
16. CONCENTRATED ANIMAL FEEDING OPERATIONS

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Associated Appendices

- AA. Bio-Security Guidance (Final)
- BB. NPDES CAFO Permit and NMP Minimum Practices Review Checklist

Related Web Sites

Office of Wastewater Management (OWM) Homepage: <http://www.epa.gov/owm>
National Agriculture Compliance Assistance Center: <http://www.epa.gov/agriculture/>

16. A. Objectives

The purpose of this Concentrated Animal Feeding Operations (CAFOs) chapter is to provide an overview of the National Pollutant Discharge Elimination System (NPDES) CAFO regulations which include the effluent limitations guidelines (ELGs) and standards for CAFOs. The chapter is for use by state and regional inspectors. It is intended to be used together with the *NPDES Permit Writers' Guidance Manual and Example NPDES Permit for Concentrated Animal Feeding Operations* (the Guidance), published in December 2003, which contains information specific to the inspection of CAFOs. The Guidance reflects the revisions to the ELGs and standards for CAFOs (68 *Federal Register* (FR) 7176: February 12, 2003) that became effective on April 14, 2003. It replaces the previous guidance on NPDES CAFO permits, *Guide Manual on NPDES Regulations for Concentrated Animal Feeding Operations*, issued in 1995. States have from 1 to 2 years to revise their programs to reflect the 2003 CAFO regulations. Under the new regulations, states that do not require a statutory change must revise their programs by February 12, 2004; states that require a statutory change have until February 13, 2005.

The remainder of the *National Pollutant Discharge Elimination System (NPDES) Compliance Inspection Manual* should be consulted for general information about NPDES inspections.

Legal Authority for CAFO Inspections

The Federal Water Pollution Control Act of 1972, as amended by the Clean Water Act (CWA) of 1977 and the Water Quality Control Act of 1987, gives EPA the authority to regulate the discharge of pollutants to waters of the United States. The CWA provides broadly defined authority to establish the NPDES Permit Program, define pollution control technologies, establish effluent limitations, obtain information through reporting and compliance inspections, and take enforcement actions (both civil and criminal) when violations of the act occur.

Section 301(a) of the CWA establishes statutory requirements for the discharge of pollutants from point sources to waters of the United States. Under CWA Section 502(14) and its implementing regulations at 40 CFR Part 122, CAFOs are point source discharges and are therefore subject to the NPDES permitting requirements.

Responsibilities of the CAFO Inspector

The primary role of a CAFO inspector is to gather information to evaluate compliance with the NPDES CAFO permit conditions, including the effluent limitations and any other applicable regulations. The CAFO inspector also plays an important role in enforcement case development and support, as well as permit development. To fulfill these roles, an inspector is required to know and abide by applicable regulations, permits, policies, and procedures; legal requirements concerning inspections; procedures for effective inspection and evidence collection; accepted health and safety practices; and quality assurance standards.

This chapter is primarily for use by EPA inspectors, but it might also be valuable in orienting and training state inspectors and other regional personnel involved in CAFO enforcement work.

Procedures are recommended in this manual, but equivalent state procedures may be substituted where appropriate.

16. B. CAFO Regulation Overview

Overview

This section defines the term *animal feeding operation* (AFO) and explains which AFOs are CAFOs and subject to NPDES permitting requirements.

Regulatory Background

Section 301(a) of the CWA establishes statutory requirements for the discharge of pollutants from point sources to waters of the United States. Under CWA section 502(14) and its implementing regulations at 40 CFR Part 122, CAFOs are point source discharges and are therefore subject to the NPDES permitting requirements. The effluent limitations guidelines (ELGs) and standards for CAFOs are at 40 CFR Part 412.

Animal Feeding Operation

An AFO is an animal facility that meets both of these conditions:

- C Animals are confined for at least 45 days during any 12-month period. The 45 days of confinement do not have to be 45 days in a row, and the 12-month period can be any consecutive 12 months.
- C Crops, forage growth, and other vegetation are not grown in the area where the animals are confined.

Pasture and rangeland operations are not AFOs because the animals are not confined or concentrated in an area where manure builds up. A pasture or grazing-based operation, however, might also have additional areas such as feedlots, barns, or pens that meet the conditions described above to be defined as an AFO. A winter feedlot can still be an AFO even if the feedlot area is used to grow crops or forage when animals are not confined there. In the case of winter feedlots, the “no vegetation” condition applies to only the time when the animals are confined there. The AFO definition is not limited to the animal types discussed in the regulations. An operation that confines any type of animal and meets both of the conditions in the definition is an AFO. In addition to confinement areas at animal production facilities, confinement areas at auction houses, sale barns, livestock marketing areas, horse show arenas, and stable areas of racetracks may be considered AFOs if they meet both of the conditions in the definition.

Concentrated Animal Feeding Operation

For a facility to be a CAFO, it must first meet the regulatory definition of an AFO. A CAFO is an AFO that meets specific, regulation-defined, characteristics. There are two ways for an AFO to be considered a CAFO:

- C An AFO may be defined as a CAFO
- C An AFO may be designated as a CAFO

AFOs Defined as CAFOs

An AFO may be defined as a CAFO if it has a certain number of animals and it meets the other criteria in the regulations. The regulations set thresholds for size categories (Large, Medium, and Small) based on the number of animals confined at the operation for a total of 45 days or more in any 12-month period. Tables provided later in this chapter show the thresholds for Large, Medium, and Small CAFOs for different kinds of animals.

Large CAFOs

An operation is defined as a Large CAFO if it meets the regulatory definition of an AFO and meets the Large CAFO threshold for that animal type (See Tables 16-2 through 16-13).

Medium CAFOs

An operation is defined as a Medium CAFO if it meets the regulatory definition of an AFO, meets the Medium CAFO thresholds for that animal type (See Tables 16-2 through 16-13), and meets at least one of the following two criteria (called “discharge criteria”):

- C A man-made ditch, pipe, or similar device carries manure or process wastewater from the operation to surface water or
- C The animals come into contact with surface water that runs through the area where they are confined.

The discharge criteria apply to only the parts of the operation that have animals confined, store manure or raw materials, and contain waste. For example, if a ditch is dug or a pipe is installed to drain water from the confinement area into a stream or lake, the operation would meet the first discharge criterion. Open tile drains in the areas where animals are confined, wastes are collected and stored, or raw materials are kept also meet the first criterion if the tile drains carry pollutants from these areas to surface water. The operation meets the second discharge criterion if a stream runs through the confinement area and the animals have direct access to the stream.

Small CAFOs

Small CAFOs are AFOs that confine fewer than the number of animals that defines a Medium CAFO, meet specific discharge criteria, and have been designated as CAFOs (see the designation discussion below).

AFOs Designated as CAFOs

The second mechanism for an AFO to be determined to be a CAFO is through designation. The NPDES regulations for CAFOs set forth the standards and process for the NPDES permitting authority, or in some cases EPA, to designate, on a case-by-case basis, any AFO as a CAFO, upon determining that the facility is a significant contributor of pollutants to waters of the United States. Designation ensures protection of surface water quality while maintaining flexibility for states or other entities to assist small and medium operations in removing risk conditions before they become subject to the NPDES requirements applicable to CAFOs.

Any AFO may be designated as a CAFO, on a case-by-case basis, if it is determined to be a significant contributor of pollutants to waters of the United States as specified in 40 CFR

122.23(c). Given the structure of the CAFO definition, however, three types of AFO operations are typically considered for designation:

- C A medium-sized AFO that does not meet one of the specific discharge criteria and is determined to be a significant contributor of pollutants to waters of the United States.
- C A small AFO (one that confines fewer than the number of animals that define a Medium CAFO) if the facility meets one of the method of discharge criteria [40 CFR 122.23(c)(3)(i) and (ii)] and is determined to be a significant contributor of pollutants to waters of the United States.
- C An AFO that raises animals other than species identified in the regulatory definition of a CAFO and is determined to be a significant contributor of pollutants to waters of the United States. Examples of such AFOs include operations that raise geese, emus, ostriches, llamas, mink, bison, alligators.

No operation may be designated as a CAFO until an inspector has conducted an on-site inspection of the facility, regardless of the size of the operation or the type of animals confined [40 CFR 122.23(c)(3)].

Factors to Be Considered When Designating an AFO as a CAFO

For an AFO to be designated as a CAFO, it must be determined to be a significant contributor of pollutants to waters of the United States by the permitting authority or, in some cases, the EPA Regional Administrator [40 CFR 122.23(c)]. Once an operation is designated as a CAFO, it must seek coverage under an NPDES permit and, among other requirements, develop and implement a nutrient management plan.

An AFO may not be designated as a CAFO until the NPDES permitting authority or EPA has conducted an on-site inspection of the operation and determined that the operation should and could be regulated under the permit program [40 CFR 122.23(c)(3)]. In addition, a small AFO may not be designated as a CAFO unless it also meets the small AFO method of discharge criteria [122.23(c)(3)(i) and (ii)] and is determined to be a significant contributor of pollutants to waters of the United States.

The on-site inspection serves three primary objectives: (1) to confirm that the facility meets the AFO definition, (2) to collect information related to the CAFO designation factors, and (3) to provide notice to the AFO that it might be designated as a CAFO. The requirement for an on-site inspection helps ensure that a reasoned assessment of the situation has been performed. EPA recommends that the designation process be conducted as soon as possible following the inspection. Regardless of when an inspection takes place, the designation should be based on current information.

In determining whether an AFO is a significant contributor of pollutants to waters of the United States, the permitting authority or EPA Regional Administrator is to consider the factors specified in 40 CFR 122.23(c)(2), which are listed in the left column of Table 16-1. The right column in Table 16-1 gives examples of case-by-case designation factors that might be assessed during the designation inspection. The assessment of regulatory factors may be based on visual observations, as well as water quality monitoring and other sources of relevant information.

Table 16-1. Example Factors for Case-by-Case CAFO Designation	
Designation Factor	Example Factors for Inspection Focus
' Size of the Operation and Amount of Waste Reaching Waters of the United States	<ul style="list-style-type: none"> C Number of animals C Type of feedlot surface C Feedlot design capacity C Waste handling/storage system design capacity
' Location of the Operation Relative to Waters of the United States	<ul style="list-style-type: none"> C Location of water bodies C Location of floodplain C Proximity of production area and land application area to waters of the United States C Depth to ground water, direct hydrologic connection to waters of the United States C Location in an impaired watershed
' Means of Conveyance of Animal Waste and Process Wastewater into Waters of the United States	<ul style="list-style-type: none"> C Existing or potential man-made (including natural and artificial materials) structures that might convey waste C Direct contact between animals and waters of the United States.
' Slope, Vegetation, Rainfall, and Other Factors Affecting the Likelihood or Frequency of Discharge of Animal Waste, Manure, and Process Wastewater into Waters of the United States	<ul style="list-style-type: none"> C Slope of feedlot and surrounding land C Type of feedlot (concrete, soil) C Climate (e.g., arid or wet) C Type and condition of soils (e.g., sand, karst) C Drainage controls C Storage structures C Amount of rainfall C Volume and quantity of runoff C High water table C Buffers
' Other Relevant Factors	<ul style="list-style-type: none"> C History of noncompliance C Use of conservation practices to minimize nutrient transport to waters of the United States C Working with USDA or Soil and Water Conservation District to improve operation

Following the on-site inspection for designation, the inspector should prepare a brief report that (1) identifies findings and any follow-up actions, (2) determines whether the facility should be designated as a CAFO, and (3) documents the reasons for that determination. Regardless of the outcome, a letter should be prepared and sent to inform the facility of the results of the inspection. If the permitting authority has made a decision to designate an AFO as a CAFO, the letter should specify that the operation must obtain an NPDES permit. The letter should indicate whether a general permit is available or whether an individual permit application is to be submitted by a specific date. In those cases where a facility has not been designated as a CAFO but the NPDES permitting authority has identified areas of concern, these areas should be noted in the letter. The letter should state that if these concerns are not corrected, the facility might be designated in the future. It should also include a date for a follow-up inspection to determine whether the concerns have been adequately addressed.

