

MANURE IN THE BAY

A Report on Industrial Animal Agriculture in Maryland and Pennsylvania

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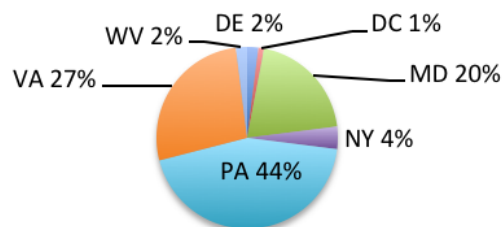
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Executive Summary

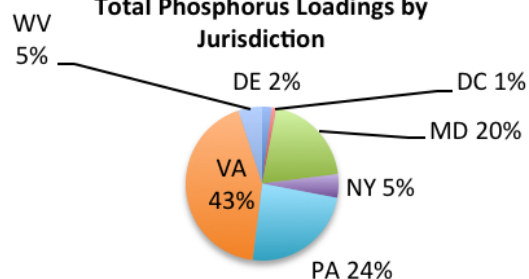
In the United States, the romantic image of the Jeffersonian farmer tending the field has long given way to industrial production of food. Nowhere is this more evident than in the animal agriculture sector, where the decline of the family farm and the subsequent rise of large-scale animal operations have been dramatic. Over the past 60 years, the number of chicken farms has declined to 27,000 from 1.6 million, with a correspondingly striking increase in the number of chickens produced—from roughly 360 per farm in 1950 to roughly 330,000 per farm in 2007.¹ This thousand-fold increase in production per farm is the result of a massive transformation in the sector—from millions of small farms with modest production, to comparatively few farms with massive production due to industrial techniques intended to maximize output. Similar patterns of consolidation are occurring in the hog sector and to a lesser extent in the dairy and beef sectors.

The dramatic rise in the number of animals raised in these operations corresponds to a dramatic increase in the amount of manure and wastewater generated by these industrial operations. In the badly impaired Chesapeake Bay watershed, animal manure contributes around 19 percent of the total nitrogen and 26 percent of the total phosphorus to the Bay, or 53 million pounds and 5 million pounds, respectively.² Apart from nutrients, which are themselves problematic in such quantities, manure contains an unappetizing slurry of pathogens, antibiotics, and other pollutants such as cleaning fluids, heavy metals, synthetic fertilizers, and pesticides. In the United States, the Environmental Protection Agency (EPA) estimates that the largest of these concentrated animal feeding operations (CAFOs) generate three times the amount of waste generated by humans annually.³ Unlike human waste, which is subject to extensive biological and chemical treatment, animal waste is most frequently spread onto land without treatment. When the raw waste reaches local waterways, myriad human health and ecosystem impacts are inevitable.

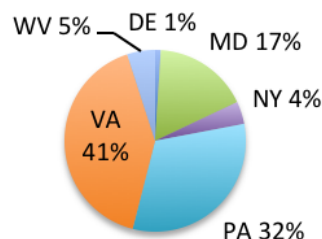
Total Nitrogen Loadings by Jurisdiction



Total Phosphorus Loadings by Jurisdiction



Total Sediment Loadings by Jurisdiction



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In large part because of this waste and other nutrient pollution, the Environmental Protection Agency (EPA), the Bay states of Delaware, Maryland, New York, Pennsylvania, Virginia, and West Virginia, and the District of Columbia are beginning in earnest to implement pollution reduction controls to meet the newly established pollutant limits in the Chesapeake Bay Total Maximum Daily Load (TMDL).⁴ In the near term, reducing discharges and runoff from CAFOs and other animal feeding operations (AFOs) is crucial.

Congress specifically identified the CAFO sector as a source of pollution to be regulated decades ago, but only in the past few years has EPA focused on these massive operations and the pollution they cause. States across the country have been slow to embrace these programs. Not surprisingly, the states that most urgently needed to implement regulations were the ones most dominated by agricultural interests. In many states, CAFO programs are only now starting to implement minimum federal standards.

This report provides a substantive and detailed look at the CAFO and other AFO programs in Maryland and Pennsylvania, as well as a general overview of the federal CAFO program. The information in this report was gathered through publicly available resources as well as a series of interviews with agency officials and other individuals who work with the animal agricultural sector.

Based on findings, research, and interviews, this report identifies concrete and practical recommendations for improving how the waste generated by animal industrial agriculture is managed and controlled by EPA, the Maryland Department of Environment (MDE), and the Pennsylvania Department of Environmental Protection (DEP). The report provides general recommendations that apply to each of these agencies and specific and distinct recommendations applicable to these three agencies that are primarily charged with protecting human health and the environment, along with recommendations for state agricultural agencies that also manage manure and AFOs. Most of these recommendations require no legislative action and could be implemented by the agencies under their existing authorities.

Overall Recommendations

The significance of agriculture to the communities and economies in the Bay is matched only by the significant amounts of water pollution caused by this sector. Renewed and vast efforts will be required to control manure from the universe of agricultural operations in order to meet the Bay TMDL.

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The following overall recommendations apply to EPA, Maryland, and Pennsylvania:

- ***EPA, MDE, and DEP should take meaningful, targeted enforcement actions and when appropriate assess fines that have an actual deterrent effect.*** Deterrence-based enforcement is based on the theory that regulated facilities, such as CAFOs, weigh the costs and benefits of complying with Clean Water Act (CWA) permit requirements or other regulations. For example, if a CAFO will save \$10,000 by avoiding compliance and illegally discharging animal waste into the Susquehanna River but also knows that it will face stiff penalties that far exceed \$10,000 for this discharge, the CAFO will be dissuaded from violating environmental laws under the deterrence-based enforcement model. Unannounced inspections, combined with the threat of severe penalties, are part of an effective, deterrence-based enforcement program.
- ***EPA, MDE, and DEP should immediately exercise their designation authority in the Clean Water Act to classify small AFOs that contribute significantly to water pollution as CAFOs that are required to seek permit coverage.*** Under the CWA, EPA or a state with CWA permitting authority is authorized to designate a small AFO as a CAFO if that small AFO is nonetheless a “significant contributor” of water pollution. In Pennsylvania, for example, more than 12,000 animal operations fall below the CAFO threshold yet cumulatively produce as much manure as the CAFO sector. Designating the most significant contributors of nutrient pollution as CAFOs is crucial to managing manure in the Bay.
- ***The Maryland and Pennsylvania legislatures should increase basic funding levels for MDE and DEP, respectively.*** An adequately funded CAFO program would have sufficient funds and enough permit writers to develop and issue CAFO permits in a timely manner and inspectors to ensure that both CAFOs and MAFOs (Maryland Animal Feeding Operations) are inspected and in compliance. For example, Maryland has a significant permit backlog: of 473 CAFOs that have applied for permits, MDE has issued only 155 permits. This backlog results from a combination of an inadequate number of technical staff to write the nutrient management plan component of the permits and the inadequate number of MDE staff to register and issue the permits. At its current pace, MDE is expected to finish issuing permits in 2014, the year that the CAFO permits expire.

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- ***EPA, MDE, and DEP should clarify in federal or state regulations that an entity that has substantial operational control over a CAFO constitutes an “operator” and is thus subject to CWA permitting requirements.*** The trend toward vertical integration of animal agriculture has resulted in concentrations of manure that exceed agricultural needs in certain regions. National processors in the poultry and hog sectors, such as Tysons, Perdue, and Smithfield, provide the animals, feed, and medication or strictly dictate growing practices to local contractors. At the same time, they disclaim any responsibility for the environmental and public health damage caused by the manure and animal litter from these operations. This arrangement means that the central players in the CAFO industry contract away responsibility for pollution, leaving the local contractors responsible for preventing water pollution with relatively few resources. Such an arrangement is no doubt convenient for the large integrator, but it is fundamentally unfair to the local contractors and creates a significant barrier to accountability.

Maryland Recommendations

Maryland contributes roughly 20 percent of total nitrogen pollution in the Chesapeake Bay, and the state’s agriculture sector accounts for 39 percent of Maryland’s total nitrogen contribution. Similarly, Maryland contributes roughly 20 percent of total phosphorus to the Bay, and the state’s agriculture sector accounts for 19 percent of that contribution. Maryland’s CAFO program officially began in FY 2011 and is notable because it goes beyond the minimum federal standards by requiring more operations to obtain permits. How these regulations are implemented in practice remains to be seen, both because the CAFO program is new and because MDE does not appear to have adequate financial and technical resources to issue permits, monitor and inspect facilities, and conduct deterrent-based enforcement actions.

Specifically, this report recommends:

- ***MDE should retain the broad scope of permit coverage for CAFOs and MAFOs.*** Maryland regulations require all large and medium AFOs to obtain either a CAFO or a MAFO permit. The distinction between the CAFO and MAFO permit hinges on whether or not the operation actually discharges or operates in a way that will cause a discharge and thus “proposes to discharge.” Those operations that discharge or propose to discharge are required to obtain CAFO permit coverage. Those operations that do not discharge or do not propose to discharge—in essence, those that operate in such a way that a discharge will not occur—are required to obtain MAFO permit coverage. These regulations are more stringent than the minimum federal standards and take advantage of provisions in the CWA that explicitly allow states to be more protective of their waters.

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- ***MDE should immediately begin to assess annual permit fees for CAFOs, both those that have permits and those with pending permits.*** Unlike a penalty, a permit fee accounts for the additional work that a regulated facility generates for MDE by discharging pollution into the Bay and its tributaries. The current annual permit fees range from \$120 to \$1,200 per year, depending on the size of the operation. Maryland law requires permit fees to be based on the anticipated cost of monitoring and regulating the permitted facility and programmatic needs related to preventing pollution discharge into the waters of Maryland. Ultimately these fees ensure that the regulated facility that pollutes the environment shoulders the full cost of its operations, rather than foisting the cost onto the public. MDE waived application and annual permit fees during the start-up phase of its program. The agency should end this grace period and ensure that the permit and annual fees are assessed and reflect the anticipated cost of administering the permit.
- ***MDE should increase the number of physical, on-site inspections of MAFOs.*** The rate of inspections for MAFOs is significantly lower than the inspection rate for CAFOs. Although MAFOs by definition do not discharge, MDE should increase the number and frequency of physical, onsite inspections of these operations to ensure that they do not in fact discharge and are properly permitted. In FY 2012, MDE's target rate of MAFO inspections is roughly 5 percent, compared to a roughly 50 percent inspection target rate for CAFOs.

Pennsylvania Recommendations

Pennsylvania contributes 44 percent of total nitrogen pollution to the Bay, as well as 24 percent of total phosphorus and 32 percent of total sediment.⁵ Of these loads, the agriculture sector contributes 55 percent of Pennsylvania's total nitrogen contribution, 24 percent of Pennsylvania's total phosphorus contribution, and 35 percent of Pennsylvania's total sediment contribution.⁶ The state has a long history of managing manure from animal feeding operations, which include a range of operation sizes. Nonetheless, estimates suggest that only 50 percent of the manure generated by animal agriculture operations in Pennsylvania is regulated under the state's CAFO permit and concentrated animal operation (CAO) permits. As a result, thousands of smaller operations are not covered by either CWA-based state regulations or other independent state regulations.

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Specifically, this report recommends that:

- ***DEP should increase transparency by publishing an annual enforcement and compliance report.*** This report would promote accountability by demonstrating, on an annual basis, DEP's enforcement and compliance effort and would allow watchdog groups to track trends and work with DEP to improve overall compliance with CAFO permit requirements. This annual report could be modeled after Maryland's annual enforcement and compliance report and should include information such as: the universe of facilities with CAFO permits; the status of these permits; the number of total inspections, both on-site and off-site audits; the total number of inspectors and inspector vacancies; the enforcement and compliance workforce budget; the total number of significant and non-significant violations; the types of enforcement actions (cooperative, administrative, civil, or criminal); amount of penalties (monetary, supplemental environmental projects, or jail time).

Other Animal Feeding Operations

According to EPA estimates, only one-third of the manure that pollutes the Bay is regulated through states' CAFO programs. The remaining manure pollution comes from small AFOs that are not regulated by the CWA or states or from non-animal agriculture. While regulating CAFOs is crucial, managing nutrient pollution from manure will require addressing a larger universe of agricultural operations than CAFOs alone. Both Maryland and Pennsylvania have a combination of voluntary programs and loosely enforced manure management requirements that must be strengthened to make actual gains in the agricultural sector.

For example, the Maryland Department of Agriculture is responsible for implementing and enforcing the state's Water Quality Improvement Act, which applies to non-CAFO and non-MAFO agricultural operations. However, MDA has implemented the law as if compliance by animal feeding operations were voluntary, and it has done little to ensure public access to the nutrient management plans developed under the law. Shielding the agriculture sector from public scrutiny leaves surrounding communities in the dark about the pollution entering their waterways and the environment.

Specifically,

- ***Congress should establish an independent evaluator to assist with tracking, monitoring, verifying, and reporting the implementation and effectiveness of best management practices on non-regulated agricultural operations.*** In 2011, a National Academies of Science report noted the importance of monitoring, reporting, and verifying best management practices to evaluate effectiveness and quantify actual progress toward Bay restoration. The report also pointed to the

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significant logistical, institutional, and legal barriers to sharing and assembling data.⁷ An independent evaluator should be charged with assisting Bay states to collect this information and presenting it to the public, with the overall goal of promoting accountability among federal and state partners.

- ***The Maryland Department of Agriculture (MDA) should ensure that non-CAFO and non-MAFO animal operations comply with the nutrient management plans required under Maryland's Water Quality Improvement Act (WQIA).*** The Maryland General Assembly should assist by raising the penalty maxima that MDA can assess in response to a violation of the WQIA. MDA should also make nutrient management plans public, particularly for those operations that receive public funds. The Maryland General Assembly should consider transferring the authority and responsibility for enforcing the WQIA and water quality protection to MDE from MDA with respect to non-CAFO and non-MAFO animal agricultural operations.
- ***In Pennsylvania, DEP should retain enforcement authority for ensuring compliance with manure management on non-CAFO and non-CAO farms.*** DEP has proposed delegating more implementation and enforcement responsibilities to county conservation districts (CCDs). These CCDs often provide the greatest field presence for assisting and inspecting agricultural operations but are not a traditional regulatory branch. The CCDs tend not to emphasize enforcement, so DEP must retain overall enforcement authority. If the proposed delegation is adopted, DEP must provide clear guidance to CCDs for inspections and reporting.

Excess manure from animal agricultural operations across the Bay is a true challenge, one that has bedeviled policymakers and politicians for decades. During that period, the health of the Bay has not improved, making the problem all the more pressing. Addressing the Bay's problems will require each of the jurisdictions involved to apply a combination of strong regulatory requirements, broader regulatory coverage, consistent enforcement, and participation from the agricultural and other sectors that pollute the Bay.

The renewed and reinvigorated focus on restoring the Bay through the Bay TMDL and other mandatory actions is a welcome change from years past, but EPA cannot clean up the Bay without full participation of the states and without genuine compliance within the agricultural sector. Strengthening CAFO programs and manure management programs across the Bay is an integral component of achieving cleaner waters, healthier aquatic ecosystems, and a Chesapeake Bay that can be sustained for future generations.

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The Clean Water Act & Federal CAFO Regulations

Overview

In the United States, the romantic image of the Jeffersonian farmer tending to the field has long given way to industrial production of food. Nowhere is this more evident than in the animal agriculture sector, where the decline of the individual farm has been dramatic. In 1950, 1.6 million farms produced 580 million chickens, averaging around 360 chickens per farm. In 2007, only 27,000 farms produced an astounding 8.9 billion chickens, averaging around 330,000 chickens per farm.⁸ This thousand-fold increase in production per farm represents a shift in poultry productions from traditional farms to an industrial machine that maximizes output as quickly as possible. Similar patterns of consolidation are occurring in the hog sector and to a lesser extent in the dairy and beef sectors.

The dramatic rise in the number of animals raised in these operations corresponds to a dramatic increase in the amount of manure and wastewater generated by these industrial operations. Animal manure and process wastewater⁹ contain nutrients such as nitrogen, phosphorus, and potassium; pathogens; antibiotics; and other pollutants such as cleaning fluids, heavy metals, synthetic fertilizers, and pesticides. When these substances reach local waterways without being treated, myriad human health and ecosystem impacts are inevitable. EPA estimates that CAFOs produce three times the waste that humans produce annually. Yet when it comes to managing animal waste, federal regulations far less from CAFOs than from sewage treatment plants.

Congress specifically identified CAFOs as sources of pollution to be regulated decades ago. Unfortunately, the considerable political power of the agricultural lobby tied up in knots EPA for close to as many years, delaying the promulgation of implementing regulations. Those regulations that the agency managed to eke out were then subject to punishing rounds of court review. States across the country have been slow to embrace these programs. Not surprisingly, the states that most urgently needed to implement regulations were the ones most dominated by agricultural interests. In many states, CAFO programs are only now starting to implement minimum federal standards.

These delays have had devastating consequences for water quality, but EPA is proposing changes to CAFO regulations that may help to improve water quality, particularly in the Chesapeake Bay. EPA has already proposed and opened for public comment a rule to collect information from large animal feeding operations (AFOs) to help determine which operations constitute CAFOs,¹⁰ and in June 2012 EPA will propose another rule aimed at CAFOs and AFOs in the Chesapeake Bay.¹¹ This latter rule is expected to expand CAFO permit coverage to operations that are not currently subject to federal requirements. Also pending on the horizon is the revised CAFO rule consistent with a recent federal court opinion, which will clarify which animal feeding operations must apply for pollution discharge permits.¹²

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If these requirements are enforced aggressively, real pollution reductions are possible. This section provides an overview of the problem of animal waste, describes the status of existing federal CAFO regulations, and explores the regulatory gaps that must be addressed in the coming year to improve the health and quality of the nation's waters.

Environmental Consequences in the Chesapeake Bay

In the Bay Watershed, animals generate approximately 44 million tons of manure that contains nearly 600 million pounds of nitrogen.¹³ Disposal of this manure and process wastewater most often occurs through land application, in stark contrast to the disposal of human waste, which is sent to sewage treatment plants to remove physical, chemical, and biological contaminants. When applied at agronomic rates that maximize plant and crop uptake, manure is a beneficial and low-cost source of fertilizer. If applied in excessive amounts, these wastes can cause serious harm to water resources through direct runoff into surface waters, percolation into groundwater, and deposition from air pollutants such as ammonia, hydrogen sulfide, and particulate matter.

