

## **Title 15 - Mississippi Department of Health**

### **Part III – Office of Health Protection**

#### **Subpart 77 – On-site Wastewater**

#### **CHAPTER 06           REGULATION GOVERNING INDIVIDUAL ON-SITE WASTEWATER DISPOSAL: DESIGN STANDARD IV (SUBSURFACE DRIP DISPOSAL)**

##### **100   Introduction**

Subsurface drip disposal is a subsurface disposal system that has 3 basic design principles different from conventional subsurface disposal systems. They are (1) uniform distribution of effluent, (2) dosing and resting cycles and (3) shallow placement of trenches. This system uses small diameter pipe with underground emitters and must be preceded by a treatment system that conforms to the manufacturer's specifications particular to that system. The effluent must be adequately filtered before distribution through the underground emitter system. The term manufacturer used in this Design Standard is considered the manufacturer of the treatment device.

##### **101   Design**

Utilizing USDA soil groups as classified by textures is the most appropriate criteria on which to base loading rates for this system. This determination shall be based on the most restrictive soil, naturally occurring within 2 feet of the ground surface or to a depth of 1 foot below the trench bottom, whichever is deeper.

- 101.01 A minimum of 6 inches of naturally occurring soil must be present above a restrictive horizon or a predominantly gray soil before placement of fill.
- 101.02 Drip lines must be installed a minimum of 6 inches deep. The maximum depth may not exceed 18 inches. In all cases there shall be a minimum of 12 inches separation between the water table and restrictive horizon.
- 101.03 To overcome the lack of sufficient depth, to a restrictive horizon and/or seasonal water table, a clean fill material may be used. The fill material shall consist of a minimum of 50 percent sand particles equal to or greater than 0.25 mm. Clay content shall be 20 percent or less. Organic matter shall be removed from the native soil surface prior to placing and incorporating the fill. This fill must be incorporated into the native soil to prevent a textural interface from developing. When fill material is used the entire fill area must be sodded to prevent erosion, or other effective erosion control methods used. The full depth of fill material must extend at least 2 feet in all directions from drip lines and at that point shall be sloped at a grade of no steeper than 3 to 1.

- 101.04 Prior to the design of the subsurface drip disposal system, the suitability of the site must be demonstrated through acceptable soil permeability rates, acceptable soil conditions (Table I) and other topographic characteristics. The design and construction of the subsurface drip disposal system must conform to the manufacturer's specification (Figure 1).
- 101.05 In soils that contain a restrictive horizon, within 5 feet of the surface, there shall be maintained a minimum of 12 inches of unsaturated soil between the bottom of the drip disposal system and perched or seasonal water table.
- 101.06 In soils that do not contain a restrictive horizon, within 5 feet of the surface, there shall be maintained a minimum of 24 inches of unsaturated soil between the bottom of the drip disposal system and any perched or seasonal water table.
- 101.07 Electrical equipment shall be protected with safety devices (overload interrupting devices, fuses, etc.). Electrical equipment shall comply with appropriate National Electrical Manufacturer's Association (NEMA) requirements. Electrical component parts shall be covered by the manufacturer's limited warranty.
- 101.08 Valves, fittings, level control switches and all other components must be designed and manufactured to resist the corrosive effects of wastewater and common household chemicals.
- 101.09 Minimum separation between emitter line laterals shall be 2 feet, and for slopes of 20 percent or greater shall be a minimum of 3 feet.
- 101.10 Drip tubing shall either be placed 4 inches lower than the supply manifolds or water breaks shall be used to prevent effluent from flowing from drip trenches to the supply manifold trenches.

## **102 Location and Setbacks**

- 102.01 All components of the drip disposal system shall be located a minimum of:
1. 5 feet from any dwelling and driveway
  2. 10 feet from any property line
- 102.02 The aerobic treatment unit and pump chamber shall be located a minimum of 50 feet from any public, private or individual potable water source.
- 102.03 The drip disposal field shall be located at a lower elevation and a minimum of 100 feet from any public, private or individual potable water source (well).
- 102.04 Potable water lines must not pass under or through any part of the wastewater disposal system which includes the collection and distribution of the wastewater or effluent.