EPA Designation Authority

The NPDES CAFO regulations explicitly authorize the EPA Regional Administrator to designate AFOs as CAFOs in NPDES-authorized states and tribes where the Regional Administrator has determined that one or more pollutants in an AFO's discharge contribute to an impairment in a downstream or adjacent state or Indian Country water that is impaired by that pollutant. Such designation is based on assessment of the factors in 40 CFR 122.23(c)(2) and also requires an

on-site inspection. Upon designation by EPA, the operation is required to apply to the permitting authority for permit coverage.

CAFO Definition Thresholds for Specific Animal Sectors

In the NPDES CAFO regulations, EPA has set thresholds for determining which AFOs are CAFOs for specific animal sectors. The thresholds define which AFOs are Large CAFOs. In addition, the thresholds, along with regulation-defined discharge criteria, define which AFOs are Medium CAFOs. The thresholds also determine which operations are potentially subject to designation. Tables 16-2 through 16-13 show these thresholds for the various animal sectors.

The thresholds in Table 16-2 apply to operations that confine any kind of cattle other than mature dairy cows, including heifers, steers, bulls, and cow/calf pairs. For example, these thresholds apply to beef cattle operations such as feedlots and backgrounding yards, veal calf operations, and contract dairy heifer operations. Except for cow/calf pairs, each animal is counted as one animal, regardless of its age or weight. In the case of cow/calf pairs, the pair is counted as one animal until the calf is weaned. After the calf is weaned, the cow and calf count as individual animals.

Table 16-2. Thresholds for Cattle (other than mature dairy cows)		
An AFO that has ...	is a...	by ...
at least 1,000 cattle, dairy heifers, cow/calf pairs, or veal calves	Large CAFO	regulatory definition
from 300 to 999 cattle, dairy heifers, cow/calf pairs, or veal calves and meets one of the medium category discharge criteria	Medium CAFO	regulatory definition
from 300 to 999 cattle, dairy heifers, cow/calf pairs, or veal calves and has been designated by the permitting authority	Medium CAFO	designation
fewer than 300 cattle, dairy heifers, cow/calf pairs, or veal calves and has been designated by the permitting authority	Small CAFO	designation

The thresholds in Table 16-3 apply to operations that confine mature dairy cows. Mature dairy cows include both milked and “dry” cows. Thresholds for AFOs that house any other kind of cattle, including heifers and veal calves, are shown in Table 16-2 (“Thresholds for Cattle (other than mature dairy cows”).

Table 16-3. Thresholds for Mature Dairy Cows		
An AFO that has ...	is a...	by ...
at least 700 mature dairy cows	Large CAFO	regulatory definition
from 200 to 699 mature dairy cows and meets one of the medium category discharge criteria	Medium CAFO	regulatory definition

from 200 to 699 mature dairy cows and has been designated by the permitting authority	Medium CAFO	designation
fewer than 200 mature dairy cows and has been designated by the permitting authority	Small CAFO	designation

The thresholds in Table 16-4 apply to operations that confine swine that weigh at least 55 pounds. These operations include farrow-finish operations, wean-finish operations, farrowing operations, breeding operations, grow-finish operations, and other specialized AFOs that confine mature swine. AFOs that house immature swine (less than 55 pounds) might also be subject to the thresholds shown in Table 16-5 (“Thresholds for Swine (less than 55 pounds)”).

An AFO that has ...	is a...	by ...
at least 2,500 swine weighing 55 pounds or more	Large CAFO	regulatory definition
from 750 to 2,499 swine weighing 55 pounds or more and meets one of the medium category discharge criteria	Medium CAFO	regulatory definition
from 750 to 2,499 swine weighing 55 pounds or more and has been designated by the permitting authority	Medium CAFO	designation
fewer than 750 swine weighing 55 pounds or more and has been designated by the permitting authority	Small CAFO	designation

The thresholds in Table 16-5 apply to operations that confine swine that weigh less than 55 pounds. These thresholds typically apply to swine nurseries, but they may also apply to other facilities that confine swine of all sizes but primarily confine large numbers of immature swine. For example, an operation with 1,000 sows, 50 boars, and 14,000 newborn pigs is a Large CAFO. Remember that AFOs that house “mature” swine (55 pounds or more) are already subject to the thresholds in the sector “swine (55 pounds or more)” (Table 16-4). Therefore, a swine operation could be defined as a CAFO because of the number of swine weighing 55 pounds or more, the number of swine weighing less than 55 pounds, or both.

An AFO that has ...	is a...	by ...
at least 10,000 swine weighing less than 55 pounds	Large CAFO	regulatory definition
from 3,000 to 9,999 swine weighing less than 55 pounds and meets one of the medium category discharge criteria	Medium CAFO	regulatory definition

from 3,000 to 9,999 swine weighing less than 55 pounds and has been designated by the permitting authority	Medium CAFO	designation
fewer than 3,000 swine weighing less than 55 pounds and has been designated by the permitting authority	Small CAFO	designation

The thresholds in Table 16-6 apply to operations that confine horses. The confinement area does not include areas like pastures. Most horse operations confine their animals only for short-term stabling or visits to stalls for shoeing, veterinary care, or similar activities. The horses might not be confined for enough days for the operation to meet the criteria for being an AFO. Data from the U.S. Department of Agriculture's (USDA's) National Animal Health Monitoring System suggest that practically all Large horse CAFOs (those with more than 500 horses in confinement) are racetracks.

An AFO that has ...	is a...	by ...
at least 500 horses	Large CAFO	regulatory definition
from 150 to 499 horses and meets one of the medium category discharge criteria	Medium CAFO	regulatory definition
from 150 to 499 horses and has been designated by the permitting authority	Medium CAFO	designation
fewer than 150 horses and has been designated by the permitting authority	Small CAFO	designation

The thresholds in Table 16-7 apply to operations that confine sheep, lambs, or both. All confined sheep and lambs are counted to determine whether the operation meets these thresholds. Confinement areas do not include grazing pastures. Operations with grazing areas might confine animals only for shearing, veterinary care, and lambing and before sale or processing. The animals might not be confined for enough days for the operation to be considered an AFO. Animals must be confined for 45 days or more in a 12-month period for an operation to be considered an AFO.

An AFO that has ...	is a...	by ...
at least 10,000 sheep or lambs mature dairy cows	Large CAFO	regulatory definition
from 3,000 to 9,999 sheep or lambs and meets one of the medium category discharge criteria	Medium CAFO	regulatory definition
from 3,000 to 9,999 sheep or lambs and has been designated by the permitting authority	Medium CAFO	designation

fewer than 3,000 sheep or lambs and has been designated by the permitting authority	Small CAFO	designation
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The thresholds in Table 16-8 apply to operations that confine turkeys. Most turkey operations today confine their birds in confinement houses, but turkeys are also raised on lots. All birds, including poults and breeders, are counted to determine whether the operation meets the thresholds.

Table 16-8. Thresholds for Turkeys		
An AFO that has ...	is a...	by ...
at least 55,000 turkeys	Large CAFO	regulatory definition
from 16,500 to 54,999 turkeys and meets one of the medium category discharge criteria	Medium CAFO	regulatory definition
from 16,500 to 54,999 turkeys and has been designated by the permitting authority	Medium CAFO	designation
fewer than 16,500 turkeys and has been designated by the permitting authority	Small CAFO	designation

The thresholds in Table 16-9 apply to operations that confine laying hens or broiler chickens **and** use a liquid manure handling system (such as caged housing where manure is flushed to a lagoon). Liquid manure handling systems are relatively common among layer operations and are rarely used in other chicken operations. Operations that do not use liquid manure handling systems are subject to thresholds for the sector “laying hens (operations with other than a liquid manure handling system)” (Table 16-10) or “chickens other than laying hens (operations with other than a liquid manure handling system)” (Table 16-11). For pullets see “Thresholds for Chickens other than laying hens (operations with other than a liquid manure handling system)” (Table 16-11).

Table 16-9. Thresholds for Chickens (operations with a liquid handling system)		
An AFO that has ...	is a...	by ...
at least 30,000 chickens and uses a liquid manure handling system	Large CAFO	regulatory definition
from 9,000 to 29,999 chickens, uses a liquid manure handling system, and meets one of the medium category discharge criteria	Medium CAFO	regulatory definition
from 9,000 to 29,999 chickens, uses a liquid manure handling system, and has been designated by the permitting authority	Medium CAFO	designation

fewer than 9,000 chickens, uses a liquid manure handling system, and has been designated by the permitting authority	Small CAFO	designation
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The thresholds in Table 16-10 apply to layer operations that do not use a liquid manure handling system. These operations include scrape-out and belt manure handling systems, high-rise cage housing, and litter-based housing. A chicken operation that uses a liquid manure handling system is subject to thresholds for the sector “chickens (operations with a liquid manure handling system)” (Table 16-9). Non-layer operations, including broiler operations, that do not use a liquid manure handling system are subject to thresholds in the sector “chickens other than laying hens (operations with other than a liquid manure handling system)” (Table 16-11).

An AFO that has ...	is a...	by ...
at least 82,000 laying hens and does not use a liquid manure handling system	Large CAFO	regulatory definition
from 25,000 to 81,999 laying hens, does not use a liquid manure handling system, and meets one of the medium category discharge criteria	Medium CAFO	regulatory definition
from 25,000 to 81,999 laying hens, does not use a liquid manure handling system, and has been designated by the permitting authority	Medium CAFO	designation
fewer than 25,000 laying hens, does not use a liquid manure handling system, and has been designated by the permitting authority	Small CAFO	designation

The thresholds in Table 16-11 apply to operations that confine broilers, roasters, pullets, or breeders **and** do not use a liquid manure handling system. These chicken operations typically use enclosed housing and dry litter systems. A chicken operation that uses a liquid manure handling system is subject to thresholds for the sector “chickens (operations with a liquid manure handling system)” (Table 16-9). A layer operation that does not use a liquid manure handling system is subject to thresholds for the sector “laying hens (operations with other than a liquid manure handling system)” (Table 16-10).

Chicken operations with uncovered litter stockpiles are treated as operations with liquid manure handling systems and are subject to the Large CAFO threshold of 30,000 chickens for operations with a liquid manure handling system. By covering such stockpiles, a chicken operation becomes eligible for the higher thresholds for operations with other than a liquid manure handling system.

Table 16-11. Thresholds for Chickens Other Than Laying Hens (operations with other than a liquid manure handling system)		
An AFO that has ...	is a...	by ...
at least 125,000 chickens other than laying hens and does not use a liquid manure handling system	Large CAFO	regulatory definition
from 37,500 to 124,999 chickens other than laying hens, does not use a liquid manure handling system, and meets one of the medium category discharge criteria.	Medium CAFO	regulatory definition
from 37,500 to 124,999 chickens other than laying hens, does not use a liquid manure handling system, and has been designated by the permitting authority	Medium CAFO	designation
fewer than 37,500 chickens other than laying hens, does not use a liquid manure handling system, and has been designated by the permitting authority	Small CAFO	designation

The thresholds in Table 16-12 apply to duck operations that use a liquid manure handling system. These include operations with “wet” lots, lots with storage ponds, lots with swimming areas, and operations that flush manure from confinement buildings to lagoons. All birds confined at the operation are counted to determine whether the operation meets the thresholds. A duck operation that does not use a liquid manure handling system is subject to thresholds for the sector “ducks (operations with other than a liquid manure handling system)” (Table 16-13).

