

Heartland's Contributions to CAFO NMP Policy



Rick Koelsch

University of Nebraska

Joe Lally, Iowa State University

John Lawrence, Iowa State

University

John Lory, University of Missouri

Joel DeRouchey, Kansas State

University



Objectives

1. Highlight public policy role played by Heartland
2. Summarize comments to 2006 proposed EPA CAFO rule changes
3. Share a possible format for Strategic and Annual nutrient plans.



Heartland Policy Roles

- CAFO conference calls
- Agency annual conferences
- Regional Inspector Training
- Sample Records Format
- CAFO Policy Review

Outcome - Improved regional agency communications & consistency



Water Keeper Decision & EPA CAFO Proposal

And

Heartland Response



Water Keeper Decision & EPA CAFO Proposal

- NMP is part of permit
 - Application rates and related plans defined for 5 yr period
- "Significant" changes would need to be approved by EPA
- Public participation in all aspects of nutrient plan review.





Heartland

Regional Water Coordination Initiative

*A Partnership of USDA CSREES
& Land Grant Colleges and Universities*

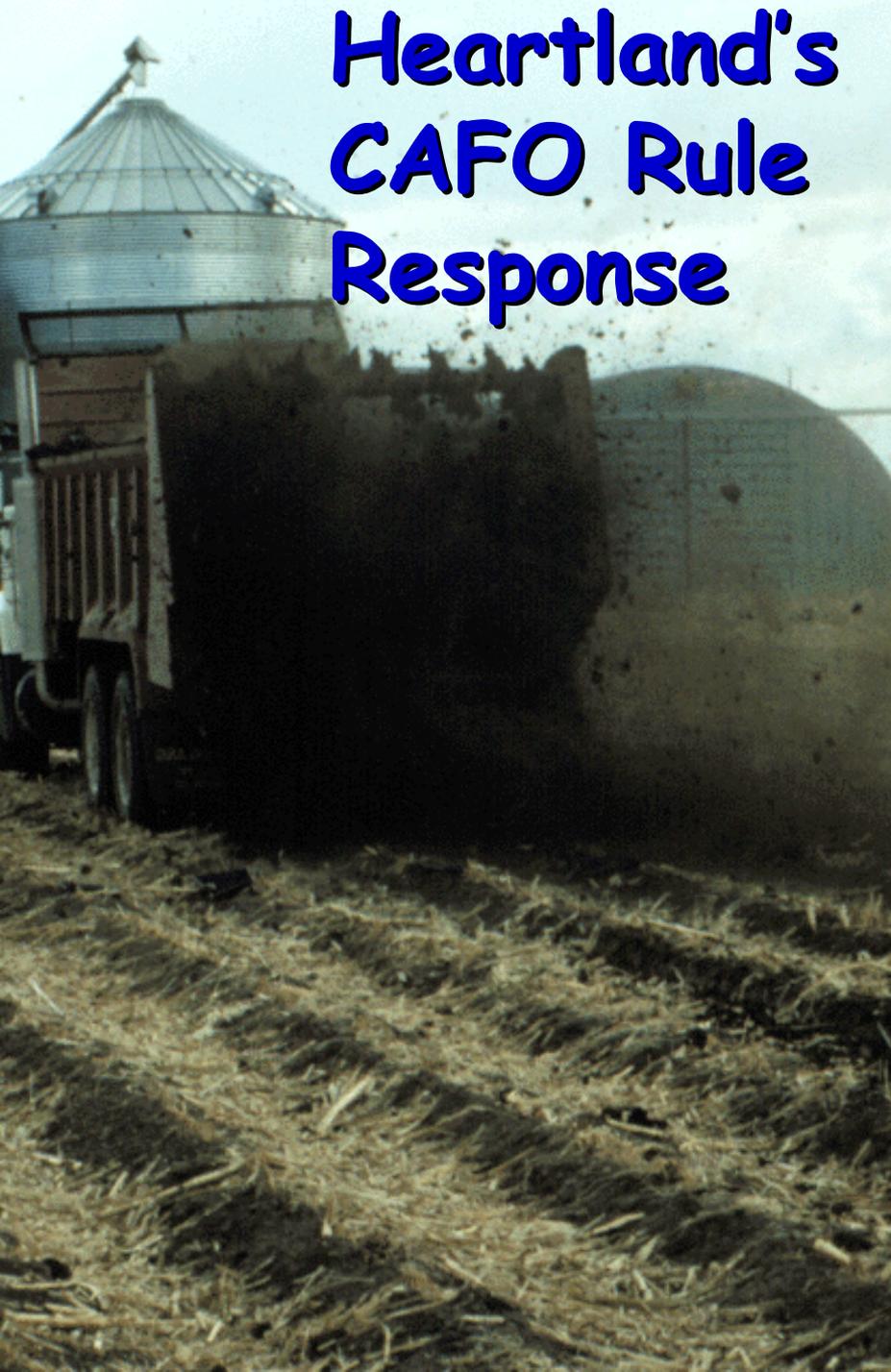
August 28, 2006

Concentrated Animal Feeding Operation Proposed Rule
Water Docket, Environmental Protection Agency
Attention Docket ID No. EPA-HQ-OW-2005-0037
Mailcode 4203M
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Greetings:

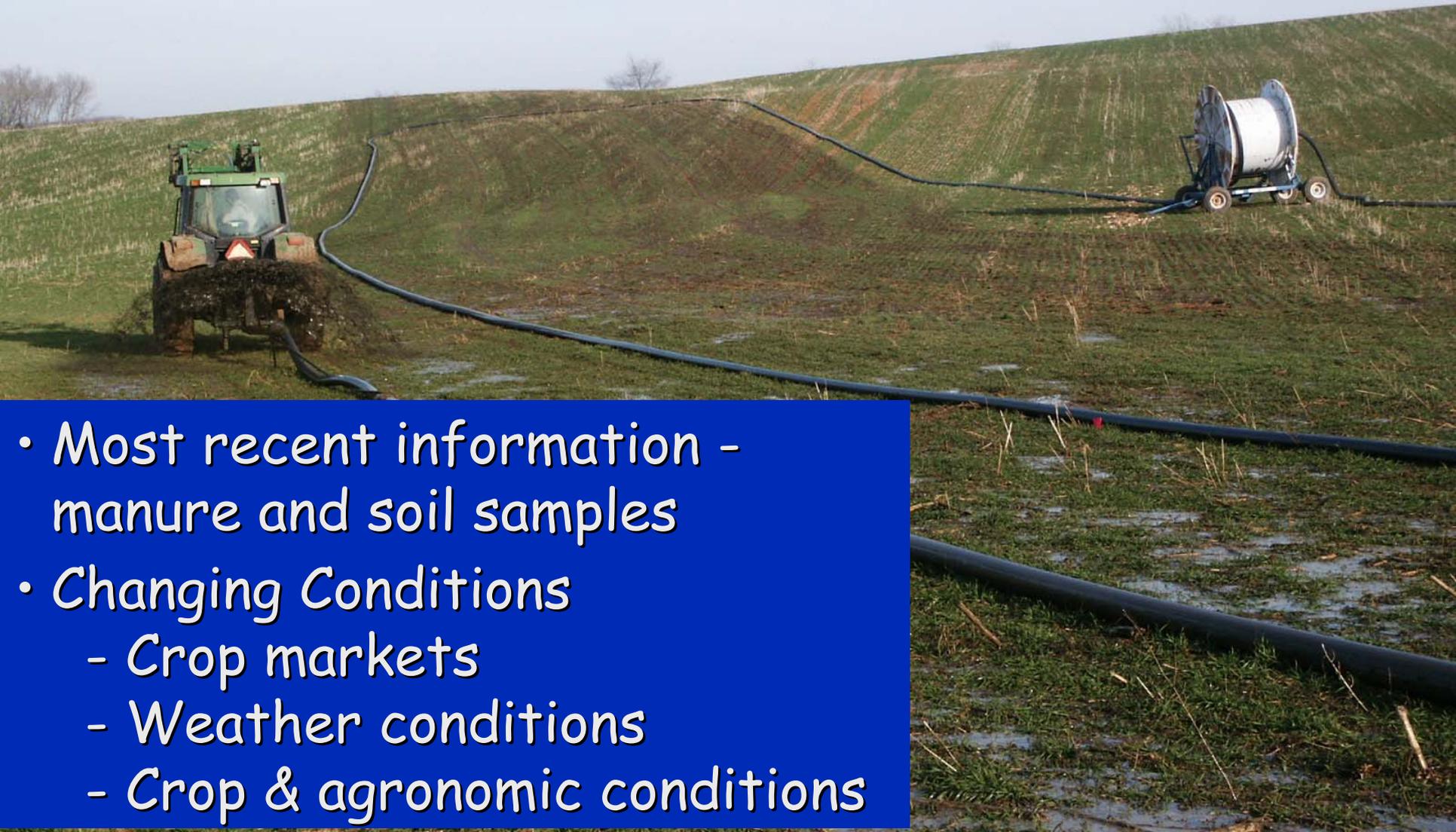
Thank you for the opportunity to comment on the revisions to EPA's 2003 Concentrated Animal Feeding Operation (CAFO) regulations. The attached comments address nutrient management plans for CAFOs. The Heartland Regional Water Coordination Initiative is a partnership of Iowa State University, Kansas State University, the University of Missouri, and the University of Nebraska-Lincoln, the USDA Cooperative State Research, Education and Extension Service and U S EPA Region 7. The four states of the Heartland region represent 43% of US cattle on feed, 20% of all beef cows

