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# Livestock Production and Water Quality in Montana

A Guide to Meeting Montana's Water Quality  
Regulations and Achieving Agricultural  
Production Goals



*Water is vital to life - all life. From the rapid riffles and cool, quiet eddies of a stream cascading down the Rocky Mountain Front to the violent majesty of a waterfall to the glistening beauty of a string of calm pools snaking across the eastern Montana prairie; water soothes emotions and feeds the soul. Water is also essential to health. Humans and animals, both wild and domesticated, need clean water to sustain life.*



## What has been done to address water quality?

The purpose of this document is to provide Animal Feeding Operation (AFO) and Confined Animal Feeding Operation (CAFO) owners, government personnel, and the general public with a better understanding of the current strategy to address animal waste concerns in Montana. It will help you to understand the relationship between the regulatory program operated by the Environmental Protection Agency (EPA) and the Montana Department of Environmental Quality (DEQ). You will also learn about voluntary technical and financial assistance available from the Natural Resources Conservation Service (NRCS) to help operators meet regulations when needed or to avoid the need for regulation as appropriate.

On February 12, 2003, the EPA published revisions to its Clean Water Act regulations for concentrated animal feeding operations. The DEQ is currently in the process of adopting these rule changes for Montana.

The rule changes provide for increased standards for the management of livestock manure from animal feeding operations. The strategy divides animal feeding operations into two categories: CAFOs and AFOs. CAFOs are further divided by size into large, medium, and small operations based on the number of animals in the facility.

According to the new strategy, all large CAFOs in Montana must have a water pollution discharge permit

(Montana Pollution Discharge Elimination System), need a nutrient management plan, and are subject to regulation under the Clean Water Act<sup>1</sup>. EPA continues to manage the CAFO regulation and permit process on tribal lands in Montana. Livestock operations classified as AFOs are not subject to permitting requirements.

## Why has a revised strategy been developed?

In the last 25 years, under the Clean Water Act, the United States has made tremendous progress in cleaning up its rivers, lakes, and coastal waters. However, nearly 40 percent of the nation's waterways that have been assessed to this point still do not meet quality criteria for culinary or recreational use. Pollution from factories and sewage treatment plants has been dramatically reduced, but runoff from city streets, agricultural operations, and other sources continues to pollute water.

In March 1999, the EPA and U.S. Department of Agriculture (USDA) completed a strategy for livestock operations. The Unified National Strategy for Animal Feeding Operations represented the EPA and USDA plan for addressing water quality concerns associated with livestock production. The goal of the program was to minimize water quality impacts by identifying operations at greatest risk for pollution and providing assistance to these owners to help them meet water quality goals.

The revised EPA and Montana regulations focus on operations posing the greatest risk to water quality. By regulating large, new, or expanded operations under the National Pollutant Discharge Elimination System Permit Regulation (40 CFR Part 122) and the Effluent Limitations Guidelines and Standards for CAFOs (40 CFR Part 412), about 60 percent of manure generated by confined animal operations will be regulated.

The strategy will initially focus on large CAFOs. However, some medium and small facilities designated as CAFOs may also be affected, especially if they are located on an impaired watershed, are identified as a significant contributor to water pollution, or manage wastewater in a containment structure. The strategy also outlines extensive voluntary opportunities for operations to improve manure management and runoff control.

## How does the strategy affect Montana producers?

The DEQ strategy relies on voluntary compliance and inspections resulting from citizen complaints. Operators who work with NRCS to develop and implement a course of action to address resource concerns and regulatory issues are given time to comply prior to formal enforcement.

<sup>1</sup>/ A federal court challenge to EPA's new regulation regarding 'must comply' provisions for large AFOs has been upheld. No word yet on whether EPA will appeal or how this provision will be addressed if the ruling is allowed to stand.

