

United States
Environmental Protection
Agency

Washington, DC 20460 March 1998



Strategy for Addressing Environmental and Public Health Impacts from Animal Feeding Operations

Draft

Preface

U.S. Environmental Protection Agency (EPA) efforts to address environmental and public health problems related to Animal Feeding Operations (AFOs) and Concentrated Animal Feeding Operations (CAFOs) date back to the 1970s. In addition to issuing Clean Water Act permits to some large AFOs, EPA has encouraged livestock operators to implement voluntary efforts to control pollution.

Recent evidence suggests, however, that these regulatory and voluntary efforts have not been sufficient to address the environmental and health problems associated with AFOs. The problems persist and, in some areas of the country, have intensified as the size and density of AFOs have increased with changes in the industry.

The purpose of this draft AFO Strategy is to provide a blueprint for a significant expansion of EPA's regulatory and voluntary efforts related to AFOs. The Agency's goal in this effort is to minimize environmental and public health impacts from AFOs. It is important to note that the Strategy emphasizes water quality because current data indicate that water is the natural resource most adversely affected by AFOs. EPA will continue to investigate the effects of AFOs on other media (e.g., air and soil quality), however.

To identify activities for addressing problems related to AFOs, EPA relied on the expertise of other Federal agencies and numerous stakeholders. Similarly, EPA will depend on the input of a wide range of organizations and stakeholders to develop the final strategy and ensure successful implementation. In addition to guiding EPA actions in addressing AFO-related problems, this Strategy will be critical in meeting Agency water program objectives under the Government Performance and Results Act.^a This Strategy may be revised to reflect USDA's and EPA's coordinated efforts to develop a unified national strategy as called for in the *Clean Water Action Plan: Restoring and Protecting America's Waters*.^b

^a EPA Strategic Plan, U.S. Environmental Protection Agency, 1997.

^b On October 18, 1997, Vice President Gore announced a new initiative to tackle our Nation's most serious remaining water quality problems. The Vice President directed the Environmental Protection Agency (EPA) and the Department of Agriculture (USDA) to develop and submit a Clean Water Action Plan within 120 days. The *Clean Water Action Plan* was announced by the President and Vice President on February 19, 1998.

Acknowledgments

This draft document represents the efforts of numerous people from EPA Headquarters and Regions, the U.S. Department of Agriculture, the National Oceanic and Atmospheric Agency, and the States. Their devotion to investigating, addressing, and resolving the potential environmental and public health consequences of Animal Feeding Operations (AFOs) has been exemplary. Over a long period, they have been relied upon to contribute not only their time but also their individual perspectives developed during many years of public and private service. The creation of this draft AFO Strategy has resulted from the willingness of these individuals to share their experience. I would like to commend the following individuals for their participation:

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U.S. Department of Agriculture

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I would also like to thank all of the participants in the State Round Table and stakeholder meetings for their input. We look forward to continuing to work with each of you as this AFO Strategy evolves.

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I. Introduction

Agricultural practices and their impacts on the environment and public health have received increased attention from the Administration, Congress, the public, and industry. Public concern regarding these issues has been heightened by incidents across the country, including contamination of drinking water, fish kills, shellfish contamination, swimming advisories, and nuisance odors, and the links of some of these incidents to agricultural practices.

Animal Feeding Operations (AFOs) are one of the agricultural activities that can adversely impact environmental and public health.¹ AFOs are facilities that confine animal feeding activities, thereby concentrating animal populations, animal manure, and animal mortality. AFO activities can cause a range of environmental and public health problems, including oxygen depletion and disease transmission in surface water, pathogens and nutrient contamination in surface and ground water, methane emissions to the air, and excessive buildup of toxins, metals, and nutrients in soil.

The U.S. Environmental Protection Agency (EPA) initially responded to these problems by developing regulations in the early 1970s that required certain AFOs to obtain permits under the Clean Water Act (CWA). In addition, EPA has promoted voluntary programs designed to encourage environmentally sound management of animal manure and byproducts. This draft AFO Strategy represents an Agency-wide effort to coordinate and expand regulatory and voluntary activities related to AFOs with the goal of minimizing environmental and public health impacts from AFOs.

This draft AFO Strategy lays out a comprehensive plan of action for addressing the current and potential environmental and public health impacts from AFOs. EPA has identified in the draft Strategy a number of short-term activities for improving implementation of and compliance with CWA requirements for AFOs. The Agency also proposes a number of longer term activities that rely on a full range of tools (e.g., regulatory, voluntary, and partnership) for addressing environmental and public health issues associated with AFOs.

EPA is distributing this draft AFO Strategy to all interested parties to solicit comments and suggestions for improvements.

Environmental Impacts of AFOs

Evidence suggests that EPA's regulatory and voluntary efforts to date have been insufficient to solve the environmental and public health problems associated with AFOs. Agricultural practices in the United States are estimated to contribute to the impairment of 60 percent of the Nation's surveyed rivers and streams; 50 percent of the Nation's surveyed lakes, ponds, and reservoirs; and

¹ *National Water Quality Inventory: 1994 Report to Congress*, U.S. Environmental Protection Agency, Office of Water, 1995.

34 percent of the Nation's surveyed estuaries (Table I-1).² Feedlots alone, not including the potential runoff from farms using manure as fertilizer, are estimated to adversely impact 16 percent of waters impaired by agricultural practices.³ AFOs have also been identified as substantial contributors of nutrients (e.g., nitrogen and phosphorus) in water bodies that have experienced severe anoxia (i.e., low levels of dissolved oxygen) or outbreaks of microbes, such as *Pfiesteria piscicida*.⁴

Table I-1: Major Sources of Impairment of Surface Water Resources in the United States

Type of Water Body	Total size	Percent Surveyed	Percent Impaired	Major Sources of Impairment*
Rivers and Streams	3.5 million miles	17	36	Agriculture (60%) Municipal Point Sources (17%) Hydro./Habitat Mod. (17%)
Lakes, Ponds, and Reservoirs	40.8 million acres	42	37	Agriculture (50%) Municipal Point Sources (19%) Urban Runoff/Storm Sewer (18%) Unspecified Nonpoint Source (15%)
Estuaries	34,388 square miles	78	37	Urban Runoff/Storm Sewer (46%) Municipal Point Sources (39%) Agriculture (34%) Industrial Point Sources (27%)

* The percentage reflects the relative proportion of surface water affected by each major source of impairment.