Heartland's CAFO Rule Response



- Supportive of EPA's emphasis on nutrient planning
- Concerned about:
 - Flexibility in achieving agronomic and environmental goals resulting from uncertain conditions
 - Inclusion of NMP "terms" within NPDES permit that address tactical issues
 - Notification of substantial changes to tactical decisions is a disincentive to good planning

Factors Impacting Tactical Decisions



- Most recent information -
 - manure and soil samples
- Changing Conditions
 - Crop markets
 - Weather conditions
 - Crop & agronomic conditions

Nine Elements of an NMP

- Adequate storage
- Mortality management
- Clean water management
- Animal contact with Waters of US
- Chemical handling
- Conservation practices
- Testing of manure & soil
- Methods for land application
- Record keeping

Elements
of
Concern



Nutrient Plan Concept

Strategic Plan

- Inventory
- Potential for success
- Decision protocol

Tactical or Annual Plan

Records & Required Annual Report

Plan Modification

■ Permit Application

■ Permit Maintenance



Sample Format for a Strategic & Annual NMP



Strategic Plan Would Include:

- Inventory of farm resources
- Substantiate “potential” of farm’s ability to manage nutrients
- Define decision protocol for tactical decisions
- 1-year Tactical Plan





Strategic Plan - Inventory

- Potential land application sites
- Animal inventory
- Manure volume
- Manure nutrients harvested



Strategic Plan - Potential for Success

- Planned inspections & records
- P-Index
- Land requirement for agronomic nutrient use
- Summary of current conservation practices and land treatments



Strategic Plan - Decision Protocols

- Rates
- Application Methods
- Application timing
- Final site selection



Sample Decision Protocol

■ Calculations:

Crop Nutrient Requirement =

[Expected Crop Yield X

Nutrient Usage/Removal Rate] -

Nutrient Credits

Crop Available Manure N (first year) =

(NH₄-N x

volatilization factor) +

(Org-N x 0.35)

Sample Decision Protocol

■ Assumptions:

❖ Legume Nutrient Credit (N only):

<u>Previous Crop</u>	Nitrogen Fertilizer Credits for Crop Following Legume (lbs./acre)
Soybeans	50
Soybeans < 50 <u>bu./ac.</u> due to season-long stress	1.0 lb./ <u>bu.</u>
Alfalfa (70-100% stand, >4 plants/ft ²)	150
Alfalfa (30-69% stand, 1.5 to 4 plants/ft ²)	120
Alfalfa (0-29% stand, <1.5 plants/ft ²)	90



Annual Plan Contents

Part A. Individual Field Nutrient
Requirement

Part B. Crop Available Manure Nutrients

Part C. Manure and Fertilizer Application
Rates

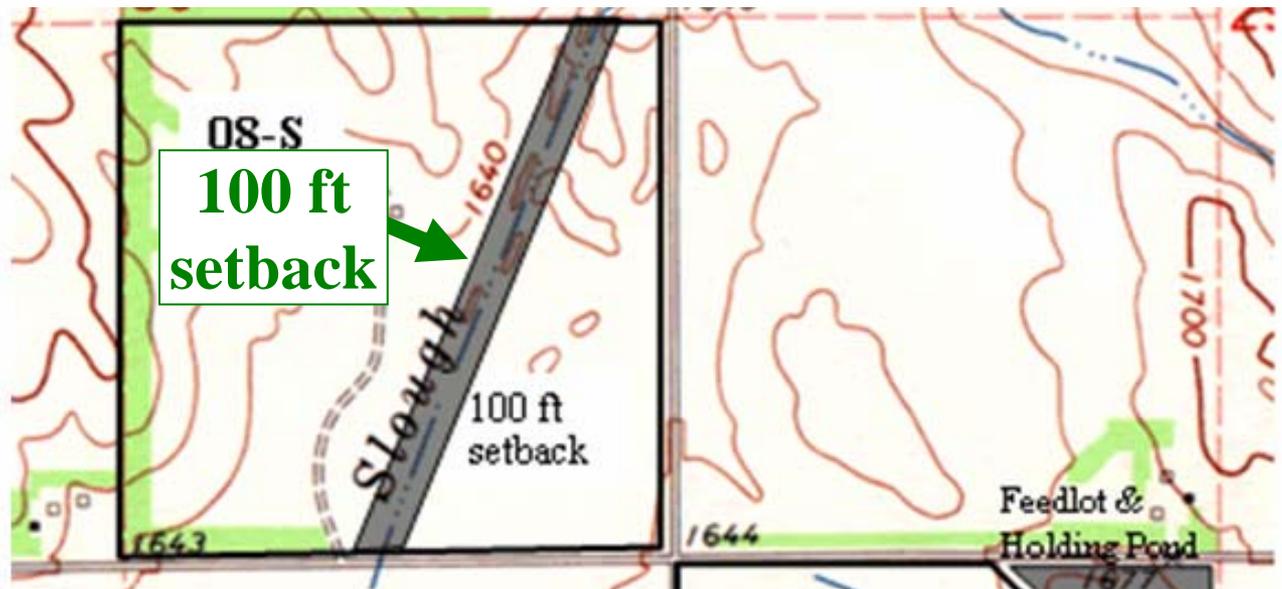
Part D. Individual Field Application and
Instructions