NRCS services requests for technical and financial assistance based on a ranking system. Producers who have been notified by the DEQ that they are CAFOs or are in violation of water quality regulations are given highest priority. Second in priority are operations wishing to adopt practices to avoid having discharge conditions that would result in the facility being defined as a CAFO. NRCS assistance includes alternative development, surveys, designs, layout, and construction checks for eligible structures and creation of associated operations and management practices to manage animal waste and nutrients.

## As a producer, what steps do I need to take?

**STEP 1** The first step is to decide if your operation is an AFO or a CAFO. Review these definitions to help you make an initial determination.

**Definition of an AFO:** An AFO is a lot or facility that meets both of the following conditions. The animals are stabled or confined and fed or maintained for at least 45 days during any consecutive 12-month period and vegetation in the form of crops, forage growth, or post harvest residue is not sustained in the normal growing season over any portion of the lot or facility.

Remember that the definition of an AFO is independent of facility size or the number of animals. Your operation is an AFO if you operate a dry lot facility where two animals are kept for 45 or more days per year.

Regardless of size, facilities with animals on pasture or range are not normally considered an AFO as long as plants are grown on the site during the normal growing season. Winter feeding areas are generally not considered AFOs since the pasture, hayland, or range normally has vegetation present during the growing season.

**Definition of a Small CAFO:** AFOs that don't confine enough animals to meet the medium size threshold may be designated as CAFOs by the permitting authority. An operation may be designated as a CAFO if the DEQ or EPA determines that the facility is a significant contributor of pollutants to state waters and that it meets at least one of these criteria.

1. A man-made ditch, pipe, flushing system, or similar device carries manure or process wastewater from the operation to state waters.
2. The animals come into contact with state water that runs through the area where they're confined or pollutants are discharged directly into state waters which originate outside of and pass over, across, or through the facility.

**Definition of a Medium CAFO:** An operation is defined as a medium CAFO if it meets the regulatory definition of an AFO, meets the medium CAFO thresholds for that animal type, and meets at least one of the following criteria.

1. A man-made ditch, pipe, flushing system, or similar device carries manure or process wastewater from the operation to state waters.
2. The animals come into contact with state water that runs through the area where they're confined or pollutants are discharged directly into state waters which originate outside of and pass over, across, or through the facility.

**Definition of a Large CAFO:** An operation is defined as a large CAFO if it meets the regulatory definition of an AFO and meets the large CAFO threshold for that animal type.

**A medium CAFO has at least:**

200 mature dairy cows  
 300 beef cattle or heifers  
 750 swine of 55 lbs or more  
 3,000 swine under 55 lbs  
 9,000 chickens  
 (liquid manure system)  
 37,500 chickens except laying hens  
 (other than liquid manure system)  
 25,000 laying hens  
 (other than liquid manure system)  
 300 veal calves  
 150 horses  
 3,000 sheep or lambs  
 16,500 turkeys

**A large CAFO has at least:**

700 mature dairy cows  
 1,000 beef cattle or heifers  
 2,500 swine of 55 lbs or more  
 10,000 swine under 55 lbs  
 30,000 chickens  
 (liquid manure system)  
 125,000 chickens except laying hens  
 (other than liquid manure system)  
 82,000 laying hens  
 (other than liquid manure system)  
 1,000 veal calves  
 500 horses  
 10,000 sheep or lambs  
 55,000 turkeys

**Primary factors in determining pollution significance include:**

1. Size of the AFO and the amount of waste reaching state waters
2. Location of the AFO relative to state waters
3. Means of conveyance of animal wastes and process wastewater
4. Slope, vegetation, rainfall, and other factors affecting the likelihood or frequency of discharges of animal wastes and process wastewater to state waters
5. Other relevant factors