- 102.05 This system may be utilized on sites where soil and site conditions prohibit the installation of a conventional or modified subsurface disposal system.
- 102.06 The area of the disposal field shall not be used for vehicular traffic or vehicular parking.
- 102.07 Aerobic treatment units, pump chambers, and drip disposal fields shall not be located under dwellings or other permanent structures.
- 102.08 Drip disposal fields shall not be located in depressed areas where surface water will accumulate. Provision shall be made to minimize the flow of surface water.
- 102.09 Drip disposal fields shall have a minimum setback from recreational waters, shellfish waters or other sensitive areas as prescribed in Table II.
- 102.10 Where all or part of the drip disposal system is proposed to be installed on property other than the owner's, an easement in perpetuity shall be legally recorded in the proper county. The easement shall be of sufficient area to permit access, construction and maintenance of the drip disposal system.
- 102.11 No site utilizing a disposal field shall be approved which is located wholly within an area which is frequently flooded, swamp, marsh, or wetland, or drainway, etc. When a site is located partially within this area, that portion not directly affected may be considered for discharge area.
- 102.12 Easements or right-of-way areas for utilities, surface or subsurface drainage, roads, streets, ponds or lakes shall not be used as available space for location of a drip disposal system.
- 102.13 Lines shall be on contour and shall not be installed perpendicular (or up and down, etc.) to the slope; elevation difference in a line or the entire grid shall not exceed the manufacturers' specifications.

### **103 Treatment**

- 103.01 The treatment method must meet the requirement established by ANSI/NSF Standard 40 testing protocol. The type of treatment must also conform to drip tubing manufacturers' specifications.
- 103.02 The primary treatment facility and dosing chamber shall be designed, constructed and installed so all joints, seams, and component parts shall preclude infiltration of groundwater, and prevent escape of wastewater or liquids.

### **104 Distribution**

Only subsurface drip disposal systems that provide for **timed dosing** are acceptable.

104.01 The drip lines may be installed using any of the following methods:

1. Excavation by a trenching machine.
2. Approved plowing method as determined by the tubing manufacturer. The insertion tool must be of the type that does not pull or stretch the drip line during insertion. The use of "cable plows" or any type insertion method that employs pulling the drip line through the plowed trench is prohibited.

104.02 To insure equal dosing of the field there can be no more than a 10 percent variance in the flow between any 2 emitters in the entire field.

104.03 If necessary, pressure compensating devices or regulators shall ensure equal distribution from all emitters at +/- 10 percent of the designed discharge rate.

104.04 The length of each distribution line shall not exceed manufacturer's specifications to insure equal distribution to each emitter.

104.05 Pump Chambers

1. The subsurface drip disposal system shall be designed and installed in such a manner that during normal operating procedures the inlet to the treatment facility will not become surcharged.
2. The pump chamber shall have a minimum capacity of 1.5 times the estimated daily flow.
3. The pump chamber shall be equipped with an audible high water alarm, and may utilize a self-opening relief valve.
4. The pump chamber shall have a grade level access allowing a minimum of 17 inch diameter or 15 inch square, to allow servicing and/or removal of the largest component in the chamber. Access ports shall be protected against unauthorized entrance or removal, by use of tamper proof fasteners or a lid weighing 65 pounds or more.
5. The pump chamber shall be vented through the grade level access or by means of a separate vent. In either case, the vent shall be a minimum of ~~one~~ 1 inch in diameter.
6. The pump chamber shall be made of material resistant to the corrosive effects of wastewater and designed to withstand the lateral and bearing loads to which it is expected to be subjected.
7. All openings shall be sealed with mastic, butyl rubber or other pliable sealant that is waterproof, corrosion resistant and approved for use in

contact with wastewater, in a manner to prevent the entrance of surface and groundwater.

8. The high water alarm must be set as to allow a reserve capacity equal to 1 day estimated flow.

#### 104.06 Minimum Pump Specifications

1. The pumping system shall be capable of dosing the drip field a minimum of 6 equally spaced doses per 24 hour period. Each dose volume shall not exceed the estimated maximum daily flow divided by the number of dosing cycles. It is acceptable that daily usage of less than the design flow rate will result in a diminished number of cycles. An emergency override float is required to accommodate conditions which exceed the normal daily flow rate. (Table III).
2. The pumping system shall be designed to discharge the required volume of wastewater within the pressure range specified by the component's manufacturer.
3. The pump shall be equipped with a low water cutoff to prevent damage to the pump during low water conditions in the pump chamber.
4. The pump shall be constructed of corrosion resistant materials suitable for effluent pumping.
5. The pump shall be sized per manufacturers' specifications to meet or exceed the hydraulic requirement of the system.
6. The pump shall be installed as not to violate the pump warranty.
7. The suction and pressure lines shall be Schedule 40 or equal and be sized to meet or exceed the hydraulic requirements of the system.

