~~Title 15 - Mississippi Department of Health~~

~~Part III - Office of Health Protection~~

~~Subpart 77 - Onsite Wastewater~~

~~CHAPTER 11 REGULATION GOVERNING INDIVIDUAL ONSITE WASTEWATER DISPOSAL: DESIGN STANDARD IX (LAGOON)~~

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~~101 Introduction~~

~~Lagoons or oxidation ponds are best described as waste stabilization ponds as this more accurately describes the function of the pond. The activity in the lagoon is a complex symbiosis of bacteria and algae. The principle work of treatment is accomplished by aerobic bacteria which oxidize the organic carbon in the sewage to carbon dioxide. The algae, in the presence of light, utilize the carbon dioxide to make algal cells and release oxygen in the process. The oxygen is utilized by the bacteria. A lagoon can be included in the design of an onsite wastewater disposal system to improve the quality of the treated wastewater beyond that normally obtained in a conventional septic tank. The lagoon can be used where there is a concern that disposal will occur before treatment is complete. This is especially a concern where soils are shallow over groundwater tables or restrictive layers, such as a fragipan or other impervious material. The addition of a lagoon in the design of a sewage treatment and disposal system provides for greater treatment to occur before discharge to the soil. This increases the assurance that groundwater and public health will be protected.~~

~~102 Primary Treatment~~

~~Primary treatment is required and shall consist of a septic tank from which wastewater flows to the lagoon.~~

~~103 Design and Installation Standards~~

~~103.01 The following distances shall be maintained from the working edge of the lagoon:~~

~~1. 100 feet from any well, source of potable water and any sensitive waters.~~

~~2. 50 feet from dwellings and lot lines.~~

~~103.02 Construction of the lagoon must conform to the minimum criteria set forth in FIGURE 1 of this design standard.~~

~~103.03 The effluent from the lagoon can then be discharged, following disinfection [Design Standard XI] via overland disposal, See Design Standard X.~~

~~103.04 Lagoons that are to be constructed in soils other than clay loam, sandy clay loam, silty clay loan, silty clay, sandy clay, and clay shall be lined with a continuous 20 mil. liner or a suitable clay layer a minimum of 6 inches thick.~~

~~103.05 Dimensions - For a home with three bedrooms or less, a surface area of 400 square feet (20 ft. X 20 ft.) with vertical sides and a liquid depth of 4 to 5 feet shall be provided, with a minimum 2 feet of freeboard. Vertical side lagoons shall have a continuous berm around them to prevent entrance of surface water. The berm must be a minimum 18 inches above the natural ground level and a minimum of 12 inches wide.~~

~~If the lagoon is to have sloping earth sides the lagoon shall be a minimum of 625 square feet (25 ft. X 25 ft.) with a 4 to 5 foot liquid depth , with a minimum 2 feet of freeboard . Lagoons having sloping earth sides shall be cut on a 1 to 1 (45 degree) slope. Sloping side lagoons shall have a continuous berm around them to prevent entrance of surface water. The berm shall have a minimum top width of 6 feet.~~

~~For each additional bedroom over and above three bedrooms, 140 square feet of lagoon surface area shall be added.~~

~~103.06 Materials - Vertical side walls shall be of cypress, treated timbers, concrete blocks, or concrete and so constructed as to provide a permanent structure.~~

~~103.07 Inlet and Outlet - The pipe from the septic tank to the lagoon as well as the outlet pipe from the lagoon should be 4 inches in diameter SCH 40 and be placed at a minimum slope of 2 inches per 100 feet. The inlet should extend 5 feet horizontally into the lagoon and be directed downward . The invert of the lagoon inlet should be 2 inches lower than the invert of the septic tank outlet. The lagoon outlet should extend 5 feet horizontally into the lagoon and consist of a tee with the invert set at the operating water level of the lagoon. One leg of the tee should be open and extend above the water level 6 inches, while the~~

~~down leg is extended 1½ feet below the water level. The invert of the lagoon outlet and the operating water level should be 2 inches lower than the invert of the lagoon inlet.~~

~~103.08 Health and Safety - The lagoon shall be at least 100 feet from any well or suction line supplying potable water. The lagoon shall be enclosed by a suitable non-climbable fence 4 feet high to keep out children, pets, and livestock. An open type fence (woven wire) is to be used because it will not restrict sunlight and air which are necessary for treatment.~~

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~~104.01 All components of the lagoon disposal system shall be located a minimum of:~~

~~1. five feet from any dwelling.~~

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~~104.02 The septic tank, aerobic treatment plant and/or pump chamber shall be located a minimum of 50 feet from any public, private or individual potable water source.~~

~~104.03 The lagoon shall be located at a lower elevation and a minimum of 100 feet from any public, private or individual potable water source.~~

~~104.04 Potable water lines shall not pass under or through any part of the lagoon disposal system. Where a water supply line must cross a sewer line, the bottom of the water service within ten feet of the point of crossing, shall be at least 12 inches above the top of the sewer line. The sewer line shall be of Schedule 40 pipe with cemented joints at least ten feet on either side of the crossing. Water and sewer lines shall not be laid in the same trench. The water and sewer lines shall maintain a minimum horizontal separation distance of 10 feet.~~

~~104.05 The lagoon banks and discharge area shall not be used for vehicular traffic or vehicular parking.~~

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~~104.08 Where all or part of the lagoon 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 lagoon system, to include area~~

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~~104.09 No site for a lagoon disposal system shall be approved which is located wholly within an area which is frequently flooded, swamp, marsh, or wetland. Except that if permits have been issued by the proper regulatory agency authorizing the use of wetlands for building sites and the construction of an individual onsite wastewater disposal lagoon, the property shall be evaluated using standard soil and site criteria for IOWDS.~~

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~~105 Operation and Maintenance~~

~~105.01 Regular and proper maintenance of a lagoon is very important for continuously satisfactory operation. The maintenance tasks required can be facilitated by thoughtful design.~~

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1. ~~Sodding of levees with suitable persistent grasses to reduce erosion hazard with resultant wash into the pond.~~

2. ~~Regular mowing of grass on the levees to prevent the growth of weeds and other deep rooted plants, not only to prevent erosion, but to prevent vegetation growing or hanging into the pond water, facilitating mosquito breeding.~~

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