

Guidelines for Livestock Waste Management



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U.S. Environmental Protection Agency – Region 9**

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I. Foreword

This document, "Guidelines for Livestock Waste Management, January 19, 2010" ("Guidelines") supersedes the "Guidelines for Livestock Waste Management, June 1996" in its entirety.

Hawaii has many regulations that may affect the livestock industry. These Guidelines are intended to provide guidance to existing and new animal feeding operation (AFO)¹ owners/operators on the existing federal and state regulations. The regulations have been promulgated to ensure a safe and clean environment. More specifically, the primary area of focus of the current regulations is to protect the state waters by minimizing the water pollution from animal feeding operations and the land application of manure.

On October 31, 2008, the U.S. Environmental Protection Agency (USEPA) finalized revisions to the National Pollution Discharge Elimination System (NPDES) permitting requirements and Effluent Limitation Guidelines and Standards for Concentrated Animal Feeding Operations (CAFOs)². These revisions went into effect on December 22, 2008. Most animal feeding operations are not expected to be affected by the newly revised regulations.

The revisions to the applicability portion of the regulations will require existing AFO operators to reevaluate their current livestock management practices and determine if their facility discharges or proposes to discharge to surface waters. These Guidelines contain examples of best management practices (BMPs) and best available technology (BAT) that new and existing operators can utilize for their nutrient/waste management in order to reduce the pollution potential from their animal feeding operations. The information contained herein is an attempt to provide the operator with enough understanding to balance their operations both economically and environmentally.

As with everything else, new technology and practices emerge daily. A good example is the portable dry-litter pig pen developed by the College of Tropical

¹ **“Animal Feeding Operation (AFO)”** means a lot, facility or pursuit conducted on land zoned by the county for the commercial agricultural production of livestock or livestock products where the following conditions are met:

- a) Animals (other than aquatic animals) have been, are or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12 month period;
- b) Crops, vegetation, forage growth or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility and
- c) Two or more animal feeding operations under common ownership are considered, for the purpose of these regulations, to be a single animal feeding operation if they adjoin each other or if they use a common area or system for the disposal of wastes.

² **“Concentrated Animal Feeding Operation (CAFO)”** means an “animal feeding operation” which meets the criteria in 40 CFR 122, Appendix B, or which the director designated under 40 CFR 122.23(c).

Agriculture and Human Resources of the University of Hawaii. Details of the dry-litter system are in Appendix C. The State of Hawaii Department of Health (Department) is encouraging all new and existing animal feeding operations to use waste management systems that appropriately reuse the waste stream, such as composting, and reduce the liquid waste stream.

New regulations will undoubtedly be promulgated. As such, these Guidelines will be revised periodically to update the owners/operators on the BMPs, BATs, and regulations.

II. Background

The lead agency for regulating AFOs in Hawaii is the Environmental Management Division of the Department. Two branches within this division are involved: the Clean Water Branch and the Wastewater Branch.

The Clean Water Branch (CWB) is responsible for administering the National Pollutant Discharge Elimination System (NPDES) permit program and has enforcement authority to address discharges to surface waters. The following Hawaii Revised Statutes (HRS) and the Hawaii Administrative Rules (HAR) are administered by the CWB:

- HRS, Chapter 342D (Water Pollution)
This statute establishes that no person may discharge water pollutants into state waters unless approved by the Director of Health.
- HAR Title 11 Chapter 54 (Water Quality Standards)
This rule establishes a policy of maintaining the level of water quality necessary to protect existing uses and of maintaining exceptional water quality in those water bodies that exceed the level necessary to protect existing uses. The Director may allow reduced water quality (while still protecting existing uses) if it is necessary to accommodate important economic or social development.
- HAR Title 11 Chapter 55 (Water Pollution Control)
This rule establishes the state's policy to protect, maintain, and improve the quality of state waters and to provide that no waste is discharged to state waters without appropriate level of treatment needed to prevent water pollution. This rule covers the NPDES permitting program.

