1993 Project Abstract
For the Period Ending December 31, 1996
This project was supported by MN Future Resources Fund (MS section 116P.13)

Title: Increasing the utilization of federal cost share feedlot funds
Project Manager: Gerald F. Heil
Organization: Minnesota Department of Agriculture
Address: 90 West Plato Blvd., St. Paul, MN 55107
Legal Citation: M.L. 93 Chpt. 172, sect. 14, subd. 3c
Appropriation Amount: $480,000.00

Statement Of Objectives
The purpose of this project was to provide technical assistance to livestock producers in the area of manure management and animal waste control facility design by 1) targeting resources geographically and by livestock enterprise; 2) conducting education opportunities and focus groups to encourage practical and environmentally sound manure management practices; and, 3) increasing the availability of technical assistance to complete design work for animal waste control facilities and access federal cost share funds.

Overall Project Results
Farmer focus group meetings, held in four areas targeted for technical assistance, identified the information and education needs of farmers in the area. From this effort, the "Feedlot and Manure Management Directory" was developed to provide farmers and technical assistance staff with referrals to appropriate feedlot permitting, manure utilization and educational information. NRCS produced a series of fact sheets related to animal waste control. In addition, a catalog of current educational and demonstration activities in the state was completed. Farmers were involved in the planning and design of the publications which increased their usefulness, effectiveness and acceptance.

This project provided technical assistance to farmers to develop animal waste control facility designs to rehabilitate 114 feedlots with water quality concerns. The designs, developed by five NRCS technicians and one NRCS engineer paid for with LCMR funds, meet USDA-NRCS standards required to qualify for federal cost-share funds. Designs were reviewed by MPCA. Assistance was targeted to multi-county geographic areas chosen on the basis of concentration of feedlots, livestock enterprises and potential pollution problems. It is estimated that about $1.1 million in federal cost share funds were leveraged through this additional technical assistance. The design and approval of these facilities will control potential pollution problems associated with these existing feedlots.

Project Results Use and Dissemination
Approximately 13,800 copies of the "Feedlot and Manure Management Directory" have been distributed. Six thousand copies of the NRCS factsheets were printed and distributed. Focus group research included six focus groups with livestock producers, four mini-focus groups with agriculture professionals, and 16 one-to-one interviews with innovators in the livestock industry. Findings of the focus group research was used not only for this project but others at MDA. The research led to the publication of the "Manure Management Planning Guide for Minnesota Livestock Operators," to a model ordinance handbook, "Manure Management Alternatives: A Supplemental Manual" and to a feasibility study on processing manure on an areawide basis. A brochure describing these MDA publications was distributed at trade shows, workshops, seminars and other events. Through funding provided by this project, 114 designs were completed by NRCS staff and reviewed by MPCA staff potentially providing access to $1.1 million in federal cost share funds for animal waste control facilities.

DATE OF REPORT: December 31, 1996

LCMR FINAL WORK PROGRAM UPDATE REPORT

I. Project Title: Increasing the utilization of federal cost share feedlot funds.

Program Manager: Gerald Heil
Agency Affiliation: MN Department of Agriculture
Address: 90 W Plato Blvd, St. Paul, MN 55107
Phone: (612) 296-1486

A. Legal Citation: M.L. 1993 Chpt 172, Sect. 14, Subd. 3(c).
Total Biennial LCMR Budget: $480,000
Balance: $ 1,164

Appropriation language:
This appropriation is from the future resources fund to the commissioner of agriculture to provide technical assistance for the rehabilitation of priority feedlots with water quality concerns.

B. LMIC Compatible Data Language: Not Applicable.

C. Status of Match Requirements: Not Applicable
Match Required: Not Applicable
Funds raised to date: Not Applicable

II. Narrative:
This project will provide technical assistance to develop animal waste control facility (AWCF) designs to rehabilitate approximately 110 feedlots with water quality concerns. The designs will meet USDA-SCS standards required to qualify for federal cost-share funds. Assistance will be targeted to multi-county geographic areas chosen on the basis of concentrations of feedlots, livestock enterprises and potential pollution problems. Educational opportunities and focus group meetings within the targeted areas will be part of the project.

III. Statement of Objectives:
A) To maximize benefits of the project by targeting resources geographically and by livestock enterprise.

B) To promote and encourage practical and environmentally sound manure management methods through educational opportunities determined through input from livestock producers and appropriate agency personnel.
C) To accelerate the technical assistance needed to complete the design work for AWCFs that prevent water quality pollution from feedlots and provide access to federal cost share funds.

IV. Objectives:

A. Title:
To maximize benefits of the project by targeting resources geographically and by livestock enterprise.

A.1. Narrative:
This objective will determine priorities for the targeting of resources; assure livestock producer involvement; incorporate other stakeholder input; and provide coordination with related efforts within the target area.

A.2. Procedures:
The MN Department of Agriculture and project cooperators will form a Steering Committee to develop specific project implementation plans. The Steering Committee will meet monthly. An Advisory Group, consisting of the Steering Committee and representatives of key state, local and federal agencies, higher education and livestock producers (pork, turkey, dairy, beef and chickens), will meet quarterly to discuss the overall implementation of the project; help in formulating and sponsoring educational opportunities; and advise on focus group meetings in terms of content, location and participants. The focus group meetings with producers will determine issues and opportunities in livestock waste management and utilization. The information will also be used to help develop the project's educational program.

The target areas are expected to range from two to six counties. Once selected, related efforts within the target areas will be identified and appropriate coordination plans developed. Probable target areas will include locations within the Anoka Sand Plains, Minnesota River watershed and Karst area.

A.3. Budget:
a. Amount Budgeted: $24,809
b. Balance: $ 0

A.4. Timeline:	7/93	1/94	6/94	1/95	6/95
a) Define target areas:	X				
b) Identify related efforts:	XX				
c) Coordination:	X				
d) Focus group report completed:		X			
e) Select design clients:		X		X	
f) Advisory Group meetings:	X X	X X	X X	X X	X

A.5. Status:

Steering & Advisory Committees

January 1, 1994

The implementation of this project is under the direction of a steering committee (Addendum A) consisting of representatives from Minnesota Department of Agriculture (MDA); USDA - Soil Conservation Service (SCS); USDA - Agricultural Stabilization and Conservation Service (ASCS); Minnesota Pollution Control Agency; local Soil and Water Conservation Districts; Minnesota Board of Water and Soil Resources; and the Minnesota Extension Service. The steering committee initially met monthly, as the project progressed the group meets as needed to maintain the implementation and coordination of this project. The advisory committee consists of steering committee members plus a representative from the Agricultural Utilization Research Institute (AURI); and four producer organizations.

May 5, 1994

The Steering and Advisory Committees have merged into one overall Advisory Committee to facilitate scheduling and participation of members as well as enhance coordination of efforts. The merged committee met in March and April of 1994. The next meeting is scheduled for mid-June, 1994. The Advisory Committee has developed two temporary subcommittees. The first subcommittee's task is to review the draft SCS fact sheets as well as the producer resource directory (referenced in Objective B. 6. (d)) to prevent duplication in information with related publications. The second subcommittee's responsibility is to identify alternative or modified technologies or systems for animal waste collection and storage.

January 1, 1995

The Advisory Committee met in June and July of 1994. One of the group's two subcommittees, reviewed and made recommendations for the Natural Resource

Conservation Service (NRCS - formerly SCS) fact sheets (Addendum E) and the "Feedlot and Manure Management Directory". A total of 7,500 directories were printed and all but 400 were distributed to farmers through producer groups, county extension, NRCS, ASCS and SWCD offices. The focus group research cost less than was anticipated; the department proposes shifting the remaining $5,191.00 from Objective A to Objective B for the purpose of covering a portion of the printing costs for the directory. The second subcommittee developed criteria to use in measuring the effectiveness of alternative technologies and systems for manure management. Recommendations from both subcommittees were reviewed by MPCA's Feedlot Advisory Group (FLAG).

Define Target Areas

January 1, 1994

The steering committee defined four target areas for technical assistance using the following criteria: livestock concentrations; soil type and geologic conditions; perceived threat to water quality from feedlots; and current and potential backlog of animal waste control facilities cost share requests. In addition, two other target areas were selected for only focus group research. (Addendum B contains a map illustrating the target counties.)

Identifying Related Efforts/Coordination

January 1, 1994

The department has identified efforts within the target areas relating to this project. A joint letter (Addendum C) from the Minnesota Commissioner of Agriculture, State Conservationist (SCS), State Director of the ASCS, and Executive Director of the Minnesota Association of Soil and Water Conservation Districts is going through final reviews and will be sent in January 1994. The letter will ask SCS District Conservationists, ASCS County Directors, and Soil and Water Conservation District Managers in each of the counties within a target area to submit a list of potential producers to participate in this project. Each county will rank the producers on their list according to criteria specified by the steering committee. One of these criteria is the potential to support and integrate into related efforts, such as the Clean Water Partnership. This letter asks for the identification of other related water quality projects within the region.

Identifying Related Efforts/Coordination (continued)

May 5, 1994

The interagency joint letter was sent February 11, 1994. Counties have/or are notifying the department of related water quality projects. Local SWCD and SCS staff are in the process of notifying area SCS offices of priority feedlots participating in complementary projects. When complete, the information will be used in planning future project objectives.

January 1, 1995

The list of related efforts is attached in Addendum F.

Focus Group Research

January 1, 1994

Angus Reid Research Inc. was retained to conduct focus group research with livestock producers and agriculture professionals. The focus group facilitator has completed six focus groups with livestock producers; four mini-focus groups with agriculture professionals; and 16 one-to-one interviews with innovators in the livestock industry. A preliminary report will be presented to the department in mid-January 1994. The final report is due in February 1994. (Addendum D contains focus group sites and schedule).

May 5, 1994

MDA received the "Feedlot Waste Management Study - Final Report" in March, 1994. Due to complications with weather, participant availability, and unforeseen medical reasons, the report was completed in March instead of the anticipated February. The Advisory Committee is reviewing the report and will discuss future action strategies at their June, 1994 meeting. In addition, members of MN Pollution Control Agency's Feedlot Advisory Group (FLAG) have received the report and plan to discuss the results and future actions at an upcoming meeting.

January 1, 1995

MDA has utilized the findings of the focus group research in developing related projects. One such project is to develop a "Planning Guide for Minnesota Livestock Operators" (to be paid for out of other MDA funds). Through the focus group research, farmers identified the types of information they prefer or felt they need. The planning guide will provide such information to farmers on manure related factors that they need to consider prior to making a change in their operation. Some items to be included are: siting requirements, permitting process, neighbor

relations, safety considerations, system components, economics, and utilization.

June 30, 1995

In addition to the "Manure Management Planning Guide for Minnesota Livestock Operators", the focus group findings are being used in MDA projects to develop a model ordinance handbook, "Manure Management Alternatives: A Supplemental Manual", and a feasibility study on processing manure on an areawide basis. Each of these projects will be completed by June 30, 1995 and available for the public and other intended audiences.

Design Clients

Clients having systems designed as part of this project have been selected by the local SCS, SWCD and ASCS staff. As mentioned previously in Objective A, county priority feedlots were submitted to the area conservationists. To build upon existing water quality projects, operations involved in related projects were selected. More detail on the status of the design clients and NRCS progress is provided in Objective C.

A.6. Benefits:

a) Targeting resources to geographic areas with concentrations of eligible clients and major types of livestock enterprises will increase the projects positive impacts on ground and surface water.
b) The involvement of producers in project planning and implementation increases the acceptance and effectiveness of the project. It will also increase the visibility of project to other producers.
c) Integration and/or coordination with related efforts within the targeted area will enhance the positive impact of all efforts.
d) The targeting of project efforts by livestock group and geographic area will increase future efforts by other groups while continuing the dialogue between producers, regulators and other involved parties.
e) The focus group report will serve as a resource for future efforts relating to manure management, waste control facilities, and delivery of educational opportunities.

B. Title:

To promote and encourage practical and environmentally sound manure management methods through educational opportunities determined through input from livestock producers and appropriate agency personnel.

B.1. Narrative:
This objective will provide related educational opportunities, and market and deliver management practices addressing the needs identified by producers and appropriate agency personnel.

B.2. Procedures:
Through focus group meetings, producers and agency personnel will identify their information and education needs regarding management practices. The Advisory Group will use this information to identify resources and strategies to meet the needs and to plan the educational programs. The planning and delivery of these educational segments will be conducted in cooperation and coordination with the University of Minnesota, federal and state agencies, local units of governments, etc. The educational segments will include reporting on project progress in that targeted area. Existing staff and resources of state agencies, the University of Minnesota, USDA, etc. will be used to deliver the educational events as well as demonstrate management practices on the handling and use of animal waste.

To enhance producer participation, livestock producer organizations will be asked to co-sponsor and assist in the planning of the educational events.

B.3. Budget:

a. Amount Budgeted: $15,191
b. Balance: $ 1,164

B.4. Timeline:

	7/93	1/94	6/94	1/95	6/95
a) Complete analysis of focus group data:		X	X	X	
b) Identify related educational activities within the target areas:					X
c) Complete assessment plan:					X

B.5. Status:

January 1, 1994
The activities/products for Objective B will occur after January 1, 1994.

Analysis of Focus Group Data
May 5, 1994
The focus group report is being reviewed by the project's Advisory Committee as well as MPCA's Feedlot Advisory Group (FLAG). The Advisory Committee will analyze the report and develop appropriate future actions at the June meeting. The focus group research was conducted to get a broad view of the issues facing farmers and technical assistance personnel relating to manure management. A number of issues have surfaced through this research.

January 1, 1995
See Objective A.5. Status: Focus Group Research January 1, 1995. MDA continues to use the focus group research in concert with this project as well as the "Planning Guide for Minnesota Livestock Producers", the alternative technologies/systems technical supplemental manual, and in developing the educational assessment report.

Educational Activities
May 5, 1994
The resource directory is going through final layout and will be printed in late May, 1994. The directory will provide producers and technical assistance staff with referrals for feedlot permitting, manure utilization, and educational information. The directory is intended to refer individuals to the appropriate resource.

Planning, site location, and co-sponsorship of educational events will occur after the Advisory Committee completes analysis and develops strategies based on the focus group report findings. Delivery of educational events will occur this fall.

January 1, 1995
The "Feedlot and Manure Management Directory" was printed in June of 1994. Of the initial 4,500 directories printed, approximately 3,500 were sent to all county extension, NRCS (formerly SCS), and SWCD offices, and farm groups. The response has been so positive that a second print order for an additional 3,000 directories was placed in July. Less than 400 copies remain. The department proposes shifting $5,191.00 from Objective A to Objective B to cover a portion of the costs associated with printing the "Feedlot and Manure Management Directory" and to complete other items in this objective.

Educational Activities January 1, 1995 (continued)
The original intent of this objective was sponsoring formal educational activities to increase farmer awareness of federal cost-share funds and of the need for environmentally sound storage facilities and related practices. The analysis of the focus group research, and discussions with the advisory committee indicated that the primary need is for information and not for formal events. Also, as a result of the activities of livestock producer groups, farm organizations, environmental groups, and local, state, and federal agencies in the target areas, farmers are more aware of the cost share assistance; the need to increase producer awareness as part of this project declined. Subsequently, it became evident that the resource directory, fact sheets, planning guide, and other such information sources are more relevant to producers but, still meet the information objectives of this project.

The department proposes amending the emphasis of this project's educational component from formal events to developing a catalog of current educational programs, and refining the informational needs assessment of producers. The department will then work in cooperation with the University of Minnesota, federal and state agencies, and local units of governments to develop a plan to meet the identified producer needs. It is anticipated the assessment plan will be utilized beyond the length of this project. The intended audience of the educational assessment plan will be primarily educators and technical support staff. The information will be delivered through existing networks such as, county extension educators, farm management instructors, NRCS and SWCD offices. MDA has hired a part-time, temporary person to catalog existing programs, refine the needs assessment and write the plan to meet the identified producer needs. The staff person is presently identifying related educational activities within target areas and gathering information on progress.

MDA will also prepare a brief "brochure" that will summarize the various recent feedlot and manure management publications. Some examples of these include: "Feedlot and Manure Management Directory" (LCMR funded produced by MDA); "Manure Management: Practices for the Minnesota Pork Industry" (MES and MN Pork Producers Association); "Planning Guide for Minnesota Livestock Producers" (MDA); as well as others currently in the development stage.

June 30, 1995
MDA is completing a catalog of current educational activities and is developing recommendations. 111 individuals were contacted to gather information regarding what type of educational activities were currently being conducted.

These individuals included Minnesota Extension Service educators, farm business management instructors, county feedlot officers, crop consultrants, producer groups, and NRCS and SWCD staff. The predominant activities are helping with finances; workshops and informational meetings; one-to-one consultation; and utilizing the Manure Application Planner program. "Many individuals expressed that more education was needed in order to make producers more aware of better manure management. More education was defined as continuing to provide seminars/workshops, reading materials, and consultation. The interest among producers about manure management is pretty high. Educators said that turnout at seminars and field days seems to draw a good crowd. Producers are interested and concerned about improving their farm's manure management practices." Individuals contacted expressed their main concerns as cost share assistance; more education; value of manure; regulations; getting a permit; odor; and manure application/utilization.

The document, when complete, will be made available to educators and technical support staff as well as other interested parties.

A brochure (Addendum H) with a brief description of each of MDA recent publication is complete and will be distributed at trade shows, workshops, seminars and other informational opportunities.

December 31, 1995
A summary of educational activities is being finalized. The document contains a summary of the activities and needs identified by various support persons. The plan also includes recommendations for future educational activities and events.

The 1994 Minnesota Nonpoint Source Management Plan outlines a four year strategy for addressing water quality problems that result from a wide variety of land use practices. Section 319 of the Clean Water Act requires the governor of each state to submit a management program for controlling pollution from nonpoint sources to the navigable waters within the state and improving the quality of such waters. The plan is entering the implementation phase. MES and MPCA, as part of the feedlot section (Chapter 8) of the Nonpoint Source Management Plan, have formed an interagency committee to coordinate the delivery of feedlot and manure management educational and other informational materials to farmers and other target audiences. This committee consists of representatives from MES, NRCS, U of MN, MDA, MPCA, and BWSR. The summary of educational activities will be made available to the participants.