The effect of CAFOs extends from human health impacts to impacts on local waterways and air quality. For example, more than 40 diseases found in manure can be transferred to humans, and researchers are increasingly connecting the aggressive spread of antibiotic resistant bacteria to the nontherapeutic use of antibiotics in these industrial animal agriculture operations.¹⁴ EPA estimates that the use of antibiotics increased to 28.8 million pounds in 2009, up from 18 million pounds in 1995.¹⁵ When these drugs are not used to treat sick animals but instead given to otherwise healthy animals to enhance and promote growth, they have been linked to promoting antibiotic resistance in bacteria. These resistant bacteria often cause severe infections in humans that cannot be treated with typical antibiotics.¹⁶

Water pollution from CAFOs also causes severe environmental damage, such as the infamous summer dead zones in the Chesapeake Bay and the Gulf of Mexico and massive fish kills. The nutrients and other substances in manure and process wastewater can also over-enrich waterbodies and lead to increased turbidity, which can block the sunlight necessary for aquatic plants to survive.

In the Chesapeake Bay, agriculture is the single largest source of nutrients, which come from manure from animal agricultural operations, chemical fertilizer added to traditional row crops, and air emissions from livestock and fertilized soil emissions.¹⁷ The combined contribution of both regulated and unregulated agriculture is roughly 45 percent the total nitrogen and total phosphorous that enters the Bay.¹⁸ Of this, animal agriculture accounts for 17 percent of the nitrogen and 26 percent of the phosphorus, and an additional 6 percent of the nitrogen comes from livestock and fertilized soil emissions. According to EPA:

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About one-third of animal manure is regulated (contributing 6 percent of nitrogen and 8 percent of phosphorus delivered to the Bay). The remaining nitrogen and phosphorus from agriculture is from non-animal agriculture (e.g. rowcrops) and smaller animal feeding operations or emissions which are not subject to the regulatory restrictions imposed on CAFOs.¹⁹

These estimates assume that all CAFOs are in compliance with their permit requirements. Strong CAFO programs in the Bay states could eliminate one-third of the animal manure that enters the Bay, and potentially more if not all CAFOs are in fact in compliance. These statistics also support the need for EPA to expand permit coverage to include more animal feeding operations.

The Clean Water Act and CAFOs

The CWA distinguishes between point sources, which are regulated, and nonpoint sources, which are not regulated. Point sources discharge pollution into waterways through discrete conveyance systems, and nonpoint sources comprise the remaining sources of pollution that enters water through disaggregated means, such as runoff.²⁰ The CWA explicitly identifies CAFOs as point sources, which is notable because Congress did not specify any other industrial sector as a point source.²¹

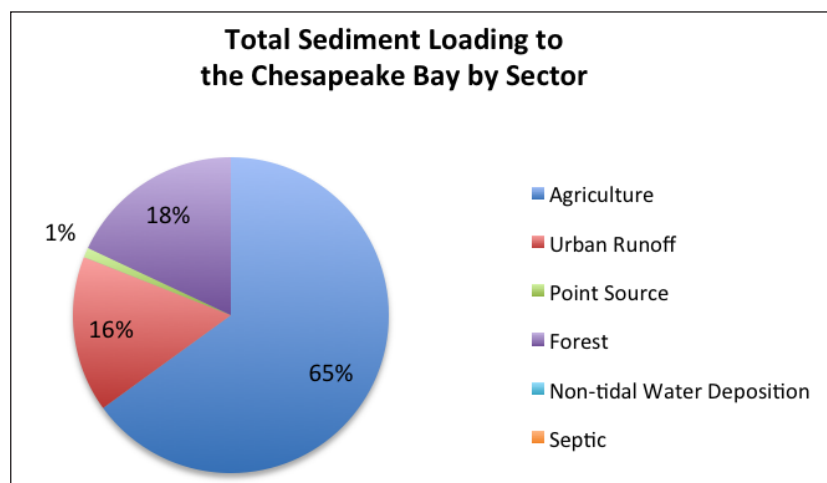
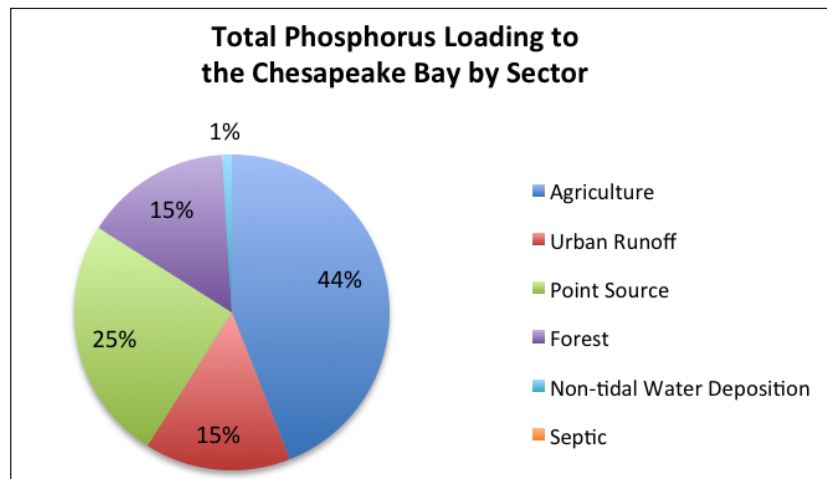
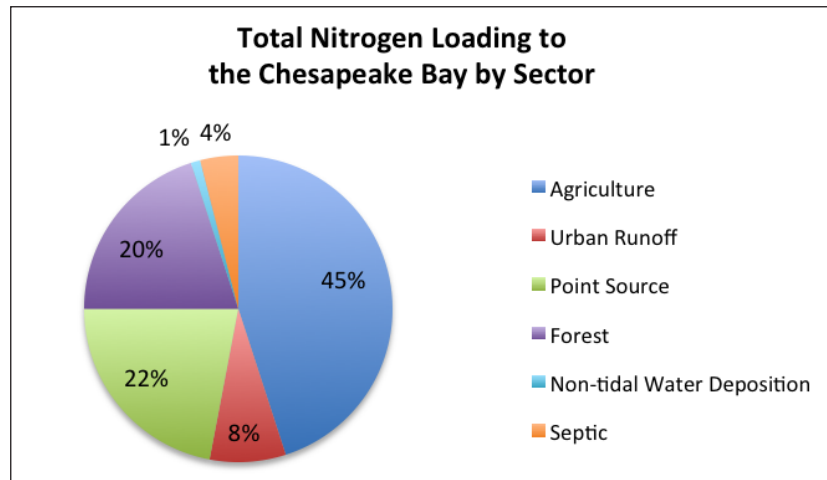
The primary mechanism to control water pollution is the end-of-pipe, technology-based controls required for point source dischargers. Under section 301 of the CWA, point sources are prohibited from discharging pollution into the waters of the United States without a National Pollution Discharge Elimination System (NPDES) permit.²² A crucial aspect of the NPDES permitting program is that it imposes uniform technology-based limitations, which require the same basic level of treatment for a particular industry no matter where the point source polluter is located. Thus, the CWA requires EPA to set minimum limitations that all polluters must meet, regardless of the quality of each individual polluter's receiving waters.

The CWA also recognizes that technology-based limitations alone do not necessarily provide an adequate level of cleanup to meet water quality objectives. The CWA therefore contains additional water-quality based standards. Under section 303 of the CWA, states must set use designations for its waters or particular segments thereof and must also establish criteria designed to ensure that these uses are met. If the technology-based limitations are in fact inadequate, states must identify the water bodies that fail to meet applicable water quality standards. These waters are commonly referred to as "water quality limited segments" or impaired waters.²³ States must then prioritize these waters according to their impairment levels and uses. Following this priority list, the states must then establish the TMDLs for the pollutants that are causing the impairment "at a level necessary to implement the applicable water quality standards."²⁴

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Nutrient and Sediment Pollution in the Chesapeake Bay by Sector



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The CWA authorizes EPA to delegate authority to a state to administer the NPDES permit program, which includes issuing permits that comply with the minimum federal regulations and ensuring compliance with permit terms and the CWA itself.²⁵ A state also retains the authority to pass any water quality standard or pollution limitation to prevent water pollution, as long as that standard or limitation is not less stringent than any applicable federal standard or limitation.²⁶

The first CAFO regulations were issued in 1974 and 1976 and were based on the length of confinement, the number of animals, and whether or not the facility directly discharged pollutants into surface waters that are protected by the CWA.²⁷ These regulations had a nominal zero-discharge limitation on CAFOs but exempted discharges that occurred during a 24-hour-25-year storm event. Notably, the original regulations did not deal with pollutant discharges to surface water or that leached into groundwater as a result of land application.

These regulations were ineffective for a variety of reasons:

- ***The low levels of permit coverage.*** Less than 30 percent of CAFOs had permits, possibly because of the heavy emphasis on traditional industrial and municipal point sources and the exemption for heavy storm events.
- ***The failure to capture updated practices in animal waste management.*** For example, during this time, poultry operations changed from liquid manure handling to dry manure handling and were thus not required to have a NPDES permit.²⁸
- ***The limited oversight and inspection.*** EPA did not provide adequate oversight to ensure that states were implementing the CAFO requirements, and states were not focused on inspecting facilities to determine which required permits and whether those that had permits were in compliance.
- ***The failure to establish agronomic rates of manure application.*** The regulations largely overlooked aspects of land application of manure, a direct source of water pollution if not applied properly.

Nevertheless, the CAFO regulations remained unchanged until 2003 when EPA issued new CAFO regulations.²⁹ Under these regulations, every CAFO was required to have a NPDES permit because every CAFO was assumed to have the “potential to discharge.” The final regulation also expanded the long-standing exemption for agricultural stormwater discharge³⁰ to include discharges from land to which manure has been applied. In addition, the final rule required all CAFOs to develop and implement a site-specific nutrient management plan (NMP), including a set of mandatory best management practices (BMPs) to ensure storage of manure and wastewater, proper management of mortalities and chemicals, and appropriate site-specific protocols for land application of manure. The rule did not require EPA to review these BMPs, however, nor were they included in the NPDES permit terms.³¹

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Litigation quickly followed, and in 2005 the Second Circuit for the Federal Court of Appeals upheld some provisions and struck down others in *Waterkeepers Alliance et. al. v. EPA*.³² Most importantly, the court struck down the provision that required every CAFO to have a NPDES permit because “EPA has jurisdiction to regulate and control only actual discharges—not potential discharges, and certainly not point sources themselves.”³³ The court upheld the expansion of the agricultural stormwater discharge exemption, so long as the land application complied with the appropriate site-specific nutrient management practices.³⁴ The court also upheld the requirement for NMPs but agreed with environmental litigants that the EPA was required to review the NMPs and to incorporate them into the NPDES permit terms.³⁵

Going back to the drawing board to address permit coverage and other issues, EPA again proposed and promulgated a final rule in 2008.³⁶ This rule required a CAFO owner or operator to apply for a permit if the CAFO “discharges or proposes to discharge.” The rule further defined “proposes to discharge” as a CAFO that is “designed, constructed, operated, or maintained such that a discharge would occur.”³⁷ In addition, a CAFO owner or operator who fails to apply for a permit and whose CAFO discharges would be liable for both the discharge and the failure to apply for a permit. The other significant aspect of the 2008 final rule was the requirement to develop and implement an NMP and requirements for land application. As part of the NPDES permit, the NMP must be submitted to EPA and subject to public review and comment, and the terms of the NMP must be incorporated into the applicable permit as an enforceable effluent limit.

Again, litigation immediately followed in *National Pork Producers Council v. EPA*. In March 2011, the Court of Appeals for the Fifth Circuit vacated the requirement to apply for a permit based on the “proposes to discharge” criteria but upheld the requirements for NMPs.³⁸ The court emphasized that there “must be an actual discharge into navigable waters to trigger the CWA’s requirements and the EPA’s authority” and concluded that “EPA cannot impose a duty to apply for a permit on a CAFO that ‘proposes to discharge’ or any CAFO before there is an *actual* discharge.”³⁹

At this time, EPA is reviewing the duty to apply under the CAFO regulations and plans to revise the regulations in the next few years. This ruling generally does not affect CAFO regulations in states with delegated CWA authority because these states retain the authority to regulate CAFOs more stringently than the minimum requirements in the federal regulations.⁴⁰ The biggest impact of this ruling is on states such as Idaho and New Mexico where EPA administers the CWA programs and permits because the agency has not delegated CWA authority to the state.⁴¹ This ruling also affects states that have laws that forbid state agencies from adopting standards that are stricter than federal standards. Thus, EPA should continue to pursue regulations that protect the nation’s waters from pollution generated by CAFOs.

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Definitions

Agricultural Stormwater. Agricultural stormwater is precipitation-related discharge of manure, litter, or process wastewater from land areas under the control of the CAFO. This discharge is exempt from NPDES permit requirements only if the manure, litter, or process wastewater has been applied with the site-specific nutrient management practices in the CAFO's nutrient management plan.

Animal Feeding Operation. A lot or facility where (1) animals are stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period and (2) crops, vegetation, or forage growth are not sustained in the normal growing season over any portion of the lot or facility.

Concentrated Animal Feeding Operation. An AFO that is defined by federal regulations as a Large or Medium CAFO or is designated as a CAFO.

General Permit. A general NPDES permit covers a class of facilities that have the same type of discharge and are located in a specific geographic area. The general permit applies the same or similar conditions to permit holders.

Individual Permit. An individual NPDES permit is specifically tailored to an individual facility.

Land application area. The area of land to which manure, litter, or process wastewater from the production area is applied and that is under the control of the AFO owner or operator.

Nutrient Management Plan. A NMP is a site-specific plan that details how an AFO will store, use, and dispose of manure, litter, and process wastewater.

Process Wastewater. Water that is used in the operation of the AFO for: spillage or overflow from animal or poultry watering systems; washing or cleaning AFO facilities; direct contact swimming, washing, or spray cooling of animals, or dust control.

Production Area. The part of an AFO that includes the area where animals are confined, where manure is stored, where raw materials are stored, and where waste is contained.

Federal CAFO Regulations

The following table outlines the current, major federal requirements for CAFOs. A state retains the authority to regulate animal feeding operations more stringently than EPA.

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Does the animal agriculture operation meet the definition of a large CAFO, medium CAFO, or a small, designated CAFO? 40 CFR § 122.23(a)

- A large CAFO is defined by the number of animals on an animal feeding operation (AFO), where animals are kept for a total of 45 days or more in a twelve-month period and where crops or vegetation are not produced during the normal growing season.
- A medium CAFO is also defined by the number of animals on an AFO and by the presence of pollution discharge into surface waters.
- A small CAFO is an AFO that does not meet the definition of a medium CAFO but is designated as a CAFO because it is a significant contributor of water pollution.

If YES, move to the next question.

If NO, does the animal agriculture operation land-apply manure?

- If YES, the CAFO must seek coverage under a NPDES permit.
- If NO, the animal agriculture operation does not fall under federal CAFO regulations and does not require a NPDES discharge permit. The individual state, however, may have applicable regulations.

Does the CAFO discharge? 40 CFR § 122.23(d)

If YES, move to the next question.

If NO, the animal agriculture operation does not fall under federal CAFO regulations and does not require a NPDES discharge permit. The individual state, however, may have applicable regulations.

Is the CAFO seeking coverage under an individual permit or a general permit? 40 CFR § 122.21 & 122.28

Individual Permit

To apply for an individual permit, a CAFO must provide this information:

- The name and location of the operator or owner
- The location of the facility and the mailing address
- The GPS coordinates for the production area
- A topographical map of the production area
- The number and type of animals
- The number of acres available for land application
- The type or containment or storage for manure, litter, or process wastewater and the total capacity of storage
- The estimated amount of manure generated per year
- The estimated amount of manure transferred to others per year
- A nutrient management plan that satisfies applicable regulations

General Permit

The CAFO operator must submit a Notice of Intent that it plans to seek coverage and must submit this information:

- The name of the operator or owner
- The name of the facility and its address
- The type of facility and the type of discharge
- The receiving waters for discharge

By what date is the CAFO required to seek permit coverage? 40 CFR § 122.23(f)

If the CAFO was considered a CAFO before April 14, 2003, it must have a permit as of that date.

If the CAFO was considered a CAFO as of April 14, 2003, it must seek coverage no later than February 27, 2009.

If the CAFO is considered a CAFO after April 14, 2003, it must obtain a permit 90 to 180 days prior to beginning operation.

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What are the requirements for a CAFO NPDES permit? 40 CFR § 122.42(e)

A CAFO must implement its nutrient management plan.

The NMP must:

- Ensure adequate storage of the manure, litter, and process wastewater.
- Ensure proper management of animal mortalities.
- Ensure that clean water is diverted from the production area.
- Prevent direct contact of confined animals with waters of the United States.
- Ensure that chemicals or contaminants are not disposed of in the manure, litter, or process wastewater, unless there is a treatment system designed specifically to dispose of them.
- Identify site-specific conservation practices.
- Identify protocols for testing manure, litter, and process wastewater and soil
- Identify protocols for land application of manure, litter, or process wastewater. For land application, an operator must identify [40 CFR § 122.42(e)(5)]:
 - The fields available for land application
 - Linear or narrative field-specific application rates.
 - The timing of land application.
- Identify records to document the implementation of the NMP.

A CAFO must keep certain records and make them available to the state or EPA permit administrator upon request.

- Records must be maintained for 5 years.
- For the production area, a CAFO must keep records of (40 CFR § 412.37(b)):
 - Inspections
 - Weekly depth measurements of manure, litter, or process wastewater in liquid storage
 - Any actions taken to correct any deficiencies found as a result of visual inspections.
 - Mortalities management
 - Design of manure lagoon storage structures
- For Land application, a CAFO must keep records of (40 CFR § 412.37 (c)):
 - The crop yield expected
 - The date that manure, litter, or process wastewater is applied
 - The weather conditions at and 24 hours before and after the time of land application
 - The test methods used to sample soil, manure, litter, and process wastewater
 - The results from sampling soil, manure, litter, and process wastewater
 - An explanation for the application rates
 - The calculations for the total nitrogen and total phosphorous to be applied
 - The actual amount of total nitrogen and total phosphorous applied
 - The method of application
 - The dates of manure application equipment inspection

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A CAFO must keep track of manure transfers, if any.

- Large CAFOs must keep records on manure transfers for 5 years from the date of transfer. The records must include:
 - The recipient name and address.
 - The approximate amount of manure, litter, or process wastewater transferred.
- Large CAFOs must provide transfer recipient with the most current nutrient analysis.

A CAFO must submit annual report to the state or EPA permit administrator.

The annual report must include information about:

- The number and type of animals
- The estimated amount of manure, litter, and process wastewater generated in the past 12 months
- The estimated amount of manure, litter, and process wastewater transferred in the past 12 months
- The number of acres available for land application, as described in the NMP
- The number of acres to which manure, litter, and process wastewater was actually applied
- The date, time, and volume of any manure, litter, or process wastewater discharges
- A statement about whether the operation's nutrient management plan was developed by a certified nutrient management planner
- The actual crops planted and the yield, the actual nitrogen and phosphorous concentrations in manure, litter, and process wastewater, the actual application rates, the amount of manure, litter, or process wastewater applied to fields in the past 12 months
- For CAFOs with narrative rates of application, the results of soil testing, the data used in calculations, and the amount of supplemental fertilizer

What else must a CAFO do? 40 CFR § 412.37(a)

A CAFO must conduct routine visual inspections.