#### 104.07 Minimum Filter Specifications

1. The filter shall filter the effluent to the specifications of the drip disposal tubing manufacturer to prevent clogging.
2. The filter shall achieve the required filtration at a rate equal to or greater than the peak discharge rate, including filter and/or system backwash.
3. An independent third party acceptable to the health authority shall certify the filter performance. Verification from a manufacturer of filters or by an independent registered professional engineer with the State of Mississippi under his/her seal shall be acceptable as third party certification.

4. The filter shall be made of material resistant to the corrosive effects of wastewater and common household chemicals.
5. The filters shall be readily accessible for inspection and/or service.
6. The filter flush volume and velocity shall be per manufacturer's specifications.
7. The filter residue shall be returned to the treatment facility.
8. The system must provide an automatic field and filter flush to prevent the build-up of solids in the distribution system, with its discharge returning to the treatment facility and be capable of achieving a flushing velocity of a minimum of 1 foot per second. The return line must be permanently installed as a component of the system. A hose bib shall be prohibited as a component part of the drip disposal system.

#### 104.08 Component Specifications

1. Vacuum breakers shall be installed as per manufacturer's specification, a minimum of one vacuum breaker/air release valve for each drip field zone.
2. Vacuum breakers shall be located in a protective enclosure that will prevent the accumulation of any substance that would prevent their proper operation and shall have a grade level access.
3. All materials shall meet applicable ASTM standards and be resistant to common household chemicals. The manufacturer must certify drip tubing as designed and manufactured for the disposal of wastewater. The drip tubing must be color coded, by the manufacturer, to be easily identified as tubing designed for wastewater disposal.
4. Equipment susceptible to freezing must be adequately protected to prevent freezing.

### 105 Documentation

105.01 The registered manufacturer must provide, detailed instructions for installation, initiation of service and operation and maintenance to the distributor and/or installer. Specific instructions shall include but not limited to:

1. Recommendations concerning types of wastewater which cannot be disposed of by the system.
2. Arrangement of plumbing connections.
3. Electrical wiring of components.

4. Installation instructions to cover proper location of the system in well drained areas and protection for vents, pumps, filters and controls from snow, ice, or water vapor accumulations.
5. Drawing with each major component numbered, and identified with the same designation on an illustration, photograph, or print.
6. Recommended frequency of maintenance; maintenance instructions; and procedures for removal and disposal of wastes.

#### 105.02 User's Manual

A user's manual shall be provided to the consumer by the manufacturer with each drip disposal system. The manual shall include:

1. Model number.
2. Design and flow diagrams.
3. Limited warranty.
4. Replacement and service policy.
5. General installation instructions to cover proper location of the system in well-drained areas and; protection for vents, pumps, filters, and controls from snow, ice, or water vapor accumulations.
6. Detailed operation and maintenance requirements (including user responsibility, parts, and service).
7. Recommendations concerning types of wastewater which cannot be disposed of by the system.
8. Arrangement of plumbing connections.
9. Electrical wiring of components.

#### 105.03 Limited Warranty

1. The manufacturer shall provide a 2 year limited warranty, from date of installation, covering all parts and materials.
2. Each manufacturer shall furnish the user with a limited warranty identifying the replacement policy covering all mechanical and electrical component parts.

#### 105.04 Initial Service Policy

1. A 2 year initial service policy shall be furnished to the user by the manufacturer, and shall be included in the original purchase price. This policy shall provide as a minimum:
2. The 4 inspection/service calls (at least one every 6 months) over the 2 year period including inspection, adjustment, and servicing of mechanical, electrical, and other applicable component parts to insure proper function.
3. If any improper operation is observed, which cannot be corrected at the time of the service call, the user and the local health authority shall be notified immediately in writing of the conditions and the estimated date of correction.

#### 105.05 Continuing Service Policy

Each manufacturer shall make available, for purchase by the user, a continuing service policy with terms comparable to the initial service policy.

#### 105.06 Standby Parts

Standby mechanical and electrical component parts shall be stocked by the local distributor for use when the drip system's mechanical or electrical components must be removed from the installation site for repairs.

#### 105.07 Guaranteed Component Parts

The physical, mechanical and electrical component parts shall be guaranteed against any defects in material and workmanship as warranted. The cost of replacing damaged component parts, not due to reasonable wear and tear, is excluded from this provision.

#### 105.08 Mechanical Component Parts

1. Mechanical component parts shall be protected against damage or impairment of efficiency by flooding or surcharging.
2. Mechanical component parts shall not require periodic maintenance or adjustment by the user other than changing a fuse and similar devices, or visual inspection of the warning light.
3. Mechanical component parts shall be covered by the manufacturer's limited warranty.