Source: *National Water Quality Inventory: 1994 Report to Congress*, U.S. EPA, Office of Water, 1995.

AFO manure management systems also contribute to air quality issues. Methane emissions contribute significantly to potential changes in global climate because methane is extremely effective at trapping heat in the atmosphere. The amount of methane emitted by manure management systems is projected to increase from about 10 percent of total U.S. emissions in 1990 to nearly 15 percent by the end of the century.⁵ In addition, ammonia emissions from these systems can increase nitrogen (nitrate) concentrations in precipitation, thereby contributing to overenrichment problems of water bodies.

² *National Water Quality Inventory: 1994 Report to Congress*. U.S. EPA, Office of Water, 1995. The States survey surface water bodies every 2 years in compliance with Section 305(b) of the Clean Water Act. "Impaired" surface waters occasionally, frequently, or always fail to meet State-designated uses, including fish consumption, primary contact recreation (e.g., swimming), or drinking water supply.

³ *National Water Quality Inventory: 1994 Report to Congress*. U.S. EPA, Office of Water, 1995.

⁴ *Pfiesteria piscicida* is a toxic microorganism that has been found responsible for major fish kills and fish disease events in Chesapeake Bay tributaries and North Carolina estuaries, coastal areas, and aquaculture operations.

⁵ *Anthropogenic Methane Emissions in the United States: Estimates for 1990, Report to Congress*, U.S. Environmental Protection Agency, Office of Air and Radiation, 1993.

Existing Regulatory Definitions of AFOs and CAFOs

Existing regulatory definitions of AFOs and Concentrated Animal Feeding Operations (CAFOs) are given at 40 *CFR* 122.23 and Part 122, Appendix B. These regulations define an AFO as a facility that meets the following criteria:

- Animals have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period, and
- Crops, vegetation, forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility.⁶

Federal regulations define a CAFO generally as an animal feeding operation that:

- Confines more than 1,000 animal units (AU);⁷ or
- Confines between 301 to 1,000 AU and discharges pollutants:
 - Into waters of the United States through a man-made ditch, flushing system, or similar man-made device; or
 - Directly into waters of the United States that originate outside of and pass over, across, or through the facility or otherwise come into direct contact with the animals confined in the operation

The existing CAFO regulatory definition also contains an exemption for discharges in the event of a 25-year, 24-hour storm event.

Section 502 of the CWA defines CAFOs as point sources, making CAFOs subject to National Pollutant Discharge Elimination System (NPDES) permitting requirements.

In addition, the permitting authority (i.e., EPA or an NPDES authorized State) can designate an AFO as a CAFO upon determining that the operation is a significant contributor of pollution to waters of the United States. This determination, which takes a number of factors into account (e.g., slope, vegetation, and the proximity of the operation to the waters), is based on an onsite inspection by the agency that issues the permits.⁸

⁶ 40 *CFR* 122.23 (b)(1).

⁷ The following examples are animal quantities equivalent to 1,000 animal units: 1,000 slaughter and feeder cattle, 700 mature dairy cattle, 2,500 swine each weighing more than 25 kilograms, 30,000 laying hens or broilers (if a facility uses a liquid manure system), and 100,000 laying hens or broilers (if a facility uses continuous overflow watering). See 40 *CFR* Part 122, Appendix B.

⁸ 40 *CFR* 122.23 (b)(3).

Implementation of NPDES permit requirements relating to AFOs and CAFOs has occasionally been inconsistent among EPA and State permitting authorities.⁹ These inconsistencies can influence the siting or expansion of livestock operations and provide an economic advantage to facilities in States with less stringent requirements for AFOs and CAFOs. One of the purposes of this Strategy is to ensure application of nationally consistent minimum requirements for protecting the environment and public health.

Industry Trends

Approximately 450,000 operations nationwide confine or concentrate animals. Of these, about 6,600 have more than 1,000 AUs and are considered CAFOs based on the number of animal units alone.¹⁰ As shown in Figure I-1, these AFOs are located throughout the United States.



Figure I-1: Sample Distribution of Animal Feeding Operations in the United States

(Data source: MarketPlace, Dun & Bradstreet, 1996; contains 8,151 records including cattle, chicken, hog, goat, and horse facilities. These facilities are anticipated to be among the largest of the estimated 450,000 AFOs in the United States)

⁹ In certain States, facilities are subject to State permitting laws in addition to Federal permitting laws.

¹⁰ *Animal Agriculture: Information on Waste Management and Water Quality Issues*, General Accounting Office, 1995.

In terms of production, the total number of animal units in the Nation increased by about 4.5 million (approximately 3 percent) between 1987 and 1992. During this same period, however, the number of AFOs decreased, indicating a consolidation within the overall industry and greater production from fewer, larger operations (see Figure I-2). This consolidation continues a trend that began in the mid-1950s in the poultry industry and is now exhibited in other AFO sectors.¹¹ This consolidation could exacerbate environmental and public health problems associated with AFOs in communities or watersheds in which AFO expansion or new AFO or CAFO construction is occurring.