- Weekly inspections of all stormwater diversion devices, runoff diversion structures, and devices that channel contaminated stormwater to the wastewater and manure storage and containment structure.
- Daily inspections of water lines.
- Weekly inspections of manure, litter, or process wastewater impoundments.

For open source liquid impoundments, CAFO must have a depth marker to indicate the minimum capacity needed to contain precipitation and runoff from a 25-year, 24-hour rainfall event.

A CAFO must take corrective actions "as soon as possible" to correct any deficiencies that are discovered during the visual inspections.

A CAFO cannot dispose of dead animals in any liquid manure or process wastewater system unless technologies are in place and approved of to deal with mortalities.

While these regulations may appear exhaustive, they neglect to address some key outstanding concerns, such as air emissions from these operations, the potential for groundwater contamination, and other issues identified below. Moreover, the regulations are meaningless without the resources for implementation. A 2003 GAO report concluded that neither EPA nor states have the capacity to implement CAFO programs, lacking additional staff to process permits, to conduct inspections and monitoring activities, and

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to pursue enforcement actions.⁴² Thus, the discrepancy between the regulations on paper and the regulations in practice means that animal waste still flows into waters across the United States.

Remaining Issues

Although Congress specifically identified CAFOs as sources of water pollution to be regulated, EPA still does not have enough basic information about the universe of CAFOs to adequately regulate water pollution from animal waste. Moreover, many aspects of CAFO regulations remain unresolved, and existing CWA tools to regulate CAFOs remain underused. Below, some of these issues are identified and discussed.

- ***The universe of facilities with a duty to apply for a CAFO NPDES permit.*** Because the Fifth Circuit invalidated EPA's 2008 rule that CAFOs that "propose to discharge" are required to apply for a NPDES permits, EPA is in the process of reformulating that rule but has not publicly set out any timeline for proposing and finalizing such a rule. At the time EPA proposed the 2003 CAFO rule, the agency estimated that CAFOs collectively produce 60 percent of all manure from animal feeding operations.⁴³ While this percentage is significant, it is lessened by the fact that only 8,000 of 20,000 CAFOs actually have permits. Thus, a far lower percentage of manure is likely to be actually regulated, controlled, and prevented from polluting water. The uncontrolled manure from these CAFOs that do not have permits, in addition to the remaining 40 percent of manure generated by non-CAFO operations, contribute to the continued deterioration of waters across the country. EPA should act immediately to ensure that all animal feeding operations that discharge manure and other water pollution are subject to mandatory pollution controls. In addition to proposing a new rule, EPA could encourage states to designate more operations as CAFOs, lower the threshold number of animals that constitute a CAFO, or establish a presumption of discharge from large AFOs.
- ***The lack of information about CAFOs and other large AFOs.*** On May 25, 2010, the Natural Resources Defense Council, the Sierra Club, and the Waterkeeper Alliance and EPA agreed that EPA would propose a rule to collect information about CAFOs under section 308 of the CWA. Section 308 authorizes the EPA administrator to collect information from the owner or operator of a CAFO to help develop pollution limitations or prohibitions and to determine whether any violations of the CWA are occurring. The settlement agreement proposed collecting information about 14 aspects of a CAFO, including information about implementation of the CAFO's nutrient management plan; the land application practices and other means of manure disposal and transfer, and whether the CAFO has applied for a NPDES permit.

This information is crucial because, as cited in a 2008 GAO report, "EPA has neither the information it needs to assess the extent to which CAFOs may be contributing to water

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pollution, nor the information it needs to ensure compliance with the Clean Water Act.” The report concluded that no federal agency collects current and accurate information on the number, size, and location of CAFOs as defined by EPA regulations. Without this information, EPA cannot fully assess the impact of CAFOs on water quality and therefore cannot adequately protect water quality. The U.S. Department of Agriculture (USDA) has the largest public database of agricultural data, but federal law prohibits USDA from disclosing individual information. Thus, USDA publishes information in a statistical or aggregate format. EPA can use this information to refine estimates of the CAFO universe, to assess animal densities and land application at the county level, and to identify the number of operations by county. However, EPA cannot access individual CAFO facility information.

Information from states is equally limited and would not provide a comprehensive picture of CAFOs nationwide. A handful of states, such as Missouri and North Carolina, maintain fairly comprehensive registries of CAFOs, but the vast majority of states do not have this information. States also do not collect and report information in a standardized format, and these inconsistencies prevent EPA from compiling complete information about CAFOs.

On October 21, 2011, EPA proposed a rule to collect information from CAFOs. The information to be collected includes: (1) the name and contact information of the owner of the CAFO; (2) the GPS coordinates of the CAFO production area; (3) information about NPDES permit coverage if the CAFO has a permit; (4) information about the types and numbers of animals confined on the CAFO for the past 12 months; and (5) the total number of acres of land for land application of manure, litter, or process wastewater if the CAFO owner land-applies.

The initial deadline for public comments was December 19, 2011, but the deadline was extended to January 19, 2012. The proposed rule failed to collect information adequate for determining the potential harm to water quality posed by a CAFO and required updates only once every ten years. The proposed rule also failed to require information about the vertical integrator of a CAFO, such as Perdue or Tysons. These companies contract with local agricultural operators to grow chickens, providing the chickens and the feed and dictating nearly every aspect of growing conditions. Under the CWA, an “owner or operator” is required to obtain a NPDES permit, and collecting information about vertical integrators would help EPA identify and apportion responsibility for the environmental and public health harms caused by these massive operations.

The proposed rule also contained two options, one of which would require information from CAFOs located in priority watersheds. This option would not solve the problem of the incomplete picture of the CAFO universe. EPA should adhere to the settlement agreement and collect more complete information from CAFOs.

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- ***A presumption of discharge.*** In the 2005 *Waterkeepers* case, the Second Circuit hinted that EPA could establish a regulatory presumption that large CAFOs discharge. Existing case law allows an administrative agency to establish an evidentiary presumption only if there is “a sound and rational connection between the proved and inferred facts.” A presumption is appropriate when “proof of one fact renders the existence of another fact so probable that it is sensible and timesaving to assume the truth of the inferred fact... until the adversary disproves it.”⁴⁵ A court must review the agency presumption for “consistency with their governing statutes and for rationality.”

A state retains the authority to establish this presumption, and indeed Wisconsin law presumes that most large CAFOs discharge and thus requires them to have a state NPDES permit.⁴⁶ In an effort to improve water quality, EPA and states should establish a regulatory presumption of discharge so that all large animal feeding operations are covered.

- ***Integrator liability.*** In 2000, EPA included a proposal to require an entity that exercises substantial operational control over a CAFO to obtain a permit, in addition to the CAFO owner or operator. EPA recognized the trend toward vertical integration of animal agriculture that has resulted in concentrations of manure that exceed agricultural needs in certain regions. National processors in the poultry and hog sectors, such as Tysons, Perdue, and Smithfield, provide the animals, feed, and medication or strictly dictate the growing practices, yet they disclaim any responsibility for the environmental and public health damages caused by the manure and animal litter from these operations. This arrangement means that central players in the CAFO industry contract away responsibility for pollution, leaving the local contractors responsible for preventing water pollution with relatively few resources. As a result, EPA sought to clarify that permit compliance and responsibility for the manure generated by CAFOs falls on both the CAFO owner or operator and these entities.

EPA’s proposal would have clarified that an entity that has substantial operational control over a CAFO constitutes a CAFO operator and is thus subject to NPDES permitting requirements. To define “substantial operational control,” EPA proposed a list of factors that included whether the entity (1) directs the CAFO personnel through a contract of direct supervision; (2) owns the animals; or (3) specifies how the animals are grown, fed, or medicated. Ultimately, this proposal was not included in the final 2003 CAFO rule. EPA is clearly aware that national processors escape accountability and should include in its upcoming rule a similar proposal for integrator liability.

- ***The underuse (or nonuse) of designation authority.*** Under the CWA, EPA or a state with NPDES permitting authority is authorized to designate as a CAFO a small farm that does not meet the threshold requirements of large and medium CAFOs but nonetheless is a “significant contributor” of water pollution. To make this designation, these factors must be considered: (1) the size of the operation and the amount of manure

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or waste that is discharged into water; (2) the location of the operation; (3) how the manure, litter, or process wastewater is discharged into water; (4) factors that affect the likelihood or frequency of pollution discharge; and (5) other relevant factors.

To date, this designation authority has remained unused in most states and EPA regions but provides a significant tool to expand nutrient management requirements to operations that contribute to water pollution.

- ***Agricultural stormwater exemption.*** In the final 2003 CAFO rule, EPA specifically exempted from NPDES permitting requirements the discharge of manure, litter, or process wastewater from land under control of the CAFO if the waste has been applied in accordance with site-specific nutrient management practices. This exemption was upheld by the Second Circuit Court of Appeals in the 2005 *Waterkeeper* decision as a permissible interpretation of the CWA. However, the exemption remains a significant concern because of the loose standards for the rate of application and the ability to monitor land application of manure according to those rates. The USDA has already identified the Chesapeake Bay region as among the highest for excess phosphorus from manure.⁴⁷ EPA is currently conducting a review of the Bay states' technical standards, which EPA uses to evaluate the applicability of the agricultural stormwater exemption.
- ***EPA's Chesapeake Bay Enforcement and Compliance Strategy.*** Under the Bay TMDL, EPA has developed an enforcement and compliance strategy to address three specific geographic areas with high loads of manure-based nutrients: the Delmarva Peninsula, including Delaware and the eastern shores of Maryland and Virginia; south-central Pennsylvania, including the Susquehanna River Watershed and Lancaster and York counties; and the Shenandoah Valley, including Virginia and West Virginia.⁴⁸ These areas have significant nutrient imbalances and nutrient-related local water quality impairments. They also contribute the highest agricultural nutrient loads to the Bay, due to inconsistent implementation of nutrient management practices.

On the Delmarva Peninsula, the densely packed poultry operations are the primary source of nutrients. In south-central Pennsylvania, the primary source of nutrients is dairy operations but also some swine and poultry operations.

As part of this strategy, EPA intends to target and prioritize the animal operations that pose the greatest risk to water quality and to take enforcement actions to compel compliance. EPA may also expand the universe of operations that are required to have permits and exercise its authority to reject CAFO permits that are not stringent enough to protect water quality. EPA also plans to target air emissions from CAFOs.

Key Issues in Litigation of Federal CAFO Regulations

The following table illustrates some of the key provisions in the federal CAFO regulations that have been litigated and summarizes the results of that litigation.

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	2003 Rule	<i>Waterkeeper Alliance</i> (2d. Cir. 2005) ⁴⁹	2008 Rule	<i>National Pork Producers Council</i> (5th Cir. 2011) ⁵⁰
The duty to apply for a permit	ALL CAFOs are required to apply for a NPDES permit, whether or not they discharge.	<p>The court held that EPA cannot require CAFOs to apply for a permit based on the “potential to discharge.”</p> <p>In footnote 22, however, the court suggested the possibility that EPA create a regulatory presumption of discharge. It said, “We also note that the EPA has not argued that the administrative record supports a regulatory presumption to the effect that Large CAFOs <i>actually</i> discharge. As such, we do not now consider whether, under the Clean Water Act as it currently exists, the EPA might properly presume that Large CAFOs—or some subset thereof—actually discharge.”</p>	<p>CAFOs that “discharge or propose to discharge pollutants” are required to apply for a NPDES permit.</p> <p>A CAFO does not “propose to discharge” if “based on an objective assessment of conditions at the CAFO, that the CAFO is designed, constructed, operated, and maintained in a manner such that the CAFO will not discharge.”</p>	<p>The court held that EPA’s requirement that CAFOs that “propose to discharge” apply for a NPDES permit is <i>ultra vires</i>.</p> <p>The court said that EPA’s authority under the CWA is “strictly limited to the discharge of pollutants into navigable waters.” There must be an “actual discharge into navigable waters to trigger the CWA’s requirements and the EPA’s authority.”</p>
Liability for the failure to apply for a permit	If CAFO can prove that it does not have <i>the potential</i> to discharge, it is not required to seek a permit.		<p>A CAFO that “discharges or proposes to discharge” and that fails to apply for a NPDES permit is liable for that failure.</p> <p>However, a CAFO can undergo voluntary certification. In the event of a discharge, a CAFO without a NPDES permit will not be liable for violating the duty to apply but will still be liable for an unpermitted discharge.</p>	<p>The court held that EPA cannot impose liability on a CAFO for failing to apply for a permit.</p> <p>The court noted that the CWA specifies circumstances for liability, and it does not include liability for failing to apply for a NPDES permit.</p>

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	2003 Rule	<i>Waterkeeper Alliance</i> (2d. Cir. 2005)⁴⁹	2008 Rule	<i>National Pork Producers Council</i> (5th Cir. 2011)⁵⁰
Land application and the agricultural stormwater exemption	EPA expanded the agricultural stormwater exemption to include “land application discharge,” <i>if</i> the land application comports with appropriate, site-specific nutrient management practices.	The court upheld the inclusion of land application discharge as part of the agricultural stormwater exemption.		
Nutrient Management Plans	For all CAFOs that apply for a permit, they are required to develop and implement a site-specific NMP with best management practices (BMPs), designed to “ensure adequate storage of manure and wastewater, proper management of mortalities and chemicals, and appropriate site-specific protocols for land application.		The rule restated that NMPs are an enforceable part of a NPDES permit and that the terms of NMPs are the same as the 2003 Rule.	The court upheld the NMP requirements and terms.
Review of BMPs	The rule did not include EPA review of BMPs and did not require the BMPs to be included in the CAFO NPDES permit.	The court held that failure to provide EPA review of NMPs violated the CWA requirements that “the permitting agency must assure compliance with applicable effluent or discharge limitations” and that NMPs constitute an effluent limitation that must be part of a NPDES permit.		

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Resources for the Federal CAFO Program

The following resources provide in-depth information about the federal CAFO program and were cited throughout this section.

Laws and Regulations

Clean Water Act, 33 USC § 1362(14)

Clean Water Act regulations, 40 CFR §§ 122.23, 122.42, & 412

Government Documents & Reports

Claudia Copeland, *Animal Waste and Water Quality: EPA Regulation of Concentrated Animal Feeding Operations (CAFOs)*, Congressional Research Service (CRS) Report for Congress, RL31851 (September 21, 2006).

Claudia Copeland, *Animal Waste and Water Quality: EPA Regulation of Concentrated Animal Feeding Operations*, CRS Report for Congress, RL31851 (February 16, 2010).

Claudia Copeland, *Animal Waste and Water Quality: EPA's Response to the Waterkeeper Alliance Court Decision on Regulation of CAFOs*, Congressional Research Service Report for Congress, RL33656 (June 15, 2010).

Government Accountability Office (GAO), *Livestock Agriculture: Increased EPA Oversight Will Improve Environmental Program for Concentrated Animal Feeding Operations*, GAO-03-285 (January 2003).

GAO, *EPA Needs More Information and a Clearly Defined Strategy to Protect Air and Water Quality from Pollutants of Concern*, GAO-08-944 (September 24, 2008).

U.S. EPA Office of Enforcement and Compliance Assurance, [Chesapeake Bay Compliance and Enforcement Strategy](#) (May 12, 2010).

Non-Governmental Reports

Pew Environment Group, *Big Chicken: Pollution and Industrial Poultry Production in America* (July 27, 2011).

Union of Concerned Scientists, *CAFOs Uncovered: The Untold Costs of Confined Animal Feeding Operations* (2008).

Other

Hannah Connor, *Comprehensive Regulatory Review: Concentrated Animal Feeding Operations under the Clean Water Act from 1972 to the Present*, 12 VERMONT JOURNAL OF ENVIRONMENTAL LAW 275 (2011).

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CAFOs and the Animal Agricultural Sector in Maryland

Introduction: Purpose and Scope

The purpose of this section is to provide basic information about the regulation of animal agriculture in Maryland and how those regulations are implemented, both in policy statements and in practice. In addition to providing an overview of the laws, regulations, and policies that address concentrated animal feeding operations and other animal agriculture operations, this section also makes recommendations to ensure that this sector is accountable for meeting its pollution reduction requirements. Maryland and other states surely have no time to waste in implementing these requirements if they are to improve water quality within timeframes expected by EPA and the public.

Maryland addresses pollution caused by animal agriculture under two distinct programs administered by two different agencies. Under the federal CWA, the Maryland Department of the Environment (MDE) administers and regulates CAFOs and issues National Pollution Discharge Elimination System (NPDES) permits. EPA delegated authority to MDE to administer the CAFO program and other CWA programs that require NPDES permits. MDE also administers a state program for a second group of large animal feeding operations, Maryland Animal Feeding Operations (MAFOs).

For agricultural operations that generate or use manure but that do not qualify as CAFOs or MAFOs, the Maryland Department of Agriculture (MDA) also administers a nutrient management program established by the state Water Quality Improvement Act (WQIA). The table below identifies these three categories of animal agricultural operations and the applicable regulatory requirements.

Table 1. Categories of Animal Agricultural Operations in Maryland.

Category of Operation	Definition	Administrating Agency	Regulatory Requirements
Concentrated Animal Feeding Operations (CAFOs)	A medium or large animal feeding operation (AFO) that discharges or operates in a way that a discharge of pollution to surface waters will occur A small AFO that is designated by MDE or EPA as a CAFO because its location or animal type is likely to cause a discharge of pollution into surface waters	MDE, as delegated by EPA	NPDES General Permit and Comprehensive Nutrient Management Plan
Maryland Animal Feeding Operations (MAFOs)	A large AFO that does not discharge or is not designed or not operated to cause discharges A medium or small AFO that is designated by MDE because of its proximity to surface water or animal type	MDE, under state regulations	MAFO permit, a nutrient management plan, and soil and water conservation plan
Other Agricultural Operations	Agricultural operations that gross \$2,500 annually or contain 8,000 pounds of live animal weight ⁵¹	MDA, under the WQIA	Nutrient management plan

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FY 2011 was the first full year of operation of Maryland's CAFO program, but it already is undermined by severe shortfalls in funding and staff. The Maryland CAFO program is notable because it exceeds the minimum federal standards by requiring more operations to obtain permits. No good deed goes unpunished, however, so MDE is focused on issuing and registering permits to the hundreds of operations that are required to have permits. MDE has developed a General CAFO Permit that contains the same requirements for all operations in Maryland because they generate and discharge similar types of waste.⁵² How these regulations are implemented in practice remains to be seen, both because the CAFO program is new and MDE does not appear to have adequate financial and technical resources to issue permits, monitor and inspect facilities, and conduct deterrent-based enforcement actions.