February 27, 1997
The Educational Activities Report is attached as Addendum I. The "Feedlot and Manure Management Directory" is in its third printing with an additional 6,300 copies printed this month.

B.6. Benefits:

a) Dissemination of current manure management practices to substantial audiences of producers in targeted areas including producers other than those participating in the design part of the project.
b) Increase awareness of all producers in targeted areas about the AWCF designs being developed for their areas under the project.
c) Enhance manure handling and utilization by producers in target areas.
d) Educational effort that will build upon and incorporate extensive work already being done by agencies, the U of MN, etc. A resource directory will be developed containing information about resources such as videos, fact sheets, etc.
e) Involving producers in planning will increase the effectiveness of the project.

C. Title:

To accelerate the technical assistance needed to complete the design work for AWCFs that prevent water quality pollution from feedlots and provide access to federal cost share funds.

C.1. Narrative:

This objective will provide sufficient technical assistance to agricultural producers to increase utilization of available federal cost share funds (USDA-ASCS) for the rehabilitation of existing feedlots with potential pollution problems. Currently, lack of technical assistance is restricting access to these funds.

C.2. Procedures:

This objective will be implemented by the department through a contract with SCS to hire and train personnel to provide technical assistance to complete the design work. The technical staff will work with producers, Soil and Water Conservation District, the Soil Conservation Service personnel in targeted areas, and the Minnesota Pollution Control Agency to design AWCF systems according to USDA-SCS guidelines.

As part of this activity, attempts will be made to modify traditional approaches

to AWCF systems in innovative ways that are both cost effective yet, sound pollution abatement designs. The innovative approaches may include different combinations of existing technology or designs, as well as the designing of variations on existing technology.

The department will provide resources to MN Pollution Control Agency through an interagency agreement to complete state level review of the designs. In addition, the MPCA will develop a report on AWCF design alternatives.

C.3. Budget:

a. Amount Budgeted: $440,000
b. Balance: $ 0

C.4. Timeline:

	7/93	1/94	6/94	1/95	6/95	4/96
a) Complete contracts:	X					
b) Staff hired and trained:	XX					
c) Designs completed for 55 systems:			X			
d) Report on designs completed:		X				
e) Designs completed for 55 systems:						X

C.5. Status:

SCS - MDA Contract

January 1, 1994
The Minnesota Department of Agriculture has a contract with the USDA-SCS. The contract format is the version recommended by LCMR.

May 5, 1994
SCS has received $39,000 of LCMR funds to date. The next invoice from SCS, in the amount of $121,000, is expected on July 1, 1994.

January 1, 1995
NRCS (formerly SCS) has been reimbursed, to date, a total of $160,000. The next invoice from NRCS is expected shortly after January 1, 1995 for $125,000, after which the remaining balance will be $115,000.

June 30, 1995
NRCS has been reimbursed, to date, a total of $285,000. After the June 30, 1995 invoice for $48,700, the remaining balance will be $66,300.

February 27, 1997
NRCS has been reimbursed, to date, a total of $400,000. The balance is $0.00

MPCA - MDA Interagency Agreement
May 5, 1994
MPCA is completing the list of deliverables to be attached to the interagency agreement. MDA will process the agreement upon receipt of the deliverables list.

January 1, 1995
The interagency agreement between MDA and MPCA was signed August 24, 1994. The agreement calls for a state level review and report on alternatives to total containment of feedlot runoff. The agreement does not call for a literature search because the funds were not sufficient to cover all of MPCA's activities, as originally anticipated. The department proposes deleting the literature search as a product to be delivered by MPCA. MDA will use another source of funds to conduct a more comprehensive literature search on alternative technologies and systems for manure management. The product will be delivered in June of 1995 and will fulfill the literature search needs of this project with more in-depth and broader information.

MPCA is preparing a report on alternatives to total containment of feedlot runoff. The report is being developed by a subcommittee of the MPCA's Feedlot Advisory Group (FLAG). During the 1994 legislative session, the Feedlot and Manure Management Advisory Committee (FMMAC) was created and is replacing FLAG. Late this past Fall, membership appointments to FMMAC (Addendum G) were made. The organization's first meeting is scheduled for late January, 1995. FMMAC will make recommendations for future actions. MPCA has provided state level review for 25 designs and will submit a initial invoice in January.

June 30, 1995
To date, MPCA has completed the state level review of 54 designs resulting from this project. MPCA has been reimbursed $20,000 for the first 25 design reviews. Because of the project extension, the interagency agreement between MDA and MPCA has been amended to extend the end date. NRCS expects to complete the

final designs by April 30, 1996. In order to complete the state level review on the final designs, MPCA requires an extension to June 30, 1996. MPCA will be reimbursed the remaining balance of $20,000 after completion of reviews on all eligible designs.

February 7, 1996
To date, MPCA has completed the state level review of 74 designs resulting from this project.

February 27, 1997
MPCA has completed the state level review of 99 designs resulting from this project.

Staff Hiring, Training, and Production
January 1, 1994
SCS hired and is training five technicians and one engineer. The staff locations are shown in Addendum B. These staff will design livestock manure management systems.

The initial steps in the design process for all systems are geologic investigations and topographic surveys. For the first quarter of this project, SCS is slightly ahead of schedule having completed 29 geologic investigations and 26 topographic surveys.

SCS is developing a computer design program; a design checklist; and a set of fact sheets. All three items have the long term benefit of increasing the efficiency of designing livestock waste systems. Both the computer program and design checklist will accelerate the design process by standardizing the method used to design a system. The screens and architecture of the computer program are complete. A test version of the program will be ready for use in January 1994. The final version of the program should be complete by May 1994. The design checklist is undergoing an internal review and will be available in the next quarter.

Fact sheets will contain information on the advantages and disadvantages of various livestock waste systems. Technicians will distribute the fact sheets to aid each farmer in determining the best system for his/her operation. Draft fact sheets are complete, and coordination with other MN Department of Agriculture and MN Extension Service efforts will occur in the next few months. This will allow the fact sheets to be used as part of a comprehensive information reference intended for

use by producers. This project has elevated the priority of technical assistance for livestock waste systems within SCS. To assist with the workload, the SCS purchased a new soil investigation truck and a new total station surveying instrument. Both items were purchased with SCS funds in anticipation of the implementation of this project. In all probability, the internal reallocation of funds would not have occurred if it had not been for this project.

May 5, 1994
During the four month period since the last status report, the LCMR funded technicians spent a considerable amount of their time on training related items. The training included soil identification; concrete testing and inspection; agricultural waste policies, procedures and regulations; computer aided drafting and design (CADD); SCS new employee training; and on the job training for ag waste system planning and topographic surveying. All training has progressed well.

To date, SCS project staff have completed a total of: 14 pollution abatement system designs; 37 geologic soil investigations; and 45 topographic surveys. Field work is increasing now that the ground is no longer frozen. SCS anticipates, by June 30, 1994, the completion of a total of approximately 25 pollution abatement system design; 65 geologic investigations; and 65 topographic surveys.

The USDA SCS has recently undergone a staff reduction. In Minnesota, 27 statewide staff opted for the "early buy out" retirement program. Of these 16 worked, at least partially, with animal waste control systems. The LCMR funded positions were not affected but, even with these positions, SCS has a net loss in staffing for the animal waste area. If not for the LCMR funding, the negative impact on the state would have been greater.

The design checklist has been distributed to all statewide SCS offices as a supplement to the Agricultural Waste Field Handbook. This is available for use by SCS and SWCD employees. The checklist will help guide the planning and design process, and document decisions.

The last status report refers to a computer program, rather than a spreadsheet. Initially SCS was going to develop a spreadsheet for statewide use in designing agriculture waste systems, after closer review, the computer program evolved as a more complete solution to implementing consistency in the design process. Due to a priority shift in the workload of the SCS computer programmer, the program will

not be ready for use this spring. In order to meet current design process needs, a design spreadsheet was developed and is in use at this time by SCS and SWCD staff in the LCMR target areas. MDA and SCS are exploring methods of accelerating the program development. A programmer in the St. Peter field office is working on the program. Completion is expected in early fall of 1994.

Minnesota Extension Service is reviewing the fact sheets and will jointly issue the information with SCS. Printing should be complete in July, 1994. The fact sheets will be used and distributed through SCS, SWCD and MES staff to assist farmers in deciding which systems are appropriate for their operation.

January 1, 1995
To date, NRCS (formerly SCS) project staff have completed a total of 49 pollution abatement system designs; 87 geologic investigations; and 91 topographic surveys.

Approximately 6,000 fact sheets were printed and distributed this quarter through NRCS, SWCD and MES staff to assist farmers in deciding which systems are appropriate for their operation. A copy of the set is attached (Addendum E).

There have been a total of 106 projects initiated by LCMR funded staff. The 49 designs that are complete at this time represent 75% of the planned quantity at the end of this quarter. The status of the remaining projects will be reviewed with field staff in of January. NRCS will project the number of projects that can be completed with the LCMR funded staff. If additional resources are needed, NRCS will look at redirection of the state office design staff to help meet the project goals by June 30, 1995.

There were five designs that were taken to the point of completion or near completion when the producers decided to terminate the design process. The design plans were prepared expecting that they would be cost-shared jobs; those plans are being credited to NRCS.The design spreadsheet continues to be used by planners and technicians working on feedlot designs. It has added additional uniformity to designs throughout the state. This is available for use by NRCS and SWCD employees.

The design checklist has been distributed and continues to be available for use by field office staffs.

The NRCS computer programmer in the St. Peter office has left the organization. The computer program will not be done as part of this project. While the program would have been a nice supplemental feature to the design spreadsheet, it is not necessary nor required for this project.

March 2, 1995
The proposed amendment is to extend the length of the project to April 30, 1996. This is not a request for additional funding. The current budget balance for this component is $115,000. After the June 30, 1995 reimbursement, the remaining balance will be approximately $62,320.

There are three factors which contribute to this request for an amendment to extend the completion deadline for this project. First, as the project progressed, it was apparent that the systems being designed were more complex, time consuming, and costly than originally anticipated. The average cost share assistance amount per system has exceeded $20,000.

The second factor in the delay in completing NRCS's component of the project is due to the cumbersome federal hiring process. The positions could not be posted until the start of the project on July 1, 1993. Once hired and trained, the staff funded through this project have met design work expectations.

The third factor is the number of farmers who have requested design project terminations. To date, 13 farmers have terminated their project after design work had begun. A primary reason may be the reduction of cost share funds available which may have discouraged some farmers. Although not counted toward the total, the terminated projects are work that had been done by the NRCS staff hired under this project.

To date, NRCS has initiated 106 design projects. The current status is that 49 have been completed; 13 were terminated; and 44 are still in progress. The NRCS estimates, that of the 44 designs currently in progress, 37 will be complete by June 30, 1995 for an overall total of 86 complete designs. The remaining 7 designs currently in progress will be near completion by June 30, 1995. In addition, between now and June 30, NRCS will initiate another 20 projects that will be in various stages of completion. The total number of designs initiated by June 30, 1995 will have been 126, which is expected to result in the completion of 110 designs.

June 30, 1995
To date, NRCS (formerly SCS) project staff have completed a total of 84 pollution abatement system designs; 123 geologic investigations; and 124 topographic surveys. During this quarter, 35 designs, 32 geologic investigations and 31 surveys were completed. All work on the project has been completed except for the final designs. In several instances, designs were taken to the point of completion or near completion when the producer decided to withdraw their application for cost share assistance. Those jobs are being reported but will not be counted toward the 110 designs resulting from this project. Following their June 30, 1995 invoice, NRCS's portion of this objective's budget balance is $66,300.

The demand for pollution abatement designs has dropped off dramatically in response to large cuts in cost share funding. Federal cost share funding has been reduced 50 percent in 1995 and is expected to be reduced another 50 percent in 1996. Since there are fewer systems to design, NRCS expanded the work area to include counties adjacent to the original targeted areas.

As noted in the March update, the systems designed have been more complex and expensive than anticipated. The project was scheduled to be completed during this quarter. However, as extension has been granted by LCMR, the contract amendment between MDA and NRCS has been signed.

February 7, 1996
To date, NRCS (formerly SCS) project staff have completed a total of 107 pollution abatement system designs; 143 geologic investigations; and 144 topographic surveys. During this quarter, 23 designs, 20 geologic investigations and 20 surveys were completed. All work on the project has been completed except for the final designs. In several instances, designs were taken to the point of completion or near completion when the producer decided to withdraw their application for cost share assistance. Those jobs are being reported but will not be counted toward the 110 designs resulting from this project. NRCS's portion of this objective's budget balance is $44,980.

February 27, 1997
NRCS project staff have completed a total of 114 pollution abatement system designs; 148 geologic investigations; and 149 topographic surveys. NRCS has been fully reimbursed for this objective.

C.6. Benefits:

a) Technical assistance would be provided to about 110 producers within targeted areas to meet feedlot rehabilitation needs. The USDA-ASCS will cost share up to 75 percent of the facility rehabilitation cost with a maximum of $3,500 per year for up to ten years. Based upon past experience, the additional technical assistance would leverage approximately $1.1 million federal Agricultural Conservation Program(ACP) funds and stimulate $2.2 million in private funds used for the rehabilitation of AWCF.

b) The major result will be the design and approval of up to 110 AWCF systems to control potential pollution problems associated with existing feedlots. A major benefit will be enhanced protection to water quality. Variations to or of existing systems will be identified, evaluated, and incorporated into some designs.

c) At the end of the two years, the employees hired by SCS with these funds would be retained as SCS employees. Trained and experienced personnel will be in place for future efforts.

d) Assistance and compliance standards for manure management planning and utilization will be included as part of the 110 additional systems for the lifetime of the ASCS contract on all Long Term Agreements. This will ensure that the manure is managed so that the nutrient value of the manure is utilized by crops and application practices will not adversely impact water quality.

e) Currently, Minnesota receives one of the nation's highest ACP allocations. If underutilized, future allocations might be reduced.

V. Evaluation:

This project's success will be measured by the number of AWCF systems designed and approved by SCS and MPCA; applications for technical assistance to complete designs for AWCF systems within the targeted areas; the number of innovative and cost effective concepts incorporated into AWCF design standards; and the producer satisfaction with the educational opportunities.

VI. Context:

A. The ASCS spent approximately $1,000,000 of ACP cost share funds for livestock facility upgrades in F. Y. 1991. Of total allotments, approximately $1,000,000 was carried over to F. Y. 1992. The Minnesota ACP allotment for F. Y. 1992 was increased by $700,000 giving a total of approximately $1,700,000 of ACP cost sharing funds that could be directed toward high priority water quality concerns.

With the level of funding for this project, it is anticipated the additional technical assistance will enable another 110 AWCF systems to be designed during the biennium, thereby leveraging $1,100,000 of the ACP funds. The estimated total value of construction for these systems would be approximately $3,300,000. However we cannot guarantee that the excess funds will be directed toward AWCF.

Occasional backlogs in permit applications at the Minnesota Pollution Control Agency can delay the investment in construction, including pollution control efforts. This project will provide additional resources to the MPCA to complete their review of the AWCF designs.

B. This project will supplement the SCS and SWCD efforts to address the current mandate of the federal government by providing technical assistance to prevent water quality degradation from high priority feedlots. The number of designed systems completed through this project will increase levels of AWCF approved systems by 50%.

C. The SCS provides the technical expertise and oversight in the design and rehabilitation of feedlot systems. However, with the current mandated workload, producers in some areas of the state wait up to one year for technical assistance. The ASCS average expenditure, the past two years, on animal waste control facilities was $964,876 which was used for the rehabilitation of an average of 113 feedlots per year by the SCS. This project will enable the ASCS to utilize another $1,100,000 of their allocation from the federal government and the SCS to design an additional 110 systems over a two year period.

We do not expect this project to completely abate Minnesota's feedlot pollution problem. We expect that the federal government will continue to provide cost share funds but we are uncertain at which level. We estimate that the state has 45,000 feedlots, with various estimates on how many of those have potential pollution problems. This project addresses 110 of the higher priority feedlots. We anticipate that upon completion of this project the need for additional funding to resolve the water quality concerns of feedlots and that the need for funds to supplement the ACP allocation will still exist.

VII. Qualifications:

1. Program Manager:

Gerald Heil: - Director, Agriculture Planning and Development - MN Department of Agriculture.
Education: M.S., Rural Sociology
Experience: 13 years as Director of MN Department of Agriculture's Agriculture Planning and Development division.

2. Cooperators/Other Investigators:

John Brach - State Conservation Engineer - Soil Conservation Service.
Education: B.S., Agricultural Engineering
Experience: 13 years of experience as an SCS Engineer.

Joe Fitzgerald -Executive Director - Stearns County Soil and Water Conservation District.
Education: B.S., Agronomy; B.S., Vocational Education
Experience: 31 years as a farmer, 4 years as a Adult Farm Management Instructor and 18 with the Soil and Water Conservation District.

Dave Nelson - Coordinator Feedlot Program - MN Pollution Control Agency.
Education: B. S., Agricultural Engineering
Experience: 10 years as an Engineer at MN Pollution Control Agency.

Other members of the Advisory Group Steering Committee include:
D'Wayne De Ziel - Executive Director - MN Association of Soil and Water Conservation Districts.
Greg Anderson - Agriculture Program Specialist - Agricultural Stabilization and Conservation Service.

VIII. Reporting Requirements:

Semiannual status reports will be submitted not later than Jan. 1, 1994, July 1, 1994, Jan. 1, 1995, June 30, 1995, December 31, 1995, and a final status report by April 30, 1995. Project was granted an extension to December 31, 1996.