#### 105.09 Service

Service shall be available within no more than 2 days following a request.

#### 105.10 Service Label

A clearly visible, permanently attached label or plate, giving instructions for obtaining service, shall be placed at the audible signal.

#### **106 Responsibility of The User**

The user shall be responsible for maintaining and operating the subsurface drip disposal system according to regulatory agency and manufacturer's specifications.

#### **107 Existing System**

In addition to the visual inspection conducted by the county environmentalist the following will apply:

107.01 The system must be inspected by a factory authorized representative to verify that the system is functioning within factory specifications.

107.02 The factory authorized representative must furnish written verification, to the Department that an inspection was made and the system is functioning properly or has been repaired and is presently functioning properly.

Figure I

# SUBSURFACE DRIP DISPOSAL SYSTEM

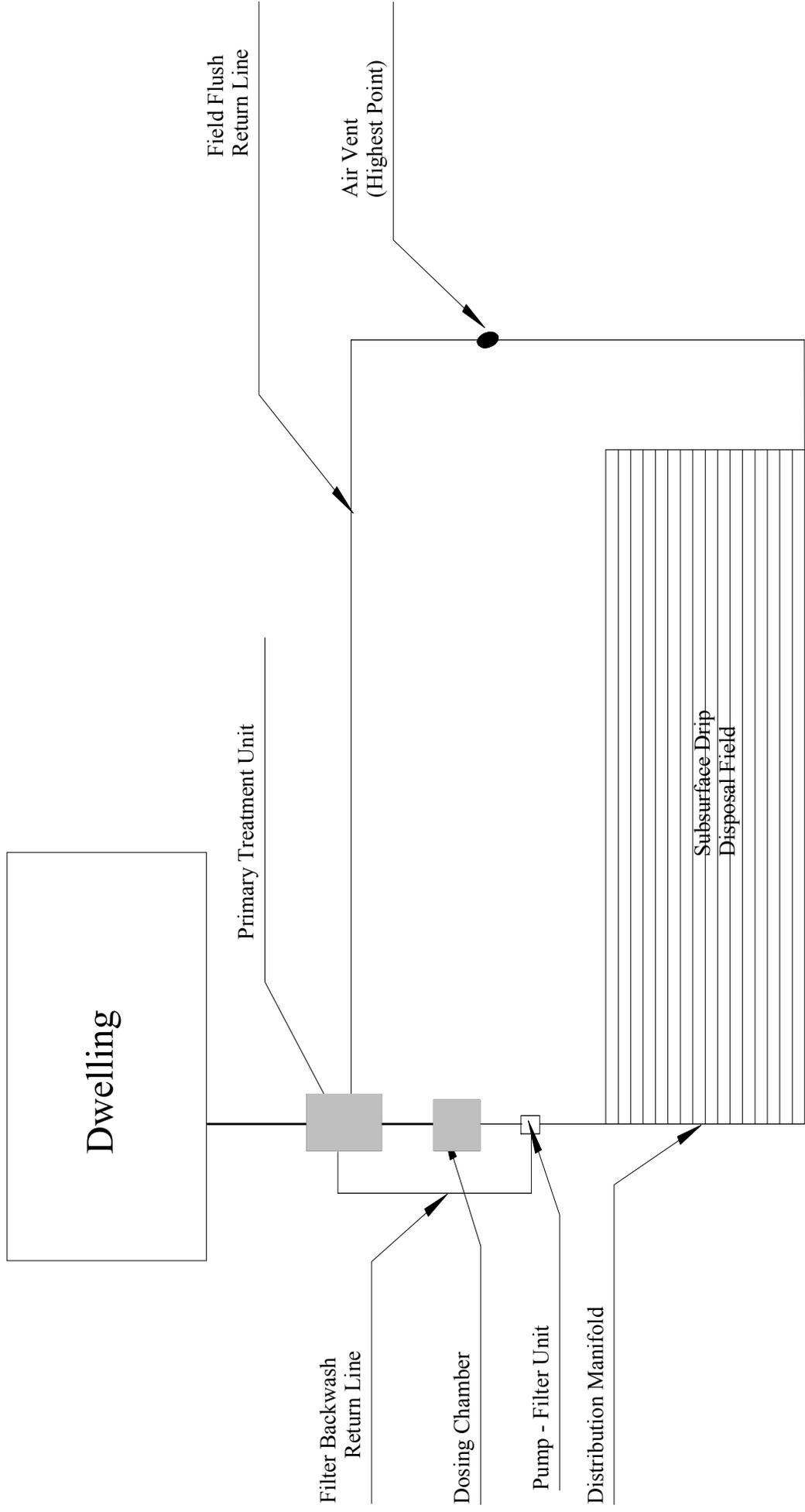


Table I

**SUBSURFACE DRIP DISPOSAL SYSTEM**  
Results of Soil Evaluation

Soil Textural Class	Loading Rate GPD/ Ft <sup>2</sup>	Linear feet (Lf) Per Bedroom**	Additional Lf/Person Over 2 Person Per Bedroom**	Depth of Drip Line in Inches
Gravel	NOT SUITABLE			
<i>Coarse Sand</i>	0.5	150	75	6-18
<i>Medium Sand</i>	0.5	150	75	6-18
<i>Fine Sand</i>	0.5	150	75	6-18
<i>Loamy Sand</i>	0.5	150	75	6-18
<i>Sandy Loam</i>	0.3	250	125	6-18
<i>Light Loam</i>	0.3	250	125	6-18
<i>Heavy Loam</i>	0.3	250	125	6-18
<i>Silt Loam</i>	0.3	250	125	6-18
<i>Sandy Clay Loam</i>	0.3	250	125	6-18
<i>Light Clay Loam</i>	0.15	500	250	6-18
<i>Heavy Clay Loam</i>	0.15	500	250	6-18
<i>Light Silty Clay Loam</i>	0.15	500	250	6-18
<i>Heavy Silty Clay Loam</i>	0.15	500	250	6-18
<i>Sandy Clay</i>	0.15	500	250	6-18
<i>Silty Clay</i>	0.05	1500	750	6-18
<i>Clay</i>	0.05	1500	750	6-18

\*\* Bedroom is equivalent to 150 gallons per day.

Table II

## SETBACK REQUIREMENTS FROM SENSITIVE WATER

Minimum Distance from the Water Edge

Soil Textural Class	Slope of Less Than 8 Percent	Slope of Greater Than 8 Percent