The Wastewater Branch is responsible for reviewing and approving waste management plans for AFOs. This branch oversees inspection activities and enforcement actions against AFOs. Inspections are generally initiated by complaints and are not performed on a routine basis. It should be noted that discharges directly into state waters are handled by the CWB.

AFOs in Hawaii are moving in a different direction compared to the national trend. As of this writing, there are no CAFOs in Hawaii. The number of AFOs and the livestock 'head' have decreased in recent years, primarily due to the high price of feed on the islands, agriculture lands being converted to urban use, and price competition from the US mainland. As shown in the table below, the population of livestock has decreased significantly from 1996 to 2009.

Table 1. Livestock Population, Egg and Milk Production 1996 to 2009 (USDA NASS)

Livestock	1996	2009	% decline
Cattle	174,000	152,000	13
Dairy Cows	9,400	1,700	82
Pigs	34,000	15,000	56
Chickens	846,000	373,000	57
Egg Production	181,000 eggs	73,000 eggs	60
Milk Production	129,000 lbs	18,500 lbs	86

Based on the last 13 years of the implementation of the livestock waste management guidelines, the typical complaints received by the Department were related to odors, wastewater spill, and in some cases wastewater discharges to state waters. There were also complaints about pets and inquiries from pet owners. It should be made clear that these guidelines do not apply to pets.

III. Introduction

Hawai'i is the most isolated land mass that is inhabited with a population over 1 million people. Its' isolation has allowed a unique environment and culture to develop. Hawaii's economic base is heavily dependent on its' natural beauty to attract millions of tourists each year.

Water is the most crucial element to sustain life. Merely 0.3 percent of the world's water is fresh and drinkable. Hawaii's isolation and growing water demand make this resource even more precious. As such, measures to prevent pollution of ground water and state waters are crucial for the economic health of the state. However, these measures need to balance the natural resources with the economic needs that are crucial for a thriving sustainable community.

These Guidelines acknowledge the need to balance environmental stewardship and AFOs within an island setting. Measures to reduce and prevent water pollution are best accomplished by initiating them at the source. There are proven water pollution control technologies that are readily available and economical to implement. These practices and technologies are considered BMPs and BAT.

BMPs and BAT are practical solutions to reduce pollution potential and can also be new source of revenues when the new technologies are adopted e.g. electricity generation, compost, soil amendments, etc. It should be noted that the implementation of pollution prevention measures is part of the cost of operating/managing any AFO. Financial assistance to implement BMPs and BAT may be available for qualified operators from the U.S. Department of Agriculture and U.S. Environmental Protection Agency.

IV. Applicability

These Guidelines are applicable to all AFOs. AFO means a lot or facility (other than an aquatic animal production facility) where the following conditions are met:

- A. Animals (other than aquatic animals) have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period, and
- B. Crops, vegetation, forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility.

Pasture operations are not AFOs because the animals are not confined or concentrated in an area where manure builds up. However, a pasture or grazing operation may have areas such as feedlots, barns, or pens that meet the conditions above.

Existing AFOs and waste management systems that were approved by the Department and/or county agencies are not exempt from the provisions of these Guidelines. The provisions of the federal regulations must be implemented in its' entirety. Further, variances from the Hawai'i Revised Statutes (HRS) and the Hawai'i Administrative Rules (HAR) are not allowed. Exceptions to these guidelines may be proposed by submitting a written petition to the Department.

AFO Checklist

The following section lists the minimum requirements for operating an AFO.

Opening an AFO

- 1. Submit a waste management plan to the Department.
- 2. Seek technical assistance from NRCS and/or UH Extension Services

Operating an AFO

- 1. Follow and comply with the approved waste management plan.
- 2. Conduct inspections of your facility as required.

Closing an AFO

Submit closure plan to the Department for review and approval.

