

Archived Publication

This information provided in this document is for reference. Please be aware that the information in this document may be outdated or superseded by additional information.



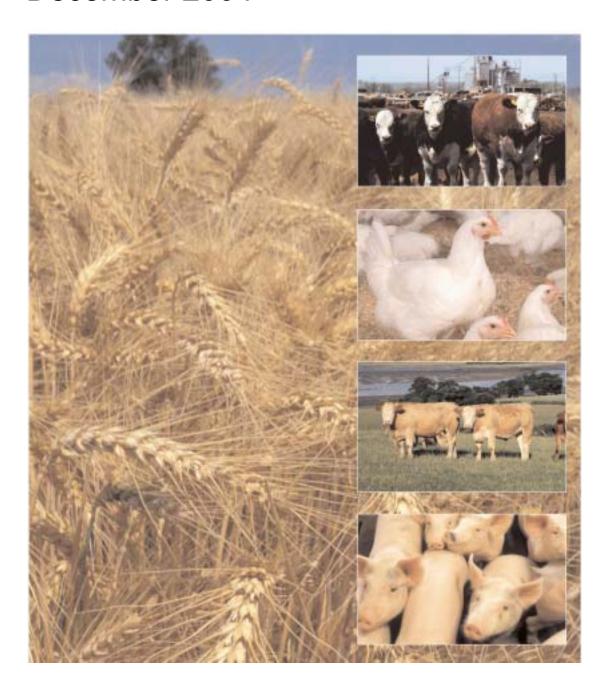
EPA promulgated regulations for Concentrated Animal Feeding Operations (CAFOs) in February 12, 2003 that expanded the number of operations covered by the CAFO regulations and included requirements to address the land application of manure from CAFOs. The rule became effective on April 14, 2003. NPDES-authorized states were required to modify their programs by February 2005 and develop state technical standards for nutrient management. On February 28, 2005, in response to litigation brought by various organizations, the Second Circuit court issued its decision in *Waterkeeper Alliance et al. v. EPA*, 399 F.3d 486 (2d Cir. 2005). EPA has updated the CAFO rule to reflect the changes requested by the Court. Visit www.epa.gov/npdes/caforule to view the 2008 CAFO Final Rule and supporting documents.





Managing Manure Nutrients at Concentrated Animal Feeding Operations

December 2004



U.S. Environmental Protection Agency Office of Water (4303T) 1200 Pennsylvania Avenue, NW Washington, DC 20460

EPA-821-B-04-009

Disclaimer

This is a guidance manual and is not a regulation. It does not change or substitute for any legal requirements. While EPA has made every effort to ensure the accuracy of the discussion in this guidance, the obligations of the regulated community are determined by the relevant statutes, regulations, or other legally binding requirements. This guidance manual is not a rule, is not legally enforceable, and does not confer legal rights or impose legal obligations upon any member of the public, EPA, States, or any other agency. In the event of a conflict between the discussion in this document and any statute or regulation, this document would not be controlling. The word "should" as used in this guidance manual does not connote a requirement, but does indicate EPA's strongly preferred approach to assure effective implementation of legal requirements. This guidance may not apply in a particular situation based upon the circumstances, and EPA, States and Tribes retain the discretion to adopt approaches on a case-by-case basis that differ from this guidance manual where appropriate. Permitting authorities will make each permitting decision on a case-by-case basis and will be guided by the applicable requirements of the CWA and implementing regulations, taking into account comments and information presented at that time by interested persons regarding the appropriateness of applying these recommendations to the particular situation. In addition, EPA may decide to revise this guidance manual without public notice to reflect changes in EPA's approach to implementing the regulations or to clarify and update text.

Managing Manure at Concentrated Animal Feeding Operations

Version Control

| Version | EPA Publication Number | Publication Date | Description of Changes | Author's Initial |
|---------|---------------------------|---------------------|--|---------------------|
| 1 | EPA-821-B-04-006 | August 2004 | Initial Release | PHS |
| 2 | EPA-821-B-04-009 | December 2004 | Revised Appendix H; Updated Phosphorus Index | PHS |

| | · · · · · · · · · · · · · · · · · · · | Page |
|--|--|--|
| CHAPTER 1: A. B. C. D. E. F. G. | INTRODUCTION Purpose of this Document Scope of this Document How To Use this Document Other Related Documents Scope of CAFO Regulations CAFOs with No Potential to Discharge Comments on Managing Manure | 1-1 1-1 1-1 1-2 1-3 1-4 |
| CHAPTER 2: | OPERATION, MAINTENANCE, AND RECORDKEEPING | |
| ^ | REQUIREMENTS FOR THE PRODUCTION AREA | |
| A. | Design Standards | |
| | 2. No Discharge for Production Areas | |
| B. | Proper Operation and Maintenance | |
| | 1. Liquid Storage Structures | |
| | Solid Storage Structures Visual Inspections | |
| C. | Mortalities, Direct Contact, and Chemical Disposal | |
| 0. | Management of Animal Mortalities | |
| | Direct Contact of Animals With Surface Water | |
| | 3. Disposal of Chemicals | 2-23 |
| D. | | 2-24 |
| E. | Additional Voluntary Controls | |
| | Groundwater Protection Controls Lagoon Covers | |
| | Lagoon Covers Additional References | |
| | 7. Additional Notice folds | 2-21 |
| CHAPTER 3: | PREPARING FOR LAND APPLICATION OF MANURE, LITTER, | |
| | OR WASTEWATER | 3-1 |
| A . | Manure Sampling | |
| В. | Records | |
| C. | Additional Voluntary Controls | 3-3 |
| CHADTED 1. | OPERATION, MAINTENANCE, AND RECORDKEEPING | |
| OliAi TEIX 4. | REQUIREMENTS FOR THE LAND APPLICATION AREA | 4-1 |
| A. | Testing Protocols for Manure, Litter, and Soil | |
| | 1. Collecting Manure for Land Application | 4-2 |
| | 2. Manure Sampling and Testing | 4-3 |
| | 3. Soil Sampling and Testing | |
| B. | Protocols to Land Apply Manure | |
| | 1. Nutrient Management Plan | 4-6 |
| | Required Nutrient Management Plan Format Plan Certification | 4-7 4-7 |
| | 4. Comprehensive Nutrient Management Plans | |
| | 5. Crop Rotations and Crop Nutrient Requirements | |
| | 6. Application Rate | |
| | 7. Application Method | |

