

EXHIBIT K

DEPARTMENT OF HEALTH, ENVIRONMENTAL HEALTH

SUBJECT: Drip Dispersal Systems

DESCRIPTION: This new regulation establishes the minimum requirements for drip dispersal systems. Drip dispersal is an emerging technology intended to provide sub-surface sewage disposal for rural homes situated on soils that are currently considered unsuitable due to shallow depths to rock and ground water. The Health Department has considered drip dispersal systems on a case-by-case basis for several years. This regulation reflects the best available design while remaining flexible as to not exclude innovation.

Section I: Authority and Purpose

Provides the source of statutory authority in establishing this regulation as Act 96 of 1913 (A.C.A. {20-7-109}), and Act 402 of 1977 (A.C.A. {14-236-101} et seq.).

Section II: Definitions

Provides the definitions of terms used in this document.

Section III: Site Criteria

Provides the soil and site requirements for sites using drip dispersal.

Sections IV through XVII:

Provides the minimum technical specifications for drip dispersal system components.

Section XVIII: System Installation

Provides the installation requirements for drip dispersal systems.

Section IX: System Operation and Maintenance

Provides the operation and maintenance requirements for drip dispersal systems.

Section XX: System Design

Provides the design requirements for drip dispersal systems.

Section XXI: Training and Certification

Provides the training and certification requirements for individuals who install drip dispersal systems.

Section XXII: Surface Discharge Drip System

Establishes the requirements for those drip dispersal systems that, due to the existing soil and site conditions, may be expected to pond treated sewage on the soil surface for short periods of time.

Section XXIII: Fees

States the statutory authority for fees as Act 402 of 1977 (A.C.A. {14-236-101} et seq.) and establishes the permit fees consistent with the Onsite Wastewater Regulation fees.

Section XXIV: Penalties

Establishes penalties consistent with the Onsite Wastewater Regulation penalties.

Section XXV: Severability

Section XXVI: Repeal

Section XXVII: Certification

PUBLIC COMMENT: A public hearing was held on February 12, 2010, and the public comment period expired that date. Public comments were as follows:

Jimmy and Peggy Daley

COMMENT: Mr. and Mrs. Daley's comments address the loading rates. Mrs. Daley commented that the loading rate for drips as proposed in the Regulation is exceedingly stringent. Mr. Daley commented that he could not find any other state that was using a loading table that was being used in these regulations. He stated, "Missouri and other states around us are classified as an LPP loading type system at the same rate as an LLP system. If we were doing that we should be able to go back to our conventional charts using the same loading but in doing that there is no consideration for the fact that we have to do secondary treatment on these things because the LLP is just primary treatment so the loading rate is extremely high compared to the states around us and I think those need to be reviewed to see if these are actually adequate." **RESPONSE:** The department has made allowances for brief seasonal water tables. The department also took into consideration manufacturers' loading rates; however, their loading rates typically did not account for seasonal water tables.

Clyde and Cheryl Smith

COMMENT: Mr. and Mrs. Smith made several comments about the program in North Arkansas. These issues were comments and questions about day to day operation of the department and procedures in place. **RESPONSE:** These comments were of a general nature and were not specific to this regulation.

Wallace Bonner

COMMENT: Mr. Bonner made several comments about the National Pollutant Discharge Elimination System Permit required by ADEQ. **RESPONSE:** Inquiry was not relevant to this regulation.

Mike O'Connor

COMMENT: Section 3, Site Assessment 3.1.2 - The drip tubing or installed trench bottom shall be above the moderate seasonal water table. The brief seasonal water table needs to be eliminated. That's just being far too restrictive. Section 20, System Design 20.3 - The sizing or loading rate chart should be manufacturer suggested. Our seasonal water tables are just too restrictive for a drip. **RESPONSE:** No change was made by the department. The regulation makes special allowances for brief seasonal water tables in the loading charts.

The proposed effective date is June 15, 2010.

CONTROVERSY: This is not expected to be controversial.

FINANCIAL IMPACT: There is no financial impact.

LEGAL AUTHORIZATION: Arkansas Code Annotated § 20-7-109(a)(1)(A) authorizes the State Board of Health to make all necessary and reasonable rules and regulations of a general nature for the protection of public health and safety. The Environmental Health Division (formerly Division of Sanitarian Services) of the Department of Health shall have general supervision and authority over the location, design, construction, installation and operation of individual sewage disposal systems, and shall be responsible for the administration of the Arkansas Sewage Disposal Systems Act and of the rules and regulations adopted pursuant to this chapter. Ark. Code Ann. § 14-236-107.

RULES AND REGULATIONS
PERTAINING TO
DRIP DISPERSAL SYSTEMS

ACT 402 OF 1977

A.C.A. 14-236-101 et seq.