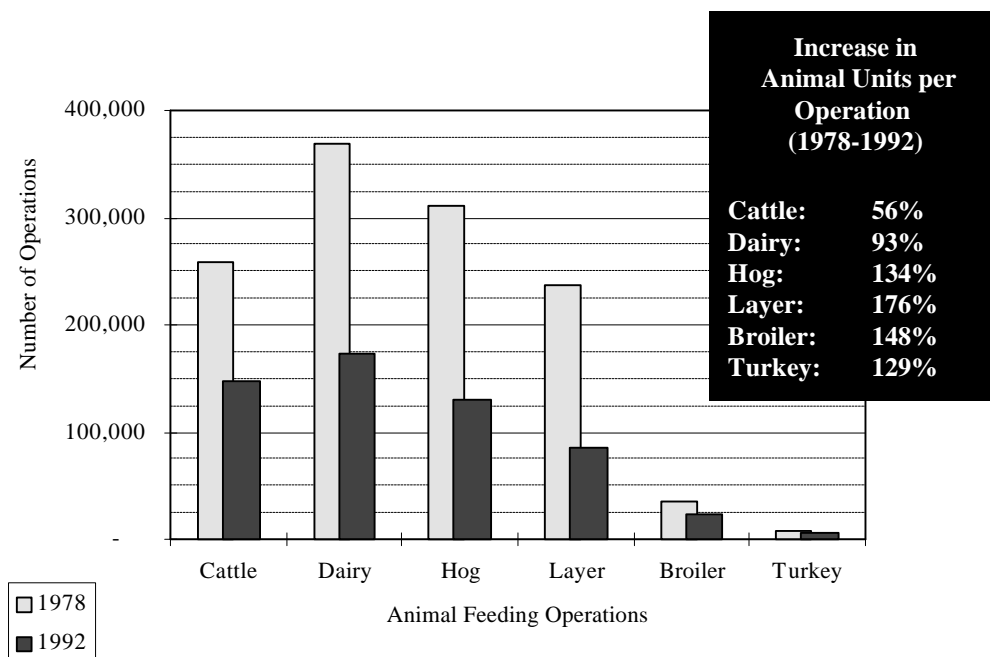


Figure I-2: Industry Consolidation of Cattle, Dairy, Hog, Broiler, Layer, and Turkey

Animal Feeding Operations (Note: Numbers in box show percent increase in the average number of animal units per animal feeding operation, not just the change in the number of operations. Data source: *Animal Agriculture: Information on Waste Management and Water Issues* , General Accounting Office, 1995.)

Current Efforts to Minimize Environmental and Public Health Impacts of AFOs

EPA, the U.S. Department of Agriculture (USDA), the National Oceanic and Atmospheric Administration (NOAA), and other Federal Agencies, States, and the agricultural industry are addressing environmental and public health problems associated with AFOs through numerous efforts.

¹¹ *Animal Agriculture: Information on Waste Management and Water Quality Issues* . General Accounting Office, 1995.

EPA Activities

EPA is currently involved in a number of regulatory and voluntary activities to reduce environmental and public health problems caused by CAFOs and AFOs.

EPA and approved NPDES States implement and enforce the existing NPDES regulations and the effluent limitations guidelines through NPDES permits. NPDES permits generally provide that animal manure storage facilities cannot discharge pollutants to waters of the United States except under extreme weather conditions. EPA established this limit in the 1970s after determining that the “best practicable control technology currently available” and the “best available technology economically achievable” would prevent all discharges except in extreme rainfall events. EPA currently estimates that only about one-third of the 6,600 CAFOs in the United States have NPDES permits. Further, EPA believes that most existing permits do not have adequate management measures to address water pollution problems resulting from land application of animal manure and other animal waste management practices.

The Agency also provides funding under various CWA authorities for State efforts to prevent water pollution problems, including problems associated with AFOs.

EPA is cooperating with other entities that provide technical assistance to CAFOs and AFOs. EPA and USDA work together to operate the Farm*A*Syst program, which develops fact sheets and work sheets to assist facilities in assessing their operations with regard to water quality. EPA and USDA also work with the Department of Energy on the AgSTAR Program, which promotes the capture of methane for use as an energy source for agricultural activities and, subsequently, reduces methane emissions. In addition, EPA is working actively with livestock and poultry industry stakeholders to promote the use of best management practices.

Activities of Other Federal Agencies

Other Federal agencies also implement relevant regulatory and voluntary programs, with particularly extensive technical and programmatic assistance available through USDA. For example, USDA funds are available to AFOs through the Environmental Quality Incentives Program (EQIP), which provides technical, financial, and educational assistance on livestock-related environmental concerns and conservation priorities. USDA has also recently announced its intent to expand the Conservation Reserve Program, which was originally used to remove highly erodible land from production, by creating the Conservation Reserve Enhancement Program (CREP) to set aside land to improve water quality. Other activities that have been carried out include land treatment programs under Public Law 566 specifically for water quality purposes as well as direct technical assistance to landowners.

NOAA and EPA work with the coastal States to implement management measures for AFOs through the Coastal Nonpoint Pollution Control Program under the Coastal Zone Act Reauthorization Amendments of 1990.

State Activities

Some States have adopted additional regulatory measures for AFOs. These measures include requiring the development of nutrient management plans for AFOs and training and certifying AFO operators in nutrient management. Other States provide technical assistance (e.g., developing nutrient management plans) or financial assistance (e.g., granting funds for manure storage/treatment facility construction) on a voluntary basis.

II. EPA's Draft AFO Strategy

The U.S. Environmental Protection Agency (EPA) recognizes that its existing regulatory programs related to animal waste management are not being implemented consistently and have not kept pace with evolving technologies or industry practices that have altered the type and magnitude of related adverse environmental and public health impacts. Industry trends toward larger Animal Feeding Operations (AFOs) and geographic concentration in some areas are already leading to greater challenges in managing animal manure and protecting the environment and public health.