Table 16-12. Thresholds for Ducks (operations with a liquid manure handling system)		
An AFO that has ...	is a...	by ...
at least 5,000 ducks and uses a liquid manure handling system	Large CAFO	regulatory definition
from 1,500 to 4,999 ducks, uses a liquid manure handling system, and meets one of the medium category discharge criteria	Medium CAFO	regulatory definition
from 1,500 to 4,999 ducks, uses a liquid manure handling system, and has been designated by the permitting authority	Medium CAFO	designation
fewer than 1,500 ducks, uses a liquid manure handling system, and has been designated by the permitting authority	Small CAFO	designation

The thresholds in Table 16-13 apply to any duck operation that does not use a liquid manure handling system. All birds confined at the operation are counted to determine whether the operation meets the thresholds. A duck operation that uses a liquid manure handling system is

subject to thresholds for the sector “ducks (operations with a liquid manure handling system)” (Table 16-12).

Table 16-13. Thresholds for Ducks (operations with other than a liquid manure handling system)		
An AFO that has ...	is a...	by ...
at least 30,000 ducks and does not use a liquid manure handling system	Large CAFO	regulatory definition
from 10,000 to 29,999 ducks, does not use a liquid manure handling system, and meets one of the medium category discharge criteria	Medium CAFO	regulatory definition
from 10,000 to 29,999 ducks, does not use a liquid manure handling system, and has been designated by the permitting authority	Medium CAFO	designation
fewer than 10,000 ducks, does not use a liquid manure handling system, and has been designated by the permitting authority	Small CAFO	designation

Practices That Constitute a Liquid Manure Handling System at Chicken Operations

The thresholds for chicken AFOs in the CAFO definition are based on the type of litter or manure handling system being used. The system is either a liquid manure handling system or other than a liquid manure handling system. A liquid manure handling system includes the use of pits, lagoons, flush systems (usually combined with lagoons), and holding ponds. Systems such as continuous overflow watering, where water is added to manure or litter, are also liquid manure handling systems. In addition, an operation that removes waste from confinement areas and stacks or piles it in areas exposed to rainfall is considered to have a liquid manure system. Such operations include those operations that remove litter from the confinement area and stockpile or store it in remote locations. Permitting authorities may authorize a limited period of temporary storage of litter of no more than 15 days that would not result in the facility’s meeting the definition of a liquid manure handling system (e.g., where this limited time is needed to allow for contract hauling arrangements). Once litter is stockpiled beyond such a temporary period, the uncovered stockpile constitutes a liquid manure handling system and the lower threshold for chickens at 30,000 birds and ducks at 5,000 birds becomes applicable to the operation.

Distinguishing Wet Lot and Dry Lot Duck Operations

For ducks, there are two thresholds for defining an operation as a CAFO: (1) where the animals are raised outside with swimming areas or ponds, or with a stream running through an open lot, or (2) in confinement buildings where water is used to flush the manure to a lagoon, pond, or other liquid storage structure. These types of operations are considered to be wet lots with liquid manure handling systems.

A duck operation using confinement buildings and handling manure and bedding exclusively as dry material; an operation using a building with a mesh or slatted floor over a concrete pit, where the manure is scraped into a waste storage facility; or an operation using dry bedding on

a solid floor is referred to as a “dry” operation. These operations use other than a liquid manure handling system. In the case of operations that stack litter, however, see the discussion above.

AFOs With More Than One Type of Animal

An AFO is defined as a CAFO if any one animal type in confinement meets the threshold for either a Large or Medium CAFO. An operation that meets the threshold for a Medium CAFO must also meet one of the discharge criteria to be defined as a Medium CAFO. Under the revised NPDES CAFO regulation, multiple types of animals are no longer counted together to determine the type and size of a CAFO. However, once a given operation is defined as a CAFO, regardless of animal type, the regulations apply to all the manure, litter, and wastewater generated by all the animals confined at the operation. In the event that waste streams from multiple livestock species are commingled and the regulatory requirements for the species are not the same, the permit must include the more stringent ELG requirements.

Requirements for NPDES Permit for CAFO

The basic elements of an NPDES permit for a CAFO are the same as those of permits issued to other point sources. These elements consist of a cover page, effluent limitations, monitoring and reporting requirements, record-keeping requirements, special conditions, and standard conditions (see Table 16-14). For additional details on the elements of an NPDES permit, refer to the *U.S. EPA NPDES Permit Writers' Manual* (EPA-833-B-96-003).

Element	Description
Cover Page	Serves as the legal notice of the applicability of the permit, provides the authority under which the permit is issued, and contains appropriate dates and signature(s).
Effluent Limitations and Standards	Serves as the primary mechanism for controlling discharges of pollutants to receiving waters (e.g., the specific narrative or numeric limitations applied to the facility and the point of application of these limits).
Monitoring and Reporting Requirements	Identifies all the specific conditions related to the types of monitoring to be performed, the frequencies for collecting samples or data, and how to record, maintain, and transmit the data and information to the permitting authority.
Record-Keeping Requirements	Specifies the types of records to be kept on-site at the permitted facility (e.g., inspection and monitoring records; manure and soil sampling results; time, amount, and duration of land application activities; precipitation records; records of recipients of waste intended for application on land outside the operational control of the CAFO facility).
Special Conditions	In NPDES permits for CAFOs, special conditions must include (1) the requirement to develop and fully implement a nutrient management plan and (2) the requirement that the nutrient management plan address nine minimum practices defined in the regulation. In addition, NPDES permits for CAFOs may include other special conditions as determined necessary by the permitting authority.
Standard Conditions	Conditions that apply to all NPDES permits, such as the requirement to properly operate and maintain all facilities and systems of treatment and control, as specified in 40 CFR 122.41.

Role of the Inspector

The content of a specific permit may vary, but permits will generally address the six elements in Table 16-14. The inspector's role, however, is to determine compliance with the actual permit as written, not what the permit should contain. The permit conditions required by the NPDES CAFO regulations are outlined below to help inspectors understand what provisions they are likely to find in CAFO permits.

CAFOs That Are Not Required to Have an NPDES Permit

Under some limited circumstances, an operation that meets the definition of a Large CAFO might not be required to obtain an NPDES permit. Large CAFOs that do not have the potential to discharge do not need NPDES permits. A Large CAFO is not required to apply for an NPDES permit if (1) the owner/operator has provided evidence to the permitting authority that there is no potential for the operation to discharge manure, litter, or process wastewater to surface waters; (2) the permitting authority agrees; and (3) the permitting authority has provided notice that the CAFO has "no potential to discharge" manure, litter, or process wastewater. "No potential to discharge" means that the CAFO must not discharge manure, litter, or process wastewater from either the production areas or any land application areas to surface waters, even by accident or because of human error. A large CAFO may qualify for a "no potential to discharge" determination if:

- C The owner or operator can show that there is no possibility for any CAFO manure, litter, or wastewater to be added to surface waters under any circumstances or conditions and
- C The operation has not had a discharge for at least the past 5 years.

The "no potential to discharge" determination is intended to provide relief where there truly is no potential for a Large CAFO's manure or wastewater to reach surface waters under any circumstances or conditions. For example, the operator of a CAFO that meets the following conditions might be able to demonstrate to the permitting authority that the CAFO has no potential to discharge:

- C Located in an arid or semiarid environment.
- C Stores all its manure or litter in a permanent, covered containment structure that precludes wind dispersal and prevents precipitation from contacting the manure or litter.
- C Has sufficient containment to hold all process wastewater and contaminated storm water.
- C Does not land apply CAFO manure or litter because, for example, the CAFO sends all its manure or litter to a regulated, off-site fertilizer plant or composting facility.

The "no potential to discharge" determination is not available to medium AFOs because the existence of a discharge is incorporated into the definition of a Medium CAFO. Small operations may become CAFOs only through designation, so the determination is not applicable.

NPDES Permit Effluent Limitations and Standards for CAFOs

Section 301 of the Clean Water Act prohibits the discharge of pollutants from a point source into waters of the United States except in accordance with an NPDES permit. Effluent limitations are the primary mechanism in NPDES permits for controlling discharges of pollutants to receiving waters. The CAFO ELGs are at 40 CFR Part 412.

Applicable Technology Standards for CAFOs

The CAFO ELGs, published on February 12, 2003, are applicable to only those operations that meet the regulatory definition of a Large CAFO. The CAFO ELGs establish the technology-based effluent limitations and standards for Large CAFOs. Table 16-15 provides the specific regulatory citations of the ELGs applicable to each animal sector. In the case of Medium and Small CAFOs, the permit writer develops effluent limitations (including the technology-based limitations and standards) on a case-by-case basis. The authority to issue case-by-case permit limitations comes from section 402(a)(1) of the CWA and 40 CFR 122.44(a) and 125.3. These case-by-case effluent limits are referred to as best professional judgment (BPJ) permit limitations.

Permit limitations are based on BPJ when national ELGs that apply to the appropriate industrial category, or to the particular process involved, have not been issued. For example, there are no ELGs for Small or Medium CAFOs or for “exotic” animal species, and there are no applicable ELGs for the land application areas at large horse, sheep, or duck CAFOs.

It is important for the compliance inspector to recognize that the CAFO ELGs do not address some discharges that might occur at a CAFO, such as discharges of plate chiller water and filter backwash water; pollutants (such as manure, feathers, and feed) that have fallen to the ground immediately downwind from confinement building exhaust ducts and ventilation fans and are carried by storm water runoff to waters of the United States; and discharges associated with the use of disinfectants in the production area. If these potential discharge sources are present, the inspector should determine whether they have been included in the ELGs specified in the permit (through the use of BPJ by the permit writer) and whether any discharges to waters of the United States have occurred in violation of CWA requirements.

Animal Sector	ELG Technology-Based Limits
Large CAFOs	40 CFR Part 412
Subpart A - Horses and sheep	40 CFR 412.13
Subpart B - Ducks	40 CFR 412.22
Subpart C - Dairy cows and cattle other than veal calves	40 CFR 412.33 and 412.37
Subpart D - Swine, poultry, and veal calves	40 CFR 412.45 and 412.47
Medium CAFOs - Horses, sheep, duck, dairy cows, cattle, swine, poultry, and veal calves	BPJ
Small CAFOs - Horses, sheep, duck, dairy cows, cattle, swine, poultry, and veal calves	BPJ
Other CAFOs - Alligators, geese, emus, ostriches, mink, bison, etc.	BPJ

Technology-based ELGs for Large CAFOs

The ELGs address two main areas of Large CAFOs—the production area and the land application areas. The following sections describe the requirements that will be included in permits for CAFOs that are subject to the ELGs. In some cases the permitting authority might include additional effluent limitations in the permit.

Production Area ELG Requirements for Existing Large CAFOs

The production area of the CAFO includes the animal confinement area, the manure storage area, the raw materials storage area, and the waste containment areas. No discharges of manure, litter, or wastewater from the production area of the CAFO may enter waters of the United States. In addition, the CAFO must comply with specific record-keeping requirements.

The ELG requirements for Large CAFOs do allow a discharge caused by rainfall events, but only if the facility meets certain conditions. Dry-weather discharges are never allowed.