Draft

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Section 1. Authority and Purpose

- 1.1. The following RULES AND REGULATIONS PERTAINING TO DRIP DISPERSAL SYSTEMS are duly adopted and promulgated by the Arkansas State Board of Health pursuant to the authority expressly conferred by the laws of the State of Arkansas including, without limitation, Act 96 of 1913 (A.C.A. {20-7-109}, and Act 402 of 1977 (A.C.A. {14-236-101}, et seq.).
- 1.2. Purpose: A drip dispersal system is a technology for the distribution of treated wastewater uniformly over a large area beneath the soil surface. Drip Dispersal fields are a "bed" design. The use of four (4) to six (6) inch installation cover does not fit the conventional trench design criteria utilized in the Onsite Wastewater Soil Morphology Program for system design.

Section 2. Definitions

- 2.1. **Aerobic treatment unit (ATU):** A mechanical on-site treatment unit that provides secondary wastewater treatment by mixing air and aerobic and facultative microbes with the wastewater. ATU's typically use a suspended growth treatment process or a fixed treatment process.
- 2.2. **Air/vacuum (A/V) relief valve:** A valve that automatically lets air out of or into liquid carrying pipe as needed in response to changes in system pressure.
- 2.3. **Aerobic:** Having molecular oxygen as a part of the environment, or growing or occurring only in the presence of molecular oxygen.
- 2.4. **Backwash:** The process of flow reversal to clean a filter and to restore it to the normal clean condition for filtering with a minimum resistance to flow through the media or screen.
- 2.5. **Control panel:** An electronic control panel that controls the quantity and time of dose. This can also control the zone receiving the effluent, automatically flushes the lines, flushes the filters, monitors the flow rates and pump run cycles or times.
- 2.6. **Decentralized system:** An onsite and/or cluster wastewater system used to treat and disperse or discharge small volumes of wastewater, generally from dwellings or businesses that are located relatively close together.

- 2.7. **Disk filter:** A type of filter that utilizes a series of grooved rings that overlay each other to form a network of very small openings to trap contaminants.
- 2.8. **Distributing valve:** A valve that distributes flow to multiple drain field laterals, zones, or locations by automatically rotating upon each pump cycle.
- 2.9. **Drain-back:** The process of effluent draining along the laterals and manifolds after the pump shuts off. Drainage occurs both inside and outside the drip tubing and manifolds to lower elevations in the drip field.
- 2.10. **Drip line:** Tubing constructed from polyethylene with emitters embedded regularly along the length of the tube.
- 2.11. **Effluent:** Sewage, water or other liquids, partially or completely treated or in its natural state flowing out of a septic tank, aerobic treatment unit, or other treatment system or systems.
- 2.12. **Emitters:** Small diameter openings in drip line that can dissipate pressure and allow a slow, controlled discharge normally rated in gallons per hour.
- 2.13. **Field flush:** Water is passed through the drip lateral for the purpose of removing particles and other debris from the walls of the drip tubing. The flush water is carried back through the return manifold and return line to the pretreatment unit.
- 2.14. **Filter:** A device for the main purpose of removing suspended solids and other debris from the wastewater.
- 2.15. **Hydraulic conductivity:** The rate of water movement under unit gradient in a specific soil horizon.
- 2.16. **Interceptor Drain:** A subsurface drain line, usually constructed upgrade from the absorption area to divert seasonal groundwater.
- 2.17. **Lateral:** One single run or multiple runs of drip tubing connected at one end to a supply manifold and the other end connected to a return manifold.
- 2.18. **Maintenance Personnel:** An individual certified by the Department to conduct assessments under the Onsite Maintenance and Monitoring Program.
- 2.19. **Monitoring:** Periodic inspection of system for performance.
- 2.20. **Pressure compensating (pc) emitters:** Drip emitters that allow a constant flow or discharge over a wide range of applied pressure.
- 2.21. **Pressure distribution:** A system of small diameter pipes equally distributing effluent through a trench or bed.

- 2.22. **Pressure regulator:** A device used to regulate and maintain a constant discharge pressure.
- 2.23. **Pretreatment:** The conditioning of effluent prior to dispersal by a drip system.
- 2.24. **Return line:** The return line connects the return manifold to the pretreatment unit for the purpose of carrying flush water from the drip field.
- 2.25. **Return manifold:** A collection manifold or piping that returns excessive wastewater and debris to the primary treatment tank during system flushes.
- 2.26. **Run:** One continuous length of tubing routed across contour connected to a supply line or return line or another run.
- 2.27. **Soil structure:** The combination or arrangement of individual soil particles in definable aggregates, or peds, which are characterized and classified on the basis of size, shape, and degree of distinctness.
- 2.28. **Solenoid valve:** An electric valve actuated by a solenoid, used for controlling the flow of liquid in pipes.
- 2.29. **Spin filter:** A filter that consist of a screen cylinder enclose in a casing. The typical filter screen mesh size is 150 and a micron rating of 100.
- 2.30. **Static plow:** A drip line plow with a shank that remains at a given depth as the plow is pulled through the soil.
- 2.31. **Supply line:** The line that extends from the pump to the supply manifold of a given zone.
- 2.32. **Supply manifold:** The supply manifold connects the supply line to the drip laterals.
- 2.33. **Vertical separation:** The depth of unsaturated, original, undisturbed soil between the bottom of the drip tubing and the highest seasonal water table or restrictive layer.
- 2.34. **Vibratory plow:** A vibratory plow is a drip line plow with a shank that vibrates vertically as the plow is pulled through the soil.
- 2.35. **Water table:** The level in saturated soil at which the hydraulic pressure is zero.
- 2.36. **Zone:** A group of laterals that are dosed at the same time.

