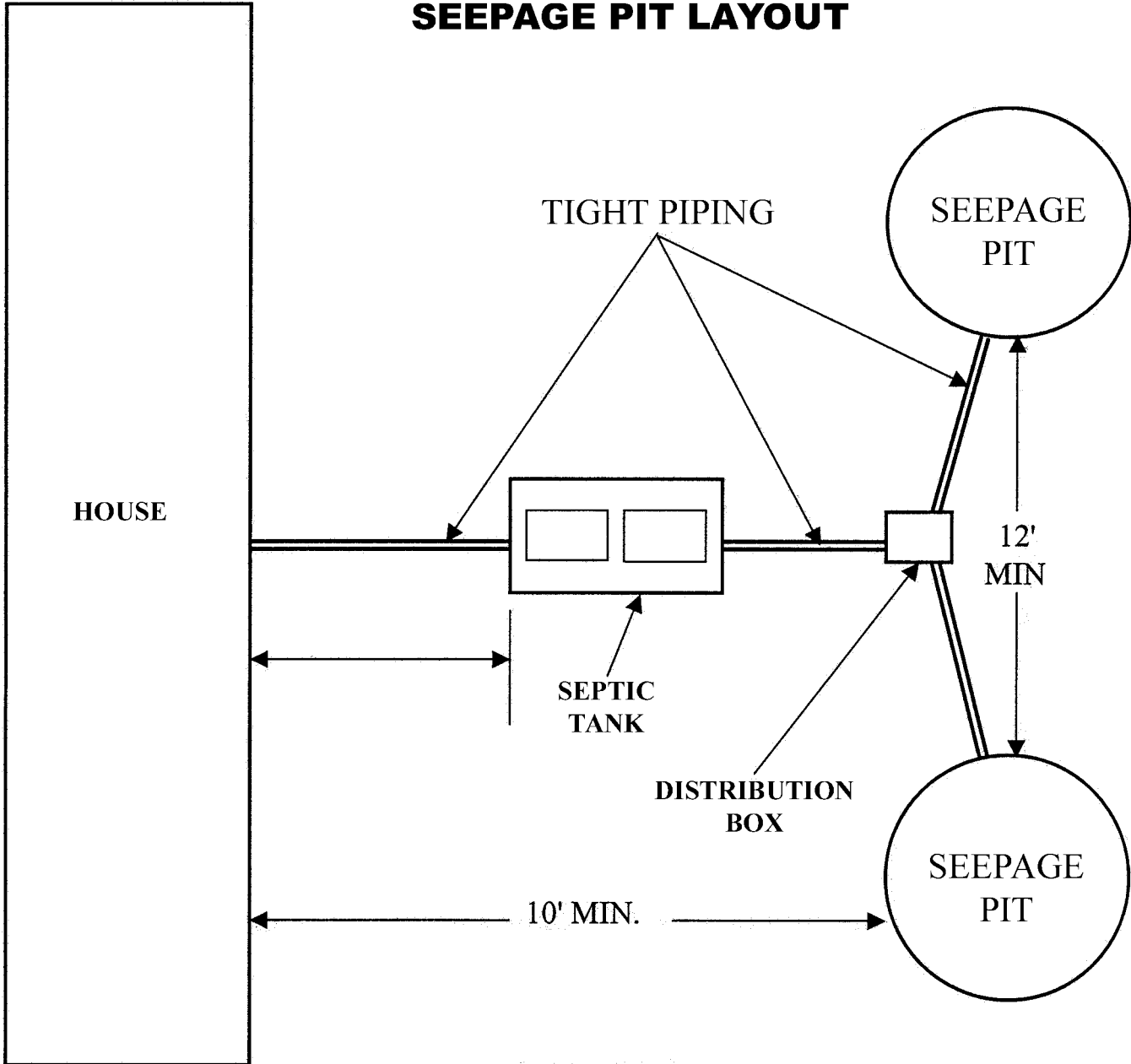


FIGURE I-2

NOTICE OF PROPOSED RULEMAKING

TITLE 14. PUBLIC SERVICE CORPORATIONS; CORPORATIONS AND ASSOCIATIONS; SECURITIES REGULATION

CHAPTER 4. CORPORATION COMMISSION - SECURITIES

PREAMBLE

- | | |
|---|--|
| 1. <u>Sections Affected</u> R14-4-117 | <u>Rulemaking Action</u> New Section |
|---|--|