Gravel	NOT APPLICABLE	
<i>Coarse Sand</i>	100 feet	100 feet
<i>Medium Sand</i>	100 feet	100 feet
<i>Fine Sand</i>	100 feet	100 feet
Loamy Sand	100 feet	100 feet
Sandy Loam	100 feet	100 feet
<i>Light Loam</i>	50 feet	100 feet
<i>Heavy Loam</i>	50 feet	100 feet
Silt Loam	50 feet	100 feet
Sandy Clay Loam	50 feet	100 feet
<i>Light Clay Loam</i>	50 feet	100 feet
<i>Heavy Clay Loam</i>	50 feet	100 feet
<i>Light Silty Clay Loam</i>	50 feet	100 feet
<i>Heavy Silty Clay Loam</i>	50 feet	100 feet
Sandy Clay	100 feet	100 feet
Silty Clay	100 feet	100 feet
Clay	100 feet	100 feet

The texture of the subsoil material having the greatest permeability rates within two 2 feet below the surface receiving effluent shall be used to determine setback.

**Table III**  
**SUBSURFACE DRIP DISPOSAL SYSTEM PUMP CYCLES**

Pump Cycles/24 Hours	Gallons Pumped/Bedroom/Cycle	Additional Gallons Pumped Per Person Over 2 Per Bedroom
6	25	12.5
8	18.75	9.375
10	15	7.5
12	12.5	6.25

Based on 150 gallons per day per bedroom.

**CERTIFICATION OF REGULATION**

This is to certify that the above REGULATION GOVERNING INDIVIDUAL ON-SITE WASTEWATER DISPOSAL: DESIGN STANDARD IV (SUBSURFACE DRIP DISPOSAL SYSTEM) was adopted by the Mississippi State Board of Health on April 9, 2008 to become effective May 5, 2008.

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F. E. Thompson, Jr., MD, MPHA  
Secretary and Executive Officer

## **Title 15 - Mississippi State Department of Health**

### **Part III – Office of Health Protection**

#### **Subpart 77 – On-site Wastewater**

#### **CHAPTER 12 REGULATION GOVERNING INDIVIDUAL ON-SITE WASTEWATER DISPOSAL: DESIGN STANDARD X (OVERLAND DISCHARGE)**

##### **100 Introduction**

Overland discharge is essentially a method to dispose treated effluent. Overland discharge may be spray irrigation, single (1) point discharge or multi-point (2 or 4) with a level manifold. Careful evaluation of the site, soils and geographical conditions are necessary to prevent runoff, erosion, groundwater pollution and nuisance conditions. Untreated or primary (partially) treated wastewater shall not be disposed of by overland discharge.