Section 3. Site Assessment

- 3.1. Subsurface Drip System(s) may be utilized on sites that meet the following criteria
- 3.1.1. The minimum vertical separation between the drip tubing or installed trench bottom and any rock substrata (consolidated or fractured) shall be nine (9) inches or greater of undisturbed, natural soil.
 - 3.1.2. The drip tubing or installed trench bottom shall be above the seasonal water table, whatever the duration. Brief seasonal water tables may be minimized or eliminated by the use of effective interceptor drains. Any design, which incorporates the use of an interceptor drain, shall indicate the effective depth of seasonal water table reduction.
 - 3.1.3. The percent clay of a soil may be interpreted as a Seasonal Water Table Class. Clay percentage, as it relates to seasonal water table interpretation, is sited in Section 8 of the Onsite Wastewater Regulations.
 - 3.1.4. Soils that are structure less or with massive structure shall not be approved for onsite sub-surface treatment.
 - 3.1.5. The lot size shall be of sufficient area to accommodate both the primary and secondary dispersal area. Both the primary and secondary dispersal area shall be sized according to their respective loading rates. If the lot can only support the primary dispersal field, a subsurface drip dispersal system shall not be installed. For lots three (3) acres or greater, the use of a surface discharge drip system may be considered. (See Surface Discharge Systems)

Section 4. Drip Tubing and Emitters

- 4.1. Emitter spacing can range from six (6) to twenty-four (24) inches. The emitters used in the tubing shall be pressure compensating. Pressure compensating emitters have a relatively constant discharge rate over a wide range of pressures. Emitter flow rate shall be specified by the designer and stated on the system plans. The drip line pressure can range from 5 to 70 pounds per square inch (PSI).
- 4.2. Drip tubing shall be installed by one the following methods: static plow, chain trencher or vibratory plow.
- 4.3. Static plow is the preferred method for inserting drip tubing into the soil. The static plow shall be pulled not pushed through the soil.

- 4.4. Chain trencher may be used for placement of the drip tubing in the soil. The maximum chain trench width is four (4) inches.
- 4.5. Wet soil shall not be plowed because of smearing.
- 4.6. Drip tubing installed in natural soil shall be installed to a depth of six (6) inches.
- 4.7. If capping fill material is used as part or all of the cover over the tubing, the installed depth of the tubing can range from one (1) to five (5) inches in the natural soil. Drip tubing shall not be placed in the capping fill material. In no case shall the cover over the tubing be less than six (6) inches or greater than (9) inches.
- 4.8. Settled depth of the cap shall not be more that 8 inches. The capping fill material shall not contain more than 27 % clay or 60% sand or 70% silt. Before the capping fill material is delivered to the proposed dispersal site, a laboratory textural analysis shall be provided. A credit of up to 50% of the settled cap depth may be allowed in the adjustment of the seasonal water table. The minimum lateral separation between the end of the settled cap and the drip tubing shall be four feet. This seasonal water table credit is at the sole discretion of the Department.

Section 5. Pretreatment Requirements

- 5.1. The quality of effluent that will be applied to the dispersal field shall meet the American National Standards Institute/National Sanitation Foundation (ANSI/NSF) Standard 40 (revised 2005) requirements for class 1 treatment systems. Only pretreatment units that have obtained approval from the Department shall be used.
- 5.2. Pretreatment system shall be required as part of any Drip Dispersal System design.
- 5.3. The daily flow rate capacity of a pretreatment system shall equal or exceed the daily flow rates found in Appendix A.
- 5.4. Pretreatment systems installed in conjunction with an individual residential structure shall have a daily flow rate capacity of not less than 400 gallon per day.
- 5.5. Pretreatment systems installation on non- residential or multi-structures shall be sized according to influent wastewater strength and total daily flow rate expressed in gallons per day.

Section 6. Filters and Screens

- 6.1. There are three types of filters or screens used for wastewater applications: spin or screen filter, disk, and sand.
- 6.2. Solids and other debris shall be filtered to a size of 100 microns or less.
- 6.3. Filter debris shall be returned to the septic tank, pretreatment unit, or a separate settling tank regardless of the type of filter system. The clear Schedule 40 PVC piping allows for direct observation of the wastewater as it flows from the filter flush line or the field flush line.