- 2. The specific authority for the rulemaking, including both the authorizing statute (general) and the statutes the rules are implementing (specific):**

Authorizing statute: A.R.S. § 44-1821

Implementing statute: A.R.S. §§ 44-1891 and 44-1902

Constitutional authority: Arizona Constitution, Article XV §§ 4, 6, and 13

- 3. A list of all previous notices appearing in the Arizona Administrative Register:**

Notice of Rulemaking Docket Opening: 5 A.A.R. 4536, December 3, 1999

- 4. The name and address of agency personnel with whom persons may communicate regarding the rulemaking:**

Name: Sharleen A. Day, Associate General Counsel

Address: Arizona Corporation Commission, Securities Division
1300 W. Washington, Third Floor
Phoenix, AZ 85007-2996

Telephone: (602) 542-4242

Fax: (602) 594-7421

- 5. An explanation of the rule, including the agency's reasons for initiating the rule:**

The Arizona Corporation Commission (Commission) proposes to create Section R14-4-117 (rule 117) to specify review standards for issuers seeking to register debt securities under A.R.S. § 44-1891. Rule 117 specifies the manner in which an issuer seeking to register debt securities must demonstrate an ability to service the debt it intends to issue. The standards in this rule are patterned after the North American Securities Administrator's Association statement of policy for debt securities and item 503 of federal regulation S-K. The Commission has patterned the demonstration of ability to service debt and the associated documentation requirements after these industry sources in the interest of uniformity.

Proposed rule 117 requires that an issuer seeking to register debt securities demonstrate the ability to service its debt obligations as they come due. Proposed rule 117 specifies the manner in which an issuer must calculate its cash flow, earnings, and the ratio of earnings to fixed charges used in the demonstration of ability to service debt.

Proposed rule 117 requires issuers to provide the Commission with a statement of the issuer's current cash flow, prepared in conformity with generally accepted accounting principles. Issuers must also provide documentation of any underlying assumptions the issuer used in pro forma calculations. Issuers must provide the Commission with a ratio of earnings to fixed charges for the issuer's last five fiscal years as well as the actual calculations used to calculate the ratio of earnings to fixed charges. Issuers must provide the Commission with documentation of any agreements, contracts, or other instruments material to its demonstration of ability to service its debt obligations.

An issuer offering securities that have been rated BBB or higher by Standard & Poor's or Fitch Investors Service, Inc., or Baa or higher by Moody's Investors Service is presumed to have complied with the demonstrations required by proposed rule 117.

- 6. Reference to any study that the agency proposes to rely on in its evaluation of or justification for the proposed rule and where the public may obtain or review the study, all data underlying each study, any analysis of the study, and other supporting material.**

None

7. A showing of good cause why the rule is necessary to promote a statewide interest if the rule will diminish a previous grant of authority of a political subdivision of this state:

Not applicable

8. The preliminary summary of the economic, small business, and consumer impact:

The economic, small business, and consumer impact statement for rule 117 analyzes the costs, savings, and benefits that accrue to the Commission, the office of the attorney general, the regulated public, and the general public. With the adoption of the proposed rule, the impact on established Commission procedures, Commission staff time, and other administrative costs is minimal. The estimated additional cost to the office of the attorney general is minimal. The benefits provided by rule 117 are nonquantifiable. Rule 117 should benefit the Commission's relations with the regulated public because of specified registration standards and increased uniformity with federal laws. The public will benefit from the continuation of certain standards for registered offerings. The Commission anticipates that the proposed rulemaking will not significantly increase monitoring, record keeping, or reporting burdens on businesses or persons. The costs of implementation or enforcement are not increased or are only marginally increased

9. The name and address of agency personnel with whom persons may communicate regarding the accuracy of the economic, small business, and consumer impact statement:

Not applicable

10. The time, place, and nature of the proceedings for the adoption, amendment, or repeal of the rule, or, if no proceeding is scheduled, where, when, and how persons may request an oral proceeding on the proposed rule:

Date: 9:30 a.m.