Addendum A

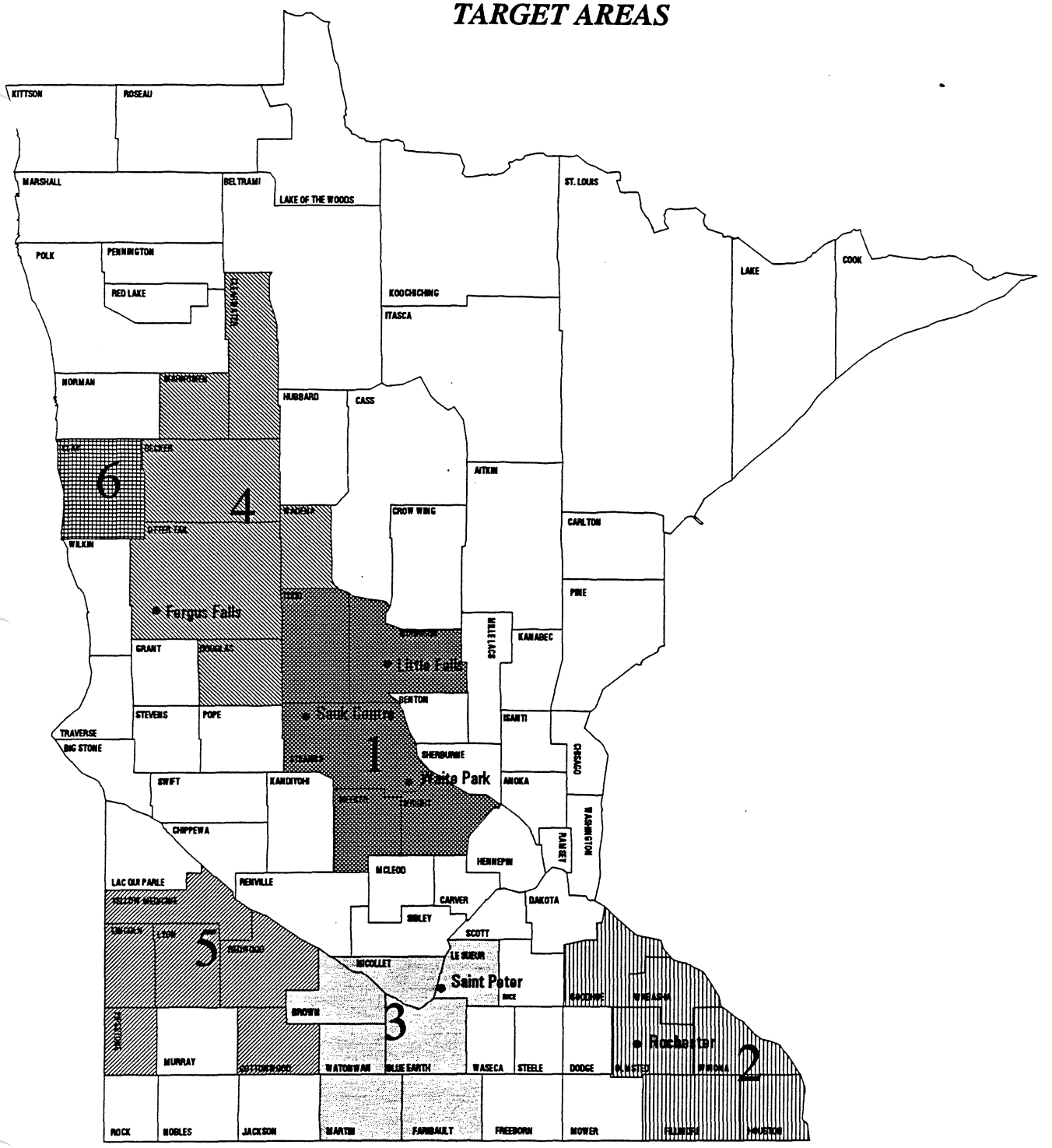
ADVISORY COMMITTEE
to
"Increasing the utilization of federal cost share feedlot funds"

LCMR project

Palmer Norling	Turkey producer
Roger Gilland	Beef producer
Marlin Pankratz	Swine producer
Jerry Miller	Dairy producer
Jerry Heil	Director, Ag Planning & Development - MDA
John Brach	State Conservation Engineer - SCS
Roger Mussetter	Assistant State Conservationist - SCS
Dave Nelson	Feedlot Prog. Coordinator - MPCA
Joe Fitzgerald	Exec. Director, Stearns County SWCD
D'Wayne DeZiel	Exec. Director, MN Association of SWCD
Greg Anderson	Agricultural Program Specialist - ASCS
Al Kean	Chief Engineer - BWSR
Fred Bergsrud	State Water Quality Coor. - MES
Bruce Montgomery	Soil Scientist - MDA
David Ball	Supervisor, Ag. Plng & Development - MDA
Doug Gunnink	Sustainable Ag./On Farm Research - MDA
Jack Johnson	Environmental & Engineering Svcs - AURI

ADDENDUM B

"INCREASING THE UTILIZATION OF FEDERAL COST SHARE FEEDLOT FUNDS" TARGET AREAS



- Area 1 - One Technician in the SCS/SWCD Regional Office in Sauk Centre, One Technician in SCS/SWCD Office in Waite Park, One Technician in the SCS/SWCD in Little Falls.
- Area 2 - One Technician in SCS Regional Office in Rochester*
- Area 3 - One Technician in SCS Regional Office in St. Peter*
- Area 4 - One Engineer in SCS Regional Office in Fergus Falls
- Area 5 - Focus Groups Only
- Area 6 - Focus Groups Only

* Engineering support for St. Peter and Rochester will be provided by staff assigned to SCS area offices.

MINNESOTA DEPARTMENT OF AGRICULTURE
AG PLANNING & DEVELOPMENT
JULY 22, 1993

Addendum C

Soil Conservation Service
FCS Building, Suite 600
375 Jackson Street
St. Paul, MN 55101

United States Department of Agriculture

Agricultural Stabilization and Conservation Service
Minnesota State ASCS Office
400 Farm Credit Services Building
375 Jackson Street
St. Paul, MN 55101-1852

MASWCD
Minnesota Association of Soil and Water Conservation Districts
790 Cleveland Avenue South, Suite 216, St. Paul, MN 55116

State of Minnesota
Department of Agriculture
90 West Plato Boulevard
St. Paul, MN 55107

February 11, 1994

«Name»
«Title»
«Firm»
«Street»
«City» «State» «Zip»

Dear «Salutation»:

The Minnesota Legislature, through the Legislative Commission on Minnesota Resources, funded a project to "Increase the utilization of federal cost share feedlot funds." This project will provide funds for:

- SCS to hire additional technical assistance personnel for the purpose of designing animal waste control facilities;
- conduct focus group research and other activities to identify research, educational, technical assistance, and regulatory support needs of producers; and
- produce a directory of feedlot and manure management related resources for use by livestock producers, agencies, decision makers and the general public.

The Minnesota Department of Agriculture is administering the project. A committee consisting of representatives from producer organizations, USDA-SCS, Minnesota Association of SWCDs, Minnesota Department of Agriculture, USDA-ASCS, Minnesota Pollution Control Agency, Board of Water and Soil Resources, Stearns County SWCD, and the University of Minnesota will serve as an advisory Board for the project. One goal of this project is to integrate this project with related efforts. As staff closest to the farmer, we are asking for your assistance in: 1)identifying potential participants; and 2) identifying significant related water quality projects in your area.

Four target areas (map enclosed) were selected based upon: concentration of livestock; soil and geologic conditions; number of permitted feedlots; and current and potential backlog of requests for ACP animal waste control facility cost-share funds. The number of target areas was expanded to six for the purpose of conducting focus group research.

The technical assistance funded through this project will enable approximately 110 additional designs of animal waste control facilities in four of the targeted areas. Given the limited funding of this project, we are asking for your assistance in identifying livestock producers to participate. If you are in one of the counties selected for technical assistance, please submit your local priorities for assistance to the SCS area conservationist. Please consider the following items when establishing priorities for the LCMR funded technical assistance:

1. Degree of potential water quality improvement.
2. Eligibility criteria and design standards necessary for cost sharing.
3. Potential to support and integrate into related efforts, such as Clean Water Partnership.
4. Producer willingness and ability to participate.
5. Consideration of ASCS funding by county committee. (If cost share money is not available at the time, identify those operations which will be considered a high priority when funds are available.)

Addendum C

Another goal is to identify related efforts within the target areas. If you are aware of significant water quality projects in your county, please submit those to Steve Olson, Agriculture Development Specialist, Minnesota Department of Agriculture, 90 West Plato Boulevard, St. Paul, Minnesota 55107. Also, please contact Mr. Olson ((612) 297-3217) with any questions regarding the project or this letter.

Thank you for your help.

Sincerely,

Elton R. Redalen
Commissioner
Minnesota Department of Agriculture

Gary Nordstrom
State Conservationist
USDA Soil Conservation Service

Wally Sparby
State Director
USDA ASCS

D'Wayne De Zeeuw
Executive Director
Minnesota Association SWCD

Enclosure

cc: Area Conservationists, SCS
District Directors, ASCS

The following table lists the screening criteria for study participants and the detailed schedule of all meetings and interviews.

TABLE #1 - INTERVIEW/MEETING SCHEDULE AND CRITERIA

Activity	# Participants / & Screening Criteria	Target Area	Locations	Timing
Tele-Phone	4 Legislative 4 Technicians	-	-	Nov.23 - Dec.3
FG#1	Dairy (50-100 Cows) Beef (>200 head/Yr)	#4	Detroit Lakes	Dec.8 12:00
MG#1	SCS/SWCD Staff	#4	Detroit Lakes	Dec.8 6:00 pm
FG#2	Dairy (50-100 Cows)	#1	Sauk Centre	Dec.9 12:00
FG#3	Poultry layers	#1	St. Cloud	Dec.15 7:00 pm
FG#4	Crops/Beef (>200 Head/Yr) Crops/Hog (75-150 sows)	#5	Marshall	Dec.13 8:00 am
MG#2	SCS/SWCD Staff	#3	Winnebago	Dec.13 6:00 pm
FG#5	Hogs (150-300 Sows)	#3	Winnebago	Dec.14 8:00 am
FG#6	Dairy (100-150 Cows) Beef (> 200 head/yr)	#2	St. Charles	Dec.15 10:00 am
Person	SWCD Staff	-	-	Dec.7 - 22
Phone	6 Producer Innovators 2 Beef, 1 Dairy, 3 Hog	-	-	Dec.7 - 22
Phone	4 University Extension	-	-	Dec.7 - 22

ADDENDUM E

United States Department of Agriculture

Natural Resources Conservation Service

St. Paul, Minnesota

Fact Sheet

Agricultural Waste Management System

November 1994

What is an agricultural waste management system?

● Manure and other agricultural wastes such as milk parlor wash water and feedlot runoff contain high concentrations of nitrogen, phosphorous, organic matter and pathogens. When properly managed, these materials can be a valuable source of fertilizer for crop production. When improperly handled they can degrade water quality. An agricultural waste management system is a combination of practices used to manage these wastes to prevent pollution and to allow the beneficial use of them on cropland.

What you need to consider

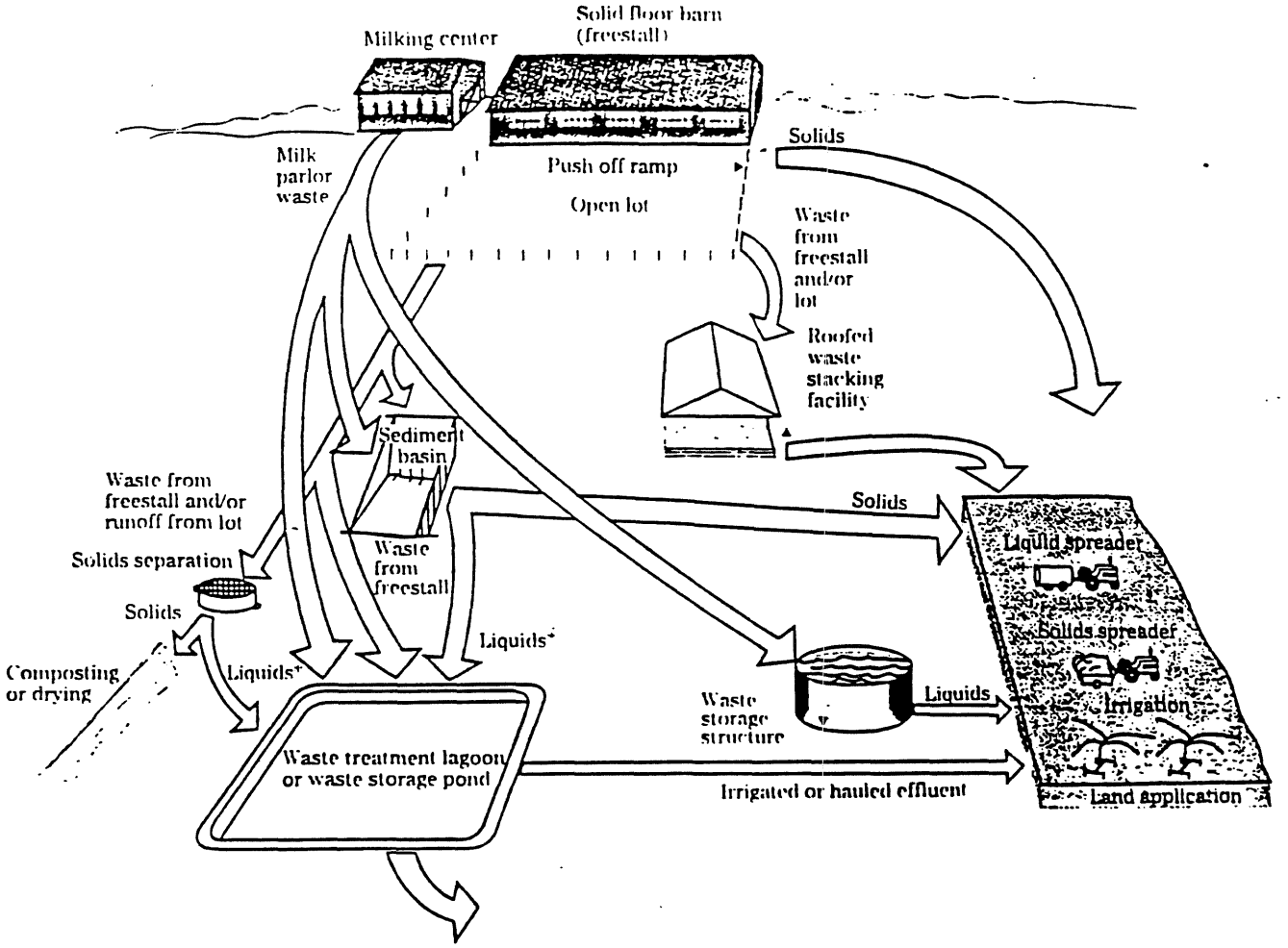
● When planning an agricultural waste management system it is important to consider the overall operation. The amount of labor and type of equipment that will be used to handle the manure are major factors in planning. The type of system used will vary depending on manure characteristics, equipment used, management preference and site conditions.

● There are two main considerations for an ag waste management system. They are waste management and storm runoff management.

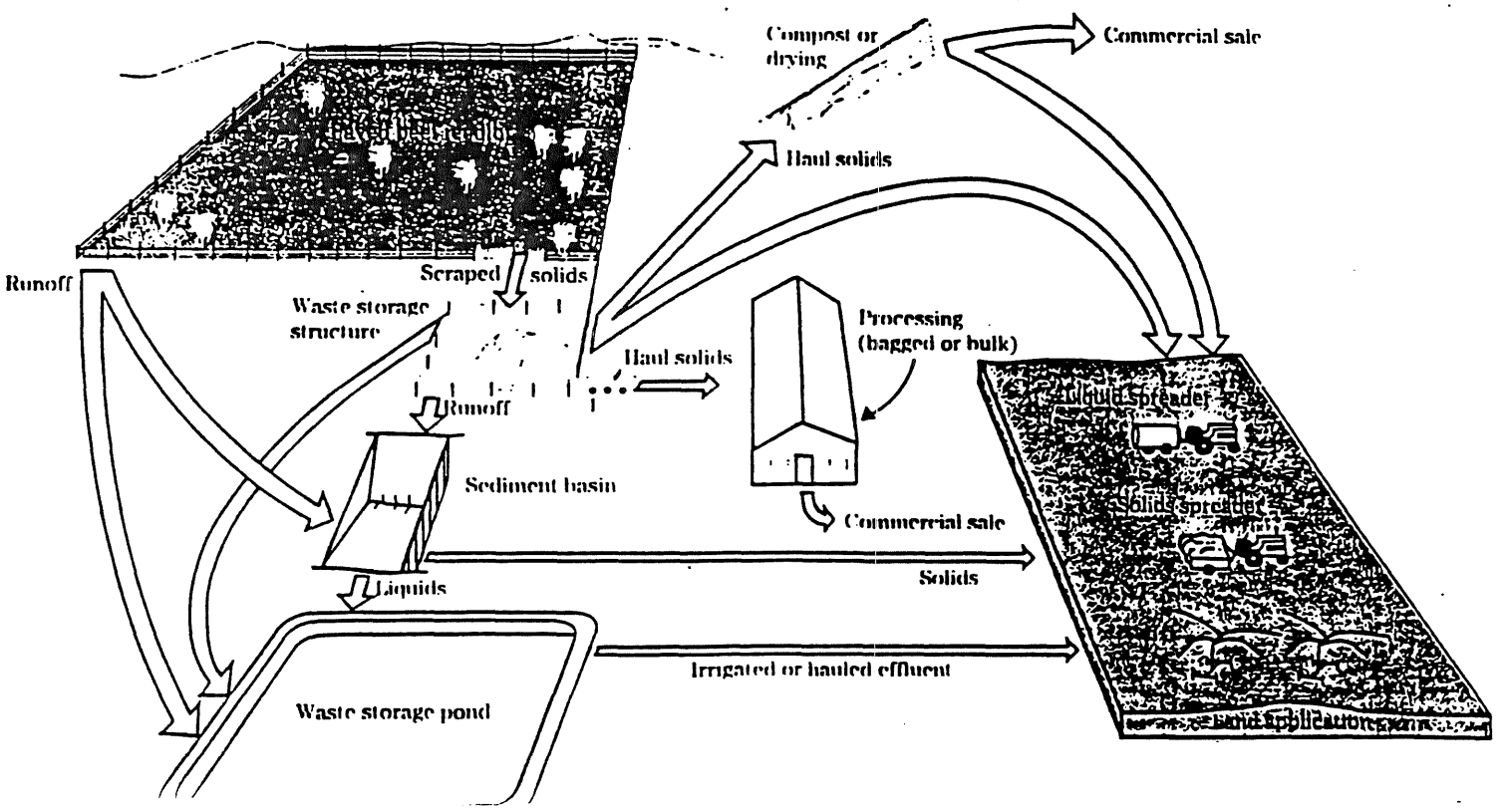
● Waste management deals with the collection, transfer, storage, or treatment of animal solid and liquid wastes including bedding and wash water. Runoff management deals with the management of polluted feedlot runoff and separation of clean storm runoff. Systems can be designed to handle wastes and runoff together or separately.