Section 7. Control Panel

- 7.1 Timed dosing is the only method for controlling the dose cycles and volumes.
- 7.2 Control panels shall be constructed of the following basic components: NEMA 4X rated enclosure, motor-start contractors, separate circuit breakers for pump and panel control, audio and visual alarms, and wiring terminals. Optional components range from elapsed time meter or counters, event counters and pump run lights.
- 7.3 Control panels shall be constructed of the following basic components: NEMA 4X rated enclosure, motor-start contractors, separate circuit breakers for pump and panel control, audio and visual alarms, and wiring terminals. Optional components range from elapsed time meter or counters, event counters and pump run lights.

Section 8. Flow meters and pressure gauges

- 8.1 A flow meter shall be installed after the filter system but before the drip dispersal field. The flow meter shall incorporate not only a rate of flow gauge but also a total gallons pumped register. The flow rate gauge and the total gallons pumped register may be separate devices. The flow meter shall be installed in a protective box that will be of sufficient size for servicing the meter and to allow easy access for reading the meter. The flow meter shall be sized for the dispersal flow as well as the additional field flushing volume.
- 8.2 Pressure gauges shall be located before the filter, after the filter and on the dispersal field return line. Pressure gauges shall be enclosed in the head works box, which allows easy access for observation. The gauges shall be liquid filled and a minimum of 3 inches in diameter. The pressure range of the gauge shall be sufficient for the maximum pressure that will be expected in the system.

Section 9. Supply line and manifold

- 9.1. The supply line and manifold should be designed with a flow velocity between the 0.5 feet per and 5 feet per second.
- 9.2. The piping and fittings in the supply line and the manifold shall be Schedule 40. Schedule 80 fittings shall be used at the filter system, as well any point where the piping will be disconnected or subjected to abuse.
- 9.3. When dosing, the supply manifold shall eliminate the drain back potential from a higher to a lower elevation in the drain field.

Section 10. Return Manifold and Line

- 10.1. The return manifold and line allow the flushing of the drip dispersal field. The flushed wastewater and solids shall be returned back to the settling tank or treatment tank

Section 11. Flexible hose or tubing

- 11.1 Flexible Schedule 40 PVC piping shall be used at all connections to the supply and return manifolds.

Section 12. Air/vacuum relief valves

- 12.1 Air/vacuum relief valves provide a means for releasing air at the start of a dose cycle, so the system will charge quickly with wastewater and allow air to enter the system quickly at the end of dose cycle. Air/vacuum valves shall be located at the highest points of the either supply or return manifolds, or both.
- 12.2 Air/vacuum relief valves shall be sized based on the proposed design flow rate. A valve that is under sized will not provide an adequate amount of airflow.
- 12.3 A Schrader valve shall be provided at each vacuum valve as a means of checking the pressure of the drip field.

Section 13. Flushing valves

- 13.1 Automatic flushing controls shall be required for all drip systems. The flush valve shall be a solenoid type valve. Manual flushing valves may be installed in the field flush line. Manually operated valves may be standard ball or gate valves. The flush

valve shall be fully opened during a flush cycle regardless of the valve type. The field flushing velocity shall be in accordance with the drip tubing or system manufacturer's recommendations. The minimum field flushing velocity shall not be less than 0.5 feet per second.

Section 14. Pipe and specialty connectors and fittings standards

- 14.1. PVC pipe, tubing, reducer tees, adapters, elbows, couplers and compression fittings shall be constructed of Schedule 40 PVC.
- 14.2. Lock-Slip fittings, adapters, tees, elbows, and couplings shall be specifically manufactured for use with wastewater drip dispersal systems.
- 14.3. Insert fittings, barbed adapters, tees, elbows, and couplings shall be specifically manufactured and sized for use with wastewater drip dispersal systems.

Section 15. Headworks boxes

- 15.1. Any component or assembly that may need to be routinely serviced shall be located in a headworks box that is readily accessible.
- 15.2. Headwork boxes may be constructed of high-density PE (polyethylene), fiberglass, PVC, or concrete.
- 15.3. Headwork boxes shall be large enough to allow ease of service and allow periodic removal and replacement of components as needed. The headworks box shall be of sufficient length and depth to accommodate the various components that will be housed in the box. The lid of the headworks box shall extend above the finished grade. The bottom of the headworks box shall be designed to drain any rainwater or wastewater away from the inside of the box. The headworks box lid shall be easy to remove but also shall be made tamperproof where access to the site is not restricted or controlled. The structural strength of the headworks box and lid shall be sufficient to withstand the weight of any lawn maintenance equipment or other service equipment that may roll over the box. If the box will be subject to excessive wheel loading, additional protection shall be provided.