Time: June 22, 2000

Location: Arizona Corporation Commission
1200 West Washington Avenue
Phoenix, Arizona 85007

Nature: Oral proceeding. Subsequent to the oral proceeding, the Arizona Corporation Commission will take final action at an open meeting with respect to the making of the proposed rule.

11. Any other matters prescribed by statute that are applicable to the specific agency or to any specific rule or class of rules:

None

12. Incorporations by reference and their location in the rules:

None

13. The full text of the rule follows:

**TITLE 14. PUBLIC SERVICE CORPORATIONS; CORPORATIONS AND
ASSOCIATIONS; SECURITIES REGULATION**

CHAPTER 4. CORPORATION COMMISSION - SECURITIES

ARTICLE 1. IN GENERAL RELATING TO THE ARIZONA SECURITIES ACT

Section

R14-4-117. Requirement for Registration of a Debt Offering; Definitions

ARTICLE 1. IN GENERAL RELATING TO THE ARIZONA SECURITIES ACT

R14-4-117. Requirement for Registration of a Debt Offering; Definitions

A. As a condition of registration of debt securities under A.R.S. Title 44, Chapter 12, Article 7, except pursuant to § 44-1901, an issuer must demonstrate its ability to service its debt obligations as they become due, including the obligations under the debt securities to be offered.

B. An offering of investment grade debt securities that have been rated BBB or higher by Standard & Poor's or Fitch Investors Service, Inc., or Baa or higher by Moody's Investors Service will be considered to have complied with the requirements of this Section.

C. For purposes of this Section, the following definitions shall apply.

1. "Fixed charges" means the sum of interest expensed and capitalized; amortized premiums, discounts, and capitalized expenses related to indebtedness; an estimate of the interest within rental expense; and preference security dividend requirements of consolidated subsidiaries.

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2. "Earnings" is the amount resulting from subtracting the sum of the items in subsection (b) from the sum of the items in subsection (a).
 - a. Pretax income from continuing operations before adjustment for minority interests in consolidated subsidiaries or income or loss from equity investees, fixed charges; amortization of capitalized interest, distributed income of equity investees, and the issuer's share of pretax losses of equity investees for which charges arising from guarantees are included in fixed charges.
 - b. Interest capitalized, preference security dividend requirements of consolidated subsidiaries, and the minority interest in pretax income of subsidiaries that have not incurred fixed charges.
 3. "Equity investees" means investments for which the issuer accounts by using the equity method of accounting.
 4. "Pro forma ratio" means a ratio that reflects the application of proceeds from the proposed offering to repay any outstanding debt or to retire other securities.
- D.** The issuer's demonstration of its ability to service its debt obligations shall include all of the following.
1. Statement of the issuer's current cash flow prepared in conformity with generally accepted accounting principles and adjusted on a pro forma basis to reflect:
 - a. The elimination of interest and fees on debt or debt securities and of cash dividends on preferred stock that are to be retired with the proceeds of the offering.
 - b. The effect of any acquisitions or capital expenditures that were made by the issuer after its last fiscal year, or that are proposed or required for the current fiscal year, that materially affect the issuer's cash flow.
 - c. The effect of interest and fees on debt or debt securities or cash dividends paid after the issuer's last fiscal year.
 - d. The effect of any interest and fees on debt or debt securities and of cash dividends on preferred stock or common stock that were issued during the issuer's last fiscal year, but that were outstanding for only a portion of such fiscal year, as if such debt, debt securities, preferred stock, or common stock had been outstanding for entire fiscal year.
 - e. The effect of imputed or deferred charges of zero-coupon debt or debt securities for the issuer's last fiscal year and any additional charges on such debt or debt securities issued after the issuer's last fiscal year.
 - f. The effect of accrued dividends on preferred stock for the issuer's last fiscal year and any additional dividends on such preferred stock issued after the issuer's last fiscal year.
 - g. The effect of any other material changes to the issuer's future cash flow.
 2. Detailed explanation of the facts and assumptions underlying the pro forma statement of cash flow.
 3. A ratio of earnings to fixed charges for each of the last five fiscal years and the latest interim period.
 - a. If a ratio indicates less than one-to-one coverage, disclose the dollar amount of the deficiency.
 - b. If the proceeds from the proposed sale of securities will be used to repay any of the issuer's outstanding debt or to retire other securities and the change in the ratio would be 10% or greater, include a pro forma ratio. Use the net change in interest or dividends from the refinancing to calculate the pro forma ratio.
 4. A calculation using the amounts and captions used by the issuer to calculate the ratio of earnings to fixed charges.
 5. Copies of written agreements, contracts, or other instruments material to the issuer's ability to service its obligations under the debt securities to be offered.
 6. Detailed information regarding all guarantee obligations of or to the issuer in connection with any debt. Any financial statements provided to the Commission to satisfy this subsection shall be prepared in conformity with generally accepted accounting principles.
 7. Other material or information the issuer desires to include to support its demonstration.
- E.** If the Commission deems it necessary for investor protection, the Commission may require that the issuer establish a sinking fund or redemption requirements.