Recommendations

To ensure that the CAFO and animal agriculture sector in Maryland is accountable for reducing nutrient and sediment pollution, this section recommends:

- ***MDE should retain the broad scope of permit coverage for CAFOs and MAFOs.*** Maryland regulations require all large and medium AFOs to obtain either a CAFO or a MAFO permit. The distinction between the CAFO and MAFO permit hinges on whether or not the operation actually discharges or operates in a way that will cause a discharge and thus “proposes to discharge.” Those operations that discharge or propose to discharge are required to obtain CAFO permit coverage. Those operations that do not discharge or do not propose to discharge—in essence, those that operate in such a way that a discharge will not occur—are required to obtain MAFO permit coverage. These regulations are more stringent than the minimum federal standards and take advantage of provisions in the CWA that explicitly allow states to be more protective of their waters. MDE should retain this broad permit coverage in the face of any potential opposition.
- ***MDE should immediately begin to assess annual permit fees for CAFOs, both those that have permits and those with pending permits.*** Unlike a penalty, a permit fee accounts for the additional work that a regulated facility generates for MDE by discharging pollution into the Bay and its tributaries. The current annual permit fees range from \$120 to \$1,200 per year, depending on the size of the operation. Maryland law requires permit fees to be based on the anticipated cost of monitoring and regulating the permitted facility and programmatic needs related to prevention pollution discharge into the waters of Maryland. Ultimately these fees ensure that the regulated facility that pollutes the environment shoulders the full cost of its operations, rather than foisting the cost onto the public. MDE waived application and annual permit fees during the start-up phase of its program. The agency should end this grace period and ensure that the permit and annual fees are assessed and reflect the anticipated cost of administering the permit.

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- ***MDE should conduct targeted enforcement actions that have a strong deterrent effect.*** Deterrence-based enforcement is based on the theory that regulated facilities, such as CAFOs, weigh the costs and benefits of complying with NPDES requirements or other regulations. If a CAFO will save \$10,000 by avoiding compliance and illegally discharging animal waste into the nearby waters but also knows that it will face stiff penalties that far exceed \$10,000 for this discharge, the CAFO—and other similarly situated CAFOs—will be dissuaded from violating environmental laws under the deterrence-based enforcement model.

Deterrence-based enforcement works, therefore, only if the threat of enforcement is credible. Part of the calculus involves assessing the likelihood that the government will detect a violation and take enforcement action and assessing the likely financial penalty. Penalties play a central role in motivating regulated companies to comply with environmental laws and regulations. The threat of a severe penalty also motivates a company to take proactive and preventative measures to minimize pollutant discharge and reduce the potential for liability.

- ***MDE should increase the number of physical, on-site inspections of MAFOs.*** The rate of inspections for MAFOs is significantly lower than the inspection rate for CAFOs. Although MAFOs by definition do not discharge, MDE should increase the number and frequency of physical, onsite inspections of these operations to ensure that they do not in fact discharge and are properly permitted. In FY 2012, MDE's target rate of MAFO inspections is roughly 5 percent, compared to a roughly 50 percent inspection target rate for CAFOs.
- ***MDA should ensure that non-CAFO and non-MAFO animal operations comply with the nutrient management plans required under the Water Quality Improvement Act.*** The Maryland General Assembly should assist by raising the penalty maxima that MDA can assess in response to a violation of the WQIA. MDA should also make nutrient management plans public, particularly for those operations that receive public funds. If MDA continues to demonstrate that it has been captured by the agricultural lobby and cannot effectively enforce mandatory NMP requirements, the Maryland General Assembly should transfer the authority and responsibility for enforcing the WQIA to MDE from MDA with respect to non-CAFO and non-MAFO animal agricultural operations.
- ***The Maryland General Assembly should increase basic funding levels for MDE.*** A well-funded CAFO program should have sufficient funds to enough permit writers to issue CAFO permits in a timely manner and enough inspectors to ensure that both CAFOs and MAFOs are inspected and in compliance. Since the CAFO program began, the number of regulated facilities has increased dramatically, from 10 regulated facilities to more than 500 CAFOs and MAFOs combined.

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Methodology

The information in this report was gathered from publicly available sources, reports, or articles and interviews with key stakeholders in the state. The interviewees include:

- **Andrea Baker**, Deputy Counsel at MDE, Office of the Assistant Attorney General
- **Christy Brown**, Comprehensive Nutrient Management Plan Planner, Maryland Natural Resources Conservation Service (NRCS), USDA
- **Scott Edwards**, Co-Director, Food & Water Justice, Food & Water Watch
- **Eric Hines**, District Conservationist, Maryland NRCS, USDA
- **Tansel Hudson**, Acting State Resource Conservationist, Maryland NRCS, USDA
- **Gary Kelman**, CAFO Program Director, MDE
- **David McGuigan**, Associate Director, Water Protection Division, U.S. EPA Region 3
- **Michele Merkel**, Co-Director, Food & Water Justice, Food & Water Watch
- **David Mister**, Eastern Shore Office of Resource Conservation, Maryland Department of Agriculture
- **Jim Newcomb**, District Manager, Dorchester Soil Conservation District
- **Jennifer Timmons**, Regional Poultry Specialist, University of Maryland
- **Ashley Toy**, CAFO Team, NPDES Enforcement, U.S. EPA Region 3

CPR asked interviewees a series of open-ended questions about MDE's CAFO program and more generally about regulation of animal agriculture in Maryland. The questions included permitting, monitoring, and enforcement aspects of the CAFO program, as well as overall strengths and weaknesses and recommendations for changing the program. To encourage candid remarks, interviewees were told that their specific remarks would not be attributed to them individually but that a summary of remarks would be included in a final report

The report below provides information about the CAFO and animal agriculture regulations that apply in Maryland, as described in the publicly available sources. The interviewees' perspectives are included in the blue text boxes. The interviewees do not necessarily endorse any of the findings or recommendations made in this report, which are the authors' alone. The interviewees also participated and spoke on their own behalf and not on behalf of the agencies or organizations for which they work.

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Key Interview Findings

Overall the interviewees' opinions about the effectiveness of Maryland's CAFO program pointed to several key findings:

Interviewees agreed that the lack of technical staff to write Comprehensive Nutrient Management Plans (CNMPs). To obtain a CAFO permit, an operator must submit a CNMP that has been written by comprehensive nutrient management planner. These planners are either staff in the Maryland office of the USDA Natural Resources Conservation Service (NRCS) or private individuals who have been certified by the NRCS. Without a CNMP, MDE cannot issue a CAFO permit to a facility. Across the board, interviewees repeatedly emphasized that the number of permit applications far exceeded the capacity of the three CNMP writers and eight to ten technical service providers to issue plans in a timely manner. Interviewees estimated that CNMP development may take anywhere from two to six weeks.

Interviewees also agreed that the lack of MDE staff to address the backlog of permit work and to conduct inspections is another serious obstacle for the CAFO program. A common refrain during the interviews was the lack of staff resources to administer the CAFO program, in addition to the lack of staff to write CNMPs. Interviewees cited the need for more inspectors to conduct targeted inspections of the roughly "20 percent of bad operations."

Interviewees identified the broad universe of permit coverage as a great strength of the CAFO program. Maryland's regulations exceed the federal minimum because large animal feeding operations that will discharge are required to obtain CAFO permits,

while large AFOs that do not discharge are nevertheless required to obtain MAFO permits. Several interviewees cited this broad universe of coverage as one of the strongest aspects of Maryland's CAFO program and expressed a desire to see this coverage continue in the face of a federal court's decision to narrow the federal standards for permit coverage.

Other interviewees, however, expressed frustration with the "propose to discharge" language of the regulations, the uncertainty surrounding federal regulations due to unresolved lawsuits, and the inability to get clear and consistent answers from MDE staff about state regulations. The interviewees noted that these aspects of the CAFO program hinder the ability to implement regulations and to work with agricultural operators.

Some interviewees agreed that MDE has done a good job of reaching out to and educating CAFO operators about the permit requirements and that the level of awareness among operators has increased considerably. Interviewees applauded MDE for cooperating with MDA, the soil conservation districts, the University of Maryland extension offices, and industry organizations and representatives. One interviewee characterized the relationship between MDE and MDA as "excellent," enabling the agencies to work together to correct minor issues before they become major problems.

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Snapshot of Animal Agriculture in Maryland

According to USDA, Maryland has 12,800 farms that cover over 2 million acres, or a quarter of the state's total land area. The average farm size is 160 acres. Maryland ranks 36th overall in the United States for total value of agricultural products, and the state ranks 14th overall for poultry and egg production. As of the 2007 USDA agricultural census, Maryland's top three agriculture sectors were poultry and eggs, with 1,833 operations and a total sales of approximately \$904 million; grains, seeds, and legumes, with 3,501 operations and a total sales of approximately \$308 million; and nursery, greenhouse, floriculture, and sod, with 691 operations and a total sales of approximately \$209 million.⁵⁴

Maryland contributes roughly 20 percent of the total nitrogen to the Chesapeake Bay, and the state's agriculture sector accounts for 36 percent of Maryland's total nitrogen contribution. Similarly, Maryland contributes roughly 20 percent of the total phosphorus to the Bay, and the state's agriculture sector accounts for 41 percent of the total phosphorus contribution.⁵⁵ Specifically, the CAFO sector contributes 80,000 pounds of nitrogen and 7,000 pounds of phosphorus.⁵⁶

Legal and Regulatory Framework

Maryland's regulations for animal feeding operations became effective on January 12, 2009, and the General Discharge Permit for Concentrated Animal Feeding Operations (CAFOs) and Maryland Animal Feeding Operations (MAFOs) became effective on December 1, 2009. As a result of the state's promulgation of these rules, EPA approved Maryland's CAFO program on January 29, 2010.⁵⁷ MDE is responsible for developing and issuing the CAFO permit, which allows these facilities to dispose of animal manure and other pollution according to the permit terms. EPA retains oversight and enforcement authority, and Maryland retains the authority to regulate animal agriculture operations more stringently than the federal standards.

Under the Maryland program, CAFOs were required to submit Notices of Intent (NOI) to seek coverage under the General Discharge Permit by February 27, 2009; MAFOs were required to submit NOIs by March 1, 2010. The General Discharge Permit applies to all CAFOs. Maryland has not issued any Individual Discharge Permits, or permits that are specifically tailored to an individual operation. The application and annual fees for CAFO permits are \$120 for small CAFOs, \$600 for medium CAFOs, and \$1,200 for large CAFOs. To date, MDE has waived all fees until future notice in an effort to cajole potentially regulated operations to join the system.

As part of its approval, EPA did not address Maryland's technical standards for nutrient management because a planned review was scheduled to begin in February 2010. Under the CWA, the technical standards include a field-specific assessment of the potential for nutrient transport from field to surface waters and address factors such as the form,

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source, and amount of nutrients and the timing and method of land application. The standards seek to minimize nutrient run-off into surface waters and to achieve realistic crop production goals.⁵⁸ EPA noted that it may require modifications to Maryland’s technical standards if they are found to be inadequate, meaning that the standards allow excess manure application.⁵⁹ EPA expects Maryland to “demonstrate that its technical standards, in conjunction with other state requirements, are sufficient to meet [pollution allocations for all] agricultural sources.”⁶⁰

Snapshot of the MDE CAFO Program. The CAFO program is part of MDE’s Land Management Administration (LMA). The CAFO program has approximately three inspectors, who average approximately 100 inspections per person per year, and three permit writers, who average one to two permit registrations per week.

As of January 2, 2012, MDE has received 600 Notices of Intent for CAFO and MAFO permit coverage. Notably, prior to the start of the CAFO program, Maryland had merely 10 facilities registered and permitted as CAFOs.⁶¹

Table 2. Number of NOIs and Registered CAFOs and MAFOs in Maryland.⁶²

	8/19/2011	8/26/2011	9/9/2011	9/16/2011	9/23/2011	11/7/2011	01/03/2012
Total Number of NOIs Received	595	595	596	594	595	597	600
Total Number of CAFO NOIs	471	471	471	471	471	471	473
Total Number of MAFO NOIs	97	97	98	98	98	97	98
Total Number of Withdrawn NOIs	27	27	27	27	27	29	29
Number of CAFOs with a NOI & CNMP Received	331	334	336	340	340	347	353
Number of CNMPs under Review	219	215	229	216	213	214	193
Number of CAFOs under Public Comment	23	29	17	16	13	1	5
Number of CAFOs Registered under General Discharge Permit	89	90	31	108	114	132	155
Number of CAFO Sites with Submitted Compliance Schedules	345	346	346	346	346	346	339
Number of CAFO Sites with Compliance Schedules Executed	331	331	330	332	332	332	339

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CAFO and MAFO Permit Application Process. Maryland’s regulations for the CAFO and MAFO programs are part of section 26.08.01 of the Code of Maryland Regulations, a section that also covers regulations for all sources that require NPDES permits. In Maryland, every large AFO is required to have a permit, regardless of whether or not it discharges pollution to surface waters. The definition and threshold of a CAFO in Maryland tracks the federal definition and threshold that was promulgated by EPA in 2008. Maryland has retained the “discharge or propose to discharge” language from the federal regulations.

Maryland has an additional category of large animal feeding operations, the Maryland Animal Feeding Operation (MAFO). A MAFO is a large AFO that does not discharge or does not propose to discharge, or a medium or small AFO that MDE designates because of the type or location of animal waste storage. A medium or small AFO may also be designated as a MAFO if the animals’ access to surface water is likely to cause a discharge of pollution to ground or surface waters in Maryland.

MDE outlines on its website the five general steps to obtaining CAFO or MAFO permit coverage:

- (1) The operator first must determine if the animal agriculture operation meets the threshold size and definition of a CAFO or a MAFO.
- (2) If so, the operator must submit a NOI form and the required nutrient management plan (depending on the category of CAFO or MAFO). In general, a CAFO must submit a Comprehensive Nutrient Management Plan while a MAFO must submit either a CNMP or a nutrient management plan (NMP) and a soil conservation and water quality conservation plan. If a CAFO does not yet have a CNMP to submit, it is required to sign a compliance agreement that contains a schedule to obtain coverage and that requires periodic reports on progress made toward obtaining a CNMP.
- (3) MDE reviews the submission and determines whether the applicant receives preliminary approval.
- (4) MDE publishes a notice of approval and, if requested, holds a public hearing only on its approval of a CAFO CNMP. MDE must receive a written request for a hearing within a specified timeframe. For MAFOs, no hearing is required but the public may submit written comments.
- (5) After making any necessary adjustments to the CAFO, MDE sends a letter of approval to the permit applicant that his or her CAFO is registered under the General Permit. The letter explains the enforceable elements of the CNMP.⁶³

A CNMP is a nutrient management plan that covers use and disposal of manure and other animal waste, protection of water quality, and prevention of soil erosion. It includes basic information about the facility and its operations; detailed information about manure

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application, mortality management, and operation and maintenance requirements; and requirements for periodic reports. An agricultural operator must consider the six CNMP elements, even if the final CNMP does not contain all six:

- (1) manure and wastewater handling and storage;
- (2) land treatment practices;
- (3) nutrient management;
- (4) record keeping;
- (5) feed management; and
- (6) other utilization activities.⁶⁴

Compared to the NMPs required by state law under the Water Quality Improvement Act (discussed below), a CNMP has a greater focus on water quality, soil erosion, and testing and monitoring nutrient levels and concentrations. A CNMP must be written by a planner who has been certified by the USDA NRCS. In contrast, a nutrient management plan can be written by anyone, including an agricultural operator who has been certified by MDA. While allowing operators to write their own plans may reduce burden on MDA, it raises questions of self-interest that a third-party planner would not.

The table below shows MDE's projected timeline for registering all CAFOs and MAFOs. This timeline indicates that MDE intends to issue all CAFO permits before the General Discharge Permit expires on November 30, 2014.

Table 3. Timeline for Registration of CAFO Permits through 2014.⁶⁵

Date	Number of Permit Writers	Rate of Permit Issuance Per Permit Writer	Time Period	Permits Issued During this Time Period	Permits that are already Registered	Total CAFO Permits Registered
09/30/2011	2	1 permit/week	16 weeks	32	74	106
12/31/2011	2	1 permit/week	13 weeks	26	106	132
03/31/2012	3	1 permit/week	13 weeks	39	132	171
06/30/2012	3	1 permit/week	13 weeks	39	171	201
09/30/2012	3	1 permit/week	13 weeks	39	210	249
12/31/2012	3	1 permit/week	13 weeks	39	249	288
12/31/2013	3	1 permit/week	52 weeks	156	288	444
03/31/2014	3	1 permit/week	13 week	39	444	483

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Interview Perspectives: CAFO Permits and the Permitting Process in Maryland

CPR asked interviewees about the CAFO permit process, the universe of covered operations, and the ability of MDE to identify and issue permits in a timely manner.

Interviewees agreed that staff shortages both for technical CNMP writers and MDE staff to process permit applications contribute to the large number of CAFOs and MAFOs that are operating without a NPDES permit in Maryland. The process to obtain a registered CAFO permit has created a backlog of CAFOs that are waiting permits. Interviewees estimated CNMP development for a CAFO that does not land apply manure is a couple of weeks, compared to four to six weeks for a CAFO that land applies manure. The time required to develop a CNMP also depends on the type of animal.

As a result of this backlog in getting a CNMP and then in MDE processing the permit, one interviewee observed that some CAFOs that submitted NOIs are likely to not receive a permit by 2014 when the existing general permit expires. Interviewees estimated that the three permit writers at MDE average around 70 permit registrations per writer per year, or one to two registrations per week.

Interviewees expressed different opinions about the adequacy of CAFO identification and the universe of covered operations across the state. A handful of interviewees said that MDE has a “pretty good sense” of the CAFOs and MAFOs that are operating in Maryland, noting that MDE has done “a lot of riding around the state” to identify them, as well as comparing internal lists to information from EPA, MDA, and other partner organizations. One interviewee suspects that there are still stragglers who are “avoiding [the permit] or have decided that the permit doesn’t apply [to them],” but overall MDE has a “pretty good picture of the farming facilities in the state.” In contrast, other interviewees

expressed skepticism about MDE’s reliance on operators to self-identify their need for permit coverage and frustration with MDE’s online database because it is “difficult to tell” which facilities have obtained CAFO or MAFO permit coverage.

Interviewees cited two primary weaknesses with the CAFO permitting process and overall program: the lack of a firm deadline for submitting a CNMP and the lack of adequate enforcement measures in the permits at the federal level. Although MDE is “hoping to [remedy the permit backlog] as soon as possible,” the agency does not have a final date or deadline to finish issuing CAFO permits. Under the federal CWA regulations, CAFOs are required to obtain permits by February 27, 2009, if they were considered a CAFO as of April 14, 2003. If the operation is considered a CAFO after that date, it must obtain a permit within 90 to 180 days prior to beginning operation. One interviewee said, “Maryland is failing its obligation to get these facilities under permit as quickly as possible.” However, a few interviewees noted that a mitigating factor to this weakness is the semi-annual reports that operations that have filed NOIs must submit, detailing their status toward obtaining a CNMP.

