

ANR-790-4.6.2

ALABAMA A & M AND AUBURN UNIVERSITIES

Animal Waste Management To Protect Water Quality Regulating Animal Wastes

Until recently, few water quality regulations affected animal waste disposal practices on individual farms in comparison to pollution control efforts required of nonagricultural industries. However, new regulations for drinking water, waste treatment, and water quality protection now present a mounting challenge to animal producers. Producers must alter traditional practices and disposal methods to achieve and maintain fishable and swimmable rivers, lakes, and streams. They must also take precautions to prevent chemical and biological contamination of groundwater.

One of the primary causes of water pollution from animal production is stormwater runoff from confined animal feeding operations (CAFOs). These concentrated animal operations create pollutants such as organic matter, nutrients (primarily nitrogen and phosphorus), pathogens, and salt and heavy metals that are present in many animal rations. When stormwater moves through these confined areas, runoff may either transport the pollutants directly into surface waters or accelerate pollutant leaching into groundwater.

Even when animal waste is applied to land as a fertilizer material, water quality problems may still occur especially where excessive rates are applied. Land application rates are now being controlled in some states through special legislation requiring mandatory nutrient management plans.

The Clean Water Act (CWA) and the Coastal Zone Management Act (CZMA) are the two primary federal laws that deal with animal waste regulation. Under the CWA, CAFOs may be treated as point sources of pollution and regulated by a permit system. Those CAFOs regulated by permits are exempt from the Coastal Zone Management Act. However, under Section 6217 of the Coastal Zone Act Reauthorization Amendment (CZARA) of 1990, CAFOs not regulated by a permit system are considered to be nonpoint sources of pollution.

The Clean Water Act (CWA)

Under the Clean Water Act's National Pollutant Discharge Elimination System (NPDES), EPA's Re-

gion 6 has established a permit system to regulate CAFOs above a certain size in Texas, Louisiana, Arkansas, New Mexico, and Oklahoma as point sources of pollution. This region has huge operations of beef and dairy cattle. Other EPA Regions may develop similar programs.

The following information is taken from EPA Region 6 General Permit For Concentrated Animal Feeding Operations. **These regulations do not yet apply to animal operations in Alabama.** At the present time, the Alabama Department of Environmental Management (ADEM) does not regulate concentrations of animal wastes unless there is a complaint or intentional discharge into waters of the state. However, some type of permit system will probably be developed in the near future.

Concentrated animal feeding operations include feedlots, dairies, confinement systems, sale barns, and other operations. If new and existing CAFOs (1) confine animals for a total of 45 days or more in any 12-month period, (2) have a confinement area which does not sustain vegetation, and (3) contain more animals than those in Table 1 column 1, then a general permit is required.

If new and existing operations discharge pollutants into navigable waters either (1) directly, or (2) through a manmade ditch, a flushing system, or other similar manmade device, then a permit will be required for smaller numbers of animals. (See Table 1 column 4.)

Operations smaller than those shown in column 4 of Table 1 may also be designated as a CAFO by the Director of an NPDES discharge permit program. If so designated, the operations would become eligible for coverage under this general permit.

Poultry facilities that have no discharge to waters of the United States normally are not required to obtain permits. However, facilities that stockpile litter near watercourses or dispose of litter on land such that stormwater runoff or flooding can wash it into streams may be considered CAFOs.

ANR-790

Water Quality 4.6.2

Visit our Web site at: www.aces.edu

Table 1. Categories Of CAFOs And Numbers Of Animals Required To Obtain A Permit Under The CWA In EPA Region 6.

Categories	If CAFO discharges into . . .			
	. . . other than navigable waters		. . . navigable waters	
	Head (Column 1)	Animal Units ^a (Column 2)	Head (Column 3)	Animal Units (Column 4)
Slaughter or feeder cattle	1,000	1,000	300	300
Mature dairy cattle	700	980	200	300
Swine weighing more than 55 pounds	2,500	1,000	750	300
Horses, stabled	500	1,000	150	300
Sheep or lambs	10,000	1,000	3,000	300
Turkeys	55,000	1,000	16,000	300
Laying hens or broilers with unlimited continuous flow watering systems	100,000	1,000	30,000	300
Laying hens or broilers with liquid manure handling systems	30,000	1,000	9,000	300
Ducks	5,000		1,500	
Combination of animal units ^b		1,000		300

^aA unit of measurement for any animal feeding operation calculated by multiplying slaughter and feeder cattle by 1.0, mature dairy cattle by 1.4, swine over 55 pounds by 0.4, sheep by 0.1, horses by 2.0, turkeys by 0.018, and chickens by 0.01 unless a liquid system is used then multiply by 0.033.

^bNumbers of animal units from a combination of slaughter or feeder cattle, dairy cattle, swine weighing more than 55 pounds, and sheep.