NOTICE OF PROPOSED RULEMAKING

TITLE 17. TRANSPORTATION

CHAPTER 4. DEPARTMENT OF TRANSPORTATION

MOTOR VEHICLE DIVISION

PREAMBLE

1. Sections affected:

R17-4-250

Rulemaking Action:

Repeal

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2. The specific authority for the rulemaking, including both the authorizing statute (general) and the statutes the rules are implementing (specific):

Authorizing statute: A.R.S. § 28-366

Implementing statute: Originally A.R.S. § 28-310, now A.R.S. § 28-2355 after statutory rewrite of 1997.

3. A list of all previous notices appearing in the Register addressing the proposed rule:

Notice of Rulemaking Docket Opening: 5 A.A.R. 3281, September 24, 1999

4. The name and address of agency personnel with whom persons may communicate regarding the rulemaking:

Name: George R. Pavia, Division Rules Coordinator

Address: Motor Vehicle Division, Mail Drop 507M
3737 North Seventh Street, Suite 160
Phoenix, Arizona 85014

Telephone: (602) 712-8446

Fax: (602) 241-1624

Cell phone: (602) 818-1443

E-mail: gpavia@dot.state.az.us

5. An explanation of the rule, including the agency's reasons for initiating the rule:

This rulemaking arises from a 5-year rule review (F-98-0401) approved by the Governor's Regulatory Review Council on May 5, 1998. The 5-year review report recommended repeal of R17-4-250 since the rule essentially expired in 1974. Since it is no longer enforced, repeal of this obsolete rule is an expedient course of action.

6. A reference to any study that the agency proposes to rely on in its evaluation of or justification for the proposed rule and where the public may obtain or review the study, all data underlying each study, any analysis of the study and other supporting material:

None

7. A showing of good cause why the rule is necessary to promote a statewide interest if the rule will diminish a previous grant of authority of a political subdivision of this state:

Not applicable

8. The preliminary summary of the economic, small business, and consumer impact:

Motor Vehicle Division is claiming exemption under the provisions of A.R.S. § 41-1055(D)(3). The only foreseen economic impact of repealing R17-4-250 is clerical costs involved in formal rulemaking. Repeal of this obsolete rule accordingly decreases agency monitoring, reporting, and enforcing burdens required of effective administrative rules.