To date, EPA has not fully used its existing authority either to require proper management of animal manure or to promote participation in voluntary environmental programs. Altogether, these conditions have necessitated the development of this draft AFO Strategy, which charts a course for meeting the Agency's goal of minimizing environmental and public health impacts from AFOs.

In developing and implementing the draft AFO Strategy, EPA is coordinating its internal resources and has begun to work with the U.S. Department of Agriculture (USDA), the National Oceanic and Atmospheric Administration (NOAA), other Federal and State agencies, stakeholder organizations, and individual stakeholders. This coordination will continue as USDA and EPA jointly develop a unified strategy as called for under the *Clean Water Action Plan: Restoring and Protecting America's Waters*.

Draft AFO Strategy Development Process

Several past EPA efforts have addressed the environmental and public health issues associated with AFOs. As these efforts progressed, it became clear that a broader strategy was needed to effectively address the wide range of AFO issues. EPA established an AFO Team in June 1997 to develop this Agency-wide draft AFO Strategy.

To develop the draft AFO Strategy, the AFO Team prepared a comprehensive list of specific activities to address environmental and public health concerns associated with AFOs. The AFO Team divided these activities into seven key component areas:

- Communication and Coordination Activities
- Research and Development Efforts and Innovative Approaches
- Data Collection Activities
- Compliance and Enforcement Activities
- Regulatory Review and Implementation Activities
- Voluntary Program Review and Implementation Activities
- Performance Assessment Activities

EPA then selected the most necessary and appropriate activities from the list for implementation and inclusion in this draft Strategy. These specific activities will take place both in the short term as well as over a longer term.

Outreach with interested parties is an important part of development of this strategy. In June 1997, for example, EPA briefed State officials (approximately 150 representatives of State environmental and agriculture departments) and stakeholders groups (about 50 representatives of environmental interests and about 30 representatives of agriculture interests) to discuss the issues addressed by the draft AFO Strategy and to solicit their initial input on the Strategy framework. EPA will continue aggressive outreach activities to solicit ideas and information during development of the final AFO strategy.

Overview of Draft AFO Strategy

This draft AFO Strategy provides a blueprint of specific short and longer term activities that EPA will take to substantially expand existing efforts to minimize the environmental and public health impacts of AFOs. To meet this goal, EPA has identified five overall principles:

- 1.) **Expand Compliance/Enforcement Efforts:**EPA will work with States to expand the use of compliance assistance and enforcement to ensure that existing Clean Water Act (CWA) requirements are implemented and to support implementation of the AFO Strategy on a long-term basis.
- 2) **Focus on Priority Watersheds:**EPA and States, with the cooperation of USDA and other partners, will use existing data to identify the location of AFOs and Concentrated Animal Feeding Operations (CAFOs), define watersheds that are a priority for action to reduce impacts of AFOs/CAFOs, and develop State strategies for geographic targeting of permit issuance, compliance assistance, funding sources (e.g., State Revolving Fund [SRF]), and enforcement activities on a watershed basis.
- 3) **Improve Clean Water Act Permits:**EPA will work with States to significantly expand the number of facilities that currently have CWA permits. EPA will work with States to include conditions to address water pollution problems associated with animal manure management (e.g., land application) in CWA permits. These permit conditions will be based on new guidance to be developed by EPA in cooperation with USDA.
- 4) **Revise Existing Regulations:**EPA will work with States, the regulated community, and citizens to update and revise both the CWA permit program regulations and the existing feedlots effluent limitations guidelines.
- 5) **Increase EPA/USDA Coordination:**EPA, USDA, and other partners will significantly increase coordination on activities relating to AFOs, including development of technical guidance for animal manure management, development of conservation plans that address comprehensive animal manure management, and targeting of financial and technical assistance.

In addition to these specific principles, EPA will continue to work with USDA and other partners to promote research related to AFO issues; work with industry to promote voluntary efforts to reduce the environmental impacts of AFOs; define performance measures and track progress in

meeting goals; and continue active communication with the animal agriculture community and citizens.

AFO Strategy Components

The range of specific activities that the Agency will implement to accomplish goals and objectives are described below. Tables II-1 and II-2 summarize the short- and long-term activities, respectively, for the seven key component areas. Both tables are presented after the discussion on those activities.

Communication and Coordination Activities

EPA will pool its resources with those of USDA, NOAA, and other appropriate agencies and organizations at the Federal, State, and local levels and in the private sector to facilitate the final development and implementation of the Strategy. These partners will work together on resolving AFO issues and on identifying the most effective mechanisms to protect public health and the environment.

The tasks to be undertaken, and products delivered, are as follows:

- **Stakeholder Coordination:** EPA will work closely with all key stakeholder groups to solicit feedback as part of finalizing the AFO Strategy.
- **Discussions with Agriculture:** EPA will meet with agriculture sectors (e.g., research organizations, universities, producers, integrators, and nonprofit organizations) to discuss opportunities for better manure management and to develop comprehensive recommendations to protect the environment and public health. For example, EPA and USDA participated in the National Environmental Dialogue on Pork Production.

Also, EPA Region 3 is taking the lead to work with the poultry industry and other key stakeholders to identify innovative opportunities and solutions for litter/nutrient management, research, and other key issues for long-term sustainability and mutual success.

These efforts will also need to be closely coordinated with other efforts to establish regulatory and voluntary programs outlined in other parts of this Strategy.

- **Compliance Fact Sheets:** EPA's Agriculture Compliance Assistance Center will develop a livestock management focus and coordinate with USDA to develop "plain language" fact sheets and compliance assistance materials for distribution to groups that provide information to livestock producers. These documents will be completed by December 1998.

Research and Development Efforts and Innovative Approaches

EPA will promote implementation of management measures through the use of innovative technologies and management approaches, demonstration projects, and educational efforts. The Agency will work with USDA to identify and assess current efforts ongoing at State agencies, universities, and in the private sector.