Some interviewees perceived the lack of staff resources as an excuse for the lack of permit coverage in Maryland. While recognizing the real problem of shortages, they also said, “Agriculture is the primary polluter of the Chesapeake Bay. Therefore, it should be a priority [and] more state funds should be allocated to ensure these facilities are permitted properly.”

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Enforcement and Compliance Policies

MDE's policy is to inspect all registered CAFOs at least once during the five-year permit validity period, which is consistent with EPA's inspection guidance of 20 percent of CAFOs per year.⁶⁶ On-site inspections include a review of the records kept by the agricultural operator, as well as the CMNP for the operation. The MDE inspector will also physically inspect the operation. Off-site audits of records and submissions are also part of the inspection process. Both CAFOs and MAFOs are required to submit annual reports about the amount of manure generated and disposed of, as well as basic information the CNMP or NMP.⁶⁷

MDE's general enforcement policy calls for prioritized inspections of operations that pose the greatest or most significant risk to the environment and public health. Priority is also assigned based on the type of facility, the compliance history of a facility, its location, and other factors.⁶⁸ The agency also investigates complaints from citizens.

- For *minor* violations, such as first offenses that do not pose an immediate threat to public health or the environment, minor record-keeping violations, or minor deviations from a standard that can be immediately or swiftly corrected, MDE may give the facility a specific timeframe in which to correct the violation. If the facility complies, MDE does not take further formal enforcement action but notes the violation in the facility's record.⁶⁹
- For *major* violations, including those that pose a direct threat to public health or the environment or a violation that is part of a pattern of chronic, non-compliant behavior, MDE can take formal administrative or judicial enforcement actions that result in corrective orders, monetary penalties, or imprisonment.⁷⁰

MDE's most recent enforcement statistics show that during FY 2012 the agency plans to inspect a little more than half of the CAFO operations that have submitted NOIs but just a handful of MAFOs that have submitted NOIs. The reason for the significant difference between the inspection goals is unclear, particularly since MDE should consider inspecting MAFOs to ensure that they do not discharge and have the correct permit. Although MDE has tools to help animal feeding operations decide which type of permit to apply for, MDE should verify the status of self-identified MAFOs.

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Table 4. Inspection Statistics in Maryland, FY 2010-2012.⁷¹

	FY 2010	FY 2011	FY 2012 Target	FY 2012 through 12/31/2011
Total Inspections	52	319	270	126
Inspections of CAFOs that submitted NOIs	49	58	240	124
Inspections of MAFOs that submitted NOIs	2	3	5	0
Inspections of AFOs that were Found to be CAFOs or MAFOs	1	37	25	2
Minor Violations Found	5	76	n/a	16
Significant Violations Found	0	5	n/a	2

EPA Review of the CAFO Program in Maryland. EPA periodically reviews different aspects of states' Clean Water Act NPDES programs under the State Review Framework (SRF) and specifically reviews permitting issues as they arise. The SRF is an effort to consistently assess state enforcement of the major federal environmental laws, including the CWA. In the Round 1 report, EPA concluded that overall Maryland's enforcement actions are appropriate, taken in a timely manner, and designed to bring violators into compliance.⁷²

EPA noted that Maryland state law does not specifically cite recovery of any economic benefit from violation as a penalty criterion, which is part of EPA's penalty guidance. However, the report also noted that the economic benefit is partially captured by Maryland's consideration of the willfulness of the violation, the violator's knowledge of the violation, and the extent to which the violator exercised reasonable care. The report also praised Maryland for exceeding the CWA by imposing specific mandatory penalties "for certain violation from certain facilities."⁷³ The report did not identify which violations have specific penalties.

Specifically, EPA "recognizes the strengths in Maryland's agriculture programs, including an effective CAFO program."⁷⁴ As a result, agency will maintain ongoing oversight of Maryland's agricultural sector as the state implements actions to achieve the Bay TMDL pollutant allocations.

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Interview Perspectives: Compliance Rates

Interviewees were asked about the adequacy of CAFOs' rates of compliance with NPDES permit requirements.

Interviewees were generally satisfied with compliance rates in the CAFO program but suggested that MDE continue to educate farmers, to better understand how animal agriculture operates in practice, and to simplify regulations to improve compliance rates. One interviewee familiar with inspection rates said, "Compliance rates are pretty good," and compliance is motivated by "not wanting a penalty or fine." This interviewee emphasized the need for educating operators because "farmers need to understand why and how [regulations] benefit them, their family, and their community." Another interviewee noted that overall compliance issues tend to be minor, such as housekeeping issues, with a few exceptions of significant noncompliance that have resulted in consent orders with fines. Two interviewees mentioned the CAFO coordinator, discussed above, as a positive asset in achieving higher rates of compliance.

Another interviewee observed, "Farmers are good and bad, like any curve. Twenty percent are at the top and are cutting edge; 60 percent do an overall good job; and 20 percent are at the bottom: old school [farmers] who don't want to deal with the government. But there are always a few at the bottom, and when they refuse to work voluntarily, MDE comes in to enforce."

To improve compliance, interviewees suggested "getting the word out" as a deterrent for violations because "farmers may not realize they are doing the wrong thing." At least one interviewee suggested that MDE needs a better understanding of the agricultural reality when determining what counts as a violation, and another suggested that compliance rates could be improved if the regulations were simplified. This interviewee cited the "discharge versus propose-to-discharge" language as "very confusing, very painful" to implement in practice.

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Interview Perspectives: Enforcement Efforts in Maryland

Interviewees were asked about MDE's enforcement efforts in the CAFO sector.

Interviewees generally characterized MDE's enforcement efforts as uneven and inconsistent.

One interviewee expressed this sentiment, which others echoed: "MDE should be more consistent and fair in enforcement and should have more eyes on the ground." Another said, "Farmers and people who live off the land would like to pass something onto the next generation. They get frustrated when asked to do more, when the bad guy down the road is just filling out the paper work [without actually doing anything to improve his farming practices]."

This interviewee noted, "Targeted enforcement against really bad apples would make everyone else get in line." This interviewee also perceived enforcement efforts as a way to generate revenue for MDE, saying that because "budgets are bad, [MDE] is looking to fine people." Instead, the agency "should give [operators] a chance to correct [issues], lean on them and educate them, and then ramp down [if they still don't comply]."

Other interviewees noted that the CAFO enforcement program is "good" because all CAFOs that are required to have permits are in the system and MDE is visiting non-registered operations. They noted that MDE is "right on target for a new [CAFO] program." Another interviewee judged the enforcement program positively because it "has raised the level of awareness in the farming community and public about how to run things. Violations [are deterred] because MDE has acted on them." This interviewee admitted that, "up until the CAFO program, no one wanted to do the things that should've been done more promptly and sternly." However, because word spread about MDE taking enforcement actions and assessing penalties, the agriculture community is more likely to police itself. Remarkably, the interviewee said, now "farmers complain about other farmers."

In addition to having more inspectors and targeted enforcement actions, some interviewees cited the need for more substantial civil penalties, which would act as a substantial deterrent.

The Water Quality Improvement Act

Maryland also regulates the application and generation of animal manure and waste on agricultural operations that fall below the CAFO and MAFO threshold through the Water Quality Improvement Act (WQIA), also known as the nutrient management law. The Maryland General Assembly enacted this law in 1998, prior to the establishment of the CAFO program.

The WQIA requires agricultural operators who gross more than \$2,500 annually or have more than 8,000 pounds of live animal weight to submit a nutrient management plan (NMP) to MDA. In Maryland, 5,516 agricultural operations meet this criteria, and

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5,514 operations have the required NMPs.⁷⁵ This operation-specific NMP must address nitrogen and phosphorus inputs and requires agricultural operators to take soil samples triennially. The WQIA also requires them to submit an annual report that describes how they implemented the NMP during the previous calendar year.

Under this state law, MDA is responsible for compliance and enforcement. MDA staff conduct on-site inspections, analyze the annual implementation reports, and investigate citizen complaints to determine if operations are in compliance. MDA's policy is to inspect ten percent of farms to verify their NMPs are up-to-date and being implemented.⁷⁶ Inspections are prioritized according to the history of compliance and the risk to public health and the environment. According to MDA, during FY 2011 MDA's six nutrient management specialists conducted 450 implementation reviews and inspections. MDA issued 65 warnings for major violations, mostly related to plans that were expired.⁷⁷ MDA later found that 51 percent of the operators who were issued warnings had come into compliance, and the remaining operators are in the enforcement process.

MDA is authorized to issue penalties: \$250 for a farm that does not have an NMP and \$100 per violation for not implementing the NMP. The maximum penalty per year is \$2000. However, MDA states that "as long as the operator is taking steps to correct the violation, penalties do not accrue."⁷⁸ MDA can also refer violations to MDE. In FY 2011, nutrient management specialists from MDA conducted 450 implementation reviews and inspections and issued 65 warnings. MDA conducted follow-up inspections and found that 51 percent of operators had since come into compliance and began enforcement proceedings against the remaining operators.⁷⁹

The WQIA has two primary weaknesses: the persistent attitude of voluntary implementation and the secrecy surrounding NMPs. One review of MDA's implementation of the WQIA concluded that MDA leadership has been "absolutely consistent" in supporting *voluntary* farm nutrient management. This review notes that, "Regardless of the fact that the WQIA was enacted in direct response to the failures of Maryland's voluntary nutrient management regime, the MDA has implemented the WQIA as though it were a voluntary nutrient management program."⁸⁰ In addition, public access to nutrient management plans has been limited. Where agricultural operations are receiving public funds for implementing nutrient management practices, opening these plans to public scrutiny is important to ensuring accountability.

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Table 5. Government Agencies Involved in Manure Management in Maryland.

Agency/Organization	Role in Manure Management in Maryland
Maryland Department of the Environment	<ul style="list-style-type: none"> • Authorized by EPA to administer the CWA CAFO program • Develops CAFO/MAFO permits and is responsible for inspection, compliance, and enforcement activities • Assists MDA with violations of the WQIA, a state program
Maryland Department of Agriculture	<ul style="list-style-type: none"> • Responsible for nutrient management on non-CAFO and non-MAFO agricultural operations • Primary responsibility for administering the WQIA • Provides assistance to farm operators regarding nutrient management plans
Soil Conservation Districts	<ul style="list-style-type: none"> • A political subdivision of the state that focuses on providing assistance and cooperating with farm operators • Do not have any regulatory authority or enforcement responsibilities • Provide assistance to agricultural operations, from technical assistance on best management practices to assistance with finding financial resources for NMP implementation • Works with MDA and NCRS staff to reduce soil erosion and improve water quality
USDA Natural Resources Conservation Service—Maryland Office	<ul style="list-style-type: none"> • Federal office, housed within each state, that provides technical assistance for agriculture operations but does not have enforcement responsibilities • Develop and write CNMPs and certify technical service providers who also develop and write CNMPs

Interview Perspectives: Maryland’s Ability to Achieve the Bay TMDL

Interviewees were asked their opinion of Maryland’s ability to achieve the pollution reduction targets allocated to the state under the Bay TMDL.

Interviewees expressed skepticism of the Bay TMDL, critiquing both the substance of the TMDL and the ability to achieve nutrient reductions. One interviewee said that the amount of manure used in the models does not seem reasonable and was very high in the opinion

of a lot of professionals. Another interviewee was “very disappointed,” pointing to a lack of “causal linkage [between CAFOs and problems in the Bay].” Another interviewee has “almost no confidence in the state or industry in meeting allocations.”

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Interview Perspectives: Weaknesses of the CAFO Program in Maryland

Interviewees were asked to identify any weaknesses in the CAFO program, including any scientific or technical issues, administrative or resource challenges, legal or regulatory problems, or other issues.

A variety of interviewees expressed concern about the clarity of the federal and state laws and regulations governing the CAFO program.

One interviewee said that the federal CAFO regulations are “in a state of flux.” The ongoing legal challenges mean that it is a “moving target as to where the CAFO law will end up.” However, this interviewee noted that Maryland state regulations have retained the “propose to discharge” language that has not yet been appealed by animal agribusiness or agricultural operators. The changes to the federal regulations mean that “timeliness becomes an issue, [along with] the ability to keep everyone up to date.”

Other interviewees stressed their frustration with the lack of clarity coming from MDE itself. One interviewee found it difficult to decipher what the regulations require but also had the “impression that MDE’s understanding is unclear.” “You can ask the same question at MDE and receive two different answers,” said this interviewee. A second interviewee had the same impression and blamed the misunderstanding on the “people with no understanding of agriculture [who] are drafting the regulations.”

To improve the CAFO program and the regulations, this interviewee would like to see “more agricultural people writing the laws. There’s a difference between poultry, dairy, and swine.” Other interviewees recognized that a need for more agriculture knowledge because “not all MDE staff are experts in agriculture.”

Nearly all interviewees agreed that the shortage of staff is a significant obstacle in every aspect of the CAFO program.

One interviewee emphasized the need for both CNMP writers and staff to review the plans so that final permits can be finalized and issued and to clear the overall backlog of work. This interviewee expressed concerns that “MDE hasn’t been able to manage poultry before moving on” to cattle. Other interviewees cited the need for more inspectors, despite already having “lots of eyes—developers and neighbors—on the operations.”

At least two interviewees were concerned about the creation of programs like manure transport and water quality trading that require “a lot of resources,” despite the obvious shortage of staff and the failure to indicate from where the additional resources will come. One interviewee said, “[Everyone is] spending so much time dancing around the issues, creating elaborate schemes to pretend they are doing something [about nutrient pollution].”

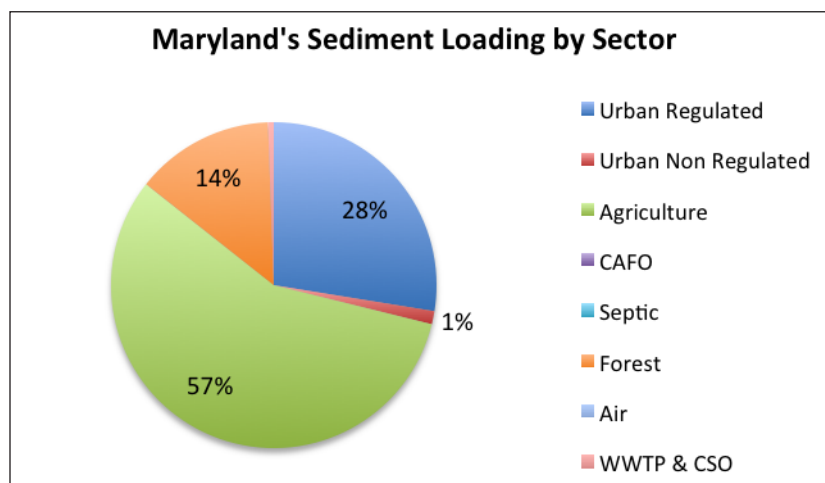
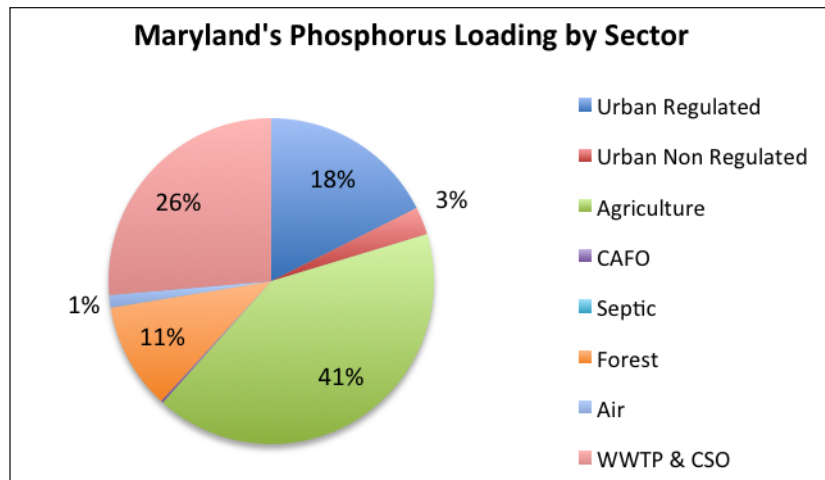
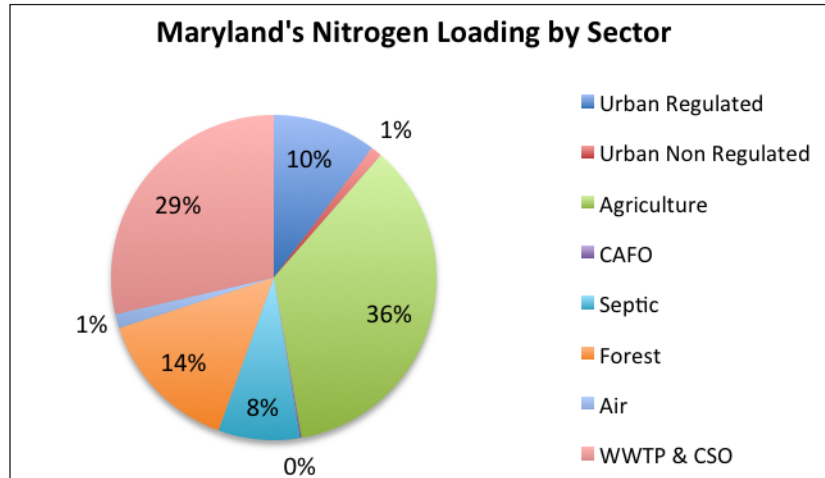
Some interviewees cited land application as a significant problem, as well as manure transport, in reducing pollution from animal agriculture operations.

They noted that, while nutrient management plans are required on all farms that apply manure to land, it is unclear that the NMPs are protective of water quality. More generally, one interviewee cited the need to do “more research and [gather] scientific data to support BMPs that are being required with the [Bay] TMDL process, and more research dollars to find alternatives” to managing nutrients in manure.

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Nutrient and Sediment Pollution in Maryland by Sector⁸¹



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CAFOs and the Animal Agricultural Sector in Pennsylvania

Introduction: Purpose and Scope

The purpose of this section is to provide basic information about the regulation of animal agriculture in Pennsylvania and how those regulations are implemented, both in policy statements and in practice. In addition to providing an overview of the laws, regulations, and policies that address concentrated animal feeding operations and other animal agriculture operations, this report also makes recommendations to ensure that this sector is accountable for meeting its pollution reduction requirements. Pennsylvania and other states surely have no time to waste in implementing these requirements if they are to improve water quality within timeframes expected by EPA and the public.

Overall, Pennsylvania has two primary areas of weakness: regulatory coverage and enforcement. Estimates suggest that only 50 percent of the manure generated by animal agriculture operations in Pennsylvania is regulated under the state's CAFO permit and concentrated animal operation (CAO) permit, meaning that the thousands of smaller operations are not covered by either CWA-based state regulations or other independent state regulations. A related problem is the enforcement of regulations for all animal agriculture operations. The approach towards enforcement tends to be cooperative through repeated visits and consultations that result in voluntary efforts to comply. However, this approach may not be effective in deterring future violations by the particular operator or by similarly situated operators.