9. The name and address of agency personnel with whom persons may communicate regarding the accuracy of the economic, small business, and consumer impact statement:

Name: George R. Pavia, Division Rules Coordinator

Address: Motor Vehicle Division, Mail Drop 507M
3737 North Seventh Street, Suite 160
Phoenix, Arizona 85014

Telephone: (602) 712-8446

Cell phone: (602) 818-1443

Fax: (602) 241-1624

E-mail: gpavia@dot.state.az.us

10. The time, place, and nature of the proceedings for the making, amendment, or repeal of the rule, or if no proceeding is scheduled, where, when, and how persons may request an oral proceeding on the proposed rule:

No public hearing is scheduled in this rulemaking. Public comment or a hearing request may be given to the officer listed in item #4. The public record in this rulemaking will close at 4:30 p.m. on June 23, 2000.

11. Any other matters prescribed by statute that are applicable to the specific agency or to any specific rule or class of rules:

Not applicable

12. Incorporations by reference and their location in the rules:

None

13. The full text of the rules follows:

TITLE 17. TRANSPORTATION

**CHAPTER 4. DEPARTMENT OF TRANSPORTATION
MOTOR VEHICLE DIVISION**

ARTICLE 2. TITLES & REGISTRATION

Section

R17-4-250. ~~1974 ReflectORIZED Stickers on 1973 License Plates~~ Repealed

ARTICLE 2. TITLES & REGISTRATION

R17-4-250. ~~1974 ReflectORIZED Stickers on 1973 License Plates~~ Repealed

~~Number plates issued as evidence of registration of passenger vehicles, trucks, and trailers, for the year ending December 31, 1974, shall be identical with the number plates issued for 1973, but each plate shall have displayed thereon a reflectORIZED sticker to be furnished by the Motor Vehicle Division bearing the year numeral 1974 and a serial number, which number shall be recorded on the registration card by the registering officer. When a properly issued sticker has been affixed to the 1973 number plate in the upper right hand corner, such plate shall constitute a 1974 license plate. The display of a 1974 sticker on a number plate other than the plate to which originally assigned by the registering officer shall be considered to alter the number plate and make the person responsible subject to the appropriate penalty provided for in A.R.S. § 28-326. None of the foregoing shall apply to dealer plates, transporter plates, motorcycle plates, or thirty-day plates.~~

NOTICE OF PROPOSED RULEMAKING

TITLE 17. TRANSPORTATION

**CHAPTER 4. DEPARTMENT OF TRANSPORTATION
MOTOR VEHICLE DIVISION**

PREAMBLE

- 1. Sections affected:** **Rulemaking Action:**
R17-4-436 Amend
- 2. The specific authority for the rulemaking, including both the authorizing statute (general) and the statutes the rules are implementing (specific):**
Authorizing statute: A.R.S. § 28-366
Implementing statute: A.R.S. §§ 28-5204 and 28-5235
- 3. A list of all previous notices appearing in the Register addressing the proposed rule:**
Notice of Rulemaking Docket Opening: 6 A.A.R. 1580, April 28, 2000
- 4. The name and address of agency personnel with whom persons may communicate regarding the rulemaking:**
Name: George R. Pavia, Division Rules Coordinator
Address: 3737 North Seventh Street, Suite 160
Phoenix, Arizona 85014
Telephone: (602) 712-8446
Fax: (602) 241-1624
E-mail: gpavia@dot.state.az.us
- 5. An explanation of the rule, including the agency's reasons for initiating the rule:**
R17-4-436 complies with legislative mandate given in A.R.S. § 28-5204 to regulate transport of hazardous materials on this state's public highways. This rulemaking updates incorporation of federal regulations to reflect the 1999 edi-

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tion of 49 CFR. One new provision is added with the incorporation of 1999 49 CFR 107 to permit enforcement audits of hazardous materials transporters. Non-substantive language changes are also made to align the rule with current Arizona rulemaking standards. Updated statutory citations are included to reflect the 1997 rewrite of A.R.S. Title 28.