Concentrated Animal Feeding Operation (CAFO)

An AFO can be a defined or designated CAFO.

A. Defined CAFO

A "Large Defined CAFO" is based upon the quantity and species of the animals. A "Medium Defined CAFO" is based upon the quantity and species of the animals and if there is a discharge to state waters.

A "discharge" is any addition of any pollutant or combination of pollutants to the state waters. This includes:

1. runoff from corrals, stock piled manure, or silage piles
2. overflow from storage ponds and animal watering systems which are contaminated by manure; and
3. overflow from irrigated fields in which wastewater is applied at greater than the agronomic rate.

"State waters" means all waters, fresh, brackish, or salt, around and within the State, including, but not limited to, coastal waters, streams, rivers, drainage ditches, ponds, reservoirs, canals, ground waters, and lakes; provided that drainage ditches, ponds, and reservoirs required as a part of a water pollution control system are excluded.

A discharge to state waters include surface waters that have direct contact with the animals in the confinement area and any man-made system that transports manure and process wastewater to state waters.

Process wastewater includes:

1. spillage or overflow from animal or poultry watering systems;
2. washing, cleaning, or flushing pens, barns, manure pits, or other facilities;
3. direct contact swimming, washing, or spray cooling of animals;
4. dust control;
5. water that comes into contact with raw materials, products, or by products including manure, litter, feed, milk, eggs and bedding;
6. leachate from silage and feed storage areas; and

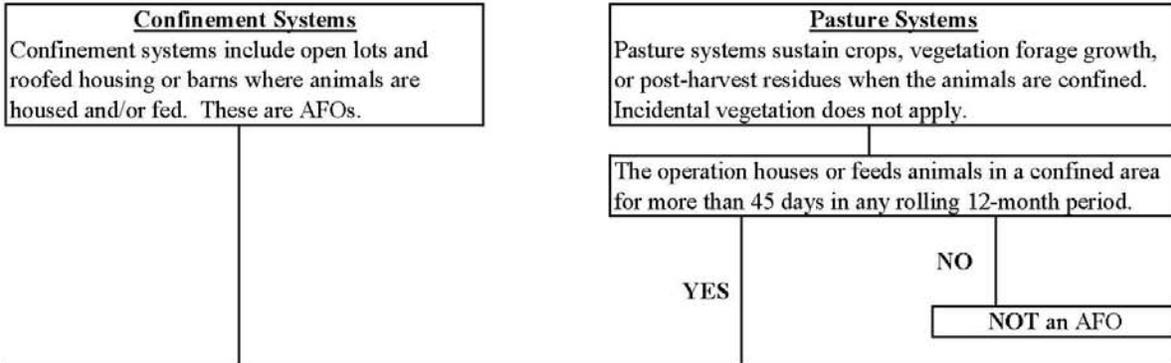
7. runoff from fields where manure has not been applied according to an approved nutrient management plan.

B. Designated CAFO

"Medium Designated CAFO" and "Small Designated CAFO" are based upon the quantity and species of animals and if the Department or USEPA determines that the operation is contributing significant pollutants to state waters. To designate a medium or small AFO as a CAFO, the Department or USEPA must inspect the AFO and find that the operation is a significant contributor of pollutants to state waters.