**This worksheet can help you determine if your operation is a CAFO.**

<p>1. Is your operation an AFO as defined on page 2?</p> <p>If you answered NO to question 1, your operation is not an AFO. Therefore, it can not be a CAFO. Please see page 6 for ways to reduce pollution from your livestock operation. If you answered YES to question 1, please go to question 2.</p>	<b>Yes</b>	<b>No</b>
<p>2. Do you have more animals than are listed for the large CAFO threshold for your animal sector?</p> <p>If you answered YES to question 2, you are defined as a CAFO. Refer to page 6 for whom to contact about permitting requirements and for additional assistance. Under the new regulations, CAFOs that can document that they have no potential to discharge (see page 4) may be exempted from the permit process. If you answered NO to question 2, please answer questions 3 and 4.</p>	<b>Yes</b>	<b>No</b>
<p>3. Do you have areas on your facility where animal manure, surface runoff, wastewater, or drainage from feed storage areas can discharge or travel by pipe or ditch to state waters?</p> <p>4. Do you have a waterway or drainage that moves through or next to your facility that comes into direct contact with animals or manure?</p> <p>If you answered YES to questions 3 or 4, you could be designated as a medium or small CAFO. Please read pages 6 and 7 carefully for ways to voluntarily reduce pollution and possibly avoid being designated as a CAFO.</p>	<b>Yes</b>	<b>No</b>

If you answered YES to any of the questions in the table, the Montana strategy recommends further assessment of your site by a qualified individual. The purpose of the assessment is to further determine your AFO/CAFO status and ways to minimize pollution from your operation. Assessments should be completed before proceeding with the permit process, if applicable. More frequently, smaller operations will be able to avoid being permitted if appropriate practices are installed to eliminate the conditions that would require a permit. In some cases, operators near suburban or rural development may wish to pursue permitting as a means to document their compliance with water quality laws.



**STEP 2** If you have decided that your operation is a CAFO, the next step is to apply for a discharge permit through the DEQ.

Once designated as a CAFO, operators must apply for and be issued a discharge permit by the DEQ or EPA. The permit allows a discharge of wastewater to state waters if manure runoff or wastewater is discharged after receiving unusual amounts of precipitation, such as during a storm event greater than a 25-year, 24-hour storm.

**STEP 3** Once you have determined that your operation is a CAFO, you should begin the process of developing a Nutrient Management Plan.

Operations designated as CAFOs are also required to develop and implement a Nutrient Management Plan (NMP) by December 31, 2006. A NMP is a written document detailing manure storage and handling systems, surface runoff control measures, mortality management, chemical handling, manure application rates, schedules to meet crop nutrient needs, land management practices, and other options for manure disposal. Technical and financial assistance may be available from NRCS to make necessary improvements, develop NMPs, and meet other requirements.

Several differences exist between a NMP and a Comprehensive Nutrient Management Plan (CNMP). See "Comparing a CNMP with an NMP" at <http://www.nrcs.usda.gov/programs/eqip/cnmpinsert.html> for an in-depth review of these differences.

A CNMP is developed with landowners for use in NRCS programs while a NMP is prepared to address the requirements of a Montana Pollution Discharge Elimination System permit. In coordination with the DEQ, NRCS has recently adapted the CNMP document to produce the added elements of a NMP. NRCS can efficiently produce an NMP document when it is needed as part of a permit application.

**A Discharge Defined:** A discharge is defined by the Clean Water Act and the Montana Water Quality Act as the addition of any pollutant (including animal manures, otherwise contaminated waters, or surface runoff from feed areas to state waters. State waters are generally defined as any surface water source, whether in manmade ditches or natural streams, that leave an operator's property. Discharges include storm water runoff.

**Key Points:** First, state waters are broadly defined to ensure that contaminated water does not leave an operator's property and end up in a stream or reservoir. Irrigation ditches often terminate at or discharge back into a stream. Therefore, a release of manure or wastewater into an irrigation ditch or canal may be considered a discharge. Second, there is no minimum volume required for a release to be considered a discharge. Third, facilities are not allowed by law to discharge unless they are permitted and then only during a storm event greater than a 25-year, 24-hour storm<sup>2</sup>. If a discharge occurs from a facility not covered by a permit, there is the potential to be subject to civil penalties under the Montana Water Quality Act.