6. A reference to any study that the agency proposes to rely on in its evaluation of or justification for the proposed rule and where the public may obtain or review the study, all data underlying each study, any analysis of the study and other supporting material:

None

7. A showing of good cause why the rule is necessary to promote a statewide interest if the rule will diminish a previous grant of authority of a political subdivision of this state:

Not applicable

8. The preliminary summary of the economic, small business, and consumer impact:

The primary costs bearers of this rule's provisions are the Arizona Department of Public Safety (DPS) in the public arena and business entities engaged in transporting hazardous materials in the private sector. DPS incurs substantial costs of approximately \$60,000 for employee salaries, training, and enforcement administration of the hazardous materials transportation program. Business entities bear minimal to moderate costs (under \$10,000) in possible federal registration fees, inspection fees, insurance, and equipment maintenance in order to remain in compliance to rule provisions. Costs of non-compliance to the business entity could be moderate to substantial monetary sanctions (\$5,000 to \$25,000) with possible loss of registration and driver license as prescribed under A.R.S. § 28-5238. Minimal administrative costs are borne by independent consultant trainers who educate law enforcement and business entities on rule compliance-provisions.

Benefits of the rule bring federal Motor Carrier Safety Assistance Program (MCSAP) grant funds of approximately \$1.8 million to state law enforcement of motor carrier safety and Hazmat programs. MCSAP funds are distributed chiefly to DPS but may also be sub-allocated to county and municipal enforcement agencies upon application to underwrite local enforcement costs. Hazardous material transport businesses benefit from rule compliance in decreased insurance premium costs, an increased margin of transportation safety, and subsequent better service to their customers resulting from expedited enforcement processing. Independent trainers in Hazmat compliance benefit through course fees which can amount to as much as \$400 per class offering.

9. The name and address of agency personnel with whom persons may communicate regarding the accuracy of the economic, small business, and consumer impact statement:

Name: George R. Pavia, Division Rules Coordinator
Address: 3737 North Seventh Street, Suite 160
Phoenix, Arizona 85014
Telephone: (602) 712-8446
Fax: (602) 241-1624
E-mail: gpavia@dot.state.az.us

10. The time, place, and nature of the proceedings for the making, amendment, or repeal of the rule, or if no proceeding is scheduled, where, when, and how persons may request an oral proceeding on the proposed rule:

Date: June 21, 2000

Time: 2:00 p.m.

Locations:

| Flagstaff | Phoenix | Tucson |
|---|---|--|
| ADOT District Office Board Room 1801 S. Milton Rd. Flagstaff, AZ 86001 | ADOT Headquarters Board Room, 143 206 S. 17th Ave. Phoenix, AZ 85007 | ADOT District Office Board Room 1221 S. 2nd Ave. Tucson, AZ 85713 |

Nature: Public hearing by teleconference

Closure: The public record in this rulemaking will close at 4:30 p.m., July 21, 2000.

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11. Any other matters prescribed by statute that are applicable to the specific agency or to any specific rule or class of rules:

None

12. Incorporations by reference and their location in the rules:

49 CFR Parts 107, 171, 172, 173, 177, 178, and 180, published on October 1, 1999

13. The full text of the rule follows:

TITLE 17. TRANSPORTATION

**CHAPTER 4. DEPARTMENT OF TRANSPORTATION
MOTOR VEHICLE DIVISION**

ARTICLE 4. MOTOR CARRIERS

Section

R17-4-436. Hazardous Materials Transportation

ARTICLE 4. MOTOR CARRIERS

R17-4-436. Hazardous Materials Transportation

A. ~~Adoption~~ Incorporation of federal regulations.

1. The Motor Vehicle Division ~~adopts and approves as its own~~ incorporates the following portions of the Federal Hazardous Materials Regulations, ~~incorporated herein by reference.~~ Materials incorporated by reference are and on file in the ~~Office of the Secretary of State~~ State's Office. The ~~incorporated~~ incorporated Hazardous Materials Regulations ~~hereby incorporated~~ are published in 49 CFR (Transportation), Subtitle B (Other Regulations Relating to Transportation), Chapter I (Research and Special Programs Administration, Department of Transportation), Subchapter C (Hazardous Materials Regulations), Parts:
 - a. 107 Hazardous materials program procedures;
 - ~~a~~ b. 171 General information, regulations, and definitions;
 - ~~b~~ c. 172 Hazardous materials table, special provisions, hazardous materials communications, emergency response information, and training requirements;
 - e d. 173 Shippers - general requirements for shipments and packagings;
 - ~~d~~ e. 177 Carriage by public highway;
 - e f. 178 Specifications for packagings, and
 - f g. 180 Continuing qualification and maintenance of packagings.
2. These parts are ~~adopted~~ incorporated as amended, revised, and printed in the October 1, ~~1993~~ 1999, edition, and those sections of the October 1, 1990; edition authorized for use under the transitional provisions of Section 171.14 of the October 1, ~~1993~~ 1999; edition.