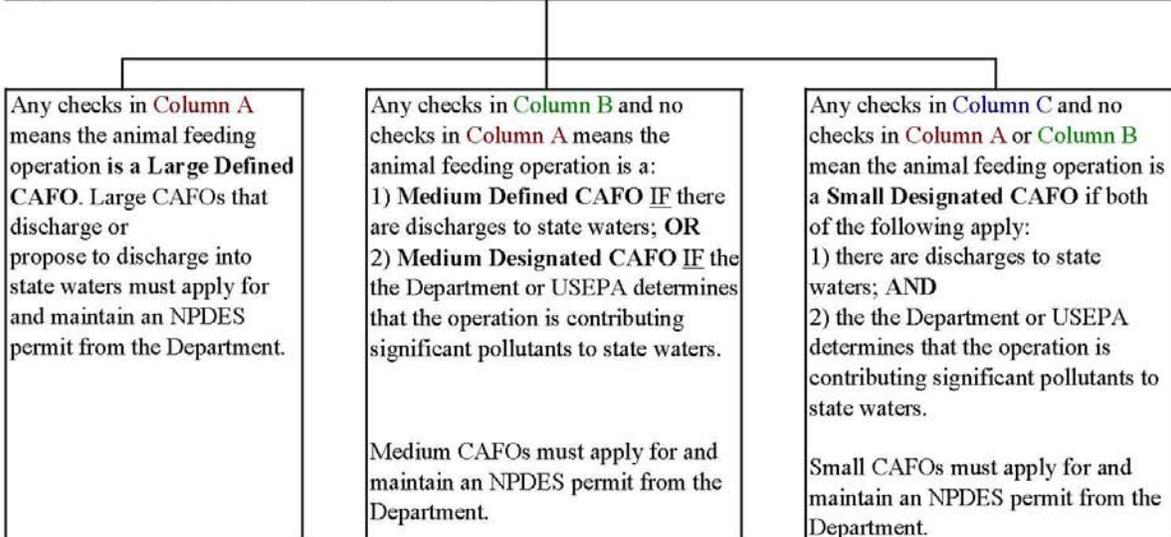
V. Assessing Your Operation

Use the chart below to determine the classification of the animal feeding operation.



<u>Place a check mark in the column that describes your animal feeding operation for each species</u>			
<u>Species</u>	<u>Column A: Large</u>	<u>Column B: Medium</u>	<u>Column C: Small</u>
Beef cattle or cow/calf pairs	___ 1,000 or more	___ 300 to 999	___ less than 300
Veal	___ 1,000 or more	___ 300 to 999	___ less than 300
Mature dairy cattle	___ 700 or more	___ 200 to 699	___ less than 200
Dairy heifers	___ 1,000 or more	___ 300 to 999	___ less than 300
Swine (55 lbs or more)	___ 2,500 or more	___ 750 to 2,499	___ less than 750
Swine (less than 55 lbs)	___ 10,000 or more	___ 3,000 to 9,999	___ less than 3,000
Turkeys	___ 55,000 or more	___ 16,500 to 54,999	___ less than 16,500
Laying hens or broilers ¹	___ 30,000 or more	___ 9,000 to 29,999	___ less than 9,000
Laying hens ²	___ 82,000 or more	___ 25,000 to 81,999	___ less than 25,000
Chickens except laying hens	___ 125,000 or more	___ 37,500 to 124,999	___ less than 37,500
Ducks ¹	___ 5,000 or more	___ 1,500 to 4,999	___ less than 1,500
Ducks ²	___ 30,000 or more	___ 10,000 to 29,999	___ less than 10,000
Sheep or lambs	___ 10,000 or more	___ 3,000 to 9,999	___ less than 3,000
Horses	___ 500 or more	___ 150 to 499	___ less than 150

¹ Only applicable to poultry operations with liquid manure systems
² Applicable to all poultry operations without liquid manure systems



VI. Construction and Operation of AFOs

The operator of an AFO needs to obtain approval from the Department prior to the construction and operation of an AFO. The approval is obtained by submitting a waste management plan to the Department for review and approval.

The review and approval process provides the Department an opportunity to ensure that the pollution control technology, processes, and operation and maintenance practices of the proposed AFO are sufficient to ensure that the proposed AFO is in compliance with state and federal regulations. Preparing and submitting a waste management plan also ensures that the operator of the AFO is informed of and agrees to the pollution prevention measures under which they are allowed to operate.

The review and approval process by the Department is limited to matters related to pollution prevention. There may be other state or county agencies which the operator of the AFO may have to obtain approvals from prior to starting the respective operation.