● The following three schematics show various waste handling options for dairy, beef and swine operations. Fact sheets are available on many of the components shown in these schematics.

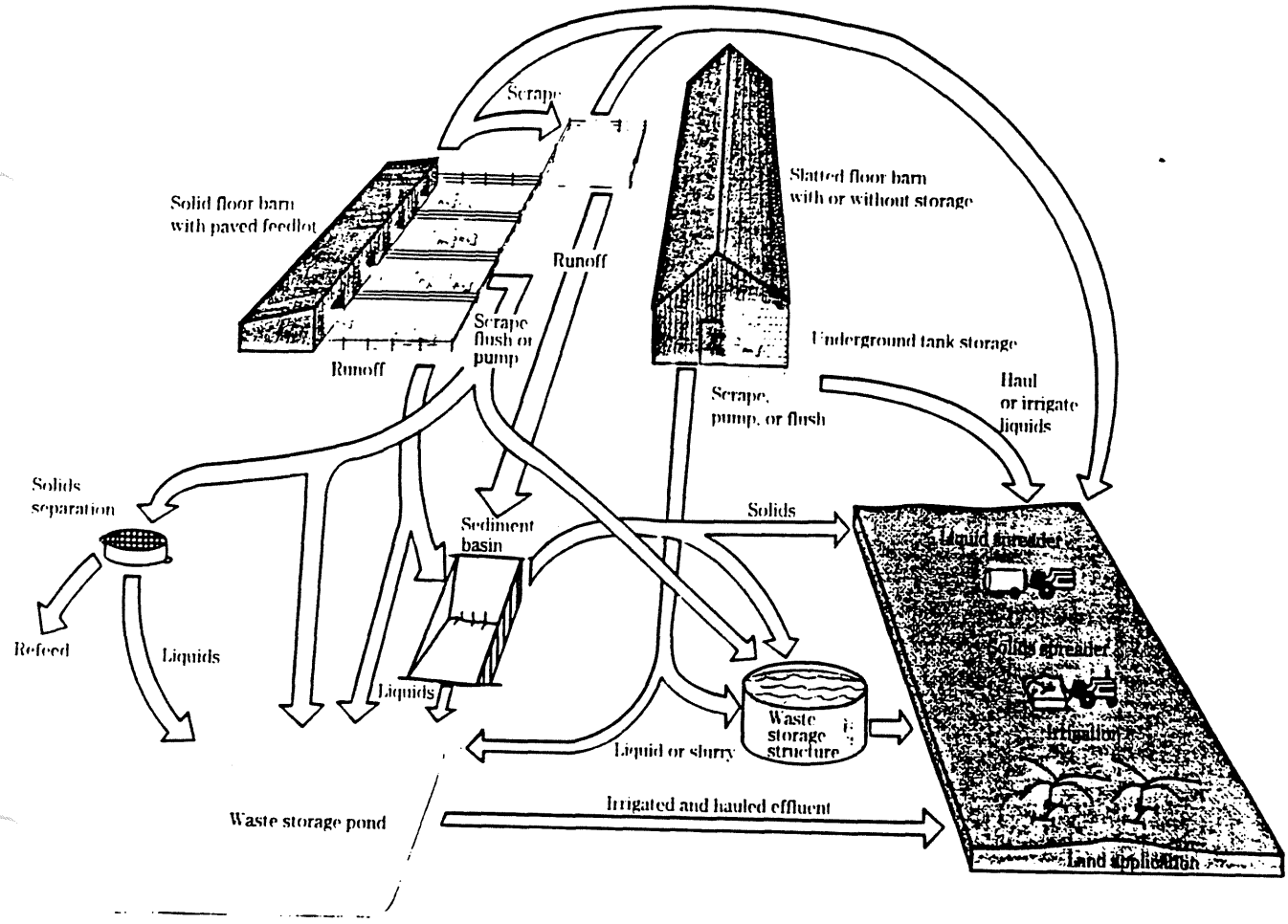
Waste Handling Options - Dairy



Waste Handling Options - Beef



Waste Handling Options - Swine



Where to get help

● A "Feedlot and Manure Management Directory" is available from your Natural Resources Conservation Service (NRCS), formerly Soil Conservation Service, or Soil and Water Conservation District (SWCD) office. This guide provides a comprehensive list of information on permits, financial assistance, technical assistance, etc.

A portion of the funding for this project approved by the Minnesota Legislature, ML 1993, Chapter 172, Sec. 14, Subd. 3(c), as recommended by the Legislative Commission on Minnesota Resources from the Minnesota Future Resources Fund. Assistance for review provided by the Minnesota Extension Service, Minnesota Department of Agriculture, Board of Water and Soil Resources, and the Minnesota Pollution Control Agency.

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-5881 (voice) or (202) 720-7808 (TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call (202) 720-7327 (voice) or (202) 690-1538 (TDD). USDA is an equal employment opportunity employer.

Printed on Recycled Paper

United States
Department of
Agriculture

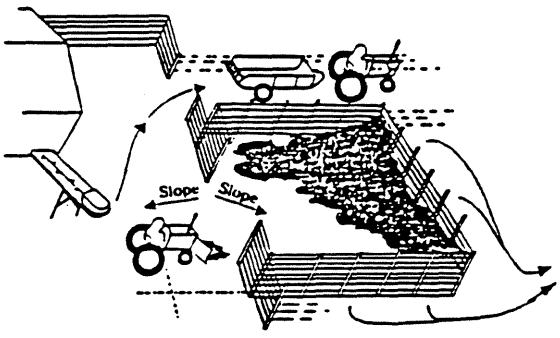
**Natural
Resources
Conservation
Service**

St. Paul,
Minnesota

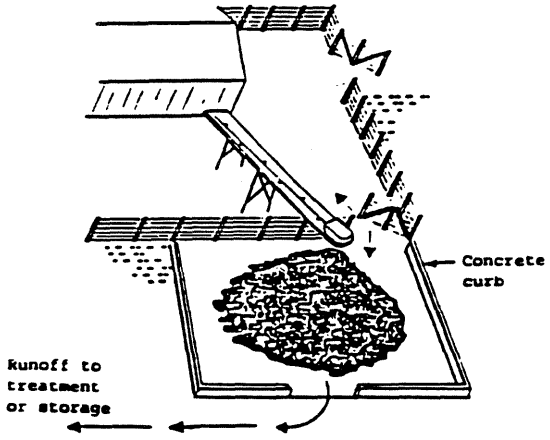
Fact Sheet

Solid Manure Stacking Area

November 1994



Barn cleaner to spreader or tractor stacking



To storage and/or spreader from elevator stacker

What is a solid manure stacking area?

● A solid manure stacking area is commonly referred to as stacking slab. It is a paved area where manure is stored when it has a low enough moisture content to be handled as a solid. Typically, stacking areas consist of a concrete slab surrounded by earth berms or walls made of timber or concrete to contain the stack. One side is usually a sloping concrete ramp, which allows equipment to enter the area to load and haul out the manure.

What you need to consider.

● Solid manure storage areas are typically loaded with piston pumps, an elevated stacker, or by scraping.

● Runoff water should be kept away from manure stacking areas to prevent it from increasing the moisture content of the stack. If the manure becomes too wet it will be difficult to handle with a bucket loader and conventional spreading equipment.

● Manure from a bedded pack and heavily bedded tie stall barn can be handled as a solid. Manure from a free stall barn or beef lot is typically handled as a semi-solid or slurry.

- Adequate outlets should be provided to allow rainfall to drain away from the stack, As a stack gets larger, it can prevent runoff from getting to a single outlet, causing ponding.

- Runoff water from stacking areas must either be treated or stored with other components such as a filter strip or runoff holding pond. See appropriate fact sheets for information on those practices.

- Solid manure storage areas can be designed to store manure for 6 to 12 months. In Minnesota, 12 months of storage capacity is recommended to allow more management options.

- An alternative to solid manure storage is daily hauling. Daily hauling (no storage except accumulation on lots and in buildings) requires a substantial amount of labor each day that manure is hauled. Daily hauling results in significant losses of nutrients that could otherwise be used for fertilizer. Daily hauling requires manure spreading in winter which may allow nutrients to enter nearby surface waters.

- Slurry manure storage is another common option to manure stacking areas. With liquid storage, manure, feedlot runoff, and wash water (if applicable) are stored together at a high enough moisture content that it can be handled by pumping. See fact sheets on "Waste Storage Pond", and "Waste Storage Structure".

- Check with your dairy inspector about any restrictions regarding manure storage setbacks from milking parlors.

- Solid manure storage allows the use of conventional manure handling and spreading equipment.

- Solid manure stacking areas work well with systems utilizing large amount of bedding.

- Only solid manure is hauled, reducing the volume of material that must be hauled to the field. Wastewater, including feedlot runoff and milk parlor wash water, must be handled separately.

- Solid manure storage is usually the lowest cost storage option.

Operation and Maintenance

- When a solid manure storage area is emptied, the manure should be applied according to a nutrient management plan. This will allow the nutrient value of the manure to be utilized for crop production and will minimize the chance for water pollution from the spreading area.

Where to get help

- A "Feedlot and Manure Management Directory" is available from your Natural Resources Conservation Service (NRCS), formerly Soil Conservation Service, or Soil and Water Conservation District (SWCD) office. This guide provides a comprehensive list of information on permits, financial assistance, technical assistance, etc.

A portion of the funding for this project approved by the Minnesota Legislature, ML 1993, Chapter 172, Sec. 14, Subd. 3(c), as recommended by the Legislative Commission on Minnesota Resources from the Minnesota Future Resources Fund. Assistance for review provided by the Minnesota Extension Service, Minnesota Department of Agriculture, Board of Water and Soil Resources, and the Minnesota Pollution Control Agency.

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-5881 (voice) or (202) 720-7808 (TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call (202) 720-7327 (voice) or (202) 690-1538 (TDD). USDA is an equal employment opportunity employer.

Printed on Recycled Paper

United States Department of Agriculture

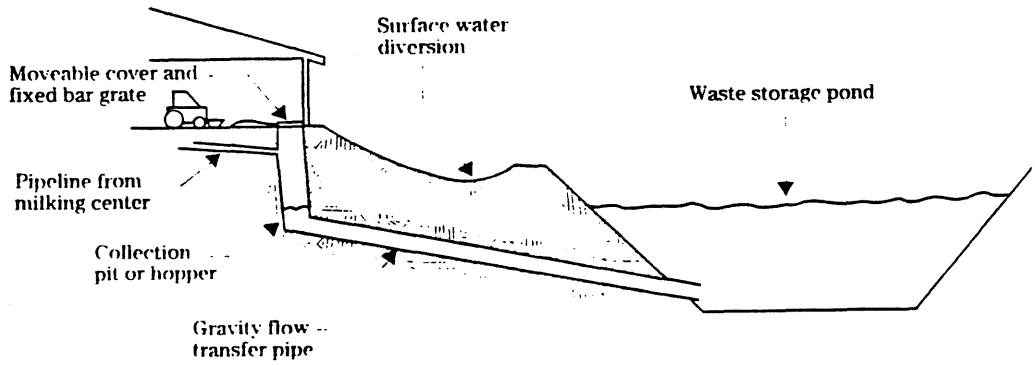
Natural Resources Conservation Service

St. Paul, Minnesota

Fact Sheet

Waste Transfer

November 1994



What is waste transfer?

● Waste transfer is the movement of manure and wastes such as milk parlor wash water or feedlot runoff to a location where it can be stored, treated or hauled.

What you need to consider

● The use of gravity to move animal waste is preferred whenever possible. Gravity pipelines work best for manure with limited amounts of fine bedding; where there is at least 4 feet of elevation difference between the top of the reception pit and the highest level in the storage area. For manure transfer, gravity pipelines generally work best for distances of less than 200 feet.

● Due to characteristics of the waste, topography, or distance, pumping is needed in many cases. Piston pumps are used to handle manure with large amounts of bedding or low moisture contents that would prevent liquid pumps from working properly. Piston pumps normally work for distances of 200 feet or less.

● Liquid pumps work well with slurries that have no bedding or fine bedding in them. Normally a reception tank is used to collect manure and wastewater where it is mixed and then pumped to the remote location. Liquid pumps can move manure long distances and can be electric or PTO driven.

● For outdoor lots and solid manure in buildings, scraping manure with a loader bucket is frequently the best option.

● To pump feedlot storm runoff to a remote location, a settling basin should be used to trap solids and restrict flow to the pump. This allows the use of a normal sewage pump and minimizes horsepower requirements and pipeline diameter.

Operation and maintenance

● NEVER enter a sump, tank, or other confined space for maintenance unless you have been properly trained and use proper procedures for confined spaces entry. Toxic gasses or low oxygen levels can be deadly, even in new tanks or clean water sumps.

● A common problem with waste transfer pipelines is clogging. Be careful to only allow manure and fine bedding to enter gravity pipelines as a slurry. Dried or frozen manure must be handled separately.

● Outlets of pipelines must be protected from freezing by making sure they are well covered with manure before cold weather sets in.

Where to get help

● A "Feedlot and Manure Management Directory" is available from your Natural Resources Conservation Service, (NRCS), formerly Soil Conservation Service, or Soil and Water Conservation District (SWCD) office. This guide provides a comprehensive list of information on permits, financial assistance, technical assistance, etc.

A portion of the funding for this project approved by the Minnesota Legislature, ML 1993, Chapter 172, Sec. 14, Subd. 3(c), as recommended by the Legislative Commission on Minnesota Resources from the Minnesota Future Resources Fund. Assistance for review provided by the Minnesota Extension Service, Minnesota Department of Agriculture, Board of Water and Soil Resources, and the Minnesota Pollution Control Agency.

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-5881 (voice) or (202) 720-7808 (TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call (202) 720-7327 (voice) or (202) 690-1538 (TDD). USDA is an equal employment opportunity employer.

Printed on Recycled Paper

United States
Department of
Agriculture

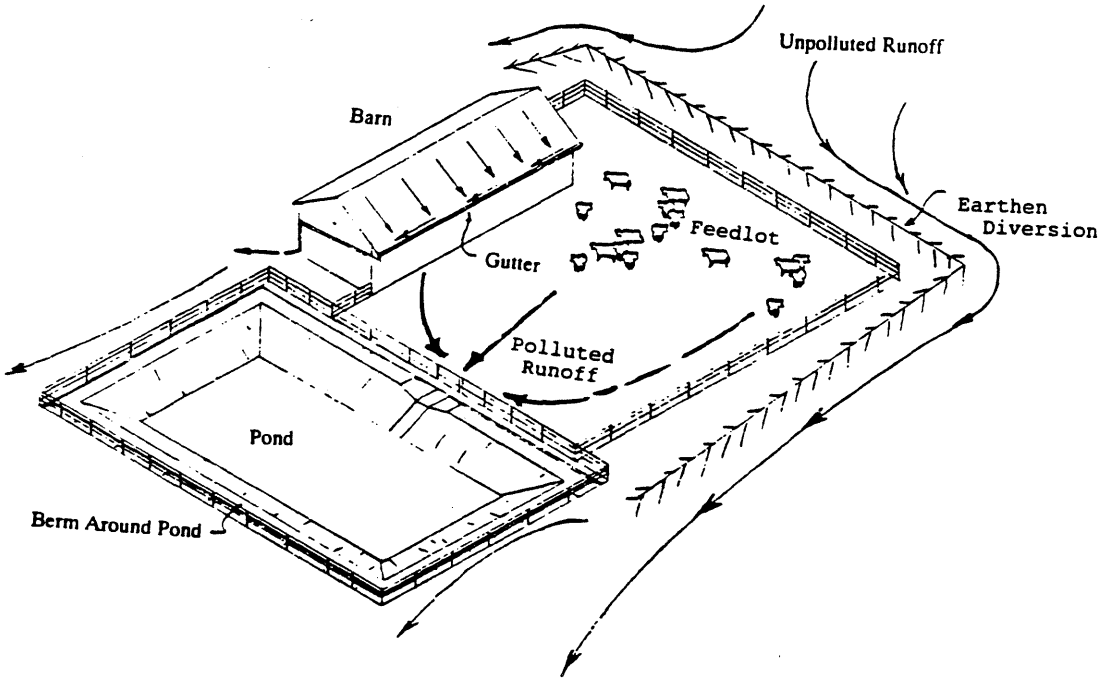
**Natural
Resources
Conservation
Service**

St. Paul,
Minnesota

Fact Sheet

Clean Water Diversion

November 1994



What is clean water diversion?

● One of the simplest and most effective methods of pollution prevention for feedlots is to keep clean water clean. This is done by diverting clean water from roofs and adjacent areas away from feedlots or manure stacks. This reduces the volume of water that must be treated or stored and field applied. This volume can be significant. In an average year, the volume of runoff from a 1/2 acre feedlot area can be 67,000 gallons. During that same year, a 40'x 80' building roof will produce 56,000 gallons of runoff. If this runoff can be collected and diverted away from a feedlot, it does not need to be dealt with.

● Earthen channels or ridges are commonly used for clean water diversions. In farmstead areas, concrete curbs and other options may be used to limit the space needed and make them easier to cross. Water from roofs can either be collected by gutters or collected and diverted when it falls on the ground.

What you need to consider

● Gutters on agricultural buildings are subject to damage from ice if not properly installed. Gutters must be attached with proper hangers at a close enough spacing or they can be severely damaged by ice.