The tasks to be undertaken, and products delivered, are listed below:

- **Research Technical and Economic Issues:**EPA will conduct an initial study of the AFO industry, in cooperation with USDA (e.g., Natural Resource Conservation Service [NRCS]; Cooperative State Research, Education, and Extension Service; National Agriculture Statistics Service; Economic Research Service) and State partners. In conjunction with revision of the effluent guideline, the study will evaluate currently used technologies here and in Europe, and will provide the evaluation results in a report. The study will also assess the economic incentives and disincentives for protection of the environment and public health. The findings will be summarized in a report by December 1999.
- **Recognize Successful and Innovative Approaches:**The use of successful and innovative approaches should be encouraged and pursued. Such approaches can range from proven technology (e.g., rotational grazing) to state-of-the-art technology, such as satellite imaging to control nutrient application. Other approaches should be used to control stream bank erosion and animal manure deposition into streams. In conjunction with USDA, EPA will:
 - Expand and improve existing technology transfer mechanisms by December 1999
 - Initiate an awards program for operators with exceptional operations and performance.
- **Distribute Cumulative Risk Index Analysis:**EPA Region 6 has developed a screening tool called the Cumulative Risk Index Analysis (CRIA) to optimize siting of animal operations by evaluating the environmental vulnerabilities of a watershed. Copies of the CRIA will be made available through EPA's Agricultural Compliance Assistance Center to livestock producers and other interested parties, including county and local level government officials, by December 1998.
- **Evaluate Modification of Animal Diets:**EPA and USDA will contribute to the further evaluation of the effects of applying phytase to certain animal feed. Phytase is an enzyme that enables swine and poultry to more fully utilize the organic phosphorus in feed. Since swine and poultry are able to use only 30-40 percent of this naturally occurring phosphorus, the remainder (60-70 percent) is excreted in the form of phytate phosphorous. Feed mills presently add inorganic phosphorous to feed to address the nutritional needs of the animals. Application of the phytase enzyme can enable more

efficient utilization of organic phosphorous by the animal and significantly reduce the need to add inorganic phosphorus to feed, thereby reducing the amount of phytate phosphorous excreted on the soil and potential runoff containing phosphorous into surface water. EPA and USDA will also contribute to the evaluation of various other technologies for achieving the same goal. This research will be considered in development of the revised effluent limitations guidelines.

Data Collection Activities

EPA will gather information on the location, characteristics, and environmental impacts of AFOs. EPA will coordinate data collection activities with USDA, NOAA, the U.S. Geological Survey (USGS), and other Federal and State agencies.

The tasks to be undertaken, and products delivered, are as follows:

- **Collect Data for Targeting Strategies:** Given the large number of CAFOs and AFOs, EPA, other Federal agencies, and States must develop targeting strategies to assure protection of the environment and public health problems given constraints on staff resources. To the fullest extent possible, these data will be collected and assessed on a watershed basis. EPA will undertake the following data collection activities to support this effort:
 - **Identify and Locate CAFOs and AFOs:** EPA will map the concentrations of CAFOs and AFOs using existing data sources and will identify the number of animal units (by animal type as well as total) in each U.S. watershed. OWM will continue to identify and research data bases for location information on AFOs and CAFOs. OWM will also work with OWOW and OGWDW to identify watersheds, ground water aquifers, and drinking water supplies impaired by AFOs. Information sources to be investigated include the *1992 Census of Agriculture* (and the *1997 Census of Agriculture*, once available, for future efforts) and national data compiled by the NRCS on nutrient balances. This information on the distribution of AFOs and CAFOs will be periodically updated.
 - **Collect Facility Data:** EPA will continue efforts to identify additional information on facilities, such as location, identity of receiving waters, number of animal units, compliance history, age of facility, type of confinement, storage, operational status, and socioeconomic data of surrounding communities.
 - **Develop Initial List of Priority Watersheds:** EPA will work with USDA, State representatives, and interested members of the public to prepare an initial list of watersheds that should have priority for AFO data collection and response efforts. A proposed list will be finalized by September 1998.
- **Better Understand Pollutant Loads:** Within selected watersheds, EPA (in conjunction with USDA and USGS) will collect fate and transport data to quantify pollutant loadings

to various media from AFOs and CAFOs. EPA will gather raw data on nutrient application rates, metals, toxins, organics, pathogen loadings, and application procedures. Data will be used to the extent possible to determine baseline conditions and assess surface and ground water loadings within the overall watershed context. This is among the information that will be needed to measure environmental results consistent with the Government Performance and Results Act (GPRA).

- **Develop Profiles of State Program Activities:**OWM will organize existing information on State AFO programs, both voluntary and regulatory. OWOW will contribute information collected by the National Association of State Departments of Agriculture. A preliminary draft of this compendium will be available by June 1998, in time for the beginning of the State Program Review. At that time, EPA will identify data gaps and revise the compendium by September 1998.

CAFO Compliance and Enforcement Activities

In March 1998, OECA distributed a final “Compliance Assurance Implementation Plan for Concentrated Animal Feeding Operations.” The Compliance Assurance Implementation Plan outlines the compliance and enforcement actions that EPA will undertake. This draft AFO Strategy incorporates the major elements of that document, including 1) strong State and Regional compliance/enforcement partnerships; 2) effective, State-specific CAFO compliance/enforcement strategies; 3) productive, coordinated compliance assistance activities; 4) strong compliance monitoring programs; 5) effective enforcement; 6) better data/information; and 7) plans for developing a feedback mechanism to EPA, States, and other Federal Agencies.