Annual Plan Final Decisions

Part D. Individual Field Applications and Instructions

2007: 08S – Bob's S – T3940-8s, Total Acres: 124.40 Manure Spreadable Acres: 124.40 Setback
Crops Planted: Corn, Yield Potential: 191 bu; Avg. Bray P1: 80.00; Avg. K20: 504.00; Avg. Soil pH: 7.

Date	Source/Product	Per/ac	Application Method	Inc
Fall '06	solid manure	17 T.	Truck Spreader	
	Commercial Fertilizer	20 lb N in Starter		



Take Home Message



- Field specific nutrient application decisions must adapt at least annually to new information and conditions.
- NPDES permit should define decision protocol (Strategic plan)
- Final decisions should be made annually by farm following these protocols (Annual Plan)



Take Home Message



- Regional Water Quality projects can play important role in policy direction and implementation.



Thank-you





Sample Strategic Plan Contents

■ Reference Tables:

Crop Available N (lb/ton) for feedlot manure surface applied and not incorporated

NH ₄ -N Content - Manure Sample (lb/ton)	Organic Nitrogen Content - Manure Sample (lb/ton)										
	10	12	14	16	18	20	22	24	26	28	30
1	4.2	4.9	5.6	6.3	7	7.7	8.4	9.1	9.8	10.5	11.2
2	4.9	5.6	6.3	7	7.7	8.4	9.1	9.8	10.5	11.2	11.9
3	5.6	6.3	7	7.7	8.4	9.1	9.8	10.5	11.2	11.9	12.6
4	6.3	7	7.7	8.4	9.1	9.8	10.5	11.2	11.9	12.6	13.3
5	7	7.7	8.4	9.1	9.8	10.5	11.2	11.9	12.6	13.3	14.0
6	7.7	8.4	9.1	9.8	10.5	11.2	11.9	12.6	13.3	14.0	14.7
7	8.4	9.1	9.8	10.5	11.2	11.9	12.6	13.3	14.0	14.7	15.4
8	9.1	9.8	10.5	11.2	11.9	12.6	13.3	14.0	14.7	15.4	16.1
9	9.8	10.5	11.2	11.9	12.6	13.3	14.0	14.7	15.4	16.1	16.8
10	10.5	11.2	11.9	12.6	13.3	14.0	14.7	15.4	16.1	16.8	17.5



Sample Strategic Plan Contents

■ Documenting Implementation:

Recommended Records, Inspections, Logs	Sample Record
Strategic Plans/Records	
Standard operating procedures for: Soil testing Manure sample collection P Index Results	Part A of Annual Plan (pg 6)
Annual or Continuously Updated Records Most items should be completed for each field or management area	
Field Nutrient Balance: a. Crop Available manure nutrient credit b. Annual pre-season plan for field-specific nitrogen and phosphorus balance summarizing planned crops, yields, nutrient credits for all nutrient sources). c. Post-season summary of crops grown, actual yields and nutrient balance Application Plan for equipment operator: a. Annual application plan identifying location, rate, form, method, and timing for manure and fertilizer.	Part B, C, and D Of Annual Plan (pg 7, 8, and 9) or Annual Pre-Season Plan and Post-Season Summary for N and P (Heartland ¹ – pg 26-27) Equipment Operators Nutrient Application Plan (Heartland ¹ – pg 29)