<sup>2/</sup> However, new source poultry, swine, and veal operations must meet a "no discharge" standard. This standard only allows for discharges from the production area in the event of a 100-year, 24-hour storm or greater.

# Frequently Asked Questions

## Question 1 Where can I get help?

Whether you determine that your operation is classified as an AFO or as a potential CAFO, technical assistance is available. At this time, the priority for providing assistance is focused on helping CAFOs since they pose the highest potential risk to water quality. AFO operators are also eligible for assistance; however, the timing may be dependent on the severity of water quality concerns, size of the operation, and the cost of proposed improvements.

A CNMP can be developed by the landowner, with assistance from NRCS, Cooperative Extension, Conservation District personnel, or private consultants. All CNMPs must be reviewed and approved by a certified CNMP specialist. Certification is offered by NRCS and entities such as the American Society of Agronomy and others.

Under the 2002 Farm Bill, landowners can now request assistance from registered Technical Service Providers certified as CNMP specialists. Find additional information about Technical Service Providers on the NRCS website at <http://mt.nrcs.usda.gov/partnerships/tsp.html>. NRCS has also contracted with several private engineering firms in the state to assist in developing and implementing AFO treatment plans.

NRCS has recently begun using the Manure Management Planner, a computer program that facilitates the documentation, nutrient accounting, and record keeping process that is part of both a CNMP and an NMP. This model helps both producers and planners save time while allowing for efficient, organized record keeping.

## Question 2 Is there a simplified treatment for small AFOs?

Operators of small AFOs may take advantage of a recently developed approach to treat these operations with low cost, yet effective practices to reduce potential runoff to waterways. As appropriate, installations using a combination of clean water diversions, roof gutters, berms, sediment traps, fencing, vegetative filter strips, and shaping and grading can keep clean water separated from dirty water, and eliminate concentrated flow paths for runoff. Properly sized and installed vegetative filter strips in conjunction with other practices to reduce waste loads and runoff volume are very effective at trapping and detaining sediment and attached nutrients and pathogens. Removal rates can approach 90 percent. Good management and maintenance are also needed to retain these potential pollutants onsite and out of waterways.

Animal health is also a beneficiary of good water management and water quality protection. Providing a clean water source instead of surface water removes the potential for direct contact between confined livestock and waterways, which is usually one of the primary reasons that AFOs become designated as CAFOs.

## Question 3 Why should I be concerned?

All Montanans value clean water. We all need to consider the consequences of our management decisions on the water sources utilized by urban residents, our neighbors, our children, and their future children. Your voluntary participation will ensure that more rigid regulatory programs and penalties are not assessed to livestock operators in Montana in the future.

Additionally, there is an increasing trend toward rewarding landowners for positive environmental stewardship. The Conservation Security Program, an NRCS program in its second year of operation, includes eligibility criteria that require AFOs to address water quality issues. Taking a proactive approach now will reward landowners wanting to participate in such programs in the future.

## Question 4 Is it true that financial help is available only in certain areas of Montana?

No, help is available on private and tribal lands throughout the state. Financial assistance is available from NRCS through the Environmental Quality Incentives Program (EQIP). Individual AFO/CAFO applications for EQIP funds compete within a pool established specifically for these projects. These EQIP funds are used solely for projects to address animal waste concerns. For information on the program and ranking criteria established yearly, visit the NRCS web site at <http://www.mt.nrcs.usda.gov/programs/eqip/>. There are also grants available through the Section 319 Program of the Clean Water Act, which is administered by the DEQ.

## **Question 5** How long is a CNMP/NMP good for?

A CNMP will generally be good as long as the operation stays the same. It is recommended that your CNMP be updated once every five years. You should also review and update your CNMP when animal numbers or the method of handling and storing manure changes significantly. Assuming no changes in the operation, a NMP is good for the duration of the permit, which is usually five years.