The operator of the AFO must commence construction within one year of receiving the Approval to Construct from the Department. If construction does not commence within the one-year period, the waste management plan will need to be resubmitted for review and approval by the Department. The resubmittal shall be revised to conform to the current best management practices, best technology available, and rules.

VII. Approval to Construct

Prior to the construction of an AFO, the owner should submit to the Department a waste management plan. The waste management plans shall include the following:

- A. site plan and basis of design;
- B. design plan;
- C. nutrient management plan; and
- D. operation and maintenance plan.

The waste management plan should provide sufficient information and supporting documentation to adequately describe the proposed operation. Applicants are encouraged to consult with the United States Department of Agriculture Natural Resources Conservation Service (NRCS), the University of Hawaii Cooperative Extension Services (UH), or a private consultant for technical assistance in

preparing their waste management plan. The Environmental Resources Coalition (ERC) uses federal grant dollars from the US Environmental Protection Agency to help owners/operators prepare nutrient management plans. Approximately 90 percent of the waste management plans submitted to the Department were prepared by the NRCS. The UH can also provide information on the technologies applicable for Hawaii's conditions, practical research information, systems of tropical agriculture, marketing and practical livestock management issues.

A. Site plan and basis of design

The site plan of the property for the proposed operation should include the all structures and identify each area for the operation. The basis of design is a report and preliminary proposal describing the planned operation and its' facilities. The report should describe the BMPs and the BAT that will be used to meet the provisions of the state and federal regulations. It should contain all site-specific information related to the design, operation, and maintenance of the animal feeding operation. The site plan and basis of design will be used to guide the Department in reviewing the suitability of the site for the proposed operation.

B. Design Plan

Design plans are detailed scaled drawings and construction specifications identifying facilities, infrastructure, equipment layout, and pollution control measures.

C. Nutrient Management Plan (NMP)

The NMP must include best management practices that will be implemented to meet effluent limitations and standards. The Department will review the NMP and provide suggestions or recommendations as applicable prior to plan approval.

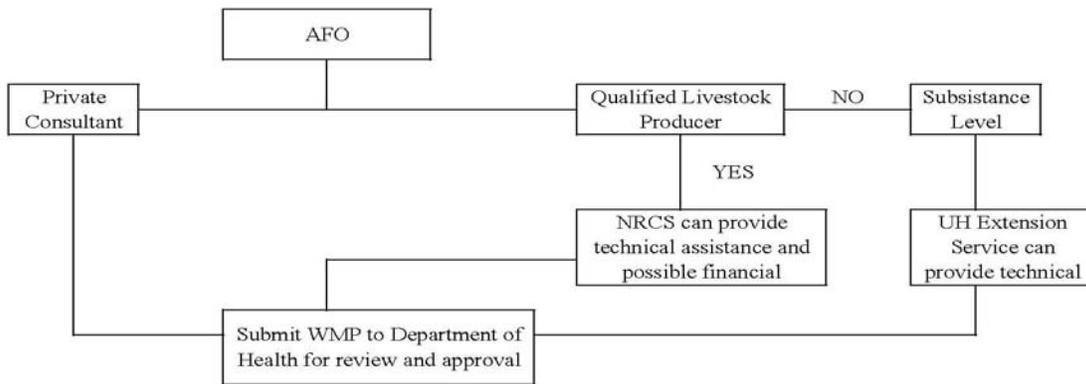
D. Operation and Maintenance Plan

The operation and maintenance (O&M) plan for the proposed operation should outline the tasks that will be performed on a routine basis to ensure continued compliance with the waste management plan. The O&M plan should include the means and methods, duration, and frequency of each task. The O&M plan shall also include the means and methods to be used for abandonment should the animal feeding operation change the method of treating livestock waste or discontinue operations. Note that a change to the method of treating livestock waste will require a new waste management plan to be submitted to and approved by the Department.