B. Application and exceptions.

1. Application.
 - a. The regulations ~~adopted~~ incorporated in subsection (A) of this Section ~~shall~~ apply as amended by subsection (C) of this Section to motor carriers, shippers, and manufacturers as defined in A.R.S. ~~Title 28, Chapter 19, Article 1 § 28-5201.~~
 - b. The regulations ~~adopted~~ incorporated in subsection (A) of this Section ~~shall~~ also apply to all vehicles owned or operated by the state, a political subdivision, or a public authority of the state, ~~which are~~ used to transport hazardous materials, including hazardous substances and hazardous wastes.
2. Exceptions. Authorized emergency vehicles, as defined in A.R.S. § 28-101, are excepted from the provisions of this rule.

C. Amendments. The following ~~Sections~~ sections of the Federal Hazardous Materials Regulations, ~~adopted~~ incorporated under subsection (A) of this Section, are amended as ~~indicated below~~ follows:

1. Part 171. General information, regulations, and definitions.
 - a. Section 171.1 Purpose and scope.

Paragraph (a) shall read:
"The transportation of hazardous materials by and their offering to: (1) interstate, intrastate and foreign motor carriers; and (2) vehicles owned or operated by the state, a political subdivision or a public authority of the state, ~~which are~~ used to transport hazardous materials."
 - b. Section 171.8 Definitions and abbreviations. Section 171.8 is amended by revising the definitions for "Carrier", "Hazmat employer", and "Person", and adding a definition for "Highway" as follows:

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“‘Carrier’ means a person engaged in the transportation of passengers or property by highway as a common, contract, or private carrier and also includes the state, political subdivisions, and public authorities of the state engaged in the transportation of hazardous materials.”

“‘Hazmat employer’ means a person who uses one or more of its employees in connection with: transporting hazardous materials; causing hazardous materials to be transported or shipped; or representing, marking, certifying, selling, offering, reconditioning, testing, repairing, or modifying containers, drums, or packagings as qualified for use in the transportation of hazardous materials. This term includes motor carriers, shippers, and manufacturers as defined in A.R.S. § 28-2401 5201 as well as the state, political subdivisions, and public authorities of the state.”

“‘Highway’ means a public highway as defined in A.R.S. § 28-2401 5201.”

“‘Person’ has the same meaning as prescribed in A.R.S. § 28-2401 5201.”

2. Part 172. Hazardous materials table, special provisions, hazardous materials communications, emergency response information, and training requirements.

Section 172.3 Applicability.

Paragraph (a)(2) is amended to read:

“Each motor carrier ~~who~~ that transports hazardous materials; and each state agency, political subdivision, and public authority of the state that transports, by highway, hazardous materials.”

3. Part 177. Carriage by public highway.

- a. Section 177.800 Purpose and scope of this Part and responsibility for compliance and training.

Paragraph (a) is amended as follows: The phrase “by private, common, or contract carriers by motor vehicle” is amended to read, “by motor carriers operating in Arizona, and state agencies, political subdivisions, and public authorities of the state that transport, by highway, hazardous materials.”

- b. Section 177.802 Inspection. Section 177.802 is amended to read: “Records, equipment, packagings, and containers under the control of a motor carrier or other persons subject to this Part, ~~insofar as they affect~~ affecting safety in transportation of hazardous materials by motor vehicle, must be made available for examination and inspection by a an ~~an~~ duly authorized representative of the Department as prescribed in A.R.S. §§ 28-2402 5204 and 28-2412 5231.”