Source: U.S. Environmental Protection Agency, 1993b.

As required by the permit, a CAFO must have a pollution prevention plan. The plan must include (1) description of potential pollutant sources, (2) waste management controls, (3) preventive maintenance, (4) sediment and erosion prevention, (5) employee training, and (6) inspections and record keeping. An animal waste management plan developed by the USDA Soil Conservation Service may be used as part of the pollution prevention plan.

Coastal Zone Management Act (CZMA)

The CZMA applies to twenty-nine states and territories of the United States, which have approved Coastal Zone Management Programs. In coastal regions of these states or territories, which include Alabama, any size animal operation which pollutes surface waters that discharge to coastal waters may be regulated in one of two ways.

One option is for the owner or operator to apply for a National Pollutant Discharge Elimination System (NPDES) permit. When the NPDES permit for stormwater discharge is issued, the operation will become exempt from guidelines of the coastal nonpoint pollution control programs. The other option is for the owner or operator to develop a pollution prevention plan that uses management measures listed under Section 6217(g) of the Coastal Zone Act Reauthorization Amendments.

Final guidelines for developing Coastal Nonpoint Control Programs were published by EPA in January 1993. State water quality agencies will have 30 months to develop and implement their programs. This means that by July 1, 1995, animal operations in approved coastal areas that are causing pollution problems and that do not have a stormwater discharge permit will fall under state guidelines developed in accordance with CZARA to protect coastal waters from nonpoint source pollution.

The CZARA applies to all new animal waste facilities regardless of size and to all new or existing CAFOs that contain the number of head or animal units for two different size operations as defined in Table 2. Measures for managing facility wastewater and runoff from the two different size operations are very similar but somewhat different.

Management measures called for by the CZARA include limiting the discharge from the CAFO by (1) storing both the facility wastewater and the stormwater runoff and (2) managing stored runoff and accumulated solids through an appropriate water utilization system. Design components to control wastewater and stormwater runoff from large unit CAFOs are illustrated in Figure 1. Such systems are not yet mandated in Alabama, but they will be required in the near future in coastal areas.

Table 2. Categories Of CAFOs And Numbers Of Head Or Animal Units Required To Implement Management Measures Under The CZARA.

Categories	Large Units		Small Units	
	Head	Animal Units ^a	Head	Animal Units ^a
Beef feedlots	300	300	50 to 299	50 to 299
Dairies	70	98	20 to 69	28 to 97
Swine	200	80	100 to 199	40 to 79
Horses, stabled	200	400	100 to 199	200 to 399
Turkeys	13,750	248	5,000 to 13,749	90 to 247
Layers	15,000	150 ^b	5,000 to 14,999	50 to 149 ^b
		495 ^c		165 to 494 ^c
Broilers	15,000	150 ^b	5,000 to 14,999	50 to 149 ^b
		495 ^c		165 to 494 ^c

^aA unit of measurement for any animal feeding operation calculated by multiplying slaughter and feeder cattle by 1.0, mature dairy cattle by 1.4, swine over 55 pounds by 0.4, sheep by 0.1, horses by 2.0, turkeys by 0.018, and chickens by 0.01; if a liquid system is used for chickens, then the multiplication factor is 0.033.

^bIf facility has a liquid manure system.

^cIf facility has continuous overflow watering system.

Source: U. S. Environmental Protection Agency, 1993a.