## **Question 6** Who Can I Call?

If you are defined as a large CAFO under the current regulations<sup>1</sup>, it will be necessary for you to get a Montana Pollution Discharge Elimination System permit. On tribal lands, a National Discharge Elimination System permit is required. Contact the DEQ, Permitting and Compliance Division, Water Protection Bureau, Water Quality Discharge Permits Section at 406-444-3080 for information on obtaining a discharge permit.

If you have less than 1,000 animal units and could be designated as a CAFO, don't panic! The Montana strategy will provide an opportunity to voluntarily develop a CNMP, which will help you meet your obligations. However, time is running out. In order to meet the December 31, 2006, deadline, visit your local NRCS office to begin the CNMP process.

### **Sources of Technical Assistance**

For more information about developing a NMP or CNMP, cost-share programs, and implementing conservation practices, contact your local NRCS office or visit the NRCS website at <http://www.mt.nrcs.usda.gov>.

The Montana Department of Agriculture website has contact names, phone numbers, and website addresses for many producer groups at <http://agr.state.mt.us/reference/agOrgs.asp>.

## **Consider these voluntary pollution prevention measures.**

All livestock facilities are responsible for helping to protect our water resources by collecting and properly disposing of manure, wastewater, and contaminated runoff. The following are general practices to reduce pollution from livestock operations.

### **Lot and Waste Storage Practices**

- Berm, ditch, gutter, or otherwise divert all clean stormwater away from the lot, manure stockpiles, bunkers, and feed areas.
- Locate manure stockpiles and wastewater lagoons above the flood plain and away from surface water sources and well heads.
- Control and contain all runoff from manure stockpiles, lot areas, and feed storage areas.
- When scraping soil-based lots to remove manure, don't disrupt the compacted surface layer. This layer acts as a barrier to leaching and provides short-term storage for precipitation.
- Design manure bunkers and wastewater lagoons based on realistic storage periods for your location, field access, and manure, wastewater, and runoff volumes generated.
- Dispose of dead animals by composting, landfilling, rendering, or burial in conformance with state and local ordinances.
- Plant trees to provide windbreaks, odor and dust control, and visual barriers around manure and wastewater storage areas.

### **Manure Application Practices**

- Analyze soil and manure and use the analysis as the basis for manure application rates.
- Apply manure to land at agronomic rates based on the nutrients in manure, soil test nutrient levels, and crop nutrient requirements.
- Reduce commercial fertilizer rates accordingly when using manure as a nutrient source.
- Service and calibrate application equipment to ensure manure is applied uniformly and at the correct rate.
- Incorporate manure as soon as possible where feasible after application to reduce the potential for surface runoff to waterways. Incorporation also greatly conserves the nutrient value of manure resulting in more efficient use of the expense to land apply.
- Leave a minimum 100-foot setback or buffer strip between manure application and any streams, ditches, wells, or other waterbodies on cropland. When vegetated, the setback can be decreased to 35 feet unless steep slopes or other sensitive conditions warrant a wider buffer strip.
- Apply manure in the spring and fall, when it can be incorporated properly and used efficiently by growing crops.

- Avoid manure application on frozen or snow covered ground. If manure must be applied under these conditions, apply only on areas where runoff is controlled by dikes, berms, or other means.
- Manage irrigation water to minimize over-application. This will limit leaching of nitrates to groundwater and runoff of nutrients to surface water.

**General Practices**

- Keep records of manure and soil analyses, manure application rates, fertilizer applied, and crop yields.
- Fence animals out of streams and ponds to reduce the disturbance of banks and limit manure in the water.
- Consider options such as composting, off-site transport, or conversion to a higher value product if your facility does not have adequate land to dispose of manure.



The berm around this feedlot contains runoff and solids, helping to prevent discharge into surface waters.



A vegetated filter strip can be used to prevent runoff from fields where nutrients are applied or from feedlot surfaces into streams.



The capacity of this waste storage pond was sized to match the need for the operation. Depositing waste under the surface of the water may help to reduce odor.



Controlling livestock access to riparian areas also helps to reduce the amount of manure, nutrients, sediment, and pathogens that come into direct contact with surface waters.