Recommendations

To ensure that the animal agriculture sector in Pennsylvania is accountable for reducing nutrient and sediment pollution, the Pennsylvania Department of Environment should:

- ***Take meaningful, targeted enforcement actions that have a deterrent effect rather than relying on cooperative approaches.*** Deterrence-based enforcement is based on the theory that regulated facilities, such as CAFOs, weigh the costs and benefits of complying with NPDES requirements or other regulations. If a CAFO will save \$10,000 by avoiding compliance and illegally discharging animal waste into the Susquehanna River but also knows that it will face stiff penalties that far exceed \$10,000 for this discharge, the CAFO will be dissuaded from violating environmental laws under the deterrence-based enforcement model.

Deterrence-based enforcement works, therefore, only if the threat of enforcement is credible. Part of the calculus involves assessing the likelihood that the government will detect a violation and take enforcement action and assessing the likely financial penalty. Penalties play a central role in motivating regulated companies to comply with

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environmental laws and regulations. The threat of a severe penalty also motivates a company to take proactive and preventative measures to minimize pollutant discharge and reduce the potential for liability.

Strong enforcement also includes unannounced inspections to get a realistic sense of whether or not a CAFO is implementing its NMP or other water pollution control activities. The element of surprise, combined with the threat of severe penalties, is part of an effective, deterrence-based enforcement program.

- **Retain enforcement authority.** DEP has proposed delegating more implementation and enforcement responsibilities to county conservation districts (CCDs). These CCDs often provide the greatest field presence for assisting and inspecting agricultural operations but are not a traditional regulatory branch. The CCDs generally do not tend to have an enforcement mentality, so DEP must retain overall enforcement authority. If the proposed delegation is adopted, DEP must provide clear guidance to CCDs for inspections and reporting.
- **Increase transparency by publishing an annual enforcement and compliance report.** This report would promote accountability by demonstrating, on an annual basis, DEP's enforcement and compliance effort and would allow watchdog groups to track trends and work with DEP to improve overall compliance with CAFO NPDES permit requirements. This annual report should include information such as: the universe of facilities with CAFO permits; the status of these permits; the number of total inspections, both onsite and off-site audits; the total number of inspectors and inspector vacancies; the enforcement and compliance workforce budget; the total number of significant and non-significant violations; the types of enforcement actions (cooperative, administrative, civil, criminal); amount of penalties (monetary, supplemental environmental projects, or jail time).
- **Use designation authority granted by the Clean Water Act to designate small animal agricultural operations as CAFOs that are subject to the NPDES permitting requirements.** The Clean Water Act authorizes DEP to designate certain small animal agricultural operations as CAFOs if the operation is a significant contributor of water pollution. DEP should identify which small operations contribute the most nutrient and sediment runoff into local Pennsylvania waters and designate them as CAFOs. These operations would then be required to comply with the broader range of nutrient and soil management practices that apply to CAFOs. In Pennsylvania, for example, more than 12,000 animal operations fall below the CAFO threshold yet cumulatively produce as much manure as the CAFO sector. Designating the most significant contributors of nutrient pollution as CAFOs is crucial to managing manure in the Bay.

In addition, the Pennsylvania General Assembly should increase basic funding levels for DEP. A well-funded CAFO program should have sufficient funds to enough permit writers

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to review CAFO permits and reports, conduct inspections, and take enforcement actions to ensure that all animal agricultural operations in Pennsylvania comply with all applicable requirements.

Methodology

The information in this report was gathered from publicly available sources, reports, or articles and interviews with key stakeholders in the state. The interviews were important to get a better sense of how Pennsylvania's regulations for CAFO and animal agriculture sector operate in practice. CPR conducted a series of interviews with a diverse group of current and former EPA and state officials and public interest group representatives.

The interviewees include:

- **Lamont Garber**, Agriculture Manager, Chesapeake Bay Foundation Pennsylvania Office
- **Mark Goodson**, State Conservation Agronomist, PA Natural Resources Conservation Service, USDA
- **David McGuigan**, Associate Director, Water Protection Division, U.S. EPA Region 3
- **Kelly O'Neill**, Agricultural Policy Analyst, Chesapeake Bay Foundation Pennsylvania Office
- **Ken Pattison**, Office of the Chesapeake Bay Watershed, PA DEP
- **Jennifer Reed-Harry**, Legislative Committee, PennAg Industries
- **John Schuman**, President, Octoraro Watershed Association
- **Kim Snell-Zarcone**, Attorney, Penn Future
- **Steve Taglang**, Chief, Division of Conservation Districts and Nutrient Management, PA DEP
- **Kyle Zieba**, Acting CAFO Team Lead, U.S. EPA Region 3

CPR asked interviewees a series of open-ended questions about DEP's CAFO program and more generally about regulation of animal agriculture in Pennsylvania. The questions included the permitting, monitoring, and enforcement aspects of the CAFO program, as well as overall strengths and weaknesses and recommendations for the program. To encourage candid remarks, interviewees were told that their specific remarks would not be attributed to them individually but that a summary of remarks would be included in a final report. The discussion below provides information on the CAFO and animal agriculture regulations that apply in Pennsylvania, as described in the publicly available sources. The interview perspectives are included in blue text boxes. The interviewees do not necessarily endorse any of the findings or recommendations made in this report, which are the authors' alone. The interviewees also participated and spoke on their own behalf and not on behalf of the agencies or organizations for which they work.

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Key Interview Findings

Overall, the interviewees' opinions about the effectiveness of Pennsylvania's CAFO program raised several common key points:

- **Some interviewees expressed skepticism of the cooperative approach to enforcement in Pennsylvania and questioned the deterrent effect of this approach.** Several interviewees lamented the length of time given to CAFOs to come into compliance because DEP uses a cooperative approach to enforcement rather than a deterrence-based approach. One interviewee said that the cooperative approach may be a smart use of resources, but "it has no deterrent effect, for sure." "It would be laughable to think that DEP would be this lenient with industrial wastewater dischargers," said another interviewee.
- **Some interviewees expressed concern that the CAFO program does not explicitly operate to protect water quality.** A handful of interviewees questioned the focus of the CAFO program and emphasized the need for a "mentality shift" from an agronomy perspective to a water quality perspective. One interviewee pointed out that farmers are not asked to test wells or streams, while another interviewee observed that the current nutrient management plans in Pennsylvania do not capture all the pollutants required by the federal guidelines.
- **Interviewees cited the general economic situation as having a big impact on both DEP's ability to administer the CAFO program and operators' ability to manage manure.** DEP is "understaffed and overworked" due to the tough economy, the lack of funding and resources, and in part the political leadership in Pennsylvania, said interviewees. More funding could help to increase the number of inspectors and inspections and could help DEP become more proactive in monitoring and verifying compliance.
- **Interviewees noted that the relatively long existence of the CAFO program is both a strength and a weakness.** Interviewees generally felt that the CAFO regulatory structure was solid, though loosely or not enforced. That Pennsylvania has been issuing permits to animal feeding operations for more than a decade was cited as a great strength because the CAFO operators are generally familiar with the paperwork and substantive manure management requirements. However, the existing program is also a weakness in that DEP has to integrate the federal requirements into the state program, leading to what one interviewee described as "definitional differences" with EPA.
- **Interviewees overwhelmingly agreed that the small and medium animal farms that generate manure but are not regulated as CAFOs pose a significant—if not greater—threat to water quality than CAFOs.** Interviewees repeatedly discussed the problem with the estimated 30,000 small and medium farms that cause water pollution but fall outside the CAFO regulatory structure. Pennsylvania's Manure Management Manual applies to these smaller operations, but a few interviewees noted that DEP has not enforced these requirements. Interviewees emphasized that without controlling manure from these smaller farms it will be difficult to achieve any water quality goals in the state. One interviewee described the problem as "capillary bleeding from small operations" that is difficult to contain.

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- **Interviewees expressed reservations about the Bay TMDL process and Pennsylvania’s ability to achieve the necessary nutrient pollution reductions.** While one interviewee expressed confidence in Pennsylvania’s ability to achieve its part of the Bay TMDL, most other interviewees expressed

varying degrees of skepticism. Among the reasons for skepticism, interviewees cited the lack of allocation for growth in the CAFO sector, a poorly communicated message to the average Pennsylvanian, and “so little current compliance and oversight of small and medium farms.”

Snapshot of Animal Agriculture in Pennsylvania

Despite the lack of Bay frontage, Pennsylvania is a significant source of the nitrogen, phosphorus, and sediment that pollute the Bay and its upstream tributaries. The state covers approximately one-third of the Chesapeake Bay watershed and is home to one quarter of the population of the watershed. Nearly half of Pennsylvania’s land area lies within the Basin, and the Susquehanna and, to a much lesser extent, the Potomac Rivers drain into the Chesapeake Bay.

In Pennsylvania, agriculture occupies roughly 27 percent of the total land area with more than 7.8 million acres classified as farmland and 63,200 agricultural operations. Roughly half of these operations are crops, and the other half is animal operations.⁸² The top three commodities are dairy products, valued at \$2 billion in 2010; corn, valued at \$479 million; and cattle and calves, valued at \$463 million.

Agriculture has a corresponding environmental cost: EPA models indicate that Pennsylvania contributes 44 percent of the total nitrogen to the Bay, as well as 24 percent of the total phosphorus and 32 percent of the total sediment.⁸³ Of these loads, the agriculture sector contributes 55 percent of Pennsylvania’s total nitrogen contribution, 24 percent of Pennsylvania’s total phosphorus contribution, and 35 percent of Pennsylvania’s total sediment contribution.⁸⁴

The sheer size and geographic scope of Pennsylvania’s animal agriculture operations and their value to the state economy complicates any effort to manage nutrients from animal waste. However, the state does benefit from a long history of nutrient management, dating back to the 1930s. In Pennsylvania, animal agriculture operations fall into three broad categories: CAFOs, Concentrated Animal Operations (CAOs), and operations that do not meet the definition or the threshold sizes for CAFOs or CAOs. Estimates put the number of CAFOs around 360, the number of CAOs around 1,200, and the number of remaining animal agriculture operations around 30,000. Roughly half the manure generated in Pennsylvania comes from CAFOs and CAOs, and the remaining half comes from the smaller, lower density animal agriculture operations.⁸⁵

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Legal and Regulatory Framework

The Pennsylvania Clean Streams Law (CSL) is the umbrella statute for protecting water quality against impacts from agriculture.⁸⁶ The CSL prohibits the discharge of industrial waste, sewage, and other pollution into the waters of the state. Regulations passed under this law address erosion and sediment control as well as manure use, disposal, and management. These regulations encompass the National Pollutant Discharge Elimination System (NPDES) permit requirements for CAFOs and other dischargers covered by the federal Clean Water Act.

Categories of Animal Agricultural Operations

Animal operations in Pennsylvania fall into three broad categories:

Concentrated Animal Operations (CAOs). Animal agriculture operations with more than 8 AEUs and with an animal density that exceeds 2 AEUs per acre on an annualized basis.

Concentrated Animal Feeding Operations (CAFOs). Any combination of animals that exceed 1000 AEUs; CAOs with more than 300 AEUs; or certain other specific animal thresholds.

Other animal agricultural operations. Operations that do not meet the CAO threshold fall into this category.

An animal equivalent unit (AEU) is equal to 1,000 pounds of live animal weight.

Concentrated Animal Feeding Operations. In Pennsylvania, a CAFO is defined as:

- any combination of animals that exceed 1000 animal equivalent units (AEUs);
- a concentrated animal operation (CAO) with more than 300 AEUs; or
- an animal operation that meets the federal definition of a large CAFO.

The Pennsylvania Department of Environmental Protection (DEP) issues both an Individual Permit and a General Permit for CAFOs. An operation must apply for an Individual Permit if the operation is in a high quality or exceptional value watershed or exceeds 1000 AEUs or if the operation intends to discharge treated wastewater into surface waters. Otherwise, an operation can apply for a General Permit if it is between 300 and 1000 AEUs or meets the federal CAFO definition but is less than 1000 AEUs. Both Individual and General CAFO permits are valid for five years.

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As of November 17, 2011, Pennsylvania had 354 CAFOs:

- 186 with Individual Permits and
- 168 with General Permits.

The Pennsylvania General Permit for CAFOs (PAG-12) expired on September 30, 2011, and has been administratively extended while DEP works on a new General Permit that must be approved by EPA.⁸⁷

A CAFO is required to develop, implement, and comply with a site-specific Nutrient Management Plan (NMP); a Preparedness, Prevention, and Contingency Plan; and an Erosion and Sediment Control Plan. The CAFO must also comply with recordkeeping and reporting requirements and measures necessary to prevent discharges from storage of raw materials that are not part of an NMP. If the CAFO has construction activity, it must also comply with a separate NPDES permit for stormwater discharges. Certain requirements may be stricter for an Individual Permit, depending on the location of and conditions at the CAFO.

Interview Perspectives: The CAFO Permit and Permitting Process in Pennsylvania

CPR asked interviewees about the CAFO permit process, the universe of covered operations, and the ability of MDE to identify and issue permits in a timely manner.

Interviewees generally agreed that DEP does a good job of identifying and issuing NPDES permits to the universe of CAFO facilities. In Pennsylvania, there are currently 364 CAFOs, a number that increases by a few each year because existing operations expand or “are found by the Department.” Most interviewees agreed that the DEP does an adequate job of identifying and issuing permits to facilities that are required to have them. One interviewee familiar with the program saying, “All known CAFOs are covered, either permitted or pending.”

Although the interviewees did not mention a permit backlog, at least one interviewee cited “long delays... documentation languishes on someone’s desk, [on the other hand] a farmer has a short timeline—a lender deadline or seasonal timelines.” “This delay is a problem,”

said this interviewee, because it can hinder the farmer’s ability to get a loan or insurance.

A few interviewees criticized the CAFO program for relying on the density of the operation, rather than the number of animals, as the threshold for being required to have a permit. One interviewee objected to the reforms based solely on the numbers of animals per operations to extend permit coverage. This interviewee said, “The focus on dropping the numbers [to increase permit coverage]... doesn’t get to the core problem. It’s a significant reform, but it doesn’t address those farms that fly under the radar. [A CAFO permit] should deal with the discharges, not the number of animals. Lowering the threshold may just increase paperwork, leading to wasted resources.”

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The NMP must address: basic contact information and information about the operation; a summary of manure generated, used, exported, and land-applied each year; detailed information about manure application rates and nutrient needs for crop production; information about alternative uses for excess manure; site-specific emergency response plans; record-keeping requirements, including records of exported manure; and minimum standards for manure storage. Overall, the Phase I WIP estimates that more than 2,650 animal agricultural operations in Pennsylvania have NMPs that cover approximately 50 percent of the manure generated in the state each year. This number includes CAFOs, CAOs, and other animal agricultural operations that have voluntarily obtained NMPs.⁸⁸

A CAFO must also comply with setback and buffer requirements and restrictions on stockpiling manure. Pennsylvania does not permit land application of manure within 100 feet of a surface waterbody unless there is a vegetated, 35-foot wide buffer to prevent manure runoff.

Concentrated Animal Operations. Pennsylvania has another category of animal agricultural operations, concentrated animal operations or CAOs. These operations have more than eight AEUs where the animal density exceeds two AEUs (2,000 pounds of live animal weight) per acre on an annualized basis. These operations are required to develop and implement a nutrient management plan by a certified nutrient management specialist. The NMP must address the elements described above.

Calculating the Animal Equivalent Unit (AEU)

An animal agriculture operation has an average of 10,000 medium broilers that weigh 2.3 pounds per broiler. Over the year, the operator has six flocks, each with a production period of 43 days. The operation includes two acres for the farmstead; three acres of woodlands; and seven acres of cropland. To calculate the AEU per acre for this operation:

Calculate the total live animal weight: 10,000 broilers x 2.3 pounds/broiler = 23,000 pounds of live animal weight

Calculate the annual average animal weight per day: (23,000 pounds x (6 x 43 days))/365 days = 16,257 lbs

Calculate the AEUs: 16,257 lbs/1,000 lbs = 16.26 AEUs

Calculate the AEU per acre: 16.26 AEUs/7 acres of cropland = 2.32 AEUs/acre

It is important to note that the EPA defines operations based on the number of animals confined for more than a 45-day period. Calculating the AEU can lower the true live animal weight during the production period, as seen in the example above (23,000 lbs per day for 258 days versus 16,257 lbs per day over the course of the year).

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Other Animal Agricultural Operations. For the thousands of other animal agriculture operations that do not meet the CAFO or CAO thresholds, Pennsylvania requires them to follow the Manure Management Manual (MMM) to control nutrients and prevent pollution. The MMM helps animal agricultural operators write manure management plans for the land application of manure and process wastewater.

The previous version of the MMM was technically complex and very difficult to use, and critics point out that DEP did not enforce its requirements. As a result, many smaller operations do not have manure management plan. However, DEP finalized a new on MMM October 29, 2011. The format is a workbook that operators can fill out by themselves, covering basic operation information, manure application rates and timing, record-keeping, mapping, manure storage structures, and pasture management. The revised MMM requires manure application setbacks; defines maximum winter manure application rates and practices; and prescribes other best management practices to prevent manure runoff into surface water bodies.

These new standards are significant: up to 40,000 agricultural operations that generate, store, or land apply manure will have to adopt a manure management plan.⁸⁹ However, whether or not DEP has the resources to ensure that these operations have the plans and are implementing the required elements remains to be seen. In addition, the MMM still permits winter application of manure, which EPA seeks to phase out because nutrient uptake by crops does not occur in winter.⁹⁰

Interview Perspectives: Other Animal Agricultural Operations in Pennsylvania

Several interviewees mentioned that pollution generated by other animal agricultural operations in Pennsylvania is significant. CPR asked interviewees to elaborate on this aspect of the agricultural sector.

Nearly every interviewee discussed the need for better DEP regulatory and programmatic coverage of small and medium animal feeding operations that discharge pollution into Pennsylvania's waters but are not covered as point sources under the CWA. Although the MMM covers small and medium farms that discharge, "it is not enforced," said one interviewee.

The estimated 30,000 other farms that generate or land apply manure are the problem, noted one interviewee. Another estimated that half the manure generated in

Pennsylvania is covered by the CAFO program, leaving the remaining half uncovered. This interviewee acknowledged that the "focus [on small farms] has been less attentive [in the past], but more so now."

Another interviewee acknowledged the impracticality of regulating them because of the lack of resources to provide technical assistance. This interviewee characterized the situation as "capillary bleeding from small operations. The number of farms is so great that the state cannot provide individual attention."