Discharges from the production areas of a Large horse, sheep, beef, dairy, swine, turkey, or chicken CAFO are allowed if the operation meets all the following conditions:

- C The production area must be designed, built, operated, and maintained to handle all the manure, litter, and process wastewater, including the runoff and direct precipitation (rain) from all normal rainfall events up to a *25-year, 24-hour rainfall event*. To meet this requirement, the design volumes of the storage structures need to account for the following:
 - T The maximum length of time before emptying the structures (the storage period).
 - T All waste accumulated during the storage period.
 - T Normal precipitation and evaporation during the storage period.
 - T Normal runoff during the storage period.
 - T The direct precipitation from a 25-year, 24-hour rainfall event.
 - T The runoff from a 25-year, 24-hour rainfall event.
 - T Residual solids after liquid has been removed.
 - T Necessary freeboard to maintain storage integrity.
 - T For treatment lagoons, a minimum treatment volume and any additional storage needed to meet management goals or other regulatory requirements.
- C The discharge may consist of only overflows caused by the rainfall event. Dry-weather discharges are not allowed.
- C The operation must comply with all record-keeping requirements specified in the ELGs. (The specific requirements are discussed later in this section.) If the operation is not keeping the required records, no discharges are allowed.

Discharges caused by poor operation or management are never allowed, even if it is raining. The regulation requires that the production area must be properly designed, constructed, operated, and maintained. Proper design and operation includes designing lagoons for the rainy season, draining lagoons before the rainy season begins, and not applying manure to saturated soils or during rain events. Proper operation and maintenance also includes activities such as dewatering when appropriate and in accordance with a nutrient management plan. Occasionally a series of rainfall events that are far above normal rainfall might occur so close together that they prevent dewatering. Under such conditions, even though storage structures have been properly designed, constructed, and managed, a series of small storms could however, cause a permissible overflow. With proper planning and maintenance, however, the operation should usually be able to avoid these situations.

Production Area ELG Requirements for New Source Large CAFOs

Some new CAFOs designed and built after April 14, 2003, are subject to more stringent ELG requirements for the production area. (No additional requirements apply to the land application areas for new source CAFOs.) For additional information concerning the requirements for new sources, refer to the *NPDES Permit Writers' Guidance Manual and Example NPDES Permit for CAFOs*.

Production Area Additional Measures and Record-keeping Requirements for All Large CAFOs

The following is a general summary of additional measures and record-keeping requirements for the production area that are applicable to all Large CAFOs. The specific requirements are listed in 40 CFR 412.37(a) and (b). The NPDES permit for Large CAFOs will include the following additional measures and record-keeping requirements:

- C Routine visual inspections of the CAFO production area. At a minimum the following visual inspections must be performed:
 - T Weekly visual inspections of all storm water diversion devices, runoff diversion structures, and devices channeling contaminated storm water to the wastewater and manure storage and containment structure.
 - T Daily visual inspections of all water lines, including drinking water or cooling water lines.
 - T Weekly inspections of the manure, litter, and process wastewater impoundments. The inspection will note the level in liquid impoundments as indicated by the depth markers.
 - T Any deficiencies found as a result of these inspections must be corrected as soon as possible.
- C Installation of depth markers in all open-surface liquid impoundments (excluding for example, in under-house pits) that clearly indicate the minimum capacity necessary to contain the runoff and direct precipitation of the 25-year, 24-hour rainfall event or the 100-year, 24-hour rainfall event, whichever is applicable.
- C No disposal of animal mortalities in any liquid manure or process wastewater systems and the handling of animal mortalities so as to prevent discharge of pollutants to waters of the United States, unless alternative technologies pursuant to 40 CFR 412.31(a)(2) and approved by the Director of the permitting authority are designed to handle mortalities.
- C Complete on-site records documenting implementation of all required additional measures and any other records specified by the permitting authority. The specific records required by the CAFO ELGs and the NPDES CAFO regulations are discussed later in this section.

Land Application Area Requirements for Large Beef Cattle, Dairy Cattle, Veal Calf, Swine, Turkey, and Chicken CAFOs

The land application area is any land that is under the control of the CAFO owner or operator — regardless of whether it is owned, rented, or leased — and to which manure or process wastewater from the production area is (or might be) applied. For example, if the CAFO applied litter to field “A” last year and does not intend to apply litter there again until next year, that field is still part of the CAFO’s land application area for purposes of the nutrient management plan. The land application requirements are the same for existing and new sources. The land application requirements specified in the CAFO ELGs (40 CFR 412.4) are applicable to all Large beef cattle, dairy cattle, veal calf, swine, turkey, and chicken CAFOs (Large CAFOs subject to 40 CFR Part 412, Subparts C and D).

The CAFO ELGs require that all Large beef cattle, dairy cattle, veal calf, swine, turkey, and chicken CAFOs properly apply manure, litter, or wastewater to land application areas under the control of the CAFO operator. This is done by implementing best management practices (BMPs) developed in accordance with a nutrient management plan. The CAFO’s nutrient

management plan must be designed to achieve realistic production goals, while minimizing nitrogen and phosphorus movement to surface waters.

Even though the CAFO ELGs do not set land application area requirements for horse, sheep, or duck CAFOs, NPDES permits for these operations will require land application BMPs as part of the nutrient management plan. (See NPDES CAFO permit special conditions that are applicable to all CAFOs).

Large beef cattle, dairy cattle, veal calf, swine, turkey, and chicken CAFOs must also implement the following BMPs and any other BMPs required by their permits (as specified in the ELGs):

- C Land apply manure, litter, and process wastewater in accordance with a nutrient management plan that specifies application rates for each field. The permitting authority will establish technical standards that must be used to determine land application rates.
- C At least once a year, collect representative samples of manure, litter, and other wastewater and analyze them for nutrient content, including nitrogen and phosphorus.
- C At least once every 5 years, collect representative soil samples from all fields where manure, litter, and process wastewater are applied and analyze them for phosphorus content.
- C Maintain a setback area within 100 feet of any down-gradient surface waters, open tile intake structures, sinkholes, agricultural well heads, or other conduits to surface waters where manure, litter, and other wastewaters are not applied. As a compliance alternative, the CAFO may elect to establish a 35-foot vegetated buffer where manure, litter, and other wastewater are not applied. The CAFO owner or operator may demonstrate to the permitting authority that a setback or vegetated buffer is unnecessary because of site-specific conditions or practices.
- C Periodically conduct leak inspections of equipment used for land application of manure, litter, or wastewater.

If a CAFO has a permit and is in full compliance with the permit, which includes properly developing and implementing the nutrient management plan, precipitation-related runoff from the land application area is an allowable discharge. On the other hand, if a CAFO does not have a permit or does not have a nutrient management plan, or the CAFO operator does not follow the nutrient management plan when applying manure, litter, and process wastewater, a discharge from the land application area of the CAFO is a violation of the Clean Water Act.

Technical Standard for Nutrient Management

The ELG determination of appropriate application practices for manure, litter, and process wastewater must be done in accordance with the technical standards established by the permitting authority. These technical standards guide the development of the site-specific nutrient management plan and must include a field-specific assessment of the potential for nitrogen and phosphorus transport from the field to waters of the United States. In addition, the standards must address the form, source, amount, timing, and method of application of nutrients on each field to achieve realistic production goals, while minimizing nitrogen and phosphorus movement to waters of the United States. The technical standards for nutrient management are also to include appropriate flexibility for any CAFO to implement nutrient management practices to comply with the standards.

The NPDES compliance inspector should verify that the permittee has used the nutrient management technical standard established by the permitting authority to develop and implement the site-specific nutrient management plan.

NPDES Permits for CAFOs: Special Conditions

The CAFO regulations establish two special conditions that must be included in all NPDES CAFO permits and one additional special condition applicable to only Large CAFOs. In addition, the permitting authority may include other special conditions in the NPDES permit.

Special Condition for All CAFOs: Develop and Implement a Nutrient Management Plan

The NPDES CAFO regulations specify that the NPDES permit for any CAFO must include a special condition requiring the CAFO, regardless of size, to develop and implement a nutrient management plan. The goal of the nutrient management plan is to minimize the CAFO's impact on water quality. The plan must describe the practices and procedures that will be implemented at the operation to meet all the production area and land application area requirements that apply.

The nutrient management plan must address land application of manure and wastewater on all land under the operational control of the CAFO operator or owner. Operational control of land includes ownership, rental agreements, leases, and access agreements.

Certified Specialists and Nutrient Management Plans

EPA's CAFO regulations do not mandate that the required site-specific nutrient management plan be developed by a certified specialist or technical service provider. However, compliance inspectors should view the use of these professionals favorably when determining whether the plan complies with permit requirements (ELGs and NPDES minimum practices).

A certified specialist is a person who has a demonstrated capability to develop Nutrient Management Plan (NMPs) in accordance with applicable U.S. Department of Agriculture (USDA) or state standards and is certified by USDA or a USDA-sanctioned organization. States have the discretion to require the use of such specialists to prepare or approve plans.

Requirements for Updating Nutrient Management Plans

CAFOs are dynamic operations where changes to the operational practices are made continually. The site-specific nutrient management plan needs to reflect the current operational practices of the CAFO and for that reason will need to be modified and updated. The compliance inspector should verify that the nutrient management plan is being updated in accordance with permit requirements. At a minimum NPDES permits for CAFOs should require that nutrient management plans be reviewed and updated at the time of permit renewal. The *NPDES Permit Writers' Guidance Manual and Example Permit for CAFOs* includes a recommendation that NPDES permits for CAFOs also specify that the nutrient management plan be updated (1) when the CAFO makes a substantive change in how it manages operations, including the location, method, timing, or frequency of land application, and

significant changes to crop rotations or yearly cropping patterns, or (2) when a discharge occurs in violation of the CAFO's NPDES permit.

Special Condition for All CAFOs: Address Minimum Practices

The nutrient management plan must include BMPs and procedures necessary to implement the applicable ELGs for CAFOs. The nutrient management plan must also include, to the extent applicable, a set of minimum practices (see 40 CFR 122.42(e)(1)(i-ix). These NPDES nutrient management plan minimum practices are as follows:

- Ensure adequate storage of manure, litter, and process wastewater, including procedures to ensure proper operation and maintenance of the storage facilities.
- Ensure proper management of mortalities (dead animals) to ensure that they are not disposed of in a liquid manure, storm water, or process wastewater storage or treatment system that is not specifically designed to treat animal mortalities.
- Ensure that clean water is diverted, as appropriate, from the production area.
- Prevent the direct contact of confined animals with waters of the United States.
- Ensure that chemicals and other contaminants handled on-site are not disposed of in any manure, litter, process wastewater, or storm water storage or treatment system unless the system is specifically designed to treat such chemicals or contaminants.
- Identify appropriate site-specific conservation practices to be implemented, including as appropriate buffers or equivalent practices, to control runoff of pollutants to waters of the United States.
- Identify protocols for appropriate testing of manure, litter, process wastewater, and soil.
- Establish protocols to land apply manure, litter, or process wastewater in accordance with site-specific nutrient management practices that ensure appropriate agricultural utilization of the nutrients in the manure, litter, or process wastewater.
- Identify specific records that will be maintained to document the implementation and management of the minimum elements described above.

The *NPDES Permit Writers' Guidance Manual and Example Permit for CAFOs* states that permitting authorities are to include these nine minimum practices in NPDES permits as stand-alone, enforceable special conditions to help ensure these requirements are ultimately met [see also CWA§402(a)(1) and (2)]. The NPDES CAFO regulations require that these practices be fully implemented by the date specified in the permit, but no later than December 31, 2006.

Table 16-16 provides recommended permit conditions to achieve each of the minimum practices as specified in the *NPDES Permit Writers' Guidance Manual and Example Permit for CAFOs*. The specific minimum practices incorporated into a permit as special conditions by the permit authority may differ from those in Table 16-16, but in all cases the special conditions must be in accordance with the minimum practices specified at 40 CFR 122.42(e)(1)(i-ix).