Section 16. Zones and related components

- 16.1. Automatic distributing valves shall include clear Schedule 40 piping on the output of each zone.

- 16.2. Check valves shall not be required if separate return lines are used to isolate returned wastewater to the pretreatment system.

Section 17. Pressure regulators

- 17.1. Regulators shall be selected to allow sufficient pressure and flows for flushing. Pressure regulators shall be designed for use in wastewater drip dispersal systems.

Section 18. System installation

- 18.1. Protect the site prior to and after the installation of the drip system. Activities on the site shall be limited only to what is necessary for the installation of the system.
- 18.2. Any clearing or grubbing shall be performed based on a site-specific plan, which minimizes the disturbance of the soil and protects the overall soil characteristics. It may be necessary to use flexible PVC tubing to work around or over objects in the dispersal field; however the number of emitters shall not be reduced
- 18.3. Drip tubing shall not be installed when the soil is wet or frozen.
- 18.4. Drip tubing shall be installed on contour.
- 18.5. Flexible Schedule 40 PVC tubing shall be used at each manifold connection to provide additional crimping protection and to prevent the tubing from being pulled out of the supply or return manifold as the soil settles.
- 18.6. Drip tubing shall be taped, or plugged or capped when cut. All piping shall be taped or capped at the end of the construction day
- 18.7. PVC pipe cutters that cleanly shear the pipe or tubing shall be used rather than sawing the pipe or tubing.
- 18.8. Complete flushing of the supply line prior to the connection of the drip tubing shall be performed. Sufficient volume of water shall be used to ensure all debris is removed for both the supply line and the drip tubing.
- 18.9. A start-up system check shall be performed before the system is placed in operation. All operational functions that would be expected during routine operations shall be performed in a specified time period of not less than 24 hours. This operational test shall include but not be limited too: timed dose functions, volume loading, flow rates, pressures at the inlet and outlet of each zone, pressures at the inlet and outlet of filters, leak detection, flushing, and alarms.
- 18.10. Repairs or modifications shall be made to eliminate any wet spot.

- 18.11. The establishment of a vegetative cover is critical to the overall performance a drip dispersal system. The dispersal area shall be covered with sod or mulch as soon as possible after the installation of the drip tubing.

Section 19. System Operation and Maintenance

- 19.1. Periodic servicing shall be required. The frequency of the service period is dependent on the operational parameters set for the system by its designer. The minimal service period shall not be less than once every three (3) months.
- 19.2. Alarms resulting from mechanical breakdowns shall be investigated and the situation causing the alarm resolved.
- 19.3. Owners of Drip Dispersal Systems are required to maintain a Maintenance and Monitoring Contract with Maintenance Personnel certified by the Department for the life of the system.

Section 20. System Design

- 20.1. The following procedure shall be used to determine the minimum surface area required for drip dispersal systems.
- 20.2. The depth and duration of the seasonal water table shall be determined
- 20.3. The sizing or loading rate chart found in Table I of this manual shall be used to determine the amount of surface area required for installation.
- 20.4 The spacing between drip tube laterals shall not be less than two (2) ft. center to center. Drip tube laterals spacing may be greater than two (2) ft. however, for the purpose of determining the length of tubing required for a dispersal field, all length calculation shall be two (2) ft. center to center.
- 20.5 The effective area of the dispersal field shall be calculated by dividing the daily wastewater flow rate (DWF) in gallons per day (gpd) by the soil loading rate (SLR) in gallons per foot square per day (g/ft²/d). [Area of the dispersal field (DF) = design wastewater flow (DWF) ÷ soil loading rate (SLR).]
- 20.6 The length of the drip tubing shall be determined by dividing the dispersal field (DF) required by the drip tube spacing (DT) of two (2) Ft. [Drip tube length (DTL = dispersal field area (DF) ÷ drip tube spacing (DT) of two (2) ft]
- 20.7 The number of emitters required shall be determined by dividing the drip tube length (DTL) by the emitter spacing (E) ft. [Drip line lateral length (ft.) ÷ emitter spacing (ft) = Number of emitters]

- 20.8 The loading rate for a soil which has a rock substrata (consolidated or fractured) and no seasonal water tables present above the rock substrata shall be sized as a moderate seasonal water table.

Section 21. Training and Certification

- 21.1. All Designated Representatives, Installers, Environmental Health Specialists, and Certified Maintenance Personnel shall be certified in the design, construction and maintenance of a drip dispersal system. The certification program will be provided or approved by the Department, Onsite Wastewater Section.