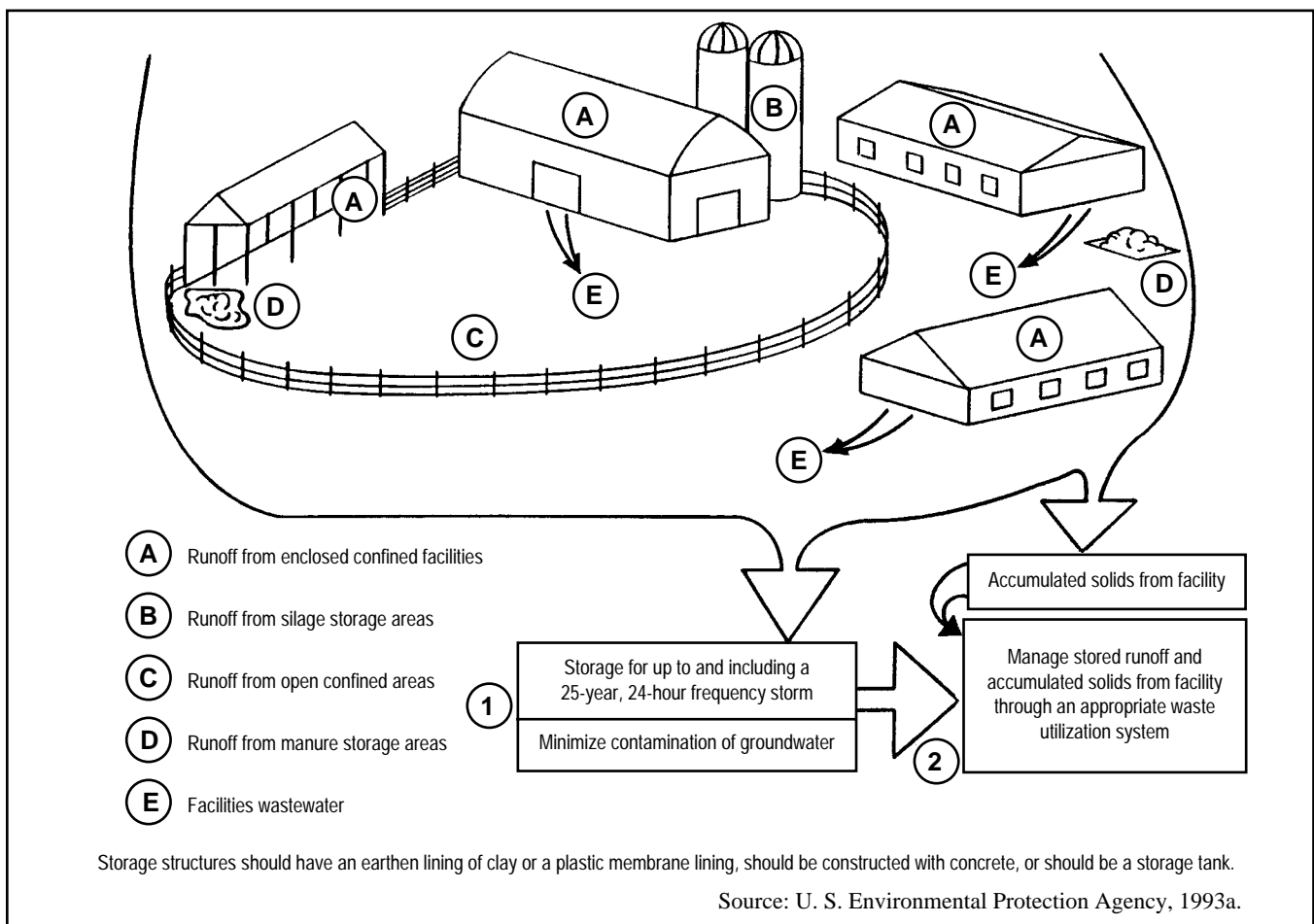


Figure 1. Management measures for wastewater and runoff from confined animal facilities (large units).

Permit Systems In Alabama

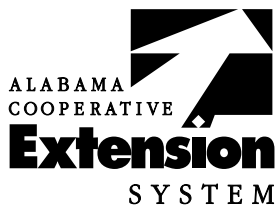
The NPDES Program Director for EPA Region 4 or designated state NPDES Director will decide if and when a permit system similar to the one for Region 6 will affect Alabama. Region 4 includes Alabama, Tennessee, Kentucky, Mississippi, Georgia, South Carolina, North Carolina, and Florida. Since Alabama has primacy, which means the federal government lets the state enforce water quality legislation, in all probability the NPDES branch under the Water Division of ADEM will be responsible for enforcing a permit system covered under the CWA.

State Nutrient Management Laws

Most states have no nutrient management laws that deal specifically with animal wastes. However, in June 1993, Pennsylvania enacted a nutrient management law that requires all farms with 2,000 pounds of live animal weight from livestock or poultry per acre to develop and implement a nutrient management plan within 3 years. This regulatory approach to nutrient management for land-applied animal waste may soon be adopted by other states.

References

- U.S. Environmental Protection Agency. 1993a. Guidance Specifying Management Measures For Sources Of Nonpoint Pollution In Coastal Waters. EPA-840-B-92-002. Office Of Water. Washington, DC.
- U.S. Environmental Protection Agency. 1993b. EPA Region 6 General Permit For Discharges From Concentrated Animal Feeding Operations (CAFOs). EPA Water Division. Dallas, TX.



ANR-790-4.6.2

This publication, supported in part by a grant from the Alabama Department of Environmental Management and the Tennessee Valley Authority, was prepared by James E. Hairston, *Extension Water Quality Scientist*, assisted by Leigh Stribling, *Technical Writer*.

For more information, call your county Extension office. Look in your telephone directory under your county's name to find the number.

Issued in furtherance of Cooperative Extension work in agriculture and home economics, Acts of May 8 and June 30, 1914, and other related acts, in cooperation with the U.S. Department of Agriculture. The Alabama Cooperative Extension System (Alabama A&M University and Auburn University) offers educational programs, materials, and equal opportunity employment to all people without regard to race, color, national origin, religion, sex, age, veteran status, or disability.

UPS, **New June 1995**, Water Quality 4.6.2