Table 16-16. NPDES CAFO Permit Minimum Practices
<p>ENSURE ADEQUATE STORAGE¹ CAPACITY Develop and implement specific practices and associated structures to ensure adequate storage capacity to achieve permit limitations including:</p> <ul style="list-style-type: none"> - Maintain sufficient capacity in liquid manure, wastewater, or storm water storage structures to ensure compliance with all permit requirements. - Store dry manure in production buildings or in storage facilities or otherwise store it in such a way as to prevent polluted runoff. - Provide adequate storage capacity to ensure compliance with the nutrient management technical standard approved by the permitting authority. - Ensure proper operation and maintenance of all manure, wastewater, and storm water storage facilities.

Table 16-16. NPDES CAFO Permit Minimum Practices	
ENSURE PROPER MANAGEMENT OF MORTALITIES	Handle and dispose of dead animals in a manner that prevents contamination of waters of the United States.
DIVERSION OF CLEAN WATER	Develop and implement management practices to divert clean water from the production area. Clean water includes rain falling on the roofs of facilities, runoff from adjacent land, and other sources. If clean water is not diverted from coming into contact with manure or process wastewater, it must be collected in accordance with permit requirements.
PREVENTION OF DIRECT CONTACT OF ANIMALS WITH WATERS OF THE UNITED STATES	Develop and implement appropriate controls to prevent access of animals to waters of the United States in the production area.
CHEMICAL HANDLING	Develop and implement controls to prevent the inappropriate introduction of chemicals into the manure, wastewater, and storm water storage and handling system. Examples include pesticides, hazardous and toxic chemicals, and petroleum products and by-products.
CONSERVATION PRACTICES TO CONTROL NUTRIENT LOSS	For land application areas under the control of the CAFO operator, develop and implement practices that are sufficient to minimize the discharge of pollutants to waters of the United States. These practices may include, but are not limited to, residue management, conservation crop rotation, grassed waterways, strip cropping, vegetated buffers, riparian buffers, setbacks, terracing, and diversions.
PROTOCOLS FOR MANURE AND SOIL TESTING	Identify and implement specific manure, wastewater, and soil sample collection and analysis protocols to be used in developing and implementing the nutrient management plan. At a minimum the protocol is to specify the collection and analysis of manure, litter, and other process wastewaters annually for nutrient content, including nitrogen and phosphorus. The protocol is to specify the collection and analysis of soil samples for phosphorus content at least once every 5 years for all fields under the control of the CAFO operator where manure and wastewater might be applied. In all cases the sampling frequency for both manure, litter, and wastewater and soil is to be consistent with the technical standard for nutrient management established by the Director.
PROTOCOLS FOR THE LAND APPLICATION OF MANURE AND PROCESS WASTEWATER	Develop and implement protocols to apply manure, litter, and process wastewater in accordance with the technical standard for nutrient management established by the Director.
RECORD KEEPING	Maintain all records necessary to document the development and implementation of the nutrient management plan and compliance with the minimum practices defined in the permit. In addition, records that document compliance with the effluent limitations specified in the permit must be maintained .

Source: *NPDES Permit Writers' Guidance Manual and Example Permit for CAFOs*, December 2003.

¹ Storage includes waste ponds and lagoons and other structures such as tanks (above and below ground) and staking facilities (concrete pad, walls, and a roof).

Duty to Maintain Permit Coverage Until the CAFO Is Properly Closed

NPDES permit coverage must be maintained until the facility has ceased operation or is no longer a CAFO and the permittee has demonstrated to the satisfaction of the permitting authority that there is no remaining potential for a discharge of the manure, litter, or process wastewater that was generated while the operation was a CAFO, other than agricultural storm water from land application areas.

Once an operation is issued an NPDES permit, that permit remains in place for the entire permit term independent of the specific number of animals confined at any one time until the permit is modified or terminated in accordance with applicable NPDES regulations.

Special Condition for Large CAFOs: Meet Manure Transfer Requirements

NPDES permits for Large CAFOs must include specific requirements concerning the transfer of manure, litter, or process wastewater to other persons. The permit must require the operator to provide all recipients of manure and wastewater generated by the CAFO with the most current manure nutrient analysis. These records are to be maintained for a period of 5 years from the date the manure, litter, or process wastewater is transferred.

NPDES Permit for CAFOs: Monitoring, Reporting, and Record-Keeping Requirements

This section includes all the record-keeping, monitoring, and reporting requirements for Large CAFOs. Table 16-17 is an integrated list of the records required by the NPDES CAFO regulation and ELGs for Large CAFOs. In addition, the permitting authority may include record-keeping requirements beyond those specified in Table 16-17. For Medium and Small CAFOs, the regulations require only that the records include the site-specific nutrient management plan and any records necessary to document compliance with each NPDES nutrient management plan minimum practice. Records associated with the ELGs for these operations would be defined in the permit because the ELGs for these operations are established by the permit writer using BPJ.

Table 16-17. NPDES Large CAFO Permit Record-Keeping Requirements		
Parameter	Units	Frequency
Nutrient Management Plan (Note: Required by the NPDES CAFO Regulation – applicable to all CAFOs)		
The CAFO must maintain on-site a current site-specific nutrient management plan that reflects existing operational characteristics. The operation must also maintain on-site all necessary records to document that the plan is being properly implemented with respect to manure and wastewater generation, storage and handling, and land application. In addition, records are to be maintained to show that the development and implementation of the nutrient management plan are in accordance with the minimum practices defined in 40 CFR 122.42(e).	N/A	Maintain at all times
Soil and Manure/Wastewater Nutrient Analysis (Note: Required by the CAFO ELGs – applicable to Large CAFOs)		
Analysis of manure, litter, and process wastewater to determine nitrogen and phosphorus content. ¹	Parts per million (ppm) Pounds/ton	Conduct initial sampling, then at least annually
Analysis of soil in all fields where land application activities are conducted to determine phosphorus content. ¹	ppm	Conduct initial sampling, then at least once every 5 years
Operation and Maintenance (Note: Required by the CAFO ELGs – applicable to Large CAFOs except as noted)		
Visual inspection of all water lines.	N/A	Daily ²
Documentation of depth of manure and process wastewater in all liquid impoundments.	Feet	Weekly
Documentation of all corrective actions taken.	N/A	As necessary

Table 16-17. NPDES Large CAFO Permit Record-Keeping Requirements		
Parameter	Units	Frequency
Documentation of animal mortality handling practices.	N/A	As necessary
Design documentation for all manure, litter, and wastewater storage structures, including the following information:		
- Volume for solids accumulation	Cubic yards/ gallons	Once in the permit term unless revised
- Design treatment volume	Cubic yards/ gallons	
- Total design storage volume ³	Cubic yards/ gallons	
- Days of storage capacity	Cubic yards/ gallons Days	
Documentation of all overflows from all manure and wastewater storage structures, including the following: (Note: Required by the NPDES Regulation – applicable to all CAFOs)		
- Date and time of overflow	Month/day/year	Per event
- Estimated volume of overflow	Total gallons	Per event
- Analysis of overflow (as required by the permitting authority)	TBD	Per event
Documentation of manure application equipment inspection.	N/A	Seasonally
Land Application (Note: Required by the CAFO ELG – applicable to Large CAFOs)		
For each application event where manure, litter, or process wastewater is applied, documentation of the following by field:		
- Date of application	Month/day/year	Daily
- Method of application	N/A	Daily
- Weather conditions at the time of application and for 24 hours prior to and following application	N/A	Daily
- Total amount of nitrogen and phosphorus applied ⁴	Pounds/acre	Daily
Documentation of the crop and expected yield for each field.	Bushel/acre	Seasonally
Documentation of test methods and sampling protocols used to sample and analyze manure, litter, wastewater, and soil.	N/A	Once in the permit term unless revised
Documentation of the basis for the application rates used for each field where manure, litter, or wastewater is applied.	N/A	Once in the permit term unless revised
Documentation showing the total nitrogen and phosphorus to be applied to each field, including nutrients from the application of manure, litter, and wastewater and other sources.	Pounds/acre	Once in the permit term unless revised
Manure Transfer (Note: Required by the NPDES CAFO Regulation – applicable to Large CAFOs)		
For all manure transfers the CAFO must maintain the following records:		
- Date of transfer	N/A	As necessary
- Name and address of recipient	N/A	As necessary
- Approximate amount of manure, litter, or wastewater transferred	Tons/gallons	As necessary

¹ Refer to the state nutrient management technical standard for the specific analyses to be used.

² Visual inspections should take place daily during the course of normal operations. The completion of such inspection should be documented in a manner appropriate to the operation. Some operations might wish to maintain a daily log. Other operations might choose to make a weekly entry, when they update other weekly records, that required daily inspections have been completed.

³ Total design volume includes normal precipitation less evaporation on the surface of the structure for the storage period; normal runoff from the production area for the storage period; 25-year, 24-hour precipitation on the surface of the structure; 25-year, 24-hour runoff from the production area; and residual solids.

⁴ Including quantity/volume of manure, litter, or process wastewater applied and the basis for the rate of phosphorus application.

Monitoring and Reporting

NPDES permits for CAFOs incorporate monitoring and reporting requirements consistent with the minimum reporting requirements at 40 CFR Part 122.41(l). The permit may also include monitoring and reporting requirements that address nonroutine activities. For example, discharges at a CAFO can occur because of an overflow during a catastrophic storm event (which can be an allowable discharge under the terms of the permit) or a leak, breach, overflow, or other structural failure of a storage facility due to improper operation, design, or maintenance (which would be an unauthorized discharge). Unauthorized discharges can also occur due to manure releases related to the improper storage or handling of liquid or solid manure, or improper land application. NPDES CAFO permits will require notification (within specific time frames) of the permitting authority, specific data collection activities, and a follow-up report describing such discharges. The monitoring and reporting requirements must ensure that the permittee provides a description; identifies the time and duration of the event, as well as the cause(s); and presents an analysis (if required to determine compliance by the permitting authority) of the discharge. The NPDES CAFO permit guidance recommends the analysis include, at a minimum, total nitrogen, ammonia nitrogen, phosphorus, pH, temperature, *Escherichia coli* or fecal coliform bacteria, 5-day biochemical oxygen demand (BOD₅), and total suspended solids. The analysis is to be performed in accordance with approved EPA methods for wastewater analysis listed in 40 CFR Part 136. The permitting authority may specify additional parameters at its discretion.

Annual Report

All NPDES permits for CAFOs will include a requirement for the permittee to submit an annual report to the permitting authority with specific information defined in the regulation [40 CFR 122.42(e)(4)]. The annual reports submitted by permitted operations will yield valuable information for the compliance inspectors and should be reviewed before conducting an inspection.

16. C. CAFO Inspection Overview

This section provides a general overview of the purpose of AFO/CAFO inspections, the authority for EPA to conduct these inspections, and how facilities are selected for inspection. A brief summary of the implementation plan for the revised CAFO regulations is also included. In addition, this section provides a general overview of the process of a CAFO inspection and the safety and bio-security issues that might be encountered.

Purpose of AFO/CAFO Inspections

An inspection at an animal feeding operation is typically a compliance evaluation inspection, in which the facility is being inspected to determine whether it is complying with the requirements of the CWA. Another purpose of an AFO/CAFO inspection is to evaluate whether the requirements of any other federal environmental laws are applicable to the facility and, if so, whether the facility is in compliance with such requirements. An inspection of an AFO or CAFO may be conducted for the following reasons:

- C Compliance inspection at a permitted facility to evaluate the facility's compliance with the requirements of its NPDES permit.
- C Inspection at a nonpermitted AFO to determine whether the facility meets the basic definition of a CAFO, whether the facility has caused or is likely to cause water pollution, and whether the facility should have an NPDES permit.
- C Routine inspection.
- C To follow up on a citizen tip or complaint.
- C For case development support after a violation has been identified.
- C To determine whether a facility should be designated as a CAFO.
- C For a follow-up inspection to ensure that the permittee has implemented required controls or BMPs.
- C Compliance inspection to ensure compliance with settlement requirements.