##### **101 Design**

The discharge area receiving the effluent shall have a minimum 6 inches of naturally occurring soil free of a restrictive horizon or predominately-grey color and shall be maintained to prevent surface accumulation or ponding.

##### **102 Location and Setbacks**

102.01 The discharge area must be maintained with sod, permanent vegetative cover, or a wooded area and must not be placed on slopes of less than 1 percent.

102.02 The discharge area must be of sufficient size to maintain the outermost edge of the effluent in addition to the following prescribed distances:

1. 10 feet from property lines up slope.
2. 50 feet from property lines, down slope or same grade, and dwellings.
3. Sensitive water setbacks are based on soil texture and soil in the discharge area (Table I)
4. The discharge area shall be located at a lower elevation and a minimum of 100 feet from any public, private or individual potable water source (well).
5. All water lines must maintain a minimum horizontal separation distance of 10 feet from wastewater disposal system which includes the collection and distribution of the wastewater or effluent.

6. Any vessel holding wastewater shall be located a minimum of 50 feet from any public, private or individual potable water source.
- 102.03 Potable water lines must not pass under or through any part of the wastewater disposal system which includes the collection and distribution of the wastewater or effluent. The discharge area shall not be used for vehicular traffic or vehicular parking.
- 102.04 Septic tanks, aerobic treatment units, disinfection units and/or pump chambers shall not be located under dwellings or other permanent structures.
- 102.05 Discharge area shall not be located in depressed areas where surface water will accumulate. Provision shall be made to minimize the flow of surface water over the effluent disposal field.
- 102.06 Discharge areas located on slopes of less than or equal to 8 percent shall have a minimum setback from the outermost edge of the effluent and recreational waters, shellfish waters or other sensitive areas as prescribed in Table I. Discharge areas fields located on slopes of greater than 8 percent shall be located a minimum of 100 feet from recreational waters, shellfish waters and other sensitive areas (Table I).
- 102.07 Slopes of greater than 20 percent shall not be considered for discharge areas unless justified by a professional engineer registered in the State of Mississippi.
- 102.08 Where all or part of the discharge area is proposed to be installed on property, other than the owner's, an easement in perpetuity shall be legally recorded in the proper county. The easement shall be of sufficient size to permit access, construction and maintenance.
- 102.09 Easements or right-of-way areas for utilities, surface or subsurface drainage, roads, streets, ponds or lakes shall not be used as available space for location of discharge areas.
- 102.10 No site utilizing a discharge area shall be approved which is located wholly within an area which is frequently flooded, swamp, marsh, wetland, or drainway, etc. When a site is located partially within this area, that portion not directly affected may be considered for discharge area.

### **103 Treatment**

- 103.01 Wastewater disposed of by overland discharge must meet the requirement established by ANSI/NSF Standard 40 testing protocol.
- 103.02 Treated effluent that is to be disposed of by overland discharge must be adequately disinfected.

**104 Distribution**

- 104.01 The discharge line shall be a minimum of 3 inch diameter Schedule 40 pipe with cemented joints.
- 104.02 The discharge should be distributed from an outlet pipe equipped with a level manifold or flow diverting device (Figure I and II) in such a manner to be self draining and maintained on the property owned or controlled by the generator through a recorded easement.
- 104.03 If effluent is to be delivered to a level manifold or flow diverting device under pressure, the distribution system shall be designed to provide pressure at the point of discharge not to exceed 5 pounds per square inch.

