

OPERATION, MAINTENANCE AND UTILIZATION PLAN
ANIMAL WASTE MANAGEMENT SYSTEM
ROBERT PERRY FARM
HENRY COUNTY, TENNESSEE
(REVISION NO. 1)

I. GENERAL

This is a feeder swine operation. When fully developed there will be five (5) buildings (40' x 180') with a capacity of 960 feeders per building. Shoats will be placed in the parlors weighing fifty five (55) lbs. and "topped out" at 255 lbs., an average weight 155.0 lbs./animal was used for design purposes. The owner of the facility desires a waste management system consisting of a single stage anaerobic lagoon and other components as needed. The storage period interval between pumping and removal of accumulated liquid wastes will be six (6) months (183 days). All waste effluent will be utilized on adjacent crop and/or grassland.

II. DESIGN DATA

The waste management system will consist of the following components:

1. Anaerobic Lagoon
2. PVC pipe for collection and conveyance of wastes from the buildings to the lagoon.
3. Junction Boxes
4. Irrigation Pump and Power Source
5. Traveling gun Irrigation Equipment
6. Fencing
7. Vegetation and Mulch
8. Agitator (as needed during sludge removal)

Volume necessary to operate and function as a single stage anaerobic lagoon is based on the biannual accumulation of in house liquid wastes, accumulated runoff volumes less evaporation, and the runoff volume of an emergency storm (25 yr. - 24 hr. rainfall).

Biannual liquid wastes, and runoff, and required lagoon volumes are as follows:

1. Lagoon Volume required (1.43 cu. ft./lb. live weight)	1,063,900 cu. ft.
2. Sludge accumulation Volume (0.145 cu. ft./lb. live weight for 10 yrs.)	107,900 cu. ft.
3. Accumulated runoff for 6 months (Oct. - Mar.)*	236,700 cu. ft.
4. Emergency Storm Runoff*	86,550 cu. ft.
5. In house volume (2-gpd/animal)	234,900 cu. ft.
Total required lagoon volume	1,729,950 cu. ft.

*Based on a drainage area of 176,000 sq. ft.

The required total storage volume for the lagoon for the storage period - April thru September is 1,468,250 cu. ft.. Based on all design consideration and criteria, it will be necessary to dispose of approximately 607,750 cu. ft. (168 ac. in.) in April and 346,050 cu. ft. (95 ac. in.) in October of each year. In any year or storage period that the emergency storm should occur, it will be necessary to dispose of the additional storm runoff volume.

III. COLLECTION AND STORAGE

PVC pipes will be installed as noted in the drawings to collect and convey the waste and effluent to the lagoon. Each building has two (2) pits beneath the floors. These pits will be initially filled with six inches of liquid recycled from the lagoon. Once each week the pits will be drained of the stored wastes and the process repeated. Once fully operational, all required pit water will be recycled from the lagoon. The lagoon as designed has an available storage capacity of 1,590,400 cu. ft.

IV. APPLICATION AND UTILIZATION:

The accumulated and excess volumes of liquid wastes will be applied annually to pasture/hayland on Tract No. 27, Farm No. 857 - Consisting of approximately 100 to 110 acres of open land. A traveling gun will be utilized to irrigate adjacent fields. When fluid level in lagoon reaches elevation 92.3 (8 inches below over flow pipe inlet) pumping and/or spreading will begin and shall continue until fluid level is lowered to elevation 89.0 (4 ft. below over flow pipe inlet). Some type of elevation markers will be installed so landowner can easily determine required pumping elevations.

Before pumping each year, the effluent being pumped each storage period will be tested for nitrogen concentration using available commercial testing kits. The rate of nitrogen application shall not exceed 290 lbs./acre/yr. for pasture/hayland of fescue, clover and/or orchard grass. The other limiting factor shall be liquid application. The total amount of each application and application rate shall not exceed 2.0 inches/acre and 1.5 inches/hour respectively. It requires 46 acres and 26 acres of disposal area in April and October respectively to dispose of annual nitrogen production. Multiple applications will be required to dispose of liquid volumes. The following tabulated data depicts a recommended disposal and utilization plan annually based on the design application rate and amounts.

Year	Field Nos.	Disposal Area-Acs.	Area Crop	Appl'n Rate (In./Hr.)	Appl'n No.	Tot. Appl'n Amt. In./Ac.	Nitrogen Applied Lbs./Ac.
4-8/97*	1,2,3	50	Perm. Grasses	1.5	1	1.7	134
4-8/97	1,2,3	50	Perm. Grasses	1.5	2	3.4	268
10/1 thru 10/30/97	4&5	26	Perm. Grasses	1.5	1	1.8	142
10/1 thru 10/30/97	4&5	26	Perm. Grasses	1.5	2	3.6	284

Annually: Repeat previous years cycle. (Each 10 years when sludge may need to be removed, it will be necessary to schedule additional areas of disposal.)

*If the lagoon is prefilled, the initial disposal schedule will need to be changed.

Final nitrogen testing results may require field and disposal area changes.

Based on the final design criteria, it will be necessary each ten year interval to remove any sludge build-up that may have accumulated in the lagoon. If the build-up of sludge occurs as assumed, it will require the agitation of the lagoon contents by use of a sufficiently large agitator in order to cause the solids to be suspended in the effluent and removed as pumping and emptying is accomplished. Each time sludge removal is undertaken, it is expected that the nitrogen concentration of the pumped effluent will greatly increase as compared to prior years of disposal. Natural Resources Conservation Service personnel will be available to assist the landowner/operator in determining application amounts and rates for each disposal crop and area during these periods.

V. PROTECTION:

~~The waste storage pond shall be fenced and warning signs posted to prevent children and others from using it for other than the intended purpose. The embankment and surrounding areas shall be vegetated to control erosion. Vegetative screen or other methods should be used to shield the pond from public view and to improve visual conditions.~~

The fence shall be at least forty eight (48) inches high and the lower thirty two (32) inches shall be woven wire. The fence shall be placed at locations which will not deter mowing and maintenance. Backslopes of waste storage ponds shall not be grazed. All required fencing will be established as noted in construction notes, plans and/or other material.

The following seeding and mulching specifications will be followed:

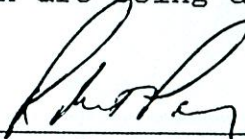
- 40 lbs./acre tall fescue.
- 2 1/2 lbs./acre white clover.
- 800 lbs. 6-12-12 or equivalent/ac.
- 2 tons lime/ac.
- 1 1/2 tons straw mulch/ac. (approximately 70% soil coverage)
- Optimum sowing date - Aug. 15 to October 1.

The structures, building sites and surrounding area will be mowed at least twice annually. All woody growth of trees and shrubs will be controlled by mowing, chemicals or hand removal.

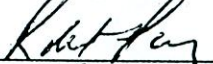
VI. OPERATION AND MAINTENANCE AGREEMENT

It is the landowner's/operator's responsibility to operate and maintain this system in such a way that none of the waste materials will enter streams. All waste will be utilized by land application for maximum retrieval of plant nutrients by the irrigated crop. The landowner agrees to provide NRCS personnel the right of full access to the project site at any reasonable time for the purposes of certifying that the terms of the Operation, Maintenance and Utilization Plan are being adhered to and properly administered.

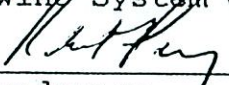
Signatures:


Farm Operator

Date 5/24/95


Swine System Operator

Date 5/24/95


Landowner

Date 5/24/95

Douglas F. Summer
District Conservationist

Date 5/24/95