EPA Authority for AFO/CAFO Inspections

EPA has the authority to regulate and inspect CAFOs through statutory requirements established in the CWA:

- C 40 CFR 122.23 defines CAFOs as point sources subject to the NPDES permitting program.
- C 40 CFR 123.26 establishes procedures and objectives for routine inspections of NPDES-permitted facilities by state programs.
- C Section 402 of the CWA states that permittees issued permits for point source discharges of pollutants must meet specific discharge limits and operating conditions.
- C Section 308 of the CWA authorizes inspections and monitoring to determine whether NPDES permit conditions are being met.
- C Under the CWA, EPA may conduct an inspection wherever there is an existing NPDES permit, where a discharge exists or might exist, and where no permit has been issued. The CWA established enforcement authorities. EPA retains independent authority to take enforcement actions in both authorized and unauthorized states.
- C Section 309(a) allows EPA to administer administrative compliance orders for persons violating the CWA and to set a reasonable schedule for compliance (violation notice).
- C Section 309(g) allows EPA to assess administrative penalties of two classes. Administrative actions may preclude other civil action penalties or citizen suits.

- Class I, with an informal hearing process, can carry penalties of up to \$25,000.
- Class II involves formal administrative procedure hearings with penalties of up to \$125,000.
- C Sections 309(b) and (d) and 404 provide for injunctive relief and civil penalties of up to \$25,000 per day for each violation of the act.
- C Section 309(c) provides for criminal penalties of a fine of \$2,500 to \$25,000 per day, or up to 1 year of imprisonment, or both, for negligent violations of the act (for subsequent convictions, fines of up to \$50,000 per day or 2 years of imprisonment, or both, may be called for).

Selection of Facilities for Inspection

Although, specific procedures will vary by EPA Region and by authorized state, the basic approach is similar. Some facilities are selected for inspection based on “probable cause,” which means that the regulatory agency has obtained specific evidence of a possible existing violation at a facility. Inspections are conducted in response to citizen complaints about a specific facility, emergency situations such as reports of ongoing spills, information about specific water quality problems or fish kills, or as a follow-up to prior inspections indicating violations at the same facility or at other facilities owned or operated by the same person. Facilities are also selected through the Neutral Administrative Inspection Scheme, in which the regulatory agency does not have any prior information indicating that there are existing violations. These are routine inspections to evaluate compliance. Facilities are selected using the Neutral Administrative Inspection Scheme, and priority should be given to facilities that meet one or more of the following criteria:

- C Are Large CAFOs
- C Are in priority watersheds impaired by runoff from AFOs
- C Are subject of citizen or government tips and complaints
- C Are in watersheds with high AFO or CAFO density
- C Are near surface waters
- C Have the potential for large amounts of animal waste to reach surface water

CAFO Permitting and Compliance Strategy

The EPA CAFO Permitting and Compliance Strategy was developed in the summer of 2003 to address the permitting, compliance, and enforcement efforts by EPA (headquarters and regions) and states to ensure that the following actions occur:

- C Permit authorities revise their regulations
- C CAFOs are provided with effective compliance assistance support
- C CAFOs are issued NPDES permits and develop nutrient management plans by December 2006
- C Inspections and enforcement actions occur when necessary

The strategy covers the 5-year period beginning with the publication of the final CAFO regulations in February 2003. The CAFO Implementation Plan provides for the following:

- C The use of tailored approaches at the state level that reflect the specific status of their existing CAFO program. Encouraging interagency cooperation and coordination by partnering with USDA where appropriate.
- C Regions taking leadership in working with their states to develop regional implementation plans that reflect both state and federal priorities to ensure a consistent national approach.
- C Taking the necessary steps to improve the quality of information in the Permit Compliance System concerning CAFO permits.
- C The development of a system that is focused on program progress and addresses emerging problems. This part of the strategy will focus on the identification and tracking of specific deadlines for permitting authorities to complete necessary program revisions, issue permits, and develop compliance assistance programs.
- C Outreach and coordination with stakeholders to provide timely compliance assistance information on regulatory requirements.
- C Issuance of guidance to facilitate permit issuance, development and implementation of nutrient management plans, and the approval of alternative technologies by permitting authorities.
- C The development of measures of success and targeted evaluation tools.

General Process of an Inspection

Pre-Inspection Activities

The primary role of the inspector is to gather information that can be used to evaluate compliance with permit conditions, applicable regulations, and other requirements. Inspectors should be familiar with the conditions of the specific permit and with all applicable statutes and regulations. Prior to conducting a CAFO inspection, the inspector should complete the following specific pre-inspection preparation activities:

- C Become familiar with the facility location and its geographic features.
- C Review the conditions of the permit.
- C Review prior inspection notes and issues, along with any previous site entry problems.
- C Review prior compliance problems, enforcement actions, and correspondence.
- C Answer these questions: Does the facility require extra safety requirements? Will biohazards be an issue?
- C Determine whether there any potential bio-security issues at the facility.

To facilitate the CAFO inspection process, a detailed checklist based on the NPDES CAFO regulations and CAFO ELGs requirements has been developed. The checklist is useful in collecting information associated with the nutrient management plan and the minimum practices. It is included in Appendix AA.

Onsite Activities

Upon arrival at the facility, the inspector must show credentials as a form of identification to gain access. To conduct the inspection, the inspector uses an inspection checklist, a notebook for field notes, and a camera to take photographs. The inspectors should ask to see the CAFO

owner or operator, or the designated representative for the facility. The typical sequence of events that occur during the inspection is as follows:

- C Entry interview
- C Record and document review
- C Facility tour
- C Exit interview

Some portions of the inspection can be completed without the assistance or accompaniment of the facility representative. Although most inspections are unannounced, CAFO inspectors should be aware that they might have to call the facility prior to the time of inspection to announce their arrival because small farm operators might not be able to stop production and assist the inspector with the inspection process. In addition, the inspector might need to know the facility's bio-security procedures before the time of inspection. The inspector should be able to determine compliance with a permit or the CAFO status of a facility with an unannounced inspection.

Entry Interview

The purpose of the entry interview is for the inspector to

- C Present credentials authorizing the inspection.
- C Seek consent for an on-site inspection.
- C Inform the facility owner or operator of the scope and purpose of the inspection.
- C Provide a copy of the NPDES regulations or other fact sheets concerning the regulation of CAFOs.
- C Ask basic information about the facility. Information and documents that the inspector should request include the following:
 - Verification of the name, address, and telephone number of the facility.
 - A determination of who is the authorized representative for the facility.
 - A determination of whether the facility is being leased, along with the names, addresses, and telephone numbers of the lessor and lessee.
 - Copies of specific records that might be required by the permit.
 - Questions concerning the history of the facility, including any discharges that might have occurred.
 - A determination of conditions as they exist at the time of the inspection.
- C If desired, inform the operator what information, if any, will be available at the conclusion of the inspection.

The inspector should ask the facility owner or operator questions about the management and control of wastes from maintenance facilities, releases of chemicals to the environment, bulk fuel storage, pesticide usage, and other issues specified in the permit.

Record and Document Review

The inspector should also ask to see the records required to be kept by the facility's permit, the specific management plans, and the records to verify that the facility is complying with the terms and conditions of its permit. The inspector may ask to see all records or may ask for just a random sample to evaluate.

Typical records that the inspector may ask the facility to produce include the following:

- C Animal inventory records.
- C Records of waste levels in the retention structure.
- C Manure and wastewater application records such as the following:
 - Date(s) of application
 - Location(s) of applications
 - Crop rotations
 - Soil, manure, and wastewater nutrient testing results
- C NPDES permit for the facility.
- C Lease(s) or rental agreements.
- C “Spreading agreements” if wastes are applied on land not owned or leased by the facility.
- C Construction plans or as-built drawings of the facility.
- C Nutrient management plan.

As needed, the inspector should ask to photocopy documents that will assist in preparing the inspection report. These documents may include a site map of the facility, drainage information, discharge reports, or other facility documentation.

Facility Tour

After reviewing the records and documents, the inspector asks the facility representative to accompany him or her on a tour of the facility. The purpose of the site tour is to assess existing conditions and confirm that the facility conforms to the description in the permit. During this phase of the inspection, the inspector might want to observe the following portions of the facility to assess structural integrity, maintenance condition, and storage availability:

- C Solids sedimentation basins
- C Manure and wastewater handling equipment
- C Waste retention structures
- C Catch basins
- C Floor drains
- C Fuel storage areas
- C Depth markers and required liquid levels
- C Maintenance facilities
- C Runoff storage structures

To document the findings of the inspection, the inspector should photograph or videotape aspects of the operation. If the facility is discharging during the course of the inspection or there is evidence that the facility has recently discharged, the inspector might also take samples. During the course of the facility tour, the inspector might determine that additional records or documents need review. The inspector should ask the facility representative as soon as this has been determined to facilitate the retrieval of the needed information.

Exit Interview

Following the facility tour, the inspector conducts a debriefing or exit interview with the facility representative. This phase of the inspection allows both parties to follow up on the inspection or

to clarify issues that arose during the inspection. If any records or documents were obtained during the inspection, the inspector prepares a Receipt for Documents and Samples. The inspector also gives the facility the opportunity to claim that some or all of the information provided during the inspection is confidential business information (CBI).

The inspector may relay basic findings of the inspection. If the inspector needs additional information from the facility or if another entity will complete the evaluation, the inspector might not be able to provide a list of the findings during the inspection. The inspector does not make the determinations of compliance or noncompliance of the facility; that determination is made by other enforcement personnel of the regulatory agency. Once the inspector has reviewed all the information obtained during the inspection, an inspection report is prepared. The inspection report includes the inspection checklist, documentation copied during the inspection, an explanation of findings, and supporting photographs. In some cases, the inspector might need to contact the facility if additional information is needed or issues require clarification.

Compliance personnel for the regulatory authority review the inspection report and evaluate whether the facility is in noncompliance and what type of follow-up action, if any, is appropriate. Copies of the report are sent to the inspected facility. EPA responds to noncompliance in a number of different ways, depending on the nature and circumstances of the violation:

- C No follow-up needed
- C Letter notifying the facility of violations or compliance assistance
- C Administrative compliance order
- C Administrative compliance order plus administrative penalty
- C Civil judicial enforcement action (penalties and/or injunctive relief)
- C Criminal enforcement

CAFO Operational Overview

This section presents a brief synopsis of several operations that might take place at a CAFO and some of the elements to note when conducting an inspection. Additional site-specific processes that are beyond the scope of this document might be encountered. When inspecting a facility, the following areas are of concern: animal housing, feeding, and maintenance areas; manure and process wastewater collection and transport; manure and process wastewater storage and treatment; and manure and process wastewater land application.

Animal Housing, Feeding, and Maintenance Areas

Housing areas can be indoor facilities with concrete, metal grate, gravel, clay, or packed earth flooring; outdoor areas with dirt surfaces; or pastureland or rangeland. Pasture areas are not subject to regulation as part of a CAFO except with respect to their use as manure application sites. Livestock housing areas are particularly susceptible to runoff and erosion because of the concentrated populations of manure-producing animals. Soil compaction in soil-based yards (also called dry cow lots, loafing areas, or exercise yards) prevents water infiltration and causes ponding and runoff. Runon and runoff controls, such as grading and berms, are important components of pollution control and prevention in livestock housing areas. An inspector should note whether the animals are treated chemically for pests or if the bedding areas are cleaned

chemically because of the potential for manure contamination by the pesticides. Bedding material, if provided, can consist of peat moss, sawdust, shredded newspaper, straw, or other materials.

Swine housing areas are often enclosed buildings, dirt lots, or outdoor concrete pads. Poultry housing areas are usually enclosed buildings.