Table I

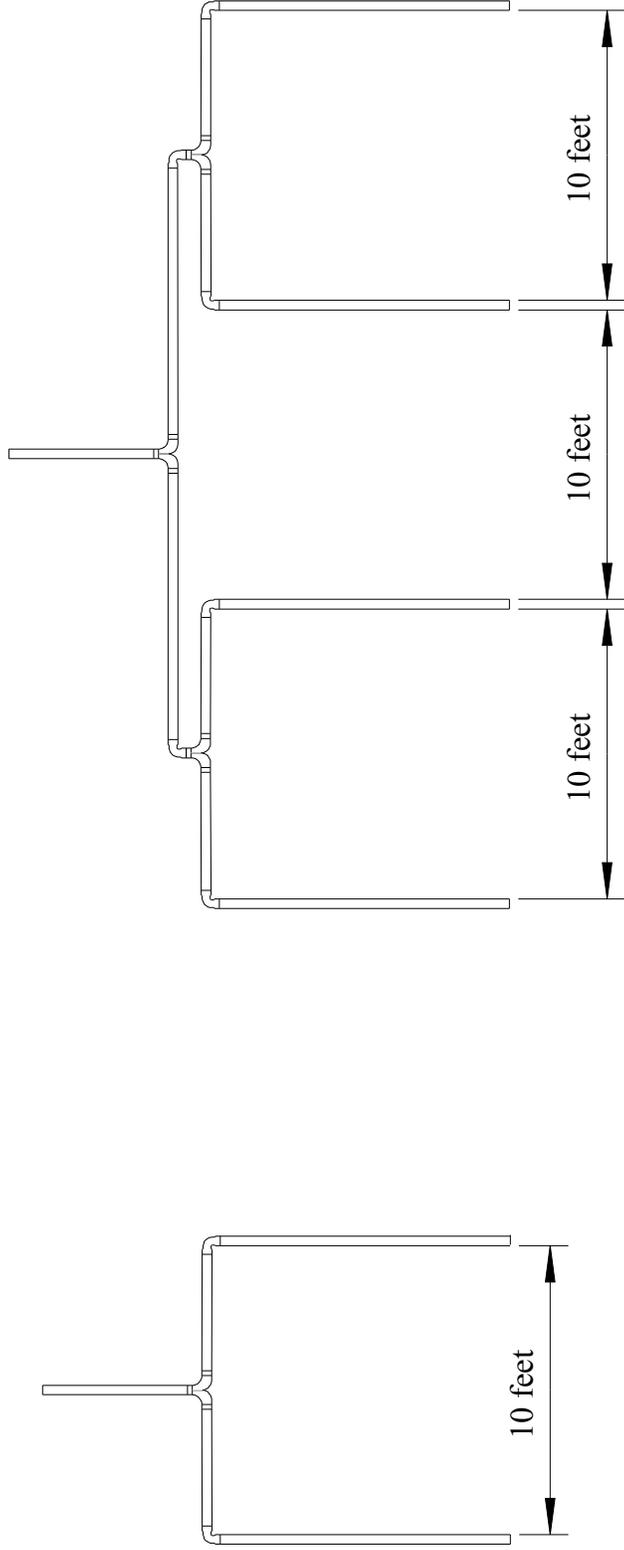
**SETBACK REQUIREMENTS FROM SENSITIVE WATER**  
**Surface Applications**  
 Minimum Distance from the Water Edge

Soil Textural Class	Slope of Less Than or Equal to 8 Percent	Slope of Greater Than 8 Percent
Gravel	NOT APPLICABLE	
<i>Coarse Sand</i>	75 feet	100 feet
<i>Medium Sand</i>	75 feet	100 feet
<i>Fine Sand</i>	75 feet	100 feet
<i>Loamy Sand</i>	75 feet	100 feet
<i>Sandy Loam</i>	75 feet	100 feet
<i>Light Loam</i>	50 feet	100 feet
<i>Heavy Loam</i>	50 feet	100 feet
<i>Silt Loam</i>	50 feet	100 feet
<i>Sandy Clay Loam</i>	50 feet	100 feet
<i>Light Clay Loam</i>	50 feet	100 feet
<i>Heavy Clay Loam</i>	50 feet	100 feet
<i>Light Silty Clay Loam</i>	50 feet	100 feet
<i>Heavy Silty Clay Loam</i>	50 feet	100 feet
<i>Sandy Clay</i>	75 feet	100 feet
<i>Silty Clay</i>	75 feet	100 feet
<i>Clay</i>	75 feet	100 feet

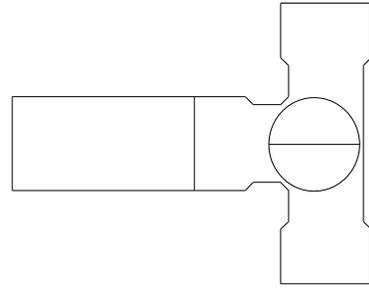
The texture of the subsoil material having the greatest permeability rates within 2 feet below the surface receiving effluent shall be used to determine setback.