Operations and maintenance

● Maintenance of clean water diversions will depend upon the individual design. Any damage or wear, which would reduce flow capacity or allow erosion, should be corrected. Intakes to underground pipes will need routine maintenance to remove debris. Gutters may need occasional maintenance to repair damaged hangers.

Where to get help

● A "Feedlot and Manure Management Directory" is available from your Natural Resources Conservation Service (NRCS), formerly Soil Conservation Service, or Soil and Water Conservation District (SWCD) office. This guide provides a comprehensive list of information on permits, financial assistance, technical assistance, etc.

A portion of the funding for this project approved by the Minnesota Legislature, ML 1993, Chapter 172, Sec. 14, Subd. 3(c), as recommended by the Legislative Commission on Minnesota Resources from the Minnesota Future Resources Fund. Assistance for review provided by the Minnesota Extension Service, Minnesota Department of Agriculture, Board of Water and Soil Resources, and the Minnesota Pollution Control Agency.

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-5881 (voice) or (202) 720-7808 (TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call (202) 720-7327 (voice) or (202) 690-1538 (TDD). USDA is an equal employment opportunity employer.

Printed on Recycled Paper

United States Department of Agriculture

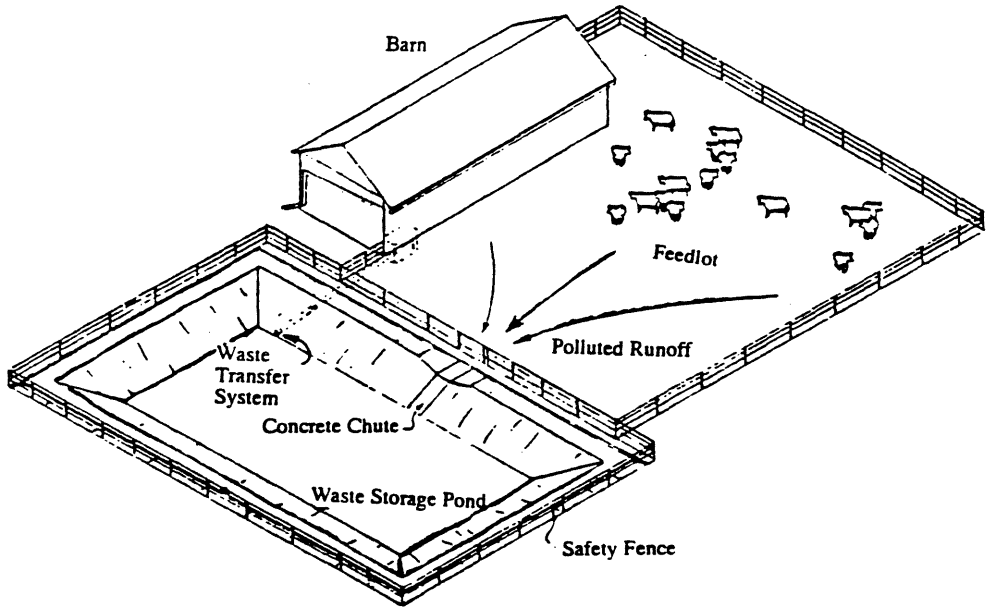
Natural Resources Conservation Service

St. Paul, Minnesota

Fact Sheet

Waste Storage Pond

November 1994



What is a waste storage pond?

● A waste storage pond is an earthen structure used to store manure when it can be handled as a liquid. They are also commonly called earthen basins or manure storage ponds. A waste storage pond can either be a belowground excavated pond, an aboveground diked pond, or a combination of the two.

● Other liquid wastes such as milk parlor wash water and feedlot runoff can also be stored in the waste storage pond.

What you need to consider

● A major consideration in the design of a waste storage pond is preventing excessive seepage into the ground. Minnesota Pollution Control Agency regulations limit the amount of seepage that is allowed from a waste storage pond. This seepage limit can be met in many cases with existing clay soils. Where soils are very sandy or silty, a liner is required. Liners can be made of clay, plastic, or concrete. In areas where sinkholes may form or any amount of seepage is unacceptable, a clay lined waste storage pond may not be a viable option.

● When clay liners or plastic liners are installed, they must be protected from damage when the manure is agitated. A concrete agitation pad is commonly used for this. Many plastic liners also need to be protected from sunlight by covering with a layer of soil.

● Adequate room should be allowed for agitation equipment to operate at multiple locations around the pond.

- Another major consideration is the ground water table. To maintain the integrity of the pond and to prevent its premature filling, it is required that the ground water table be a minimum of 2 feet below the bottom of the pond.

- Manure storage ponds are popular because of their relatively low cost to construct when no liner is required. When a liner is needed, clay is generally the most economical lining material when available at the site. If clay must be hauled in, the cost of clay liners can be similar to that of plastic or concrete liners.

- A waste storage pond must be pumped out at least once a year. This pumping can be expensive and time consuming. This expense can be offset by the nutrient value of the manure for crops.

- It is very important that the manure storage pond be fenced to prevent children, livestock and others from entering. A crust can form on the surface of the pond which appears dry and solid. An unsuspecting person or animal can walk onto the crust and fall in. Also, slopes are typically steep on the pond and can be difficult to climb out of. Warning signs should be posted on the fence around the pond.

Operation and maintenance

- Only manure, bedding and liquid waste should be put in a manure storage pond. Other material can make agitation difficult or damage equipment. On ponds with liners, agitation equipment should only be operated at designated agitation areas. Agitation should be done carefully to prevent damage to any unprotected areas on the liner. Any openings made in safety fences for agitation and pumping must be closed as soon as pumping is completed.

- Vegetation on manure storage pond must be maintained in good condition to prevent erosion of embankments and slopes.

- If a manure storage pond is not going to be used for an extended period of time, it should be completely emptied of manure. Drying cracks, freezing and thawing, animal burrows, erosion and roots can all damage pond liners. Before a pond is refilled after remaining empty for an extended period of time, the liner must be checked to see if it is still adequate.

Where to get help

- A "Feedlot and Manure Management Directory" is available from your Natural Resources Conservation Service (NRCS), formerly Soil Conservation Service, or Soil and Water Conservation District (SWCD) office. This guide provides a comprehensive list of information on permits, financial assistance, technical assistance, etc.

A portion of the funding for this project approved by the Minnesota Legislature, ML 1993, Chapter 172, Sec. 14, Subd. 3(c), as recommended by the Legislative Commission on Minnesota Resources from the Minnesota Future Resources Fund. Assistance for review provided by the Minnesota Extension Service, Minnesota Department of Agriculture, Board of Water and Soil Resources, and the Minnesota Pollution Control Agency.

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-5881 (voice) or (202) 720-7808 (TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call (202) 720-7327 (voice) or (202) 690-1538 (TDD). USDA is an equal employment opportunity employer.

Printed on Recycled Paper

United States Department of Agriculture

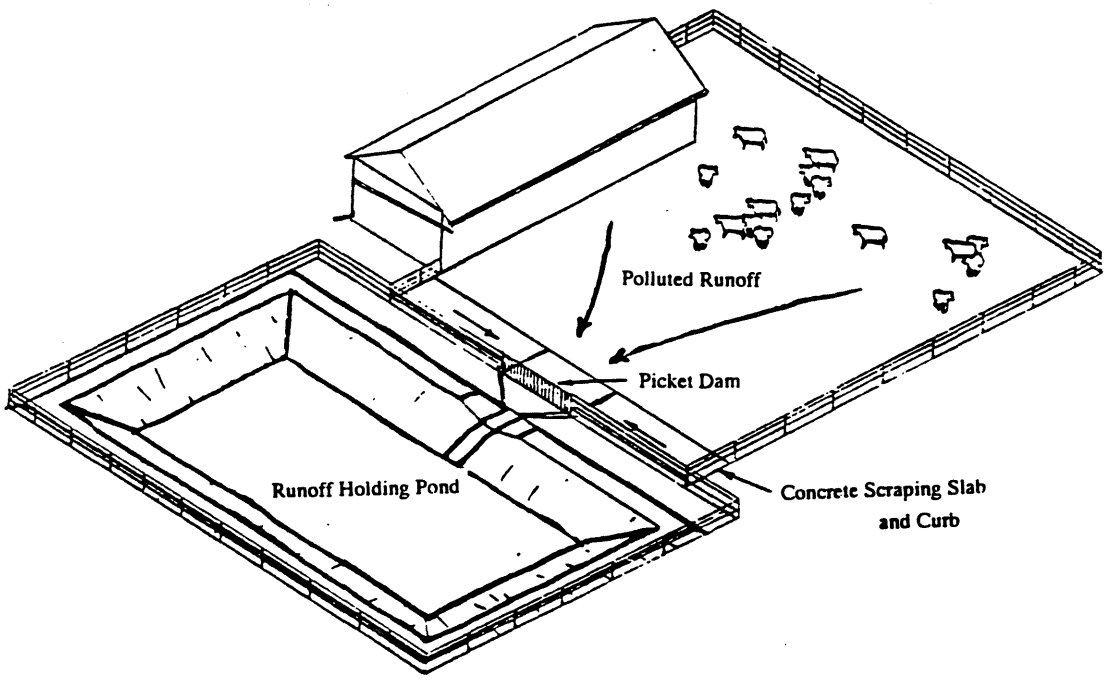
Natural Resources Conservation Service

St. Paul, Minnesota

Fact Sheet

Runoff Holding Pond

November 1994



What is a runoff holding pond?

● A runoff holding pond is an earthen structure used to hold only liquids such as contaminated runoff water and milk parlor wash water. They can either be belowground excavated ponds, aboveground diked ponds, or a combination of the two.

What you need to consider

● A major consideration in the design of runoff storage ponds is the expected amount of seepage into the ground. Minnesota Pollution Control Agency regulations limit the amount of seepage that is allowed from runoff holding ponds. This seepage limit can be met in many cases with the existing clay soil. Where soils are silty or sandy a liner is required. Liners can be made of clay, plastic, or concrete. In areas where sinkholes are likely to develop or any seepage is unacceptable, a clay lined runoff storage pond may not be an acceptable option.

● Another major consideration is the ground water table. To maintain the integrity of the pond and to prevent its premature filling, the ground water table must be a minimum of 2 feet below the bottom of the pond.

● Solids must be separated from runoff before they are washed into a runoff holding pond. This can be done by constructing a settling basin or utilizing the lower end of the feedlot to trap solids. If solids are allowed to enter a runoff holding pond, they can be difficult to remove unless the pond is designed for it.

- Contaminated water stored in a runoff holding pond has enough nutrients in it that it could cause water quality problems in a stream or lake. However, those nutrient quantities are quite small when compared to agronomic crop requirements. Because of this, the area needed for application is generally determined by the ability of the soil to hold the water without allowing runoff. Since the nutrient content is relatively low compared to most crop requirements, the same application area can be used repeatedly in most cases. Testing for nutrient content is still recommended to prevent over application.

- A permanently installed or traveling gun irrigation system are commonly used methods of emptying runoff ponds. Since the nutrient content is low and the water is easily pumped, the use of tank wagons to empty the runoff ponds is generally not needed or economically practical.

- Common alternatives to a runoff holding pond include filter strips or storing the runoff with manure in a liquid manure structure. Another option is total confinement where all animals are indoors and outdoor feedlot areas are eliminated.

- Runoff holding ponds must be fenced to prevent children or livestock from entering them. The slopes are typically steep on these ponds and they can be difficult to climb out of. Warning signs should be posted around the pond.

Operation and maintenance

- Runoff holding ponds must be emptied when full or at the specified time of year. Since runoff holding ponds only hold liquids, no agitation is required. Normal liquid handling pumps or irrigation equipment can be used to empty runoff holding ponds.

Where to get help

- A "Feedlot and Manure Management Directory" is available from your Natural Resources Conservation Service (NRCS), formerly Soil Conservation Service, or Soil and Water Conservation Service (SWCD) office. This guide provides a comprehensive list of information on permits, financial assistance, technical assistance, etc.

A portion of the funding for this project approved by the Minnesota Legislature, ML 1993, Chapter 172, Sec. 14, Subd. 3(c), as recommended by the Legislative Commission on Minnesota Resources from the Minnesota Future Resources Fund. Assistance for review provided by the Minnesota Extension Service, Minnesota Department of Agriculture, Board of Water and Soil Resources, and the Minnesota Pollution Control Agency.

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-5881 (voice) or (202) 720-7808 (TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call (202) 720-7327 (voice) or (202) 690-1538 (TDD). USDA is an equal employment opportunity employer.

Printed on Recycled Paper

United States
Department of
Agriculture

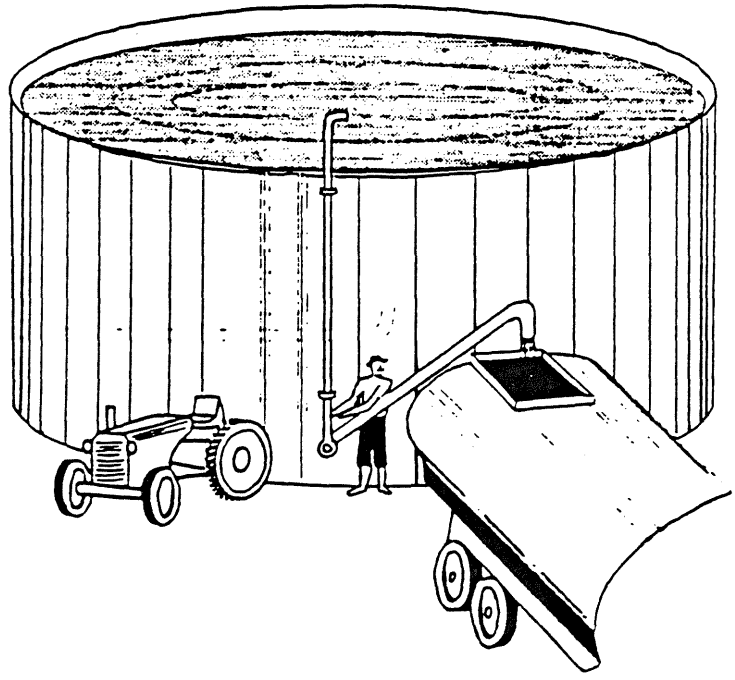
Natural
Resources
Conservation
Service

St. Paul,
Minnesota

Fact Sheet

Waste Storage Structure

November 1994



What is a waste storage structure?

● A waste storage structure is a water tight tank constructed of concrete or coated steel which are designed to store slurry or liquid manure. Various structures are available that can be installed aboveground, belowground, or under buildings.

What you need to consider

● Waste storage structures are relatively expensive, however, the long term maintenance costs for them may be lower than those for storage ponds. In some cases, the long term annual cost may be comparable to that of a storage pond which had a lower initial cost.

● Properly built waste storage structures do not allow seepage which could pollute surface or ground water.

● Clean water from roofs and adjacent areas should be separated from feedlot runoff which is stored in a structure. This will minimize the size of structure that is needed. See fact sheet on "Clean Water Diversion."

● A common alternative to a waste storage structure is a waste storage pond or a solid manure stacking area. See fact sheets on "Waste Storage Pond" and "Solid Manure Stacking Area."

● Waste storage structures can present a serious safety hazard. Every year people die in manure tanks when they enter them without

proper precautions. Only persons with proper training and equipment should ever enter a covered tank. Entrances to covered tanks should be posted with warning signs and protected from unauthorized entry. Belowground open tanks present a drowning hazard. These tanks must be protected with a safety fence and should have warning signs posted.

Operation and Maintenance

- Very little maintenance is required for most waste storage structures, however, they should be inspected each time they are emptied. Any signs of deterioration or corrosion that may weaken the structure must be repaired.

Where to get help

- A "Feedlot and Manure Management Directory" is available from your Natural Resources Conservation Service (NRCS), formerly Soil Conservation Service, or Soil and Water Conservation District (SWCD) office. This guide provides a comprehensive list of information on permits, financial assistance, technical assistance, etc.

A portion of the funding for this project approved by the Minnesota Legislature, ML 1993, Chapter 172, Sec. 14, Subd. 3(c), as recommended by the Legislative Commission on Minnesota Resources from the Minnesota Future Resources Fund. Assistance for review provided by the Minnesota Extension Service, Minnesota Department of Agriculture, Board of Water and Soil Resources, and the Minnesota Pollution Control Agency.

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-5881 (voice) or (202) 720-7808 (TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call (202) 720-7327 (voice) or (202) 690-1538 (TDD). USDA is an equal employment opportunity employer.

Printed on Recycled Paper

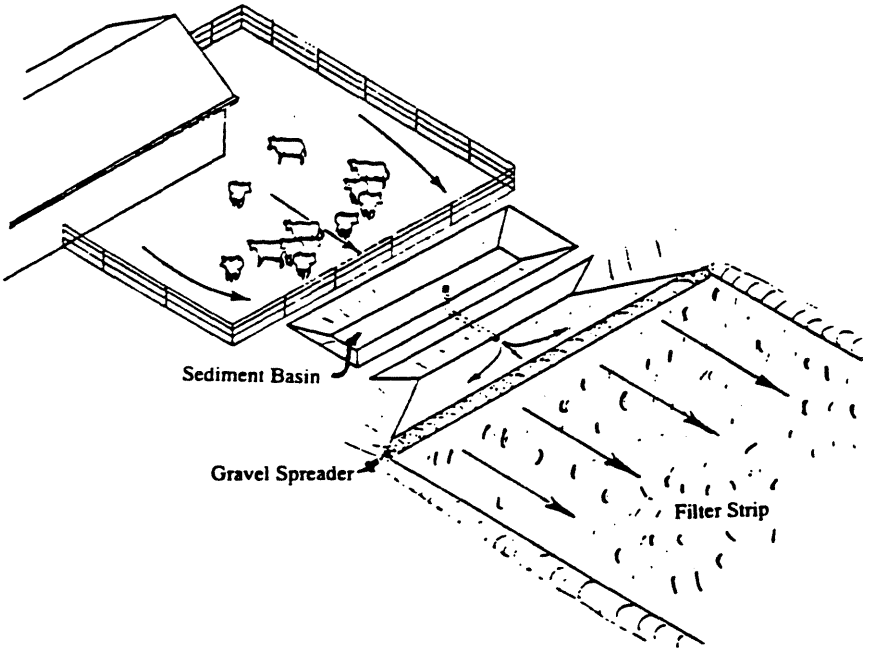
United States
Department of
Agriculture

**Natural
Resources
Conservation
Service**

St. Paul,
Minnesota

Fact Sheet Filter Strip

November 1994



What is a filter strip?