Feeding areas inside buildings are often troughs; outside areas typically have a concrete, gravel, or packed-earth surface with troughs or a feed bunker. Although a water trough increases animal traffic in the immediate area, it is advantageous because it allows the operator to restrict access to (fence off) any streams previously used for livestock watering. Poultry houses use feeding bins or trays; water is provided continuously or through on-demand systems such as nipple or cup drinkers.

Animals may spend time in non-pasture areas that are for neither housing nor feeding purposes. These areas may be for such activities as milking, shearing, birthing, breeding, or sales display. If these areas are not pasture, they are part of the CAFO. The inspector will need to observe manure management practices in these areas as well.

Manure and Process Wastewater Management Systems

Manure Collection

Dry manure is usually collected by being pushed, scraped, or scooped up. Slurry manure is generally collected by scraper or pumped after the addition of small amounts of water. Liquid manure is generally collected by flushing with large amounts of water. For indoor facilities, manure may be removed by an automated spraying system, a scraping system, a flushing system beneath the metal grates, or manual removal.

In poultry houses with dry manure systems, the manure that builds up adjacent to the feed and water devices forms a cake (crust). The collection and removal of that cake is called cake removal or crust-out. Poultry houses usually crust out the manure following each flock. A machine called a cruster is often used for this process in poultry houses. Poultry operations with liquid manure systems collect the manure in long pits underneath the birds' cages. Large earthmoving equipment is used to collect manure at large cattle feedlots. Beef cattle pens are usually cleaned after each set of cattle is marketed. Many enclosed swine operations house the hogs on a slotted floor that allows the manure and waste feed to drop through for removal. Manure pits capture the manure as it falls from the animals' containment area. Swine manure removal methods include under-floor flush, open-gutter flush, pit recharge, and hosing. Dairy facilities remove manure through slotted floors, use gutter cleaners or alley scrapers, or flush the alleys with water. Many dairies that remove manure by flushing also recycle this water for multiple flushes. Milking areas usually produce manure and process wastewater, which are generally channeled into the manure and process wastewater handling and storage system.

Manure Transport

The transport of manure is related to the solids content. Dry manure cannot be pumped; liquid manure cannot be scraped. Dry manure is usually transported directly to the land application

site in a box-type manure spreader. Manure spreaders are commonly loaded by tractor bucket loaders or elevated conveyor units. Slurried and liquid manure can be pumped or flushed through pipes and concrete channels to storage or treatment processes. The pipes can be above or below the ground.

Slurry and liquid manure are often loaded into tank trucks or tractor-drawn tanks. Tankers are often loaded by stationary pumps, pumps located on a floating barge, and moveable pumps operated by a tractor PTO drive. Liquid manure is often transported by pumping through permanent and temporary piping to irrigation devices.

Manure Storage and Treatment

In most cases, manure is stored for some period between manure production and manure disposal. This storage can be long-term (180 days or more) or short-term. Manure storage is necessary where disposal or application immediately after collection and removal is impossible or impractical. One such situation is avoiding the application of manure during poor meteorological conditions. For example, if manure is applied during the winter months, it is more likely that the melting snow and spring rains will wash away most of the nutrients before the ground thaws enough to absorb them. Manure is stored in three forms: solid, semisolid, and liquid.

Long-term storage usually consists of liquid or semisolid manure, and the storage vessels typically consist of lagoons or tanks made from glass-lined steel, concrete staves, poured concrete, or earthen waste storage pits. Manure is typically stored for a period of time, then applied to the land. The liquid or semisolid waste may be treated in a lagoon; the methane gas produced is reclaimed, and the remaining waste is applied to fields. Manure in lagoons is biodegraded by bacteria using aerobic or anaerobic processes. To provide an oxygen supply, aerobic lagoons must have aeration equipment or larger surface areas than anaerobic lagoons.

During an inspection the inspector may encounter manure that is stored in piles in fields or pastures, piles on feedlots and in livestock pens, or a watertight manure pit with a concrete- or clay-lined bottom. Short-term-storage manure is usually in solid form. Solid-manure storage areas sometimes have a grass filter strip to absorb any nutrients from leachate. In some cases, solid manure might be composted. Operations that store manure in piles exposed to rainfall in fields or pastures are considered to have a liquid manure handling system. Permitting authorities may authorize a limited period of temporary field storage of manure of no more than 15 days that would not result in the facility's meeting the definition of a liquid manure handling system (e.g., where this limited time is needed to allow for contract hauling arrangements). Once the manure is stockpiled beyond this temporary period, the uncovered stockpile constitutes a liquid manure handling system. The presence of such a liquid manure handling system affects the regulatory thresholds for chicken and duck operations.

Liquid and semisolid dairy wastes are stored using the slurry method or the lagoon method. Slurry storage is usually in a pit, slurry storage tank, or earth basin. Waste in lagoons is usually diluted with water from flush systems or milking parlor washdown. Solid waste storage facilities, both indoor and outdoor, are common at dairies. Swine operations often use manure storage basins or single- or multi-stage lagoons.

Runoff control systems, storage area integrity, and management practices are important to note. Proper siting of storage areas helps prevent contamination of drinking water supplies and other risks to human and animal health.

Land Application Activities

Land application is the most common form of manure use at CAFOs. Solid manure is usually spread using a mechanical manure spreader. Liquid manure can be applied by an irrigation system or surface applied by truck or tanker. It is sprayed on the surface (and, in some cases, later incorporated into the soil) or injected into the soil. Swine operations commonly use manure spreaders for solids or traveling irrigators, permanent irrigation systems, or portable sprinklers for liquids.

The CAFO is to conduct land application of manure and process wastewater in accordance with the applicable CAFO effluent limitations land application BMPs, the site-specific Nutrient Management Plan, the nutrient management technical standard established by the permitting authority, and the NPDES CAFO permit minimum practices.

CAFO Inspection Sampling Procedures

Rather than determining compliance with permit limitations for specific pollution parameters, CAFO sampling is focused on documenting evidence of a nonauthorized discharge to waters of the United States. Inspectors might not know whether they will be able to collect samples prior to arriving at the site but should be prepared to do so. In addition, if there is no discharge at the time of the inspection, inspectors might wish to identify and document likely pathways that a discharge would follow and the name and location of the receiving waters if such a discharge event should occur in the future.

Preparation for sampling is often based on a sampling plan. The plan is usually developed by the inspector, with input from laboratory personnel and legal counsel as appropriate. A sampling plan includes the objectives of the sample, data needs, parameters to be sampled, methods, volumes and holding times of samples, documentation and transport, and quality control procedures. The remainder of this section covers the various elements typical of sampling plans.

Parameters and Types of Samples at CAFOs

Inspectors must know before arriving at a CAFO what parameters they intend to sample to support a determination that an illegal discharge has occurred. This decision is generally made with the input of the EPA legal counsel who would be responsible for managing any enforcement action against the facility. Typical parameters sampled at CAFOs are those which readily show an effect on water quality by the discharge. These might include Biochemical Oxygen Demand (BOD), fecal or total coliform bacteria, specific conductance, and ammonia nitrogen. Many other parameters, however, may appropriately be sampled to document such discharges. Sampling of any one or a combination of these parameters can aid the inspector in documenting an illegal discharge.

Because discharges from CAFOs are likely to be nonroutine and transitory, grab sampling is usually the most appropriate sampling technique. Grab samples are individual samples collected over a period of time (not exceeding 15 minutes). They represent conditions at the time the sample is collected, and they provide information about instantaneous concentrations of pollutants at that specific time. The sample volume needed depends on the types and number of analyses to be performed.

Some parameters may be sampled only by grab sampling, but others may be sampled by either grab or composite sampling. Parameters not amenable to compositing include pH, temperature, dissolved oxygen, chlorine, purgeable organics, oil and grease, coliform bacteria, and others specified in 40 CFR Part 136. Volatile organics, sulfides, phenols, and phosphorus samples can be composited but require special handling procedures. BOD and ammonia nitrogen can be sampled by using either grab or composite techniques; if composite sampling is used, appropriate preservation must be provided during and after the sampling period.

Sample Volume

The volume of samples collected depends on the types and number of analyses needed, as reflected in the parameters to be measured. The volume of the sample obtained should be sufficient for all the required analyses plus an additional amount to provide for any split samples or repeat analyses. The laboratory receiving the sample should be consulted for any specific volume required. Specific recommended minimum sample volumes for different pollutant parameters are provided in EPA's *Methods for Chemical Analysis of Water and Wastes* (USEPA 1979) and *Handbook for Sampling and Sample Preservation of Water and Wastewater* (USEPA 1982), and in the current EPA approved edition of *Standard Methods for the Examination of Water and Wastewater* (American Public Health Association), American Water Works Association, and Water Environment Federation.

Data Handling and Reporting

Verified analytical results are normally entered into a laboratory data management system of some type. The system should contain the sampling data, including sampling time and exact location, dates and times, names of analysts, analytical methods or techniques used, and analytical results. Data are then reported to the inspector for inclusion in the compliance report. Detailed information on laboratory procedures and quality assurance can be found in Chapter Seven of this manual.

Safety Issues and Bio-Security at CAFOs

Inspector Health and Safety

Very few diseases in animals are of concern to humans. However, persons with low immunity can contract a specific respiratory illness from poultry called histoplasmosis. In addition, CAFOs might store pesticides in both concentrated and dilute form. Inspectors should never enter an area where pesticides are being applied. Before entering an area where pesticides have been applied, the inspector should be familiar with the pesticide signs, and should know the type of pesticide applied, the time and date of application, and whether the area is safe to enter.

The other major hazards at CAFOs include toxic gases, drowning, electrocution, and hazards associated with the equipment used for handling, transporting, and applying manure from CAFOs. During an inspection, inspectors must be aware of these potential hazards and seek to avoid the dangers they pose.

Confined spaces at CAFOs, as at other types of facilities, present a safety risk to inspectors. Gases such as hydrogen sulfide, carbon dioxide, ammonia, and methane are present in every manure pile, and if not properly ventilated, can reach concentrations dangerous to humans. Covered or enclosed tank facilities present the greatest danger, especially when manure is being agitated or pumped out of the structures. Silos and silage bunkers also represent a confined-space hazard. CAFO inspectors should ensure that facilities are properly ventilated before entering to conduct an inspection.

Drowning is a possibility where semisolid, slurry, and liquid manures are stored. Manure usually forms a surface crust. The thickness of the crust depends on the moisture content and consistency of the manure. However, under no conditions is the crust solid enough to support a human being. Inspectors should never venture out onto any crusted surfaces during an inspection.

Some owners or operators use tractors to power pumps when transferring waste out of storage lagoons. The power sources (takeoffs) present both electrical hazards and physical hazards for inspectors wearing loose-fitting clothing.

Facilities being washed present an electrocution hazard to the inspector. Wash water might conduct electricity from wiring, connections, or equipment to persons in contact with that water. Inspectors are advised to stay out of facilities during washdown.

Equipment used for handling, transporting, and applying manure can be hazardous to the operator and to others close by. The operator's manual for the equipment should document the potential hazards for that equipment. Common hazards include getting clothing or limbs caught in moving equipment parts; injury from escaping hydraulic fluid; and slippage of tractors, loaders, and spreaders. Inspectors should exercise appropriate caution (e.g., but not wearing loose-fitting clothing) around any machinery encountered during an inspection. Occupational Safety and Health Administration (OSHA) regulations make the private employer responsible for the safety of its employees, so the regulatory agency (EPA or the state) might be responsible for the inspector's safety during a CAFO inspection.