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Erosion and Sediment Control Regulations. Pennsylvania also has regulations to control sediment run-off that apply depending on the size of the disturbance and regardless of the size of the animal agriculture operation. The term disturbance is defined as a construction or other human activity that disturbs the surface of the land and includes agricultural plowing or tilling and operation of animal heavy use areas (AHUAs).⁹¹ Particularly on smaller animal agricultural operations, these areas are a significant source of water pollution from manure and other animal contact. AHUAs on all types of animal operations became subject to regulation in November 2010, which will make a significant contribution to water quality in Pennsylvania.

For disturbances of less than 5,000 square feet, an agricultural operation is required to implement and maintain best management practices for sediment and erosion control. For disturbances of more than 5,000 square feet, an agricultural operation is required to have a written erosion and sediment control plan that includes cost-effective and reasonable best management practices to minimize the potential for erosion and sedimentation.

Table 6. Requirements for Animal Agricultural Operations in Pennsylvania.

	CAFOs	CAOs	Other
NPDES Permit	✓		
Nutrient Management Plan	✓	✓	
Erosion and Sediment Control Plan	✓	If the operation disturbs more than 5,000 square feet	If the operation disturbs more than 5,000 square feet
100' Setback/35' Buffer Requirement	✓	✓	✓
Manure Management Plan/ Manure Management Manual			✓

Enforcement and Compliance Policies

Pennsylvania's long history of nutrient management comes with a long history of noncompliance with mandatory requirements and lackluster participation in voluntary programs. For the regulatory programs, EPA and Pennsylvania have described plans for improving compliance rates and prioritizing enforcement actions in the animal agriculture sector. The general approach toward non-compliance is to first seek a negotiated resolution, which may include a consent order and agreement and a schedule for corrective action, plus any civil penalties or stipulated penalties if the corrective action is not taken. The next level of enforcement is an enforcement order, issued by DEP or the State Conservation Commission (SCC), which can be filed with a civil penalty assessment. Generally, however, DEP notes that once an enforcement action is filed, the parties are usually able to resolve the matter through a settlement.

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Enforcement Roles of State Agencies and Organizations. The table below identifies the primary state agencies and organizations that are involved in enforcement and compliance.

Agency/Organization	Functions
Department of Environmental Protection (DEP)	<ul style="list-style-type: none"> • Authorized by EPA to administer the CWA CAFO program • Addresses agriculture-related requirements under the CAFO program, the erosion and sediment control requirements, and NMP requirements • Approximately 15 staff who oversee these requirements
Department of Agriculture (PDA)	<ul style="list-style-type: none"> • Works with the State Conservation Commission to address the more than 2,700 NMPs in Pennsylvania • Approximately 9 staff
State Conservation Commission (SCC)	<ul style="list-style-type: none"> • Interdepartmental commission of DEP and PDA • Provides support and oversight for the county conservation districts
County Conservation Districts (CCD)	<ul style="list-style-type: none"> • Provide the largest field presence for agricultural operations with 66 offices • Assist with implementing best management practices • 33 staff who review NMPs and oversee NMP implementation
USDA Natural Resources Conservation Service—Pennsylvania Office	<ul style="list-style-type: none"> • Provides technical and financial assistance on a voluntary basis to farmers and landowners who want to address natural resource concerns on their property

Inspection and Enforcement Policy for CAFOs. DEP policy is to physically inspect CAFOs with individual permits at least once a year and CAFOs with general permits once every permit cycle (consistent with EPA guidelines). All CAFOs also have annual reporting requirements, and those with individual permits must submit quarterly reports. For violations, DEP’s policy is to first resolve them through compliance assistance. If cooperative efforts fail, DEP will refer the violations to regional DEP legal counsel for more formal enforcement actions.

In addition, the local CCDs also conduct annual inspections of nutrient management activities on all CAFOs. Thus, certain CAFOs may be inspected up to twice a year.

Inspection and Enforcement Policy for CAOs and Other Animal Agricultural Operations. For non-CAFO operations, the CCDs have primary responsibility for providing a field presence and for verifying compliance with nutrient management plans. For CAOs, the CCDs conduct annual on-site inspections to verify implementation and proper record-keeping. Noncompliance issues are referred to the SCC.

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Interview Perspectives: The Inspection and Enforcement Efforts in Pennsylvania

CPR asked interviewees about DEP's inspection and enforcement efforts.

Interviewees generally agreed that DEP's inspection policy is adequate but some expressed skepticism that the policy is implemented in practice. Interviewees described the inspection policy as 100 percent annual inspections of every CAFO, plus a quarterly report for CAFOs with Individual Permits or an annual report for CAFOs with a General Permit. However, one interviewee said that the annual inspection policy is not implemented, which contrasted with another interviewee's approximation of 235 inspections in FY 2010.

Another interviewee pointed out that a CAFO with an Individual Permit could be inspected onsite up to twice a year, once by the CCD and once by DEP. At a minimum, said this interviewee, general permit holders are inspected at least once every five years, which is consistent with EPA's inspection policy. One interviewee noted a change in policy around 2009 that has led to better compliance with the reporting requirements because "compliance in the past was less than it should have been."

Some interviewees criticized other aspects of the inspection policy. One interviewee lamented "the logistics of not popping in on someone... there's something to be said for the element of surprise [when there is] no time to make it look pretty or hide your warts." This interviewee suggested "more random, unannounced visits." Another interviewee suggested the need for greater consistency between the CCDs that often conduct inspection and the DEP's determination of problems raised in the CCD's review.

A handful of interviewees criticized the effectiveness and consistency of DEP's approach toward enforcement. According to one interviewee,

the DEP approach "focuses primarily on compliance assistance, and lots of time is given to a CAFO [to come into compliance] without an enforcement action." This observation was echoed by another interviewee, who said, "It takes so many attempts [and] a really long time until a farmer gets kicked into an actual enforcement proceeding. DEP is bending over backwards to beg farmers to comply. The attitude is that the farmer is doing DEP a favor by complying." This interviewee suggested that the mentality of the conservation district staff needs to change from "carrot holders to more uncomfortable waters." They are "not used to that role," in part because some are "young, inexperienced, and uncomfortable in making assertions about compliance" and because they "want to make sure they are still welcome on the farm."

Another interviewee noted the "political cost of strong enforcement and the administrative burden" of enforcement. This interviewee said, "From DEP's perspective, cooperative efforts may be a smart use of resources, but they have no deterrent effect, for sure." However, another interviewee stated, "Threats don't work. Preserving soil is [the farmer's] livelihood as well. Approach the working relationship with integrity and understanding, not threats."

Yet another interviewee pointed to the inconsistency between enforcement against large CAFOs and the medium and smaller farms. This interviewee said, "We hope that all farms are held to the same standards. Manure from a CAFO is not different in substance or contents than manure from a small farm."

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For operations that do not meet the CAFO or CAO thresholds, the CCDs also provide a field presence by investigating complaints and providing compliance assistance with best management practices for manure use and disposal and with erosion and soil control. CCDs take a primarily cooperative approach but can refer compliance matters to DEP for violations of water quality standards or other significant environmental harms. However, DEP is also in the process of revising delegation agreements to allow CCDs to assume enforcement responsibilities.

Pennsylvania's Chesapeake Bay Water Quality Initiative. As part of Pennsylvania's Phase I WIP, the state proposed the Chesapeake Bay Agricultural Water Quality Initiative to reduce pollution from agricultural activities. To help ensure that agriculture operations are complying with regulatory requirements, the Initiative describes a three-pronged approach. First, DEP will work with its partners to provide agriculture operations with more information about regulatory requirements and to conduct greater outreach in the agriculture sector.

Second, the DEP will increase compliance with baseline regulatory requirements by increasing site visits, expanding the enforcement responsibilities of CCD staff, and updating CCD's compliance and enforcement policies. For example, the revised policy will adopt a "three strikes" approach to violations that are identified by complaints.⁹² Operations will be given a 90-day period to comply voluntarily, followed by another 45-day period to comply voluntarily. If by the 135th day the operation has not begun compliance actions, DEP will move to mandatory compliance actions that may include a consent order and a penalty.⁹³

Third, the DEP will increase field presence by hiring more staff, expanding the compliance and enforcement responsibilities of existing staff, and increasing the number and types of inspections. This approach will be used in priority watersheds.

According to the Phase I WIP, Pennsylvania expects that this initiative will generate, over the next five years:

- 3,500 agricultural operations in compliance with their agricultural erosion and sediment control requirements;
- 18,000 agricultural operations to be notified of their compliance status with regulatory requirements;
- 19,000 agricultural operations to be informed about their regulatory requirements and to address manure management planning requirements;
- 2,250 compliance inspections and 500 compliance actions by DEP Chesapeake Bay Regulatory and Accountability Program staff; and
- 2,500 compliance inspections by DEP Chesapeake Bay Field Representatives.⁹⁴

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As DEP itself points out, this strategy is ambitious and will require resources from local, state, and federal partners.⁹⁵ Prioritizing compliance will go a long way toward reducing Pennsylvania's nitrogen, phosphorus, and sediment discharges, but DEP's use of cooperative compliance efforts are likely to be inadequate. In the face of limited resources, enforcement actions with a deterrent effect will be most useful.

Reviews of the CAFO and Animal Agricultural Program in Pennsylvania

EPA periodically reviews different aspects of states' Clean Water Act NPDES programs under the State Review Framework and specifically reviews permitting issues as they arise. In these reviews, EPA has raised some of the following issues:

- **Potential deficiencies in state technical standards.** EPA is in the process of reviewing the technical standards of all Bay states to determine if the standards adequately protect water quality. Under the Clean Water Act, the technical standards include a field-specific assessment of the potential for nutrient transport from field to surface waters and address factors such as the form, source, and amount of nutrients and the timing and method of land application. The standards seek to minimize nutrient run-off into surface waters and to achieve realistic crop production goals. If EPA finds that Pennsylvania's technical standards are inadequate, meaning that they allow excess manure to be applied, it has committed to working with the state to strengthen them.⁹⁶
- **Winter application of manure.** EPA has stated its concerns that DEP continues to allow winter land application of manure, litter, and process wastewater, in contrast to the other Bay states. Nutrient uptake by crops in winter is minimal to nonexistent, which means that the nutrients are likely to simply run off into surface waters as winter snows melt. EPA plans to work with DEP to phase out winter land application.⁹⁷
- **Failure to take timely enforcement actions.** In the Round 1 (2004-2007) State Review Framework report, EPA evaluated DEP's *overall* enforcement and compliance program, not specific to any sector. It noted, "DEP does not take timely enforcement actions to address significant non-compliers." For example, of the 53 point source facilities determined to be in significant non-compliance, formal enforcement actions were taken against only seven facilities.⁹⁸
- **Failure of animal operations to comply with regulations.** In EPA's response to Pennsylvania's Phase I WIP, it explicitly stated that animal operations must increase compliance with regulatory requirements.
- **Failure to include substantive provisions in the CAFO General Permit.** Pennsylvania's General Permit for CAFOs expired in September 2011, and EPA has provided preliminary comments as guidance for DEP before it submits a new General

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Permit for EPA approval. In the comments, dated August 18, 2011, EPA noted that the new General Permit must include certain substantive provisions that are required by federal regulations. For example, EPA cites elements of the federal NMPs that do not appear in Pennsylvania's NMP requirements. Similarly, some information required by federal regulations to be reported is also missing from Pennsylvania's CAFO reporting requirements. EPA also noted that some key provisions of the federal CAFO program must be included in the new General Permit, such as a notice that compliance with technical standards (discussed below) is required; a notice that EPA and DEP retain the authority to designate any animal operation as a CAFO; and a notice that non-compliance standards is a violation of the law and subject to enforcement action. Overall, EPA is applying "enhanced oversight and actions" to Pennsylvania's CAFO sector under the Bay TMDL framework. If, through the two-year milestones and other actions, EPA does not see improvement in the areas above, it may reassign TMDL allocations between nonpoint source and point source agriculture or reject CAFO NPDES permits that are insufficiently stringent.

Interview Perspectives: Improving Compliance in Pennsylvania

Interviewees were asked about the adequacy of CAFOs' rates of compliance with permit requirements.

Some interviewees suggested that CAFOs are motivated to comply with the law because of good neighborliness and the threat of penalties.

One interviewee attributed the generally good compliance rate among CAFOs to concern with public perception—particularly in visible areas—as the biggest deterrent to violating the law. One interviewee has observed more "self-policing to prevent a bad reputation with neighbors." Other interviewees said that the mere rumor of penalties—assessed or not—"get more attention" than actual penalties, joking that compliance could be improved by churning the rumor mill.

To improve compliance with CAFO regulations, interviewees suggested increasing the number of inspections and educating operators about the requirements of their permits. A few interviewees

emphasized the need to increase the number of inspections, observing that "generally it's not the CAFOs causing the harm. It's the smaller farms."

Some interviewees suggested that non-compliance was due in part to operators' lack of knowledge about the requirements or lack of initial understanding of the applicable nutrient management plan. To remedy this information gap, these interviewees recommended that DEP become more proactive in educating operators and working with them initially so they become more familiar with how to implement the plan.

One interviewee pointed to problem with the delay in filing paperwork on DEP's end, leading to the appearance of non-compliance. Because a required report does not get filed right away, one interviewee said, it gives the appearance of a failure to submit.

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Interview Perspectives: Weaknesses of the CAFO and Animal Agricultural Program in Pennsylvania

Interviewees were asked to identify any weaknesses in the CAFO program, including any scientific or technical issues, administrative or resource challenges, legal or regulatory problems, or other issues.

A handful of interviewees frankly acknowledged the problem of excess manure in Pennsylvania and the scientific and technical dilemma of how to manage it, as well as the sheer number of animal agriculture operations in the state.

“Excess manure is a major challenge. What do you do with it when there’s not enough land to properly apply it?” This challenge was identified across the board with no easy solution. As one interviewee said, “Excess manure is a true dilemma that is not solved by regulation.” A related challenge, identified by another interviewee, is the distribution of animals across the state and particularly high concentration in Lancaster County.

Interviewees agreed that the lack of funding and staff resources were obstacles to effectively administering the state’s CAFO program and cited upcoming reorganization of DEP as a potential problem. One interviewee said that agencies in Pennsylvania are “understaffed and overworked because of the nature of the economy and government.” Under past administrations, this interviewee said DEP was better staffed and had more resources, but the current governor is “restructuring the agency to suit his agenda: pro-business and anti-enforcement.”

A handful of interviewees were concerned about the impact of relocating the CAFO program under a different branch as part of the reorganization of DEP. One interviewee noted that the staff of the current CAFO program “have a lot of knowledge, but it’s unclear if that knowledge will move” with the program. However, this interviewee noted an upside of the reorganization is that

the CAFO program will be part of the core regulatory group.

Interviewees questioned the gaps in the CAFO and other animal agriculture regulations, including elements of the nutrient management plans and pollution discharges from stormwater.

A few interviewees cited specific problems with the CAFO program. For example, one interviewee questioned whether the nutrient management plans cover all the pollutants covered in the federal NMP guidelines. Another interviewee noted that the CAFO program fails to address stormwater where rainwater commingles with animal heavy use areas and barnyards and flows into local waters. An interviewee also cited Pennsylvania as an ‘outlier’ for allowing winter application of manure.

Another interviewee suggested that DEP should use its designation authority to designate operations as CAFOs to bring operations under permits but questioned the ability to do so in “grey” situations.

One interviewee mentioned the need for a shift in mentality within the CAFO program from managing manure for agronomic purposes to managing manure for water quality protection.

One interviewee noted that the nutrient management program in Pennsylvania should shift to the needs for water quality protection calculated by water quality specialists, rather than the current focus on the nutrient needs of crops calculated by agronomists. Other interviewees also echoed their concerns about the lack of focus on water quality protection.

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Interview Perspectives: Pennsylvania's Ability to Achieve the Bay TMDL

Interviewees were asked their opinion of Pennsylvania's ability to achieve the pollution reduction targets allocated to the state under the Bay TMDL.

Interviewees were generally skeptical of Pennsylvania's ability to achieve its pollution reduction allocations under the Chesapeake Bay TMDL. Interviewees commented on the Bay TMDL from a state agency perspective and a broader public perspective. At the state agency level, one interviewee said, "Until DEP embraces what the state WIP fully requires—across the board enforcement, reductions, etc.—[and] until DEP leads this effort, I don't have much faith in the state's ability to achieve the TMDL." This interviewee is "waiting for DEP to actually make the TMDL/WIPs real for the average Pennsylvania and lamented the "lack of leadership or a strong, clear message from DEP about what farmers need to do." DEP's lack of leadership and willpower was criticized by other interviewees.

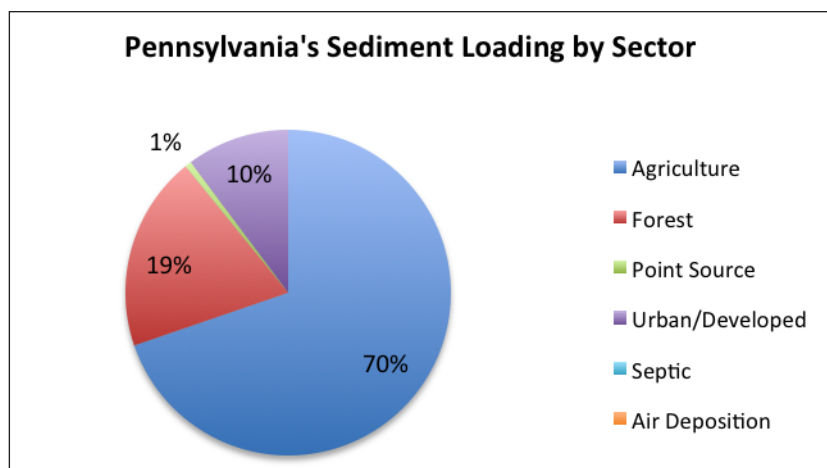
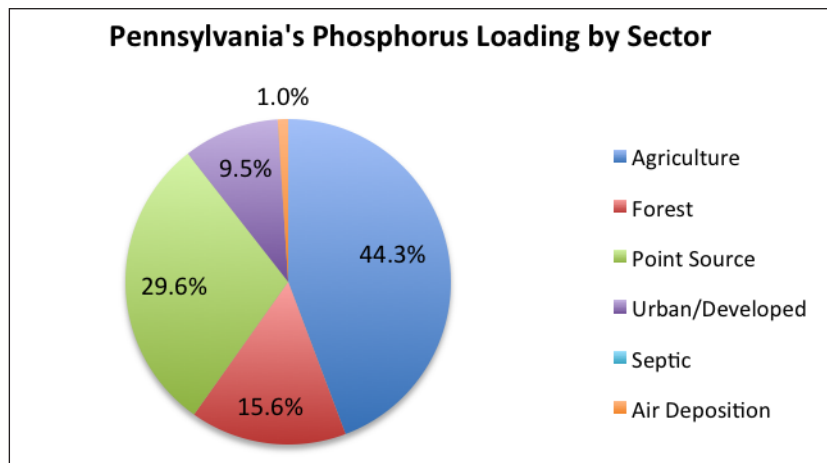
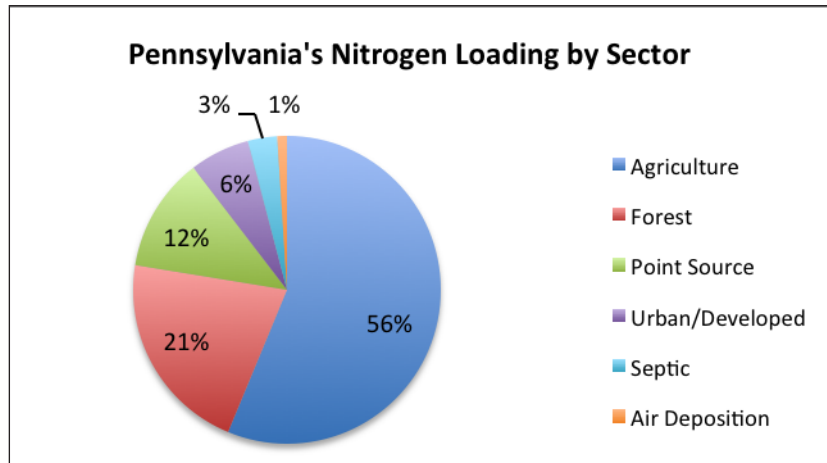
From the broader public perspective, one interviewee said, "in a nutshell, the general population has no idea what is going on. [EPA, DEP] should sell the TMDL as local streams being clean because there's no emotional tie to the Bay. But there is a tie to trout fishing or kayaking. They are selling the TMDL wrong."