● A filter strip is a vegetated area where contaminated feedlot storm runoff is discharged for treatment. Solids must be trapped by settling basins before the runoff flows to a filter strip. Too many solids in a filter strip will overload it and kill the vegetation.

What you need to consider

● There are many questions about the effectiveness of filter strips for treating feedlot storm runoff. However, they are generally considered acceptable in Minnesota when all of the following conditions are met:

1. The feedlot area is relatively small (Usually less than 1/2 acre).

2. The filter strip size and soil type are adequate to allow infiltration of runoff from most small storms for later use by plants.

3. Any discharge that may occur from the filter strip during larger rainfalls does not flow to a lake. This is because lakes are very sensitive to phosphorus, which is abundant in feedlot runoff. One pound of phosphorus will grow approximately 500 pounds of aquatic plants.

4. The operator is willing to spend the time needed to properly maintain the settling basin and filter strip.

5. For dairy operations in Minnesota, the milk parlor wash water should be treated separately. Daily discharges and extended frozen conditions limit the practicality of treating wash water with filter strips for pollution control.

- Filter strips usually have a relatively low installation cost, but are not practical or effective for all situations.

- A common alternative to filter strips is to collect and store all feedlot runoff in a storage pond or structure for later field application.

- For most filter strips a level spreader is needed to distribute runoff over the full width of the filter strip.

Operation and maintenance

- It is extremely important to clean out settling basins on a regular basis. If this is not done, solids can be washed into a filter strip and damage it. The vegetation in filter strips must be harvested and removed. This is the way that nutrients are removed from the filter strips.

- Level spreaders should be adjusted as needed to make sure that runoff is spread evenly over the width of the filter.

Where to get help

- A "Feedlot and Manure Management Directory" is available from your Natural Resources Conservation Service (NRCS), formerly Soil Conservation Service, or Soil and Water Conservation District (SWCD) office. This guide provides a comprehensive list of information on permits, financial assistance, technical assistance, etc.

A portion of the funding for this project approved by the Minnesota Legislature, ML 1993, Chapter 172, Sec. 14, Subd. 3(c), as recommended by the Legislative Commission on Minnesota Resources from the Minnesota Future Resources Fund. Assistance for review provided by the Minnesota Extension Service, Minnesota Department of Agriculture, Board of Water and Soil Resources, and the Minnesota Pollution Control Agency.

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-5881 (voice) or (202) 720-7808 (TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call (202) 720-7327 (voice) or (202) 690-1538 (TDD). USDA is an equal employment opportunity employer.

Printed on Recycled Paper

United States
Department of
Agriculture

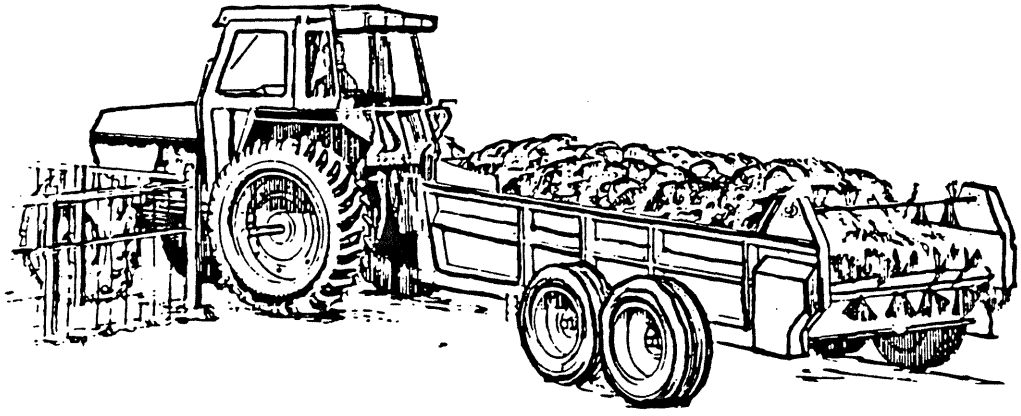
**Natural
Resources
Conservation
Service**

St. Paul,
Minnesota

Fact Sheet

Agricultural Waste Utilization

November 1994



What is agricultural waste utilization?

● Utilization is the recycling of reusable waste products and the reintroduction of other waste products into the environment. Agriculture wastes include manure, milk parlor wash water, bedding, feedlot runoff, poultry litter and animal carcasses. The term "waste" is misleading as these resources are used for multiple purposes, such as sources of energy, bedding, animal feed, mulch, organic matter and plant nutrients. Agricultural wastes are commonly land applied and plant nutrients in them recycled into new plant growth. Done correctly, land application is an economically and environmentally sound practice.

What you need to consider.

● A waste management plan detailing steps necessary to properly utilize the wastes should be prepared.

● Application rates should be based on nutrient content of manure and crop nutrient needs.

● Try to achieve uniform application across the field.

● Maintain proper setbacks from lakes, streams, wells, sinkholes and other environmentally sensitive areas.

● Agitate slurry storage units before and during application.

● Periodically sample and analyze manure for its nutrient content.

- Inject manure into the soil, if possible, or incorporate as soon as possible after application.

- Keep adequate records of applications

- The distance to neighbors, wind directions and time of day are factors which can impact the potential for odor complaints.

- Custom application of manure is a popular option for producers who have manure storage facilities. Custom application eliminates large capital investments in equipment and reduces the time required for application.

- Composting is an option for some operations as part of the utilization process.

Operation and maintenance

- Application equipment should be maintained and periodically calibrated.

- Many people die each year by entering manure tanks. Never enter a covered manure tank unless properly trained and equipped to protect against suffocation or toxic gasses.

Where to get help

- A "Feedlot and Manure Management Directory" is available from your Natural Resources Conservation Service (NRCS), formerly Soil Conservation Service, or Soil and Water Conservation District (SWCD) office. This guide provides a comprehensive list of information on permits, financial assistance, technical assistance, etc.

A portion of the funding for this project approved by the Minnesota Legislature, ML 1993, Chapter 172, Sec. 14, Subd. 3(c), as recommended by the Legislative Commission on Minnesota Resources from the Minnesota Future Resources Fund. Assistance for review provided by the Minnesota Extension Service, Minnesota Department of Agriculture, Board of Water and Soil Resources, and the Minnesota Pollution Control Agency.

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-5881 (voice) or (202) 720-7808 (TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call (202) 720-7327 (voice) or (202) 690-1538 (TDD). USDA is an equal employment opportunity employer.

Printed on Recycled Paper

United States
Department of
Agriculture

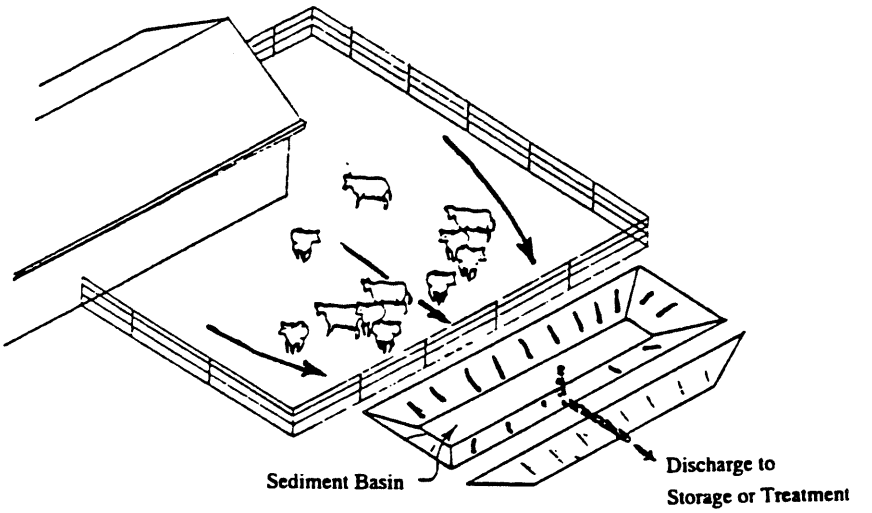
**Natural
Resources
Conservation
Service**

St. Paul,
Minnesota

Fact Sheet

Sediment Basin

November 1994



What is a sediment basin?

- A sediment basin is used to remove solids from feedlot storm runoff. They are also commonly referred to as settling basins. This enables the solid and liquid portions to be handled separately. Sediment basins are used before grass filter strips to prevent solids from entering them and killing the vegetation. They are also used to trap solids before water enters runoff storage ponds since runoff storage ponds are designed to hold liquids only.

- Sediment basins usually consist of an area where water can be ponded with a slow release outlet.

What you need to consider

- The discharge from settling basins is slowed to allow the settling of solids. Adequate temporary ponding areas are needed for the settling basin to function properly. The location of this ponding area varies from site to site. In some cases, water will need to be temporarily ponded on lower parts of the feedlot during larger rainfalls. In other cases, the entire storage volume can be contained in the settling basin, located off the lot.

Operation and maintenance

- The accumulated solids must be removed periodically for the basin to maintain its trapping efficiency. A concrete bottom and curb is typically provided in the basin to allow equipment to enter and clean the solids out of the basin.

Where to get help

- A "Feedlot and Manure Management Directory" is available from your Natural Resources Conservation Service (NRCS), formerly Soil Conservation Service, or Soil and Water Conservation District (SWCD) office. This guide provides a comprehensive list of information on permits, financial assistance, technical assistance, etc.

A portion of the funding for this project approved by the Minnesota Legislature, ML 1993, Chapter 172, Sec. 14, Subd. 3(c), as recommended by the Legislative Commission on Minnesota Resources from the Minnesota Future Resources Fund. Assistance for review provided by the Minnesota Extension Service, Minnesota Department of Agriculture, Board of Water and Soil Resources, and the Minnesota Pollution Control Agency.

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-5881 (voice) or (202) 720-7808 (TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call (202) 720-7327 (voice) or (202) 690-1538 (TDD). USDA is an equal employment opportunity employer.

Printed on Recycled Paper

United States
Department of
Agriculture

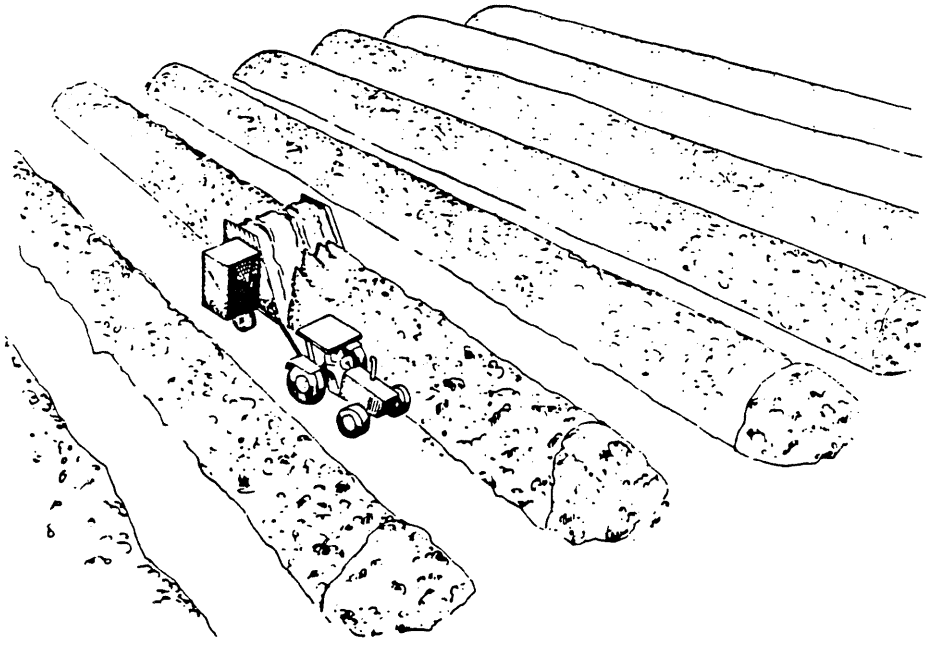
**Natural
Resources
Conservation
Service**

St. Paul,
Minnesota

Fact Sheet

Composting Livestock Waste

November 1994



What is livestock waste composting?

● Composting is an aerobic biological process where microorganisms convert organic material, such as manure and other wastes, into a soil-like material called compost. It is the same decaying process that takes place in nature. However, with composting the conditions are controlled to speed up the process.

What you need to consider

● Composting manure has the benefit of stabilizing nutrients and reducing the volume that must be field applied. Heat generated during the process also reduces the number of weed seeds and pathogens in the product.

● Cold weather can slow or stop the composting process. This usually requires a separate solid manure stacking area be planned for most operations in Minnesota.

● Composting times vary depending upon the method used. Composting manure in windrows typically takes 1 to 4 months to complete.

- Composting requires a proper carbon to nitrogen ratio, moisture and oxygen. Therefore, it is more suited to manure systems that use bedding materials in their operation.

- In some cases, compost may be reused as poultry litter, bedding in livestock buildings, or be sold for agricultural or horticulture use.

- Composting is also an environmentally sound alternative for disposal of dead poultry. Composting shed plans and management information for dead poultry composting are readily available.

Operation and maintenance

- Composting requires an extra amount of labor, management and equipment. Normal farm equipment can be used for small composting operations, but this will be labor intensive. Larger operations will usually require special equipment composting.

Where to get help

- A "Feedlot and Manure Management Directory" is available from your Natural Resources Conservation Service (NRCS), formerly Soil Conservation Service, or Soil and Water Conservation District (SWCD) office. This guide provides a comprehensive list of information on permits, financial assistance, technical assistance, etc.

A portion of the funding for this project approved by the Minnesota Legislature, ML 1993, Chapter 172, Sec. 14, Subd. 3(c), as recommended by the Legislative Commission on Minnesota Resources from the Minnesota Future Resources Fund. Assistance for review provided by the Minnesota Extension Service, Minnesota Department of Agriculture, Board of Water and Soil Resources, and the Minnesota Pollution Control Agency.

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-5881 (voice) or (202) 720-7808 (TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call (202) 720-7327 (voice) or (202) 690-1538 (TDD). USDA is an equal employment opportunity employer.

Printed on Recycled Paper

ADDENDUM F

WATER QUALITY PROJECTS RELATED TO "INCREASING UTILIZATION OF FEDERAL COST-SHARE FEEDLOT FUNDS"
LCMR PROJECT
31 COUNTIES

TARGET AREA 1

Morrison

Swan River Watershed Assessment & Monitoring — Helen Mc Lennan (612)632-6606

- Assess land use in watershed.
- Collect water samples at certain sites along the river for analysis.
- Define programs/projects to address problem areas.
- Assist landowners with project or program.
- Monitor river to measure improvements.

Manure Pit Study — Helen Mc Lennan (612)632-6606

Monitor earthen pits to determine if seals were constructed to design, and if they contribute to ground water pollution. Monitor pit for next five years.

Stearns

'er Quality Incentive Project (WQIP) — Urban Frank (612)251-2092

mprove/maintain surface water quality. Whole farm water quality resource management plans (WQRMP's) 3 year agreements. Landowners apply BMPs for water quality improvement/maintenance in exchange for incentive payments.

Anoka Sand Plain Project (SP-53) — Mike Blaine (612)261-4410

Improve/maintain subsurface water quality for sustained use. Demonstrate BMPs resulting in profitable farm operations.

AURI (Agriculture Utilization Research Institute) — Brad Wenz (612)251-6718

SWCD and SCS staff will work with WQIP participants in the Getchell and unnamed creek watersheds to develop integrated pest management plans. Farmstead assessment (Farm-A-Syst) worksheets will also be completed on these cooperators, stream monitoring of atrazine and cymazine will also be done.

Grove Lake — Elling Lyslo

Restoration project, North Fork Crow River watershed district. Reduce algal blooms and weed growth through wtland restroration & Feedlot mgmt.

Wright

.er Quality Incentive Project (WQIP) — Urban Frank (612)251-2092

Improve/maintain surface water quality. Whole farm water quality resource management plans (WQRMP's) 3 year agreements. Landowners apply BMPs for water quality improvement/maintenance in exchange for incentive payments.

Anoka Sand Plain Project (SP-53) Mike Blaine (612)261-4410

Improve/maintain subsurface water quality for sustained use. Demonstrate BMPs resulting in profitable farm operations

Anoka Sand Plains Mike Blaine (612)261-4410

Projects looking at Sand Plains area and agricultural impacts and trying to reduce negative impact while maintaining production.

Indian Lake project Kerry Saxton (612)682-1970

The project looked at the watershed of Indian Lake as it is trying to install BMPs to reduce phosphorous export.

Local Cost-Share Program Kerry Saxton (612)682-1970

Try to install some BMPs through local monies to increase flexibility of program and increase resource protection.

Meeker No response
Todd No response

TARGET AREA 2

Fillmore

Fillmore County Feedlot Advisory Group Donna Rasmussen (507)765-3305

- Develop recommendations for establishing a county feedlot program to present to the County Board of Commissioners.
- Submit recommendation to MPCA.

Farm-A-Syst in the Classroom Donna Rasmussen (507)765-3305

- Provide Farm-A-Syst packets to high school teachers to supplement environmental curriculum in vocational agriculture classes.
- Provide technical assistance and water test kits to students to assess water wells on the farmstead being evaluated.
- Training workshop for the ag teachers in our county and two neighboring counties.

Septic System Installation Demonstrations Donna Rasmussen (507)765-3305

- Demonstrate proper installation and maintenance of an individual sewage treatment system as a system is being installed, targeting the general public and septic contractor.
- Cost-share $500.00 of the cost of a system for participants in the program.

Household Hazardous Waste Collection Facility Sandra Benson (507)765-3325

- Collect household hazardous wastes to remove from the waste stream and ensure proper disposal.
- Have usable products available through a product exchange to the public to reduce waste.