**Figure I**

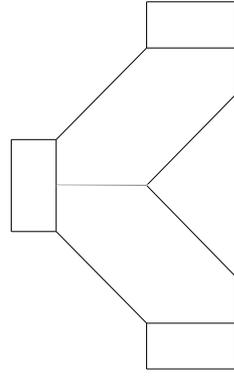
Overland discharge with multi-point



**OR**



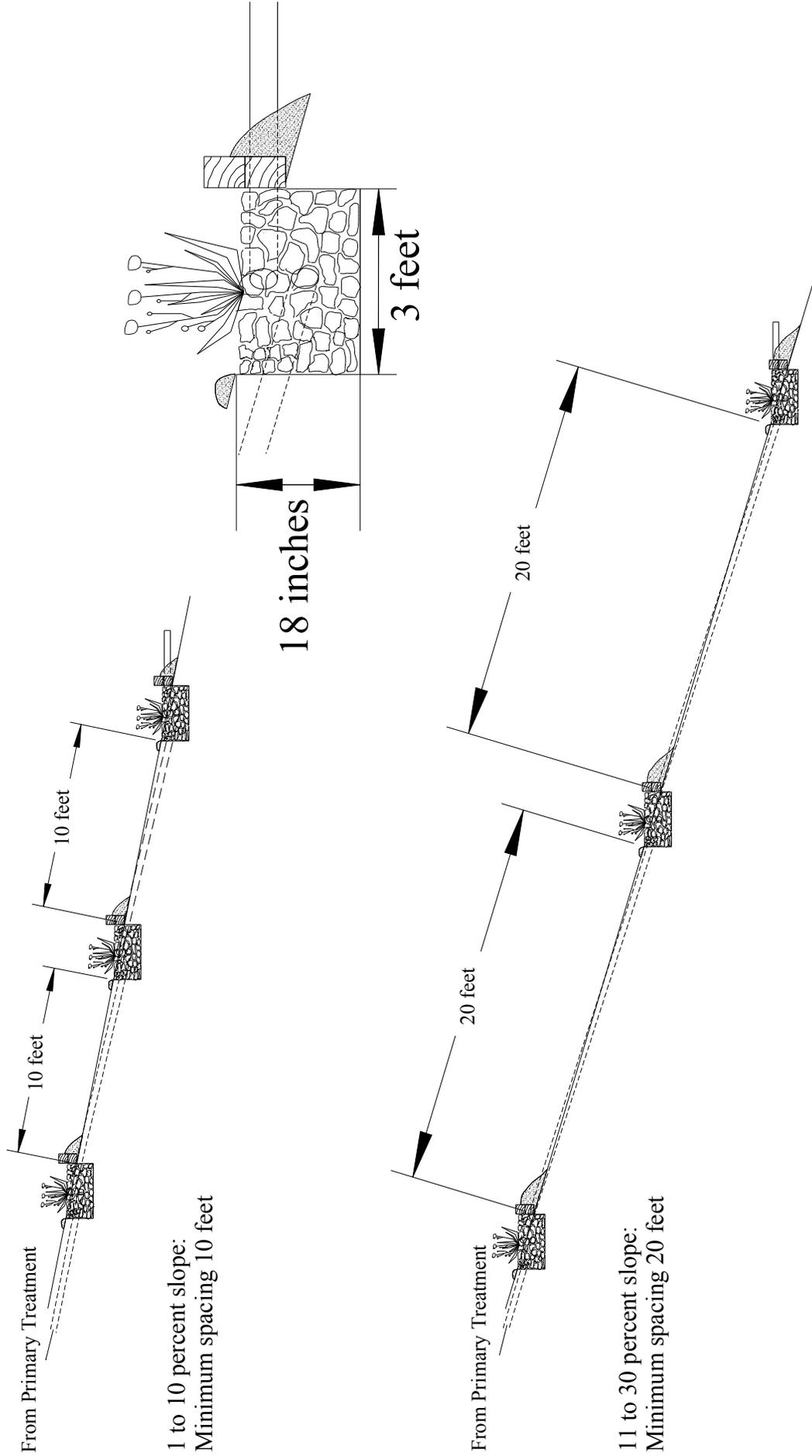
**Splitter Tee**



**Double Ell**

**Figure II**

**Overland discharge utilizing terrace plant beds**



Further absorption of the effluent could be enhanced with the addition of plantings (canna, calla lilies, elephant ears, etc.) in a bed following the distribution manifold.

## CERTIFICATION OF REGULATION

This is to certify that the above REGULATION GOVERNING INDIVIDUAL ON-SITE WASTEWATER DISPOSAL: DESIGN STANDARD X (OVERLAND DISCHARGE) was adopted by the Mississippi State Board of Health on April 9, 2008 to become effective May 5, 2008 .

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F. E. Thompson, Jr., MD  
Secretary and Executive Officer