Interviewees noted some particular challenges as well, such as the ability to achieve enforceable reductions on the small farms that fall outside the CWA; the failure to allocate pollution loads for the growth of the CAFO sector; and the assumption that amount of agriculture land does not change. Other interviewees cited the lack of historical information about best management practices implementation and the agency "spending a lot resources to add data into the model and reductions.

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Nutrient and Sediment Pollution in Pennsylvania by Sector¹⁰⁰



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Endnotes

- ¹ These figures are calculated from estimates in the Pew report, which notes that in 1950 roughly 1.6 million farms produced 580 million chickens, versus 2007 figures of 27,000 farms that produced 8.9 billion chickens. Pew Environment Group, *Big Chicken: Pollution and Industrial Poultry Production in America* (July 2011) [hereinafter *Big Chicken*], available at http://www.pewenvironment.org/uploadedFiles/PEG/Publications/Report/PEG_BigChicken_July2011.pdf.
- ² EPA estimates that in 2010 a total of 277 million pounds of nitrogen and 19 million pounds of phosphorus entered the Bay. The agency attributes 17 percent of total nitrogen and 26 percent of total phosphorus to animal manure. Bay Tracking and Accountability System; U.S. EPA, *Chesapeake Bay Enforcement and Compliance Strategy* (May 2010) [hereinafter *Bay Strategy*].
- ³ 68 Fed. Reg. 7,180 (February 12, 2003).
- ⁴ U.S. EPA, *Chesapeake Bay Total Maximum Daily Load for Nitrogen, Phosphorus, and Sediment* (December 29, 2011) [hereinafter *Bay TMDL*].
- ⁵ *Id.* at 4-1.
- ⁶ *Id.*
- ⁷ National Academies of Sciences, *Achieving Nutrient and Sediment Reduction Goals in the Chesapeake Bay: An Evaluation of Program Strategies and Implementation* at 4 (2011).
- ⁸ *Big Chicken*, *supra* note 1.
- ⁹ Process wastewater is defined as water “directly or indirectly used in the operation of the [animal feeding operation] for any or all of the following: spillage or overflow from animal or poultry watering systems; washing, cleaning, or flushing pens, barns, manure pits, or other AFO facilities; direct contact swimming, washing, or spray cooling of animals; or dust control. Process wastewater also includes any water which comes into contact with any raw materials, products, or byproducts including manure, litter, feed, milk, eggs, or bedding.” 40 CFR 122.23(b)(7).
- ¹⁰ 76 Fed. Reg. 65,431 (October 21, 2011).
- ¹¹ See EPA’s Agency Rule List, Fall 2011, available [here](#).
- ¹² U.S. EPA, “CAFO Rule History,” <http://cfpub.epa.gov/npdes/af/aforule.cfm> (last updated December 27, 2011) (last visited March 15, 2012).
- ¹³ Chesapeake Bay Foundation, *Manure’s Impact on Rivers, Streams, and the Chesapeake Bay* at 3 (July 28, 2004).
- ¹⁴ 76 Fed. Reg. 65,434 (October 21, 2011).
- ¹⁵ 76 Fed. Reg. 65,434 (October 21, 2011).
- ¹⁶ Mary J. Gilchrist et al., *The Potential Role of Concentrated Animal Feeding Operations in Infection Disease Epidemics and Antibiotic Resistance*, 115 *Env’tl Health Perspectives* 313 (February 2007); Lance B. Price et al., *Staphylococcus aureus CC398: Host Adaptation and Emergence of Methicillin Resistance in Livestock*, *mBio* 3(1):e00305-11. Doi:10.1128/mBio.00305-11 (February 2012).
- ¹⁷ *Bay Strategy*, *supra* note 2.
- ¹⁸ Chesapeake Bay Program, “[Water Quality: Agriculture](#)” (last visited February 20, 2012).
- ¹⁹ *Id.*
- ²⁰ Point sources are defined as “any discernible, confined and discrete conveyance.” 33 U.S.C. § 1362(14).
- ²¹ 33 U.S.C. § 1362(14).
- ²² 33 U.S.C. §§ 1311(a) & 1342(a).
- ²³ 33 U.S.C. § 1313(d).
- ²⁴ 33 U.S.C. § 1313(d)(1)(A) & (C).
- ²⁵ 33 U.S.C. § 1342(b).
- ²⁶ 33 U.S.C. § 1370. Some states have passed so-called “no more stringent rules” that prohibit state agencies from adopting standards that are more strict than federal standards, or effectively fixing their standards to the federal levels of protection.
- ²⁷ Claudia Copeland, *Animal Waste and Water Quality: EPA Regulation of Concentrated Animal Feeding Operations (CAFOs)* at 5, Congressional Research Service Report for Congress, RL31851 (September 21, 2006).
- ²⁸ *Id.*
- ²⁹ 68 Fed. Reg. 7,176 (February 12, 2003).
- ³⁰ The agriculture stormwater exemption applies to a precipitation-related discharge of manure, litter, or process wastewater from the land areas of a CAFO if that manure, litter, or process wastewater has been applied according to site-specific nutrient management practices. 40 CFR § 122.23(e).
- ³¹ The 2003 Final CAFO Rule also omitted some interesting provisions that were part of the original proposed rule. For example, the proposed rule discussed at length a proposal to require co-permitting of integrators, discussed *infra*.
- ³² 399 F.3d 486 (2d Cir. 2005).
- ³³ 399 F.3d at 505.
- ³⁴ 399 F.3d at 496.
- ³⁵ 399 F.3d at 498.
- ³⁶ 73 Fed. Reg. 70,418 (November 20, 2008).
- ³⁷ 73 Fed. Reg. 70,418 (November 20, 2008).
- ³⁸ *Nat’l Pork Producers Council v. EPA*, 635 F.3d 738 (5th Cir. 2011).
- ³⁹ *Id.* at 745.
- ⁴⁰ *Michigan Farm Bureau v. Dep’t Env’tl Quality*, 807 N.W. 2d 866 (Mich. App. 2011).
- ⁴¹ EPA issued updated NPDES CAFO permits in the states of Idaho, New Mexico, Oklahoma, New Hampshire, and Massachusetts. 76 Fed. Reg. 65439 (October 21, 2011).
- ⁴² Gov’t Accountability Office, *Livestock Agriculture: Increased EPA Oversight will Improve Environmental Program for Concentrated Animal Feeding Operations*, GAO-03-285 (January 2003).

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- ⁴³ 76 Fed. Reg. 65,435 (October 21, 2011).
- ⁴⁴ 76 Fed. Reg. 65,435 (October 21, 2011).
- ⁴⁵ *Chemical Mfrs Ass'n v. Dept. of Transportation*, 105 F.3d 702, 705 (D.C. Cir. 1997).
- ⁴⁶ Wis. Adm. Code NR 243.11.
- ⁴⁷ Robert L. Kellogg et al., *Manure Nutrients Relative to the Capacity of Cropland and Pastureland to Assimilate Nutrients: Spatial and Temporal Trends for the United States* at 64, U.S. Dep't of Agriculture Publication No. nps00-0579 (December 2000).
- ⁴⁸ *Bay Strategy*, *supra* note 2.
- ⁴⁹ *Waterkeeper Alliance et al. v. EPA*, 399 F.3d 486 (2nd Cir. 2005).
- ⁵⁰ *Nat'l Pork Producers Council v. EPA*, 635 F. 3d 738 (5th Cir. 2011).
- ⁵¹ This definition covers roughly 5,500 agricultural operations in Maryland because the thresholds are relatively low. The minimum 8,000 pounds of live animal weight equals 1,600 broilers. Thus, if every single one of the 12,800 agricultural operations in Maryland produced broilers, each operation would contain more than 22,000 broilers to account for the 292 million broilers that the state produced in 2009.
- ⁵² Maryland could also issue Individual CAFO Permits that would tailor manure disposal requirements to a specific operation if that operation were located in a high priority area or generated substantially more or different manure. However, to date MDE has not issued any Individual Permits.
- ⁵³ CPR also sent an interview request to Jeff Smith, Corporate Environmental Manager, Perdue Farms Inc., who declined to participate.
- ⁵⁴ USDA, [2010 State Agriculture Overview Maryland](#).
- ⁵⁵ [Maryland's Phase I Watershed Implementation Plan for the Chesapeake Bay TMDL](#) at ES-6 (December 3, 2010) [hereinafter Maryland Phase I WIP].
- ⁵⁶ *Id.* In 2009, Maryland contributed 49.4 million pounds of nitrogen and 3.3 million pounds of phosphorus to the Chesapeake Bay.
- ⁵⁷ EPA formally delegated authority to Maryland to administer CWA permit programs in a memorandum of understanding signed in 1989.
- ⁵⁸ 40 C.F.R. 412.4(c).
- ⁵⁹ Letter to Shari T. Wilson, Secretary of MDE, from Shawn P. Garvin, U.S. EPA Region 3 Regional Administrator (January 29, 2010) (on file with Yee Huang).
- ⁶⁰ *Id.*
- ⁶¹ MDE, *FY 2010 Annual Enforcement and Compliance Report* at 88.
- ⁶² MDE, [MDEStat Data—Land Management Administration](#) (January 9, 2012).
- ⁶³ MDE, [Facts About CAFO/MAFO Environmental Permitting Checklist](#).
- ⁶⁴ USDA, [Statement of Work: Comprehensive Nutrient Management Plan Maryland](#) (April 2004).
- ⁶⁵ MDE, [MDEStat Data—Land Management Administration](#) (January 9, 2012).
- ⁶⁶ Memorandum to Regional Administrators from Granta Y. Nakayama, Assistant Administrator, U.S. EPA Office of Enforcement and Compliance Assurance (October 17, 2007), available [here](#).
- ⁶⁷ MDA & MDE, [Nutrient Management Annual Implementation Report for Concentrated Animal Feeding Operations \(CAFO\) and Maryland Animal Feeding Operations \(MAFO\) for Calendar Year 2011](#).
- ⁶⁸ MDE, [Enforcement and Compliance Process Frequently Asked Questions](#) (May 17, 2007).
- ⁶⁹ *Id.*
- ⁷⁰ *Id.*
- ⁷¹ MDE, [MDEStat Data—Land Management Administration](#) (January 9, 2012).
- ⁷² U.S. EPA, *State Review Framework Maryland*.
- ⁷³ *Id.*
- ⁷⁴ U.S. EPA, [EPA Evaluation of Maryland Final Phase I Watershed Implementation Plan](#) (December 29, 2010).
- ⁷⁵ MDA, [Maryland Nutrient Management Program 2011 Annual Report](#).
- ⁷⁶ MDA, [Nutrient Management Program Overview, Enforcement and Compliance Process](#) (updated February 2007) (last visited February 20, 2012).
- ⁷⁷ MDA, Office of Resource Conservation, Nutrient Management Program, [2011 Progress Report Implementing Nutrient Management Programs](#) at 7 (July 1, 2011) [hereinafter MDA Progress Report]. These 450 reviews and inspections include follow-up visits and therefore do not represent unique site visits.
- ⁷⁸ *MDA Overview*, *supra* note 75.
- ⁷⁹ *MDA Progress Report*, *supra* note 76, at 6-7.
- ⁸⁰ Annemarie H. Herbst, [Regulating Farm Nutrient Runoff: Maryland's Experience with the Water Quality Improvement Act](#) at 44-46 (June 28, 2005).
- ⁸¹ 81 MD Phase I WIP, *supra* note 54, at ES-6. The CAFO sector contributes 80,000 pounds of nitrogen and 7,000 pounds of phosphorus.
- ⁸² The total number of agriculture operations in 2010 was 63,200, according to the USDA. Of these operations roughly half are crop production operations and half are animal production operations. U.S. Dep't of Agriculture, [2007 Census of Agriculture, Pennsylvania](#).
- ⁸³ *Bay TMDL*, *supra* note 4, at 4-1.
- ⁸⁴ *Id.*
- ⁸⁵ From interview notes on file with Yee Huang; Pennsylvania State Council of Farm Organization, [Meeting Notes](#) (June 7, 2010).
- ⁸⁶ 35 Pa. Stat. § § 691.1-691.1001.

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⁸⁷ A General Permit covers a class of facilities that have the same type of discharge and are located in a specific geographic area. A General Permit applies the same or similar conditions to all permit holders. An Individual Permit is specifically tailored to an individual facility and may be issued if the facility poses a particular threat to water quality or requires special conditions to discharge pollution.

⁸⁸ Pennsylvania Department of Environmental Protection, *Pennsylvania Phase I Watershed Implementation Plan* at 64 (January 11, 2011) [hereinafter PA Phase I WIP].

⁸⁹ Douglas Beegle, *What's Happening in Nutrient Management in the Chesapeake Bay* (November 10, 2011).

⁹⁰ U.S. EPA, *EPA Evaluation of Pennsylvania Final Phase I Watershed Implementation Plan* (December 29, 2011).

⁹¹ The “animal heavy use area” is the barnyard, feedlot, loafing area, exercise lot, or other similar area on an agricultural operation where the concentration of animals makes it impossible to establish and maintain vegetative cover area that can minimize accelerated erosion and sedimentation by usual planting methods. 25 Pa. Code § 102.1.

⁹² *PA Phase I WIP*, *supra* note 87, Appendix 5.

⁹³ *Id.* at 257.

⁹⁴ *Id.*

⁹⁵ *Id.* at 105.

⁹⁶ U.S. EPA, *EPA Evaluation of Pennsylvania Final Phase I Watershed Implementation Plan* (December 29, 2010).

⁹⁷ *Id.*

⁹⁸ U.S. EPA, *State Program Review Framework for Pennsylvania Department of Environmental Protection*, CWA-NPDES Enforcement Program at 13.

⁹⁹ Letter to Glenn H. Rider, Director of the Bureau of Watershed Management, DEP, from David McGuigan, Associate Director of the Office of Permits and Enforcement, Water Protection Division, U.S. EPA Region 3 (August 18, 2011) (on file with Yee Huang).

¹⁰⁰ PA Phase I WIP, *supra* note 87.

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Other Chesapeake Bay White Papers and Briefing Papers by CPR

- *Accountability: Water Quality Trading in the Chesapeake Bay*, CPR Briefing Paper No. 1205 (May 2012). To ensure accountability in water quality trading, this paper makes specific recommendations for designing the program, avoiding environmental inequities, and ensuring strong enforcement.
- *Back to Basics: An Agenda for the Maryland General Assembly to Protect the Environment*, CPR Briefing Paper No. 1110 (October 2011). This paper recommends that MDE should increase permit fees to accurately reflect the cost of administering permits; increase the state penalty maximum to match the federal penalty maximum; explicitly recover the economic benefit of non-compliance in penalty calculations; and establish a mandatory minimum penalty for certain violations.
- *Ensuring Accountability in Chesapeake Bay Restoration: Metrics for the Phase I Watershed Implementation Plans* (August 2010). CPR developed a set of metrics to grade the Bay jurisdictions' Phase I Watershed Implementation Plans. The metrics address (1) the transparency of information in the WIPs in providing key information about their pollution control programs and (2) the strength of the programs in making actual pollution reductions. Using these metrics to grade the WIPs provides a clear and understandable tool for monitoring each state's commitment to restoration.
- *Missing the Mark in the Chesapeake Bay: A Report Card for the Phase I Watershed Implementation Plans*, CPR White Paper No. 1102 (January 2011). This report card applied the metrics from *Ensuring Accountability* to the Chesapeake Bay states' and the District of Columbia's final Phase I Watershed Implementation Plans. The final grades reflected mediocre commitments and performance because the final plans were light on providing specific commitments for actions needed to achieve the required pollution reductions, and generally did not pledge dedicated funding for the proposed programs.
- *Failing the Bay: Clean Water Act Enforcement in Maryland Falling Short*, CPR White Paper No. 1004 (April 2010). This paper examines trends in CWA enforcement and MDE's enforcement budget and workforce for the period between 2000 and 2009. The report recommends that the Maryland General Assembly provide additional funding to account for the dramatic increase in MDE's workload; that MDE recover any economic benefit achieved by noncompliance from violators and increase on-site monitoring and inspection activities; and that MDE embrace citizen suits as a tool to supplement its own enforcement program.
- *The Clean Water Act: A Blueprint for Reform*, CPR White Paper No. 802 (May 2008). The CWA has accomplished much since its passage in 1972, but much more remains to be done. This Blueprint presents a number of specific and meaningful reforms for the CWA that address existing problems and prepare for the new problems climate change will create.

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About the Center for Progressive Reform

Founded in 2002, the Center for Progressive Reform is a 501(c)(3) nonprofit research and educational organization comprising a network of scholars across the nation dedicated to protecting health, safety, and the environment through analysis and commentary. CPR believes sensible safeguards in these areas serve important shared values, including doing the best we can to prevent harm to people and the environment, distributing environmental harms and benefits fairly, and protecting the earth for future generations. CPR rejects the view that the economic efficiency of private markets should be the only value used to guide government action. Rather, CPR supports thoughtful government action and reform to advance the well-being of human life and the environment. Additionally, CPR believes people play a crucial role in ensuring both private and public sector decisions that result in improved protection of consumers, public health and safety, and the environment. Accordingly, CPR supports ready public access to the courts, enhanced public participation, and improved public access to information.

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