Sinkhole Treatment Site Darrel Brekke (507)765-3878

- Demonstrate water quality practices by installing op. land treatment.
- Informational material on sinkholes at site, (do's, and don'ts).

R.I.M. Demonstration Tree Plot Darrell Brekke (507)765-3878

- Educational site for all ages to see the benefits of planting trees.
- Used as an outdoor classroom for schools, for tree identification.

No Till Program — Darrell Brekke (507)765-3878

- Rental of no till drills to land owners to promote better residue.
- Have no till comparison sites available for land owners to see the advantage and also how it controls erosion.

ke Pride in America — Darrell Brekke (507)765-3878

- Award given out to local farmer who is willing to open his farm to the public to show conservation practices.
- Field day, also put on by implement dealers, to promote soil saving tillage tools and residue management.

Goodhue

Ag Nutrient Management Program — Mary Kells (507)732-7695; Steve Pahs (507)732-7695

Accelerate the adoption of Ag Nutrient Management Practices, that maximize profitable crop production and minimizes negative environmental impacts.

Wells Creek Watershed Project — Tom Steger (507)732-7694

Develop a local grassroots approach to developing and implementing a comprehensive watershed management project.

Wells Creek Watershed Initiative — Beth Knudson (612)345-5601

DNR sponsored partnership effort, similar to Little Cannon project by M. Halbach (below).

tle Cannon Watershed Project — M Halbach (612)385-3104

oject funded by SEMIF, to encourage local land users in a watershed to originate and implement resource conservation work. Group neetings have been held, moderate interest, may continue under auspices of CRWP.

Little Cannon Watershed Project — Tom Steger (507)732-7694

Develop a local grassroots approach to developing and implementing a comprehensive watershed management project.

Olmsted

St. Peter Prairie du Chien-Jordan Aguthen Hydrologic Unit Area — Ken Rismeyer (507)289-6239

To improve and/or maintain the water quality for the source of water for the city of Rochester, MN and private domestic wells in the project area through the implementation of BMPs.

HUA Water Quality Incentive Project — Ken Rismeyer (507)289-6239

To accelerate the application of water quality BMPs to improve water quality.

Whitewater Water Quality Incentive Project — Ken Rismeyer (507)289-6239

accelerate the application of water quality BMPs to improve water quality. Scheduled for implementation in 1995. Presently ded/approved.

City of Stewartville — Larry Hansen

Lake Florence restoration project

Olmsted county groundwater and wellhead protection project John Harford

Monitoring network for wellhead protection. Development of land use strategies.

Whitewater watershed project Shelly Eckbald

Whitewater joint powers board. Improve water & land resources, streams, wetlands, cooperative project with USDA.

Winona

Gawin Brook Rural Clean Water Project Mark King (507)523-2171

Address surface and groundwater quality concerns in Gawin Brook watershed and its groundwater area.

Whitewater Project Shelly Elhblad (507)289-6239

Develop a progressing watershed based water quality program in the Whitewater River using clean water partnership and PLSGG funds.

Water Quality Incentive Program Mark King (507)523-2171

In 1995 implement a WQIP in the middle branch of the Whitewater River that will address management type, not-structural water quality BMPs.

Houston No response Wabasha No response

TARGET AREA 3

Blue Earth

Blue Earth River Basin Initiative BERBI Charles Peterson (507)345-4718

Five county coordinated effort to improve water quality in the Blue Earth river basin.

Beauford Watershed Charles Peterson (507)345-4718

Minor watershed of the MN RAP study. Address non-point pollution.

MN RAP MN RIP unknown at this time

Study water quality in the MN river basin.

Crystal, Loon, Mills Lakes Rick Hanna

Water quality improvement project. Investigate the sources of degradation to Crystal, Loon and Mills Lakes.

Duck Lake Rick Hanna

Water quality improvement project. Reduce algal blooms using ag, and urban BMPs, improve rec. use.

Lake Washington Terry Bovee

Water quality improvement project joint powers board ***Le Sueur & Blue Earth County***. Resource investigation of Lake Washington.

Le Sueur

German Jefferson Clean Water Partnership — Terry Bovee (612)[illegible]

ean up German & Jefferson Lakes.

Cannon River Watershed Partnership — Terry B[illegible] (612)357-[illegible]1

Clean up the Cannon River.

Lake Washington Clean Water Partnership — Terry [illegible] (612)357-2251

Clean up Lake Washington.

Nicollet

Clean Water Partnership — Bonn[illegible] (507)931-4140

Well head protection for city of St. Peter. BMPs in waters[illegible] eter. [illegible] ing in county.

Watonwan

Long Lake Assessment — n Doyle (507)37[illegible]-495[illegible] afte[illegible] PM
A comprehensive study through MPCA on the watershed a[illegible] r quality.

[illegible]tterfield Lake Project — h Perrine (507[illegible]-3104
tershed implementation leading to the clean out of Butterfiel[illegible] eturn it to [illegible]sheries [illegible]d recreatio[illegible]

Blue Earth River Basin Initiative (BERBI) — y Mueller (50[illegible]-6079

Currently using grant funds to demonstrate proper septic syst[illegible] nd to accele[illegible]e co[illegible]hare with[illegible]e F[illegible]
basin which is county wide.

(SCS) 425 Ag Waste Ponds — ce T. Kelly (507)3[illegible]7 ([illegible]ndi[illegible]er)
ce T. Kelly (507)375-[illegible]7 ([illegible]l I[illegible]

Control livestock runoff.

Brown No response
Faribault No response
Martin No projects

TARG[illegible] AR[illegible]

Clearwater

Lake Bemidji Watershed Clean Water partnership Project (Beltrami SWCD)

[illegible]ulti-agency effort to control non-point source pollution in the Lake Bemidji Wate[illegible]ed, a 620 square mile a[illegible] headwaters of the Mississippi River.

Clearwater River Non-Point Clean Water Partnership Project

Evaluate water quality of the Clearwater River and identify the sources (by sub watersh[illegible] non-point source[illegible]

TARGET AREA 5

Cottonwood

Land Treatment Grants — John Biren (507)831-1153

Provides grants for 80% Land Treatment in one watershed. This implementation work consists of constructing four ag waste systems along with other types of cost-shared conservation practices.

Clean Water Partnership — John Biren (507)831-1153

Three water quality projects.

Lincoln	No response
Lyon	No response
Pipestone	No response
Redwood	No response
Yellow Medicine	No response

TARGET AREA 6

Clay	No projects

08/30/94

ADDENDUM G

FEEDLOT MANURE MANAGEMENT ADVISORY COMMITTEE (FMMAC)

Appointment list

Individual's Name	Address	Phone	Organization	Category
Elton Redalen	90 W Plato Blvd, St. Paul, MN 55107	612/297-3219	MN Dept. of Agriculture (MDA)	Ex-Officio
Chuck Williams	520 LaFayette Rd, St. Paul, MN 55155	612/296-7302	MN Pollution Control Agency (MPCA)	Ex-Officio
John Brach	375 Jackson St., Suite 600, St. Paul,55101	612/290-3672	Natural Resource Conservation Service (NRCS) a.k.a. SCS	Ex-Officio
Wayne Edgerton	500 Lafayette Rd, St. Paul, MN 55155	612/296-6157	Dept. of Natural Resources (DNR)	Ex-Officio
Jim Rossman	7000 70th St. N.W., Oronoco, MN 55960	507/282-2890	Board of Water & Soil Resources (BWSR)	Ex-Officio
Danny Potter	Route 1 Box 133, Redwood Falls, 56283	507/644-3337	MN Assn of Soil & Water Conservation Districts (MASWCD)	Ex-Officio
Greg Anderson	400 Agribank Bldg, 375 Jackson St., St. Paul, MN 55101-1852	612/290-3659	Agricultural Stabilization & Conservation Service (ASCS)	Ex-Officio
Rick Hanna	Environmental Services Dept - Blue Earth County, 410 S. Fifth St., P.O. Box 3566, Mankato, 56002	507/389-8381	Assn of MN Counties	Ex-Officio
Brett Smith	5300 Irving Ave. So., Minneapolis, 55419	612/920-9569	Sierra Club	Environmental
Scott Sparlin	810 3rd St. North, New Ulm, MN 56073	507/359-0215	Izaak Walton League	Environmental
Sam Sunderlin	4162 Circle Lake Trl, Faribault, MN 55021	507/663-1948	MN Lakes Assn	Environmental

ADDENDUM G

FEEDLOT MANURE MANAGEMENT ADVISORY COMMITTEE (FMMAC)

Appointment list

Individual's Name	Address	Phone	Organization	Category
Dr. Sally Noll	U of MN, 208 Peters Hall 1404 Gortner Ave., St. Paul, MN 55108	612/624-4928	University of MN	Expert
Dr. Gyles Randall	U of MN Southern Experiment Station, Waseca MN 56093	507/835-3620	University of MN	Expert
Dr. Larry Jacobson	U of MN 210 Ag. Engineering Bldg, 1390 Eckles Ave., St. Paul, MN 55108	612/625-9733	University of MN	Expert
Chuck Schwartau	Minnesota Extension Service-Wabasha County, 611 Broadway, Suite 40, Wabasha, MN 55981	612/565-2662	Minnesota Extension Service	Expert
Gary Martens	RR 4 Box 468, Mora, MN 55051	612/679-2799	MN Farm Bureau	Producer
Roger Gilland	Route 1 Box 73, Morgan, MN 56266	507/249-3447	MN Cattlemen's Assn	Producer
Jerry Miller	57093 385th St., Eden Valley, MN 55329	612/453-7615	Dairy Herd Improvement Assn (DHIA)	Producer
Marlin Pankratz	RR 2 Box 101A, Mountain Lake, MN 56159	507/427-2152	MN Pork Producers	Producer
Duane Bakke	RR 2 Box 73, Lanesboro, MN 55949	507/467-2971	MN Pork Producers	Producer
John Holden	P.O. Box 166, E. Hwy 19, 2675 330th St. West, Northfield, 55057	507/645-9371	MN Turkey Growers	Producer
Greg Murch	35 East 4th St., Litchfield, MN 55355	612/693-2431	Sparboe Companies	Producer
Dave Frederickson	600 Cty Rd D West, Suite 14, St. Paul, MN 55112-3521	612/639-1223	MN Farmers Union	Producer
Troy Gilchrist	805 Central Ave. East, P.O. Box 267, St. Michael, MN 55376	612/497-2330	MN Assn of Townships	Local Government
Jim Vickerman	R.R. 2 Box 135, Tracy, MN 56175	507/629-4878	State Senate	State Senator
Leroy Koppendrayer	6234 Davenport Rd, Princeton, MN 55371	612/389-1490	State House	State Representative

In addition to the Minnesota Department of Agriculture's publications, there are also other sources available to producers related to feedlots and manure management.

- ***Animal Feedlot Rules for Minnesota"***
  Available from Minnesota Pollution Control Agency (MPCA)
  1-800-652-9747

- ***Guide to Environmental Quality In Pork Production***
  Available from Minnesota Pork Producers Association
  360 Pierce Avenue, Suite 100
  North Mankato, MN 56003
  (507)345-8814

- ***Manure Management: Practices for the Minnesota Pork Industry***
  Available from the Minnesota Pork Producers
  360 Pierce Avenue, Suite 100
  North Mankato, MN 56003
  (507)345-8814

- ***Manure Storage Safety***
  (ASAE EP470)
  Available from American Society of Agricultural Engineers
  2950 Niles Road
  St. Joseph, MI 49085
  (616)429-0300

- ***Running Your Feedlot for Farm Economy and Water Resource Protection***
  Available from Minnesota Pollution Control Agency (MPCA)
  1-800-657-3864

Printed on paper which is acid-free, archival and made from 100% deinked, recycled fiber, including a minimum 15% consumer waste.

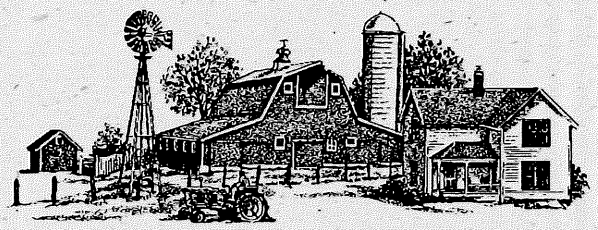
Minnesota Department of Agriculture
Ag Planning & Development Division
90 West Plato Boulevard
St. Paul, MN 55107-2094

Addendum H

FEEDLOT & MANURE MANAGEMENT PUBLICATIONS

A PUBLICATION OF THE
MINNESOTA DEPARTMENT OF
AGRICULTURE

The Minnesota Department of Agriculture, in order to better serve the livestock and poultry producers of the state, commissioned several projects to provide producers with general information about feedlots, manure management, alternatives, planning, and farmland preservation. The department was appropriated funds to provide these services free of charge.



Feedlot & Manure Management Directory *(44 pages.)*
A pocket sized resource book which allows Minnesota livestock and poultry producers quick access to information related to feedlots and manure management. The intent of the directory is to assist producers by helping them gain knowledge of restrictions, sources available for help, and general information about manure management. The directory is divided into ten sections which include feedlot permits, federal cost share assistance, state cost share information, low interest loans, manure storage, manure treatment, manure management plans, an organizational directory, private contractors, and educational resources. The directory will provide producers with background information and allow them to know who to contact for more help and/or information on the topic. (This directory can also be found on the Internet. If you have this service available to you, point your browser to http://www.mda.state.us/).

Manure Management Planning Guide for Livestock Operators *(94 pages.)*
A planning guide providing Minnesota producers with general information on factors to consider when changing their livestock manure management system. This guide is intended to enable producers to effectively determine directional assistance with the various aspects of planning a manure management system and provide options and ideas that will serve as a planning tool for successful manure management. Topics that need to be considered when a producer changes or updates his manure management system are value of manure, permitting, neighbor relations, system options, environmental considerations, manure utilization, cost share assistance, safety, and feedlot closure. The goal of the guide is to provide the producer with the right questions to ask the right people in order to determine what manure management system would best fit the farm.

Manure Management Alternatives: A Supplemental Manual *(56 pages.)*
A resource book designed to provide Minnesota livestock producers general information about evaluating their current waste management systems and comparing their systems to alternate technologies. In some cases a change in manure management technology is needed based on economic, environmental, and social considerations. Specific information is provided on odor control, composting, mechanical separation, vegetative filter strips, anaerobic digestion, and gasification.

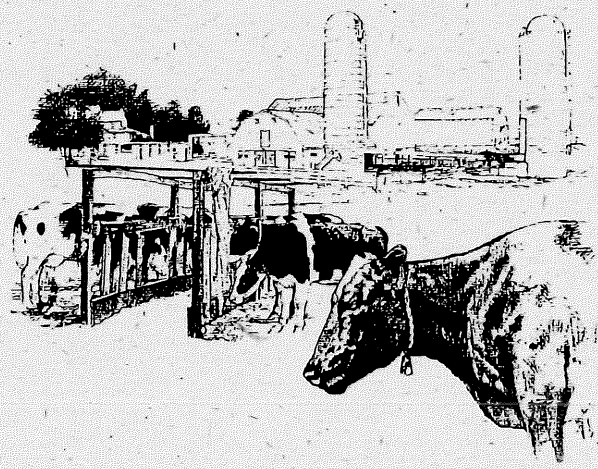
Planning & Zoning for Animal Agriculture in Minnesota: A Handbook for Local Government *(50 pages.)*
This handbook provides practical planning assistance to local units of governments dealing with livestock-related land use issues. It reviews trends related to animal confinements in Minnesota, examines the current state and local planning and regulatory environment, and outlines strategies for sound land use planning relative to feedlots and implementation through zoning and other local controls.

If you would like more information on these publications, contact the Agriculture Planning and Development Division at the Minnesota Department of Agriculture at (612) 282-6830.

Planning for Agricultural Land Preservation in Minnesota: A Handbook for Planning Under Minnesota Statutes, Chapter 40A *(60 pages.)*
This handbook will assist rural counties and local government interested in preparing farmland preservation plans in accordance with the Minnesota Agricultural Land Preservation Act. It is a step-by-step procedural guide to preparing an agricultural land preservation plan and securing approval of the plan from the Minnesota Department of Agriculture.

1995 Farm Nutrient Management for Minnesota *(Approximately 15 different booklets.)*
A 3-ring binder containing a collection of publications explaining best management practices for nitrogen use as well as a series of publications that show how to save money, maintain or increase yield, and protect water quality by effectively using on-farm nutrient resources.

Laminated Guides Available
The *Useful Nutrient Management Data Guide* addresses the N P & K content of many commercial and natural fertilizers as well as specifics on credits for crop history while the *Swine Manure Application Guide* focuses on accurate application of manure. The *Application Guide for Lawn and Garden Products* addresses common problems and solutions for lawn care fertilization.



Addendum I

LEGISLATIVE COMMISSION ON MINNESOTA RESOURCES

INCREASING THE UTILIZATION OF FEDERAL COST SHARE FEEDLOT FUNDS

Educational Activities

December 1996

INDEX

LCMR Increasing the Utilization of Federal Cost Share Feedlot Funds - Educational Activities

The Marketing and Development Division at the Minnesota Department of Agriculture received funds from the Legislative Commission on Minnesota Resources (LCMR) for a project titled, "Increasing the Utilization of Federal Cost Share Feedlot Funds." This project started in July 1993 and concluded in December 1996. Project objectives are listed below. This report focuses on Objective Two.

The objectives of this LCMR project are:

1. Maximize benefits of the project by targeting resources geographically and by livestock enterprise.

2. **Promote and encourage practical and environmentally sound manure management methods through educational opportunities as determined through input from livestock producers and appropriate agency personnel.**

3. Accelerate the technical assistance needed to complete the design work for Animal Waste Control Facilities (AWCFs) that prevent water quality pollution from feedlots and provide access to federal cost share funds.

The goals of Objective Two are:

1. Develop a catalog of current educational programs and refine the informational needs assessment of producers.

2. Develop a plan to meet the identified producer needs.

3. Develop a brief "brochure" that will summarize the various recent feedlot and manure management publications.

The first step was to identify individuals who could provide information about current manure management educational activities and about concerns producers have about manure management. A list of extension educators, farm business management instructors, county feedlot officers, crop consultants, producer groups, and NRCS and SWCD staff was complied.