| | | Page |
|------------------------|--|----------------------------------|
| | 8. Application Timing | 4-17 4-18 4-18 |
| C. D. | Records | 4-19 4-20 |
| E. | Alternatives to Setbacks Voluntary Conservation and Pollution Prevention Practices Feeding Strategies Water Conservation | 4-22 4-23 |
| CHAPTER 5: | VOLUNTARY PERFORMANCE STANDARDS FOR CAFOS Overview of the Baseline Requirements | |
| B. | Overview of the Voluntary Performance Standards Program 1. Program Participation 2. Pollutants of Concern 3. Required Technical Analysis 4. Validation of Equivalent Pollutant Reductions | . 5-2 . 5-2 . 5-2 . 5-3 |
| C. | 5. Relationship to Existing NPDES Permits Step-By-Step Requirements for Participation in the Voluntary Performance Standards Program Determining Baseline Pollutant Discharge Demonstrating That an Alternative Control Technology Achieves | . 5-4 |
| | Equivalent or Better Pollutant Reductions | . 5-7 |
| CHAPTER 6: | DEVELOPING AND USING TECHNICAL STANDARDS FOR THE LAND APPLICATION OF MANURE, LITTER, AND PROCESS | |
| A. | WASTEWATER Developing Technical Standards for Land Application 1. EPA Recommended Technical Standards and Policies 2. Factors for Developing Technical Standards 3. NRCS Standards and NMPs 4. Example National Nutrient Management Technical Standards for | . 6-1 . 6-1 . 6-4 |
| B. | Land Application 5. Appropriate Flexibility in Applying Technical Standards Example Rate Calculations Manure Production and Composition Developing a Nutrient Budget | . 6-5 . 6-6 . 6-6 |
| C. | 3. Land Application Rate Calculation | 6-11 |
| CHAPTER 7: A. B. | AVOIDING COMMON DEFICIENCIES | . 7-1 |

| | Pa | ge |
|--|--|---------------------------------|
| | Infrequent Dewatering of Storage Structures Pumpdown Practices Lagoon Agitation Representative Manure Samples Animal Mortality Practices Chemical Handling Emergency Action Plans Example Onsite Check List | 7-2 7-2 7-3 7-3 7-4 |
| CHAPTER 8: A. B. C. D. E. | ADDITIONAL RESOURCES USDA Funding Programs for CAFOs USDA and EPA Livestock and Poultry Environmental Stewardship Curriculum EPA Programs and Information USDA Programs and Information Associations and Trade Groups | 3-2 3-2 3-2 |
| Appendix A - | EFFLUENT LIMITATIONS GUIDELINES AND STANDARDS FOR CONCENTRATED ANIMAL FEEDING OPERATIONS | |
| Appendix B - | INSPECTION CHECKLIST FOR A LARGE CAFO | |
| Appendix C - | RECORDKEEPING CHECKLIST FOR THE PRODUCTION AREA AND LAND APPLICATION AREA AT A LARGE CAFO | |
| Appendix D - | MEASURING THE AMOUNT OF ANIMAL WASTE | |
| Appendix E - | ANIMAL WASTE SAMPLING | |
| Appendix F - | SOIL SAMPLING AND TESTING | |
| Appendix G - | LEACHING INDEX | |
| Appendix H - | PHOSPHORUS INDEX | |
| Appendix I - | AGRONOMIC NUTRIENT APPLICATION RATE | |
| Appendix J - | CALIBRATING ANIMAL WASTE SPREADERS AND IRRIGATORS | |
| Appendix K - | SOIL LOSS (EROSION) | |
| Appendix L - | WINTER SPREADING TECHNICAL GUIDANCE | |
| Appendix M - | MINIMUM DEPTH OF RAIN AT WHICH RUNOFF BEGINS | |
| Appendix N - | RECOMMENDED BEST MANAGEMENT PRACTICES (BMPS) AND | |

Page

- Appendix O EXAMPLE NATIONAL NUTRIENT MANAGEMENT TECHNICAL STANDARD
- Appendix P CALCULATIONS FOR ESTIMATING MEDIAN ANNUAL OVERFLOW VOLUMES AND ANNUAL AVERAGE DISCHARGE OF POLLUTANTS

LIST OF TABLES

| 5-1 | Summary Description of Baseline Requirements | 5-2 |
|-----|--|------|
| | LIST OF FIGURES | |
| 1-1 | Example CAFO Potentially Demonstrating No Potential to Discharge | 1-5 |
| 2-1 | Production Area at Whole Milk Dairy | 2-3 |
| 2-2 | Cross Section of Properly Designed Lagoon | 2-14 |
| 2-3 | Schematic of Lagoon Depth Marker | 2-17 |