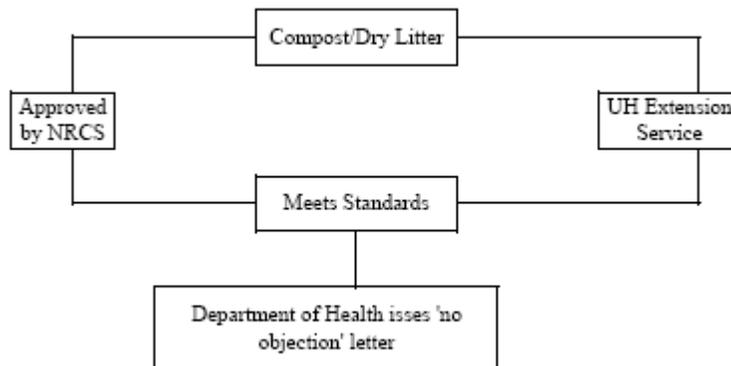
VIII. Approval to Operate

Prior to the introduction of livestock in a animal feeding operation, the Department must conduct a site inspection of the completed facility to verify that the animal feeding operation has been constructed in accordance with the approved waste management plan.

The chart below shows the typical ways an AFO can produce a waste management plan.



The chart below shows the approval process to use a composting or dry litter system.



IX. Construction and Operation of CAFOs

The operator of a CAFO will need apply for same approvals as an AFO listed above and they also need to apply for and maintain an NPDES permit from the Department.

A. NPDES Permit

The discharge of a pollutant through a discrete conveyance such as a pipe, ditch, or channel to state waters is known as a “point source discharge”. The federal Clean Water Act requires the Department to regulate point source discharges by issuing NPDES permits. A NPDES permit sets requirements to protect water quality such as discharge limits, management practices, and record keeping requirements.

A NPDES CAFO permit will require an operation to meet certain conditions for the production and land application areas. The permit will require the CAFO operator to:

1. implement a nutrient management plan;
2. submit annual reports to the CWB;
3. keep the permit current until the operation is no longer a CAFO; and
4. keep records of nutrient management practices for at least 5 years.

B. Nutrient Management Plan (NMP)

The NMP is intended to limit the CAFO's impact on state waters and must describe how the operation will manage nutrients and waste in terms of storage, management of dead animals, clean water management, preventing animals from contact with state waters, chemical handling, runoff, testing, land application, and recordkeeping.

X. Financing - Grants and Loans

Financing to implement the waste management plan can come from several sources.

The Environmental Quality Incentives Program (EQIP) offered annually by the NRCS provides technical and financial assistance to a qualified AFO that meets certain requirements. Information on EQIP and other NRCS conservation programs that provide financial assistance can be found by contacting the NRCS or through their website. (<http://www.pia.nrcs.usda.gov/programs>).

The US Department of Agriculture, Farm Service Agency offers loans to farmers. Information can be found on their website (<http://www.fsa.usda.gov/FSA/stateoffapp?mystate=hi&area=home&subject=prog&topic=landing>).

The State of Hawaii Department of Agriculture offers sub-prime rate loans to qualified farmers. Information on these loans can be found on their website (http://hawaii.gov/hdoa/agl/agl_qfarm).

The Farm Credit Services of Hawaii also offers loans with special consideration for young, beginning, and small farmers. Information on these loans can be found on their website (<http://www.hawaiifarmcredit.com/>).

USEPA CLEANmp Grant: Comprehensive Livestock Environmental Assessments and Nutrient management plans: The nutrient management project will help operators with plans to reduce manure runoff impacts in sensitive watersheds. Comprehensive environmental assessments are also part of the project. Technical assistance for the project is confidential and free and livestock operators across the nation are eligible to apply. (<http://www.erc-env.org/CLEANMP.htm>).

Traditional agriculture loans are available for the following local financial institutions:

1. Bank of Hawaii;
2. First Hawaiian Bank; and
3. Hawaii National Bank