The key tasks to be completed for CAFO compliance and enforcement include the following:

- **Complete Inspections of CAFOs:**EPA Regions and NPDES authorized States should inspect all priority CAFOs (e.g., CAFOs located in impaired watersheds) within three years. Regions and States should inspect all other CAFOs within five years.
- **Develop State Specific Strategies:**EPA Regions will work with NPDES authorized States to develop State specific CAFO compliance and enforcement strategies.
- **Develop CAFO Inspector Guidance and Training:**The Office of Compliance (OC) will develop a guidance manual for NPDES inspectors and an inspector training course in 1998. EPA will schedule inspector training courses for Fiscal Year 1998.
- **Implement Strategic Enforcement Initiative:**The Office of Regulatory Enforcement (ORE) will coordinate a strategic enforcement initiative, involving a cooperative effort between Headquarters and Regions. The goal of this initiative is to take actions against CAFOs that violate current permit requirements and against unpermitted CAFOs that violate existing regulatory requirements. EPA will also; where appropriate, take action in cases where a source of pollution presents an imminent and substantial endangerment to public health or the welfare of the public.

- **Create Model Administrative Order:** ORE will develop a model administrative order to assist Regional and State enforcement activities. This model order will serve as a template for taking action against CAFOs that violate current permit requirements or unpermitted CAFOs that violate existing regulatory requirements. Where a State has developed a targeting strategy in cooperation with EPA, use of administrative orders to require unpermitted CAFOs to obtain permits will be coordinated with any agreed upon strategy. ORE will complete the model administrative order by May 1998.
- **Prepare “Elements of Proof” Manual:** ORE will prepare a module on elements of proof for the Office of Compliance’s inspectors guidance manual. The module will explain what information and documentation are necessary to support an enforcement action. ORE will complete this module by December 1998.

Regulatory Review and Implementation Activities

To better respond to changes in agricultural production, EPA Headquarters and Regional offices will improve the effectiveness of existing regulatory authorities and activities in concert with USDA, NOAA, and States. The objective of this effort is to substantially increase the number of NPDES permits and to ensure those permits adequately address land application of animal manure and other animal manure management issues. As noted previously, the implementation strategy will give priority for NPDES permit issuance to CAFOs and other priority facilities in watersheds targeted by permit authorities (i.e., EPA or NPDES authorized States).

The tasks to be undertaken, and products delivered, are as follows:

- **Improve Current Permitting:** EPA will work with States to improve permitting of CAFOs and other priority facilities. EPA and States will significantly expand the number of facilities that currently have CWA permits, with the objective of issuance of permits by 2005 for all CAFOs (including those facilities that claim “no discharge,” designation of poultry facilities that have greater than the number of animals specified in Appendix B of 40 *CFR* 122 regardless of the type of watering and manure management, and other facilities designated as CAFOs because they are significant contributors of pollution). To accomplish this:
 - The first priority will be to permit the largest CAFOs and other facilities located in watersheds impaired by these sources by 2002.
 - Where EPA is the permitting authority, EPA will ensure that all CAFOs and other priority facilities will be permitted by 2003.
 - In those States with relatively few CAFOs, EPA will work with the Regions and authorized States to establish deadlines well in advance of 2005.

- EPA will work with the Regions and States to establish appropriate criteria and milestones that ensure that EPA and authorized States will issue permits as expeditiously as possible.

EPA will work with Regions and States to issue NPDES permits for those other facilities with significant potential to impair water quality, by December 2013.

EPA believes that individual permits are appropriate in certain circumstances such as particularly large CAFOs, and those with chronic compliance problems. EPA will also develop and promote the concept of “watershed specific CAFO permits,” based on general permit authority, to address the unique nature of CAFOs in particular watersheds. These “watershed specific CAFO permits” would allow for permitting of groups of CAFOs on a smaller scale, allow for better tailoring of permit requirements, and promote more effective public participation than would a statewide general permit. Finally, EPA expects that general permits will be a key mechanism for permitting in this area in general. EPA intends to revise its general permitting regulations to enhance opportunities for public input on the request for general permit coverage by new or significantly expanding facilities.

In addition, EPA will work with States to include appropriate conditions in CWA permits to address water pollution problems associated with animal manure management (e.g., land application). These permit conditions will be based on new guidance to be developed by EPA in cooperation with USDA. EPA regulations provide that procedures for issuance of NPDES permits must allow an opportunity for public review and input.

EPA will also:

- Develop by August 1998, additional guidance clarifying key permitting issues, for example, clarifying that the NPDES program applies to feedlots that claim to have no discharge. Further, EPA will issue guidance providing that poultry operations with more than the numbers of animals specified in Appendix B of 40 *CFR* 122 be designated as CAFOs and be required to have permits, even in the absence of a liquid manure system or continuous overflow watering.
- Develop by September 1998, a guidance document on the use of the existing authority to designate AFOs as CAFOs on a case-by-case basis, including designation of poultry operations as discussed above.
- Produce by September 1998, a best professional judgment (BPJ) guidance document to assist the EPA Regions and NPDES authorized States in developing conditions, limits, and best management practices to be included in NPDES permits. EPA will coordinate this activity with USDA.
- Develop by October 1998, model NPDES permits (e.g., individual, watershed specific, and/or general permits) that address issues including public notice, public

participation, comprehensive animal manure and carcass management practices, monitoring, recordkeeping, coordination with local and state siting procedures, and other issues. Guidance for model general permits will provide for a “notice of intent” (NOI) to be submitted well in advance of requesting coverage by a general permit by new facilities or significantly expanding facilities. The NOI would include key information such as location, number of animals, and availability of a manure management plan. EPA also expects to prepare guidance for “watershed specific CAFO permits” that promote permitting of CAFOs on a watershed scale. Because these watershed specific permits would deal with a smaller geographic area, they may better address site-specific conditions and promote greater public involvement in the permitting process than would a statewide general permit. The model permit guidance would also identify situations where individual permits for CAFOs are appropriate.