Section 22. Surface Discharge Drip System

- 22.1. Under certain conditions, Drip Dispersal Systems may be approved as a surface discharging system.
- 22.2. The requirements for surface discharge are:
- 22.2.1. The site is unsuited for a subsurface drip dispersal system.
- 22.2.2. Pre-treatment shall be a Class 1 treatment unit as approved by the Department. (See Section 5 Pretreatment Requirements)
- 22.2.3. Lot size shall not be less than three (3) acres. The lot size shall not include road or highway right of ways or utility easements.
- 22.2.4. A one hundred (100) foot setback from any property lines shall be maintained in all directions from the drip dispersal field.
- 22.2.5. A maximum loading rate of 0.09 gallons per square foot per day shall be utilized.
- 22.2.6. Ultraviolet light disinfection units shall be used as the primary method of disinfection. Ultraviolet light (UV) units shall be approved by the Department. UV units shall be installed and maintained in accordance with manufacturers recommend practices.

Section 23. Variances and Exemptions

- 23.1. Requested variations from these Rules and Regulations will be considered and may be approved at the sole discretion of the Department.

- 23.2. Submission of proposed experimental onsite wastewater systems may be approved, disapproved, or approved on a trial basis for a specific period of time. Such approval or disapproval shall be at the sole discretion of the Department. Submission of an experimental design shall include data as to the efficiency of operation of the proposed experimental system. A monitoring plan shall be submitted for approval in addition to the system design.
- 23.3. Good management practices. Good management practices are additions or modifications to systems which will make such systems more efficient, or which could make such systems acceptable in certain soil conditions. Where good management practices are proposed for inclusion in a drip dispersal system, approval shall be at the sole discretion of the Department or its Authorized Agent.

Section 24. Fees

- 24.1. A fee shall be levied for the review of individual drip dispersal system permit application pursuant to A.C.A § 14-236-116.
- 24.2. For structures one thousand five hundred square feet 32 (1,500 sq. ft.) or less, the fee to review a permit application is thirty dollars (\$30.00).
- 24.3. For structures more than one thousand five hundred square feet (1,500 sq. ft.) and less than two thousand square feet (2,000 sq. ft.), the fee to review a permit application is forty-five dollars (\$45.00).
- 24.4. For structures more than two thousand square feet (2,000 sq. ft.) and less than three thousand square feet (3,000 sq. ft.), the fee to review a permit application is ninety dollars (\$90.00).
- 24.5. For structures more than three thousand square feet (3,000 sq. ft.) and less than four thousand square feet (4,000 sq. ft.), the fee to review a permit application is one hundred twenty dollars (\$120).
- 24.6. For structures four thousand square feet (4,000 sq. ft.) and greater, the fee to review a permit application is one hundred fifty dollars (\$150).
- 24.7. For the alteration, repair, or extension of any individual drip dispersal system, the fee to review a permit application is thirty dollars (\$30.00).
- 24.8. In calculating the square footage of a residential structure for purposes of determining the applicable fee under this section, the square footage of all auxiliary areas of the residential structure shall not be considered.

24.9. Auxiliary areas include garages, carports, porches, and other similar areas as determined by the Department.

24.10. Non-individual or multi structure permit submittals shall include a *Cost Estimate Worksheet (EHP-17)*.

Section 25. Penalties

25.1. Any person, firm, corporation or association who violates any of the provisions of Act 402 of 1977, as amended, or any Rules and Regulations promulgated under the authority of Act 402 of 1977, as Amended, shall upon conviction, be deemed guilty of a misdemeanor and shall be punished by a fine of not less than one hundred dollars (\$100.00) nor more than one thousand dollars (\$1,000.00).

Section 26. Severability

25.2. If any provisions of these Rules and Regulations, or the application thereof to any person is held invalid, such invalidity shall not affect other provisions or applications of these Rules and Regulations which can effect without the invalid provisions of application, and to this end the provisions hereto are declared to be severable.

Section 27. Repeal

27.1. All Regulations and parts of Regulations in conflict herewith are hereby repealed.

Section 28. Certification

This will certify that the foregoing Rules and Regulations Pertaining to Onsite Wastewater Systems, Designated Representatives and Installers were adopted by the Arkansas Board of Health at a regular executive session of said Board held in Little Rock, Arkansas, on the ?th day of ?, ?.

Paul K. Halverson, DrPH, Director
Arkansas Division of Health

Dated at Little Rock, Arkansas, this ? day of ?, 200?

The foregoing Rules and Regulations, copy having been filed in my office, are hereby approved this ? day of ?, 200?.