Animal Safety and Bio-Security Issues

The CAFO inspector should be familiar with all safety obligations and practices regarding basic inspections, including regional and state policies or requirements. In addition to the basic health and safety risks associated with inspecting facilities, CAFO inspectors have the added responsibility to avoid transporting livestock diseases between facilities. Many large livestock facilities give the animals medication to prevent diseases and might also disperse hormones. Livestock animals are susceptible to diseases from other facilities, and human carriers are a risk to livestock operations. Many facilities are concerned about bio-security because of the recent outbreaks of foot-and-mouth disease and mad cow disease. Without the proper precautions, inspectors might transport diseases between facilities by wearing contaminated clothing or using

contaminated equipment. The current EPA bio-security policy is provided as Appendix BB.

Most swine facilities do not allow any person who has been to another swine operation within the past 72 hours to access their facility. In addition, many swine operations do not allow access to anyone who has visited another livestock operation within the past 24 hours. Inspectors must be aware of the specific facility's bio-security requirements and plan multiple inspections accordingly. The inspector might need to call in advance so that the bio-security measures are known before the inspection and the information is accessible along with other pre-inspection information.

To minimize the risk that visitors will carry diseases or infections into livestock facilities, livestock owners or operators might ask visitors to abide by their specific bio-security measures. USDA's Animal and Plant Health Inspection Service and the University of Wisconsin recommend the following bio-security precautions when visiting farms:

- C Stay off farms if you have been in a foot-and-mouth disease-infected nation within 1 week. If this is not possible, wear clothing that has been laundered or dry-cleaned since leaving the infected nation.
- C For visitors who have been in contact with livestock or have been on animal farms within the past 48 hours, wear clothing and outer garments that were not worn at that time or have been laundered since the previous contact.
- C Wear disposable plastic boots or clean rubber boots. Rubber boots must be thoroughly cleaned and disinfected before entering and upon leaving the facility. Disposable boots must be new before entering the facility and thrown away upon leaving the facility.
- C Carry disposable boots or a disinfectant in your vehicle, as well as a supply of disposable face masks. Before you enter areas where animals are kept, remove manure and soil from your shoes or boots and disinfect them, or put on disposable boots.
- C Wash clothing and footwear using approved disinfectant after contact with livestock or poultry.
- C Keep a supply of clean or disposable protective clothing in your vehicle. Do not wear this clothing at more than one farm without laundering. If you use disposables, throw them away after wearing them at one farm.
- C Park away from areas where your vehicle might come in contact with animal waste or runoff.
- C Meet the livestock owner or operator away from production areas.
- C Stay away from farm animals or wear a face mask when you are near them.
- C Heed warning signs asking visitors to stay out of buildings where animals are housed.
- C Leave all food in your vehicle.
- C Clean your nostrils and fingernails and wash your hair thoroughly.
- C Dispose of clothing, shoes, equipment, cameras, and other items that are difficult or impossible to disinfect.
- C Do not wear items, such as jewelry, watches, glasses, or hairpieces, that cannot be disinfected when working around animals.

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16. D. Multimedia Concerns

Multimedia Concerns

This section is intended as a cursory guide for CAFO inspectors who become involved in multimedia environmental compliance inspections.

Multimedia Inspections and Multimedia Screening

Multimedia compliance investigations are intended to determine a facility's status of compliance with applicable laws, regulations, and permits in more than one medium. CAFO inspectors participating in multimedia inspections may refer to the National Enforcement Investigations Center's *Multimedia Investigation Manual* (NEIC's_____) for further guidance.

Multimedia Concerns at CAFOs

CAFOs regulated under the NPDES program might be also subject to the requirements of other regulatory programs. The direct relationship of these requirements to CAFOs is hard to determine without understanding the other common areas of concern. Multimedia concerns related to CAFOs fall into the following areas.

Pesticides

If a CAFO grows crops, improper application of pesticides to agricultural fields could be in violation of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The facility should have in its records the registration numbers of the pesticides and any information relating to their application. Pesticide applicators must also hold appropriate licenses for application.

Sources of Drinking Water

A CAFO that has a discharge could be contaminating the drinking water of the surrounding area if the drinking water source is a well. The facility should have its water sampled and analyzed for contaminants, and the results should be reported to the state or EPA. This is discussed more thoroughly in the following section, Other Regulatory Requirements.

Other Regulatory Requirements

Coastal Zone Act Reauthorization Amendments (CZARA) of 1990

In reauthorizing the Coastal Zone Management Act in 1990, Congress identified nonpoint source pollution as a major factor in the continuing degradation of coastal waters. Congress also recognized that effective solutions to nonpoint source pollution could be implemented at the state and local levels. Therefore, in the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA), Congress added Section 6217, which calls on states with federally approved coastal zone management programs to develop and implement coastal nonpoint source pollution control programs. The Section 6217 program is administered at the federal level jointly by EPA and the

National Oceanic and Atmospheric Administration (NOAA).

Section 6217 (g) of CZARA called for EPA, in consultation with other agencies, to develop guidance on “management measures” for sources of nonpoint source pollution in coastal waters. Under Section 6217 of CZARA, EPA is responsible for developing technical guidance to assist states in designing coastal nonpoint source pollution control programs. On January 10, 1993, EPA issued its *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters*, which addresses five major source categories of nonpoint pollution:

- C Urban runoff
- C Agriculture runoff
- C Forestry runoff
- C Marinas and recreational boating
- C Hydromodification

The guidelines for the agriculture nonpoint source category specifically include management measures for “confined animal facilities.” The guidance also specifies management measures for erosion and sediment control, nutrient management on cropland, and grazing. These three management measures apply to facilities with livestock even if they are not confined animal facilities as defined by CZARA. However, they do not apply to CAFOs under the NPDES program. This section explains which feedlots are subject to the confined animal facility requirements of CZARA and discusses these requirements in more detail. It also briefly explains the nutrient management measures, which may be implemented by confined animal facilities.

CZARA Requirements versus CWA Requirements with Respect to Confined Animal Facilities

The CZARA guidance document has thresholds for identifying large and small confined animal facilities that are lower than those established in the NPDES CAFO regulations. Thus, in coastal states the CZARA management measures potentially apply to a greater number of small facilities than the NPDES regulations. Despite the fact that both the CZARA management measures for confined animal facilities and the NPDES regulations for CAFOs address similar operations, these programs do not overlap or conflict with each other. EPA’s CZARA guidance states that any facility with an NPDES permit for CAFOs is exempt from CZARA management measures. CZARA applies to nonpoint source dischargers. Any CAFO, as defined by 40 CFR Part 122, that has an NPDES permit is a point source discharger and thus not subject to CZARA. Similarly, if an AFO subject to CZARA management measures later becomes a CAFO (by definition or designation), that facility is no longer subject to the CZARA management measures. This means that an AFO will never be subject to an NPDES permit and CZARA at the same time.

The Safe Drinking Water Act

The following four programs established by the Safe Drinking Water Act (SDWA) might apply to select feedlots. The *Underground Injection Control Program* (UIC) helps protect underground sources of drinking water by controlling the pollutants disposed of in injection wells. Injection wells that accept feedlot drainage are classified as agricultural drainage wells, one of the many types of Class V wells. Currently, all Class V wells are authorized by rule and are subject to the inventory requirements at 40 CFR Part 144, but not to the technical requirements. Class V wells, however, are subject to a performance standard that prohibits movement of contaminants into an underground source of drinking water if the contaminants could cause a violation of a drinking water standard or otherwise adversely affect human health. Because well injection of feedlot

waste and runoff is very uncommon, the UIC program requirements apply to very few feedlots.

The *Sole Source Aquifer Program* includes development of a comprehensive management plan requiring identification of existing and potential point and nonpoint sources of groundwater degradation, an assessment of the relationship between activities on the land surface and groundwater quality, and development of management practices to be implemented in the critical protection area. If identified as a source of groundwater degradation, a feedlot located above a sole source aquifer could be subject to additional management practice requirements. In a sole source aquifer area, no federal financial assistance may be used for projects that could contaminate the aquifer and create a significant public health hazard. For feedlots above a sole source aquifer, permitting authorities should work with USDA-NRCS (Natural Resources Conservation Service) and USDA-CFSA (Conservation Farm Service Agency) to determine applicable waste retention requirements for facilities that use federal cost-share funds.

The *State Wellhead Protection Areas Program* requires each state to adopt a program to protect wellhead areas from contaminants that might adversely affect human health. States determine the boundaries of their wellhead protection area. A feedlot within a designated wellhead protection area identified as a source of contaminants adversely affecting human health could be subject to additional discharge limitations or management practices.

The *Surface Water Treatment Rule* establishes criteria that public water systems must meet to avoid filtration. These criteria include identification of activities that might have an adverse effect on the quality of water sources and demonstration, through ownership or written agreements with landowners, that all sources of human activities with the potential for such adverse impacts can be controlled. Feedlots near public water systems may be asked to enter into such a written agreement.

SDWA also provides EPA with *emergency powers* to take action when a contaminant enters or is likely to enter a public water system or an underground source of drinking water and could present an imminent and substantial endangerment to the public health. An action in this case may be either an order issued to or a civil action taken against those responsible for the contamination.

16. E. References

Guidance

- National Enforcement Investigations Center (NEIC). March 1992. *Multimedia Investigation Manual*.
- U.S. Department of Agriculture - Natural Resources Conservation Service. December 2000. *Comprehensive Nutrient Management Planning Technical Guidance*.
- U. S. Department of Agriculture - Natural Resources Conservation Service. *Agricultural Waste Management Field Handbook*
- U. S. Department of Agriculture - Natural Resources Conservation Service. *Field Office Technical Guide (State Specific)*
- U.S. Department of Agriculture - U.S. Environmental Protection Agency. March 1999. *Unified National Strategy for Animal Feeding Operations*.
- U.S. Environmental Protection Agency - Office of Water. December 2003. *NPDES Permit Writers' Guidance Manual and Example NPDES Permit for Concentrated Animal Feeding Operations*. EPA 833-B-04-001.
- U.S. Environmental Protection Agency - Office of Water. November 2003. *Producers' Compliance Guide for CAFOs*. EPA 821-R-03-010.
- U.S. Environmental Protection Agency - Office of Enforcement and Compliance. August 2003. *Clean Water Act Enforcement Strategy Update for Concentrated Animal Feeding Operations*.
- University of Wisconsin-Madison. 2001. *Biosecurity guidelines for UW-Madison Dairy and Livestock Facilities*. Available at: www.wisc.edu/animalsci/facilities/biosecurity.pdf. Accessed May 2001.

Statutes and Regulations

- Clean Water Act. Section 301. Effluent Limitations (33 USC 1311)
- Clean Water Act. Section 304. Information and Guidelines (33 USC 1314)
- Clean Water Act. Section 306. National Standards of Performance (33 USC 1316)
- Clean Water Act. Section 307. Toxic and Pretreatment Standards (33 USC 1317)
- Clean Water Act. Section 402. National Pollutant Discharge Elimination System (33 USC 1342)
- 40 CFR Part 122. EPA Administered Permit Programs: The National Pollutant Discharge Elimination System
- 40 CFR Part 123. State Program Requirements
- 40 CFR Part 412. Concentrated Animal Feeding Operations (CAFO) Point Source Category
- Federal Register Notice. FR 7176. February 12, 2003. National Pollutant Discharge Elimination System Permit Regulation and Effluent Limitation Guidelines and Standards for Concentrated Animal Feeding Operations (CAFOs); Final Rule.

Training

Livestock and Poultry Environmental Stewardship Curriculum, CAFO Fact Sheets, and Educational Materials. (<http://lpes.org/>)

State Nutrient Management Courses

U.S. Department of Agriculture - Natural Resources Conservation Service. February 2001. *Nutrient Management Version 1.1*. (Self-Study CD-ROM course on nutrient management)