- Demonstrate approaches to coordinate the issuance of NPDES permits within watersheds by developing two watershed-based NPDES permits by December 1998.
- **Develop Targeting Strategies:** OWM, OECA and the Regional offices will engage the State partners in developing State specific targeting strategies for NPDES permitting, compliance assistance, and inspections. In the absence of an approved state NPDES program, the Region should develop the State strategy. Permitting of CAFOs should ensure that immediate priority be given to the largest, unpermitted operations, CAFOs located or intended to be sited near sensitive water bodies (e.g. source water protection areas), and those operations causing water quality impairment. EPA will also cooperate with USDA and States in developing targeting strategies to ensure that technical and financial assistance programs (e.g., SRF) are targeted to areas of greatest need. EPA and the States should also give particular scrutiny to evaluation of new or significantly expanding facilities.
- **Revise Existing Feedlots Effluent Limitations Guidelines (40CFR 412):** EPA will initiate a revision of the existing effluent limitations guidelines for feedlots. The guidelines need to reflect industry changes since the 1970s — such as the movement away from using liquid manure or continuous flow watering systems at poultry AFOs — to better protect the environment and public health. EPA expects to include within the guidelines revisions to address land application of manure. EPA will be setting guidelines for existing facilities (best available technology economically achievable) and new facilities (new source performance standards). For existing and new sources, EPA will consider factors including nonwater quality environmental impact (e.g. air quality issues) and the cost of the controls. As a part of this process, EPA will:
 - Complete a study of the existing effluent guidelines and initiate guideline revisions by December 1998.

- Complete revisions to the effluent guidelines for poultry and swine by December 2001, and for other animal agriculture sectors by December 2002.
- **Revise NPDES Regulations (40CFR 122):** EPA is currently evaluating the NPDES permitting regulations to determine how to more effectively address AFOs. For example, EPA intends to review the references to continuous overflow watering and liquid manure handling systems in the regulatory definitions of poultry operations that qualify as CAFOs. EPA also intends to revise the regulations with respect to the use of general permits for CAFOs and other sources to promote greater public participation opportunities through the use of NOI procedures. EPA may also consider ways to better support the development and implementation of the new source water assessment and protection provisions of the Safe Drinking Water Act. EPA is committed to revising the regulations, based on a review of technical, economic, and water quality factors. EPA will ensure consistency between this revision and the revision of the feedlots effluent limitations guidelines. As a part of this process, EPA will:
 - Produce, by September 1998, a white paper on issues and options, including phasing, for revision of the CAFO NPDES Program regulations (40 CFR 122).
 - Propose revisions to CAFO NPDES regulations by December 1999 and publish final regulations by December 2001.
- **Explore Existing Authority to Provide Greater Environmental Protection** EPA will evaluate existing authorities other than the Clean Water Act for those authorities' potential application to AFO management practices. The review will focus on the authority to protect ground water, drinking water, and air quality, as well as to control odor.
- **Develop CAFO Module for Permit Writers Training** OWM is developing a CAFO module that can be incorporated into its NPDES Permit Writer Training Course for State and EPA permit writers and other stakeholders. The module will be available by June 1998.
- **Review State Programs and Coordination:** Following development of the State Program Compendium, OWM will work with States to review and evaluate existing State regulatory and voluntary programs related to AFOs for their effectiveness in protecting the environment and public health. This review will identify programs for EPA to consider during the Agency's regulatory revisions and help to serve as a basis for States to evaluate the effectiveness of their programs. OWM will prepare a State profiles report by September 1998.

Voluntary Program Review and Implementation Activities

EPA will work with USDA and the agricultural community (e.g., EPA Region 3 efforts with the poultry industry, the National Environmental Dialogue on Pork Production) to evaluate and

improve the effectiveness of its regulatory and voluntary programs to provide the highest level of protection of the environment and public health from potential adverse impacts from AFOs.

The tasks to be undertaken, and products delivered, are as follows:

- **Review Voluntary Programs:** EPA will assess the impacts of its existing voluntary programs (e.g., Section 319 Grant Program, Farm*A*Syst, AgSTAR, and EPA's industry dialogues) by collecting and analyzing data on improvements achieved (e.g., successful demonstration projects or number of facilities voluntarily implementing BMPs). EPA will then prepare a summary review and recommendations report on voluntary programs by December 1998.
- **Expand Partnership Activities with USDA:** EPA will work closely with USDA to support complementary voluntary programs (e.g., the Environmental Quality Incentives Program [EQIP] and the Conservation Reserve Enhancement Program [CREP]) and to learn from past programs, such as the Rural Clean Water Program.
- **Promote Voluntary Efforts:** EPA will provide resources, such as Section 319 nonpoint source grant funds and State Revolving Fund loans, to promote voluntary implementation of BMPs. The Farm*A*Syst and AgSTAR programs will support voluntary implementation of BMPs and other environmental management practices, such as methane capture systems for energy conversion.

Performance Measurement Activities

Consistent with the Government Performance and Results Act, EPA will establish quantitative performance measures and collect baseline and ongoing data to assess the performance of activities conducted under the AFO Strategy. The performance assessment will determine the extent to which the AFO Strategy is aiding the achievement of objectives established under EPA's Strategic Plan.¹²

The tasks to be undertaken, and products delivered, are as follows:

- **Determine Quantitative and Qualitative Goals and Measurement Techniques:** The AFO Team will develop an initial set of indicators to measure the Agency's progress in implementing the AFO Strategy. This process will generate a list of potential indicators, compare those indicators to existing or planned data sources, and determine the set of indicators to be measured and the needed data collection efforts. As data collection for these indicators progresses, refinements to the measured set of indicators may be necessary.
- **Establish a Baseline for AFOs and Associated Environmental and Public Health Impacts:** As a part of this performance assessment process, the AFO Team will select a baseline year for each indicator, against which future efforts will be compared.