Mike Beebe
Governor

Table I
DRIP DISPERSAL FIELD SIZE
AND
SOIL LOADING RATES

<u>DEPTH TO RMF</u>	<u>Brief SWT</u>		<u>Mod SWT</u>		<u>Long SWT</u>	
	<u>(g/ft²/d)</u>	<u>FT²/100 Gal./Day</u>	<u>(g/ft²/d)</u>	<u>FT²/100 Gal./Day</u>	<u>(g/ft²/d)</u>	<u>FT²/100 Gal./Day</u>
1	0.021	4878.05	0.007	14634.1	0.003	29268.3
2	0.041	2439.02	0.014	7317.07	0.007	14634.1
3	0.062	1626.02	0.021	4878.05	0.010	9756.1
4	0.082	1219.51	0.027	3658.54	0.014	7317.07
5	0.103	975.61	0.034	2926.83	0.017	5853.66
6	0.123	813.008	0.041	2439.02	0.021	4878.05
7	0.144	696.864	0.048	2090.59	0.024	4181.18
8	0.164	609.756	0.055	1829.27	0.027	3658.54
9	0.185	542.005	0.062	1626.02	0.031	3252.03
10	0.205	487.805	0.068	1463.41	0.034	2926.83
11	0.226	443.459	0.075	1330.38	0.038	2660.75
12	0.246	406.504	0.082	1219.51	0.041	2439.02
13	0.267	375.235	0.089	1125.7	0.044	2251.41
14	0.287	348.432	0.096	1045.3	0.048	2090.59
15	0.308	325.203	0.103	975.61	0.051	1951.22
16	0.328	304.878	0.109	914.634	0.055	1829.27
17	0.349	286.944	0.116	860.832	0.058	1721.66
18	0.369	271.003	0.123	813.008	0.062	1626.02
19	0.390	256.739	0.130	770.218	0.065	1540.44
20	0.410	243.902	0.137	731.707	0.068	1463.41
21	0.431	232.288	0.144	696.864	0.072	1393.73
22	0.451	221.729	0.150	665.188	0.075	1330.38
23	0.472	212.089	0.157	636.267	0.079	1272.53
24	0.492	203.252	0.164	609.756	0.082	1219.51
25	0.513	195.122	0.171	585.366	0.085	1170.73
26	0.533	187.617	0.178	562.852	0.089	1125.7
27	0.554	180.668	0.185	542.005	0.092	1084.01
28	0.574	174.216	0.191	522.648	0.096	1045.3
29	0.595	168.209	0.198	504.626	0.099	1009.25
30	0.615	162.602	0.205	487.805	0.103	975.61
31	0.636	157.356	0.212	472.069	0.106	944.138
32	0.656	152.439	0.219	457.317	0.109	914.634
33	0.677	147.82	0.226	443.459	0.113	886.918
34	0.697	143.472	0.232	430.416	0.116	860.832
35	0.718	139.373	0.239	418.118	0.120	836.237

DEPTH TO RMF	Brief SWT		Mod SWT		Long SWT	
	(g/ft²/d)	FT²/100 Gal./Day	(g/ft²/d)	FT²/100 Gal./Day	(g/ft²/d)	FT²/100 Gal./Day
36	0.738	135.501	0.246	406.504	0.123	813.008
37	0.759	131.839	0.253	395.517	0.126	791.035
38	0.779	128.37	0.260	385.109	0.130	770.218
39	0.800	125.078	0.267	375.235	0.133	750.469
40	0.820	121.951	0.273	365.854	0.137	731.707
41	0.841	118.977	0.280	356.93	0.140	713.861
42	0.861	116.144	0.287	348.432	0.144	696.864
43	0.882	113.443	0.294	340.329	0.147	680.658
44	0.902	110.865	0.301	332.594	0.150	665.188
45	0.935	106.952	0.308	325.203	0.154	650.407
46	0.943	106.045	0.314	318.134	0.157	636.267
47	0.964	103.788	0.321	311.365	0.161	622.73
48	0.984	101.626	0.328	304.878	0.164	609.756

Appendix A

QUANTITIES OF WASTEWATER FLOW FOR VARIOUS TYPES OF ESTABLISHMENTS

<u>ESTABLISHMENT TYPE</u>	<u>GALLONS PER DAY</u>
<u>Airports, bus terminals, train stations</u>	
<u>Per passenger</u>	<u>5</u>
<u>Add per employee per 8 hour shift</u>	<u>20</u>
<u>Barber & beauty shops per chair</u>	<u>100</u>
<u>Bowling alleys</u>	
<u>Toilet wastes per lane</u>	<u>100</u>
<u>For food service, add restaurant usage below</u>	
<u>Camps</u>	
<u>Campground with central comfort stations per camper</u>	<u>35</u>
<u>Day camps (no meals served) per camper</u>	<u>15</u>
<u>Per non resident camper</u>	<u>50</u>
<u>Per resident camper or employee</u>	<u>75</u>
<u>Churches</u>	
<u>Per seat/no food service</u>	<u>5</u>
<u>For food service, add restaurant usage below</u>	
<u>For daycares, add school usage below</u>	
<u>Commercial establishments excluding deli, bakery, or meat department</u>	
<u>Per 100 square feet of floor space</u>	<u>10</u>
<u>Add per 100 square feet of deli floor space</u>	<u>50</u>
<u>Add per 100 square feet of bakery floor space</u>	<u>50</u>
<u>Add per 100 square feet of meat market floor space</u>	<u>100</u>
<u>Country clubs</u>	
<u>Per resident member</u>	<u>100</u>
<u>Per non-resident member present</u>	<u>25</u>
<u>Dentists offices</u>	
<u>Per wet service chair</u>	<u>200</u>
<u>Add per non wet service chair</u>	<u>50</u>
<u>Doctors office</u>	
<u>Per practitioner</u>	<u>250</u>
<u>Add per employee per 8 hour shift</u>	<u>20</u>
<u>Factories, exclusive of industrial waste</u>	
<u>Gallons per employee per 8 hour shift</u>	
<u>No showers provided</u>	<u>20</u>
<u>Showers provided</u>	<u>35</u>
<u>Hospitals</u>	
<u>Per bed space</u>	<u>200</u>
<u>For food service excluding patients, add restaurant usage below</u>	
<u>Hotels & Motels</u>	

<u>Regular per room</u>	<u>150</u>
<u>Resort hotels & cottages</u>	<u>75</u>
<u>Add for establishments with self service laundry facility per machine</u>	<u>750</u>
<u>Institutions per meal served per day</u>	<u>65</u>
<u>Mobile home parks</u>	
<u>per single wide mobile home space</u>	<u>300</u>
<u>per double wide mobile home space</u>	<u>450</u>
<u>Nursing homes, rest homes, adult congregate living facilities</u>	
<u>Per bed</u>	<u>100</u>
<u>Add for food service (see Institutions, this chart)</u>	
<u>Office buildings per employee per 8 hour shift</u>	<u>15</u>
<u>Parks, public picnic</u>	
<u>Toilets only per person</u>	<u>5</u>
<u>With bath house, showers, & toilets per person</u>	<u>10</u>
<u>Recreation vehicle park</u>	
<u>Recreational vehicle space for overnight stay,</u> <u>without water & sewer hookup per vehicle space</u>	<u>75</u>
<u>Recreational vehicle space for overnight stay,</u> <u>With water & without sewer hookup per vehicle space</u>	<u>100</u>
<u>Recreational vehicle space for overnight stay,</u> <u>with water & sewer hookup per vehicle space</u>	<u>150</u>
<u>Restaurants</u>	
<u>Per day per seat per meal setting</u>	<u>30</u>
<u>Using single service articles only per seat</u>	<u>25</u>
<u>Bar and cocktail lounge per seat</u>	<u>30</u>
<u>Carry out only</u>	
<u>Per meal served without public restrooms</u>	<u>5</u>
<u>Per meal served with public restrooms</u>	<u>10</u>
<u>Add per employee per 8 hour shift</u>	<u>15</u>
<u>Residences</u>	
<u>Single or multiple family per dwelling unit</u>	
<u>1 bedroom</u>	<u>150</u>
<u>2 bedroom</u>	<u>270</u>
<u>3 bedroom</u>	<u>370</u>
<u>4 bedroom</u>	<u>450</u>
<u>For each additional bedroom add</u>	<u>50</u>
<u>Rooming houses per occupant space</u>	<u>75</u>
<u>Schools per student</u>	
<u>Day schools & day cares</u>	<u>15</u>
<u>Add for showers</u>	<u>10</u>
<u>Add for food service</u>	<u>5</u>
<u>Add for day school workers</u>	<u>20</u>
<u>Boarding schools</u>	<u>75</u>
<u>Service stations & convenience stores</u>	
<u>Per vehicle served</u>	<u>10</u>

<u>Food service, per meal served</u>	<u>5</u>
<u>Stadiums, race tracks, ball parks per seat</u>	<u>5</u>
<u>Swimming pools and bathhouses per patron</u>	<u>10</u>
<u>Theaters</u>	
<u>Indoor, movies/auditorium per seat</u>	<u>5</u>
<u>Outdoor, drive-ins per space</u>	<u>10</u>
<u>Veterinary clinic</u>	
<u>Per practitioner</u>	<u>250</u>
<u>Add per employee per 8 hour shift</u>	<u>20</u>
<u>Add per kennel, stall, or cage</u>	<u>20</u>

FOOTNOTES:

The estimated flows for residential systems assume a maximum occupancy of 2 persons per bedroom. Where residential care facilities (non-institutional) will house more than 2 persons in any bedroom, estimated flows are to be increased by 75 gallons per each additional occupant.

Waste from food service operations is commercial in nature and may require special system sizing and treatment/disposal considerations. For food service operations, kitchen wastewater flows are normally to be calculated at 66% of the total wastewater flow. Estimated daily flow is based on 3 meals served per seat per meal setting.

Systems serving high volume establishments, such as fast food restaurants, convenience stores, and service stations require special sizing consideration due to above average wastewater volume expected from restroom facilities.