¹²

EPA Strategic Plan, U.S. Environmental Protection Agency, 1997.

Table II-1: Draft AFO Strategy Short-Term Activities

Activity	Lead Office(s)	Draft Date	Final Date
Issue CAFO Compliance Assurance Implementation Plan	OECA	August 1997	March 1998
Build support and consensus for the AFO Strategy through aggressive outreach	OWM	Ongoing	June 1998
Develop additional guidance clarifying key permitting issues, including waste management practices (e.g., onsite and offsite land application of manure, odor control)	OWM OGC OECA	June 1998	August 1998
Develop best professional judgment (BPJ) manual and reconcile with revised USDA field technical guidelines	OWM OST	May 1998	September 1998
Develop model permits (e.g., individual, watershed-based, general) that address issues including comprehensive management practices (e.g., land application), public notice, public participation, and administrative efficiency	OWM OECA	May 1998	September 1998
Develop guidance on criteria and methodologies to designate AFOs as CAFOs on a case-by-case basis (40 <i>CFR</i> 122.23(c))	OWM Regional Reps. State Reps.	May 1998	September 1998
Develop targeting techniques to identify AFOs, CAFOs, and watersheds that fail to meet designated uses	OWM OWOW OECA	July 1998	October 1998
Develop profile of State regulations, voluntary programs, lead agency or agencies, permitting requirements, etc.	OWM OGC	June 1998	September 1998
Engage poultry industry in a discussion of innovative opportunities and solutions on litter/nutrient management, research, and other key issues	EPA Region 3	January 1998 (begin)	
Develop and initiate a strategic enforcement initiative	OECA	Ongoing	Ongoing
Increase overall permitting, inspection, and enforcement activities and voluntary initiatives	OWM OECA OWOW	Ongoing	Ongoing
Develop a CAFO module for permit writers training course	OWM	March 1998	June 1998
Develop a white paper for revision of the NPDES CAFO regulations (40 <i>CFR</i> 122)	OWM OST OGC	June 1998	September 1998

Table II-1: Draft AFO Strategy Short-Term Activities

Activity	Lead Office(s)	Draft Date	Final Date
Develop State-specific strategies for CAFO compliance and enforcement	EPA Regions States	May 1998 (preliminary drafts)	October 1998
Prepare initial list of priority watersheds to target implementation efforts	OWM OWOW		September 1998
Review existing voluntary programs	AFO Team OWOW		December 1998
Develop a CAFO inspectors' guidance manual and develop and conduct CAFO inspector training courses	OECA	May 1998	July 1998
Complete study of existing feedlots effluent limitations guidelines (40 CFR 412)	OST		December 1998
Work with States to establish a model watershed-based permit framework in two priority watersheds	OWM OWOW OECA	September 1998	December 1998
Develop "plain language" fact sheets and compliance assistance materials for distribution through the Agriculture Compliance Assistance Center	OECA		December 1998
Distribute the Cumulative Risk Index Analysis developed by EPA Region 6	EPA Region 6		December 1998
Develop a model administrative order to facilitate Regional and State enforcement and permitting	ORE		May 1998
Develop an "elements of proof" module in inspectors guidance manual to explain what information and documentation are necessary to support an enforcement action	ORE		December 1998
Develop an initial set of indicators to measure Agency progress in implementing the AFO Strategy	OWM	June 1998	December 1998
Develop livestock management focus under the Agriculture Compliance Assistance Center	OECA	May 1998	1999
Evaluate phytase supplement for reducing phosphorus pollution	OW	Ongoing	Ongoing

Table II-2: Draft AFO Strategy Long-Term Activities

Activity	Lead Office(s)	Draft Date*	Final Date*
Continue dialogue and coordination of Federal, State, local, and private sector resources	OWM		ongoing
Locate AFOs and CAFOs nationwide and understand their contributions to pollutant loads	OW		1999
Promote research and development to fill the gaps in technical and economic information	OPPE		1999
Promote successful and innovative technologies and management practices	OPPE		ongoing
Enhance promotion of voluntary programs (e.g., Section 319, SRF loans, EQIP, CREP, AgSTAR)	AFO Team	January 1999	1999
Initiate an AFO awards program	OW USDA	January 1999	2000
Complete revision of the NPDES regulations for AFOs (40 <i>CFR</i> 122)	OWM OST		2001
Complete revisions to the feedlot effluent guidelines (40 <i>CFR</i> 412)	OWM OST		2001
Inspect all priority CAFOs (e.g., CAFOs located in priority watersheds)	Regions States		2002
Inspect all other CAFOs	Regions States		2004
Revise and issue permits for the largest CAFOs and other facilities located in watersheds impaired by these sources	OWM Regions States		2002
Revise and issue permits for all CAFOs (including "no discharge" facilities, poultry facilities with more than the number of animals specified in 40 <i>CFR</i> 122, and other facilities that are significant contributors of pollution)	OWM Regions States		2005
Issue permits for other facilities with significant potential to impair water quality	OWM Regions States		2013
Continue measurement of selected indicators and comparison to baseline years	OWM		Ongoing

* Dates are tentative and subject to change .

Public Review Process

EPA will actively solicit input and suggestions from a broad range of interested parties prior to finalization of this Strategy. While written comments are appreciated, EPA would like to suggest that discussion of comments can result in better understanding of issues and possible solutions. To the extent possible, EPA would like to engage in discussions with key stakeholder groups. Written comments may be submitted up until May 1, 1998 to:

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Note

This document presents EPA's strategic plan for addressing the environmental and public health impacts associated with AFOs. It is not a substitute for EPA's existing regulations and it does not impose any binding requirements on EPA, the States, or the regulated community. EPA's strategies for addressing AFOs may evolve and change as its understanding of the issues increases through further work and receipt of additional information.