These individuals (111) were called between January 12, 1995 and February 16, 1995. Participants were asked to list past, present, and future educational activities. In addition, they were asked to list any concerns about manure management they had heard expressed by producers. After all participants were contacted, the information they provided was tallied and summarized.

Information was documented in several ways. First, the activities and concerns were listed for the entire group. Data was also analyzed according to area of the state and occupation of participant. A catalog of current events was also developed. Finally, a needs assessment was done to determine future action for manure management activities. This was based on the concerns expressed by the participants.

The final outcome of this process was a brochure listing feedlot and manure management publications available from the Minnesota Department of Agriculture as well as other publications related to feedlots and manure management. These publications were developed to better serve the livestock and poultry producers in Minnesota, providing producers with general information about feedlots, manure management, alternatives, planning, and land preservation.

Analysis and Recommendations

I. THE PROCESS

Individuals working directly with livestock producers were contacted by telephone to develop a catalog of current educational programs and define the informational needs of livestock producers. These individuals included extension educators, farm business instructors, county feedlot officers, crop consultants, producers groups, Natural Resource Conservation Service (NRCS) staff, and Soil & Water Conservation Districts (SWCD) staff. Telephone surveys were conducted between January 12, 1995, and February 16, 1995.

The names of extension educators were provided by the Minnesota Extension Service. Cluster Extension Leaders who specialized in livestock systems were contacted. Additional extension educators who were referred by another extension educator or had livestock experience were also contacted.

A list of farm business instructors was obtained from the Rural Finance Authority in the Minnesota Department of Agriculture. The Minnesota Pollution Control Agency (MPCA) provided a list of counties currently involved in their feedlot program. Crop consultants were chosen randomly from the Minnesota Department of Agriculture's Feedlot and Manure Management Directory. Finally, producer groups, NRCS staff, and SWCD staff were chosen based on their involvement in manure management activities.

Survey questions were prepared, however not all questions were asked of each respondent. Questions were asked based on responses from the respondent. The most commonly asked questions are listed below. Notes were taken during individual telephone conversations. After completion of all telephone interviews, information was grouped into specific categories and counted. The number of individuals in each occupation category surveyed and the manure management activities they reported are listed in Appendix A.

- What type of activities do you conduct to teach producers about manure management? *(Respondents were able to list more than one activity.)*
- What sort of teaching materials do you use? i.e. --brochures, fact sheets, etc.
- Is there usually a good turnout for meetings or presentations?
- Is there interest on the part of the farmer?
- Is there a high priority among farmers to make changes in manure management?
- What level of importance is safety when working around a storage system?
- What types of concerns do you hear producers talking about? *(Respondents were able to list up to four concerns that they felt producers have.)*
- Do many producers use their manure as fertilizer?
- Do producers test their manure on a regular basis?
- Do you discuss when state feedlot permits are required?
- Are producers aware they need feedlot permits?
- Do you talk about cost-share assistance?
- Do producers know where to get information about cost share?

It is important to note that the research methodology used for this study was highly qualitative in nature. Decisions should not be based on the findings of this report alone. The results do, however, provide an indication of current concerns and activities.

II. ANALYSIS

This report categorizes *Concerns and Activities* by topic as shown in Appendix B. The scope of this report is to provide information on concerns and educational activities on a general level. The specific concerns relating to topic vary greatly. These specific concerns and activities within the topical categories have been analyzed on a state-wide level, but not on an "area" level. (An area map is provided in Appendix C.) Refer to Appendix D where specific concerns and activities are summarized by area.

Area 5, southwest Minnesota, identified the highest number of *Concerns and Activities.* Surprisingly Area 4, west central Minnesota, had the least number of concerns. Area 1, northern Minnesota, had the fewest activities.

There were no concerns identified consistently by all areas of the state. *Cost share assistance* was identified by the highest number of respondents. Specific concerns within the topic of *cost share assistance* had to do with *more cost sharing* and *whether cost share assistance is available for building storage facilities. Cost share assistance* was not identified in Area 5, whereas, it received the highest response in Area 6. *More education* was identified as the second highest concern. However, comments varied under *more education.* Respondents identified *more education* on *manure as fertilizer* as the highest concern. Of least concern were the *depths of earthen basins* and *environmental clean up.*

Overall, Area 5 had the highest number of *Concerns.* Area 5 and 3 had the highest number of *Activities.* Area 4 had the least concerns and Area 1 had the least activities.

Three *Activities* were identified by all areas and received the highest responses. These activities include *help with finances, workshop/meetings,* and *one-on-one* consultations. *Help with finances* is a general activity and was not broken down into specific details. Farm business instructors provide help with finances on a regular basis. Specific activities within the topics of *workshop/meetings* and *one-on-one consultation* show that the highest number of *workshop/meeting activities* identified were on *permitting, the agronomic benefits of manure,* and *manure management.* Specific activities within *one-on-one consultation* are on *manure management. The value of manure* through *utilization of the Manure Application Planner (MAP) program* was also identified as a highly ranked activity. *Newspaper articles* on *safety* was also identified as a common activity. The least used activities were *radio talk shows, providing information sheets,* and *demonstration farms.*

The catalog of current events and activities reported by respondents are listed in Appendix E.

III. FINDINGS

Many of the *Activities* address the *Concerns* on a general basis. However, there are a number of specific concerns that are not addressed by any of the identified activities. Conversely, there are a number of activities that do not address any particular concern identified by the respondents. Below is a list of those *Concerns* and *Activities:*

Concerns identified as needing more attention:

Cost Share Assistance:
- Need for more cost share
- Cost share for special circumstances
- Producer will be required to perform extra work if gets cost share assistance
- When making improvements
- Will cost share be available when building
- Suspicious of cost sharing; suspect conditions are attached

Getting a Feedlot Permit:
- Time to process permit takes too long
- When is a permit required

One Agency:
- Coordinate federal and state
- One agency to deal with manure management

The Future:
- How will regulations change in the future

Technical Support Assistance:
- For designing storage facilities
- Good engineering assistance
- Technical expertise on building storage facilities

Miscellaneous:
- Depth of earthen basins

Activities not addressing specific concerns identified by respondents:

Workshops/Informational Meetings
- Technical help

Demonstration plots
- Tillage

Information through newspaper articles
- Safety

Farm Tours
- Feedlots
- Animal waste control facilities
- Alternative animal waste control facilities

Information through mailings
- Safety
- Best management practices

Related course
- Material handling

Demonstration farm
- Whole farm management
- All nutrients on farm

Radio talk shows
- Safety

IV. RECOMMENDATIONS

1. Identify Additional Needs.

A number of concerns raised by respondents are not addressed by current educational activities. Other issues have also been identified in the Angus Reid report (group interviews) and the Group Interview report conducted by Jane Stegner, Inc. These issues should be addressed in a comprehensive and coordinated manner. The following recommendation include recommendations from the Angus Reid report which is appropriate for the LCMR-funded study on educational activities.

A. Develop a comprehensive understanding of the programs and services that address the needs of producers. (Angus Reid)

B. Develop and implement a plan to improve coordination, cooperation and communication among agencies and producers on feedlot matters. (Angus Reid)

1. Review and consult with all agencies and organizations that provide programs and services to producers to determine the following:
   - How are the results interpreted by different agencies, organizations and levels of governments?
   - What are the implications of the findings of the Educational Activities report?
   - What are the future strategies to address the deficiencies?
2. Conduct a comprehensive analysis on Angus Reid report, Educational Activities Report, and Group Interview report conducted by Jane Stegner, Inc. to determine the extent of educational activities and how they are meeting the needs and concerns of the producers.

The following recommendations are based upon examination of the Educational Activities Report and review of the Feedlot & Manure Management Advisory Committee (FMMAC) questionnaire, Angus Reid report, and the Group Interview report prepared by Jane Stegner, Inc.

C. Research (Recommendations from the FMMAC questionnaire)
- Odor management.
- Focusing and strengthening of public/private research coordination/partnership and associated reporting efforts .
- Leakage potential from earthen basins .
- Role of phosphorus as a limiting/controlling parameter in the regulation of feedlot runoff and manure management

D. Education (Recommendations from the FMMAC questionnaire.)
- Coordination, and/or streamlining of public and private efforts to ensure compatibility, effectiveness, and efficiency.
- Utilization of Manure Application Planner (MAP) software by technical support staff and producers.
- Ongoing clarity of roles, responsibilities and procedures for providing and utilizing effective and efficient regulations, technical assistance and financial assistance. (This activity involves producers, financiers, regulators, technical support staff, and contractors).

2. Prepare A Plan. Consider a strategic planning process to assist in plan preparation. The strategic planning process is effective at generating internal and external ideas necessary for developing initial planning strategies and potential programs/services. The purpose of this process is to build consensus while deciding upon the direction for additional research and educational activities.

A. Elements of a strategic planning process.
   1. Establish a vision. How research and educational activities can be used more effectively to meet the needs of the producers.
   2. Identify contradictions/obstacles that may hinder the success of the research and educational activities.
   3. Identify innovative and practical actions to deal with the contradictions/ obstacles.
   4. Develop an implementation plan. Identify what needs to be done, when it will be done and by whom. Assists in identifying supporters of the plan and resources needed to carry out the plan.

B. Plan Development. The plan incorporates the work identified in the strategic planning process. Some elements of the plan should include:
   1. Analyze and correlate the educational activities and needs identified in this report, the Angus Reid report and the Group Interview Report conducted by Jane Stegner, Inc.
   2. Define goals that address deficiencies, overlaps, etc.
   3. Establish implementation steps to accomplish the plan. (Who, what, when, where and how much will it cost)
   4. Design a method to measure the success of the plan.

C. Dissemination of Services and Activities: Develop a plan to disseminate information and to better identify MDA's role as a catalyst for dissemination of information on services and educational activities. This step would most likely be identified in the strategic planning process, but is worthy of mentioning on an individual basis.

APPENDIX A

Respondent Occupation and List of Activities

Between January 12 and February 16, 1995, 111 individuals were called to develop a catalog of current educational programs and to conduct an information needs assessment of producers. The audience of the educational assessment plan was extension educators, farm management instructors, county feedlot officers, crop consultants, producer groups, and NRCS and SWCD offices.

Occupation	
Extension Educators	31
Farm Business Management Instructors	37
County Feedlot Officers	34
Crop Consultants	6
Producer Group	1
SWCD Representative	1
NRCS Representative	1

Below are current manure management activities reported by respondents. The number indicates how many individuals identified participation in that activity.

Help with Finances	37
Workshop/Information Meetings	33
Provide One-On-One Consultation	21
Utilize MAP Program	15
Have Demonstration Plots	8
Provide Information through the Newspaper	7
Tours of Various Farms	5
Provide Information through Mailings	5
Used Extension's Six-part Correspondence Course	5
Present at Special Agriculture-related Events	4
Provide Information on Alternative Solutions	3
Conduct Needs Assessment	3
Offer a Related Course	3
Conduct Survey to Determine Number of Feedlots	3
Demonstration Farm	2
Provide Information Sheets to Producers	2
Provide Information through Radio Talk Shows	2

APPENDIX B

A Breakdown of *Concerns* and *Activities*

CONCERNS : The following tables provide a detailed breakdown of *Concerns* indicating the number of respondents identifying the concern, and which activity addresses the concern. The analysis only compares the concerns and activities identified by respondents.

Cost Share Assistance

Concern	Number of Respondents	Activity Addressing Concern
Animal Waste Control Facilities (AWCF) are expensive, can't afford	1	No Activity (NA)
Provide financial assistance to producers	1	*Workshop/Information Meetings:* cost share assistance
Need for more cost share	4	NA
Cost share for special circumstances	1	NA
Producer will be required to perform extra work if gets cost share assistance	1	NA
Need cost share when making improvements to AWCF.	1	NA
More information on cost share assistance	1	*Workshop/Informational Meetings:* cost share assistance
Will cost share be available when building an AWCF?	3	NA
Suspicious of cost sharing. Suspect conditions are attached.	1	NA

More Education

Concern	Number of Respondents	Activity Addressing Concern
Regulations, ordinances	1	*Workshop/Informational Meetings:* regulations, water quality, pollution *Information sheets;* extension fact sheets/brochures, MPCA bulletins on feedlots
Application rates	2	*Workshop/Informational Meetings:* manure application, calibrations clinics, manure equipment *One-on-One Consultation:* using manure application planner *Demonstration Plots:* incorporation of manure *Information Through Mailings:* manure management rates
Manure management is becoming controversial	1	*Workshop/Informational Meetings:* manure management
Education is the answer	1	Current educational activities
Manure management	3	*Workshop/Informational Meetings:* manure management *One-on-One Consultation:* manure management plan *Information through Newspaper Articles:* manure management *Agricultural Event:* manure management *Radio Talk Shows:* manure management

Manure as fertilizer	5	*Workshop/Informational Meetings:* agronomic benefits of manure, fertilizer rates *One-on-One Consultation:* analysis of manure, value of manure *Demonstration Plots:* manure as fertilizer, fertility *Agricultural Event:* nutrient management *Related Courses:* manure as fertilizer
MAP program	2	*Workshop/Informational Meetings:* MAP program *Utilize MAP Program:* value of manure as fertilizer
Uncertain how pollution regulations will affect plans for expansion	2	*Workshop/Informational Meetings:* expanding feedlot operation

Value of Manure

Concern	Number of Respondents	Activity Addressing Concern
What is the value of using manure as fertilizer?	8	*Workshops/Informational Meetings* - Agronomic benefits of manure

Regulations

Concern	Number of Respondents	Activity Addressing Concern
Always need information on rules, regulations, and designing.	1	*Workshops/Informational Meetings* Regulations
Regulation occurring by people that don't understand.	1	
Concerned and uncertain about regulations and the regulatory process.	4	*Workshops/Informational Meetings* Regulations

Getting a Feedlot Permit

Concern	Number of Respondents	Activity Addressing Concern
Permitting	3	*Workshop/Informational Meetings:* permitting *Information Sheets:* MPCA bulletins on feedlots
Time to process permit takes to long	3	NA
When is a permit required	1	NA

Manure Application

Concern	Number of Respondents	Activity Addressing Concern
Equipment that makes calibration of manure easier.	2	Calibration clinics
Manure applied uniformly	1	Manure application workshop
No idea how to calibrate.	1	Calibration clinic
Rates as which to apply manure	1	Manure application workshop

Winter Spreading

Concern	Number of Respondents	Activity Addressing Concern
Concerned whether or not farmers will be able to spread manure during the winter months.	4	NA

One Agency to Coordinate All Information

Concern	Number of Respondents	Activity Addressing Concern
Coordinate federal and state	1	NA
One agency to deal with manure management	3	NA

Technical Support Assistance

Concern	Number of Respondents	Activity Addressing Concern
For designing storage facilities	1	NA
Good engineering assistance	1	NA
Technical expertise	1	NA

One-On-One Consultant

Concern	Number of Respondents	Activity Addressing Concern
Person to work one-on-one with producers, i.e. farm business instructor/feedlot officer	1	*One-on-One Consultant:* involves one-on-one in a general nature on topics of expansion, obtaining feedlot permits, using the manure application planner, manure management planning, value of manure.
Farmers may feel uncomfortable about it until first approached on a one-on-one basis.	1	One-on-one consultant

Alternatives

Concern	Number of Respondents	Activity Addressing Concern
Cheap alternative to new storage facility	1	*Demonstration Plots:* alternatives

The Future

Concern	Number of Respondents	Activity Addressing Concern
How will regulations change in the future.	1	NA

Miscellaneous

Concern	Number of Respondents	Activity Addressing Concern
Depth of earthen basins	1	NA
Environmental clean up	1	*Workshop/Informational Meetings:* pollution, water quality *Information Through Newspaper Articles:* water supply, contamination of fields *Demonstration Plots:* non-point source pollution
Odor	5	*Information Through Newspaper Articles:* odor

ACTIVITIES

The tables below lists all the activities and shows which concern they address. There are a number of activities that do not specifically address concerns identified by the respondents.

Workshops/Informational Meetings

Activity	Respondents	Meets identified concern
Manure management	7	Y
Permitting	13	Y
Agronomic benefits of manure	16	Y
MAP program	2	Y
Storage of manure	2	Y
Manure application	4	Y
Calibration clinics	3	Y
Fertilizer rates	1	Y
Regulations	3	Y
Cost share assistance	4	Y
Water quality	1	Y
Pollution aspects	1	Y
Expanding	2	Y
Technical help	1	N
Manure equipment	1	Y
Alternatives	1	Y
Odor	1	Y

One-on-One Consultation

Activity	Respondents	Meets identified concern
Involves one-on-one work	11	Y
Analysis of manure	1	Y
Expansion	1	Y
Obtaining feedlot permits	1	Y
Using manure application planner	1	Y
Manure mgmt plan	4	Y

Utilize MAP Program

Activity	Respondents	Meets identified concern
Value of manure	2	Y

Demonstration plots

Activity	Respondents	Meets identified concern
Incorporation of manure	1	Y
Corn/with dif types of manure	2	Y
Application rates	2	Y
Manure as fertilizer	1	Y
Non-point source pollution	1	Y
Tillage	2	N
Fertility	2	Y
Alternatives	1	Y

Information Through Newspaper Articles

Activity	Respondents	Meets identified concern
Safety	4	N
Odor	1	Y
Manure management	2	Y
Contamination of fields	1	Y
Water supply	1	Y

Farm Tours

Activity	Respondents	Meets identified concern
Feedlots	1	N
Animal waste control facilities	1	N
Alternative animal waste control facilities	2	N

Information Through Mailings

Activity	Respondents	Meets identified concern
Safety	1	N
Manure management	1	Y
Manure management rates	2	Y
Best management practices	5	N

Agricultural Event

Activity	Respondents	Meets identified concern
Nutrient management	2	Y
Manure management	2	Y

Related Courses

Activity	Respondents	Meets identified concern
Material handling	1	N
Nutrient management	1	Y
Manure as fertilizer	1	Y

Demonstration Farm

Activity	Respondents	Meets identified concern
Whole farm management	1	N
All nutrients on farm	1	N

Information Sheets

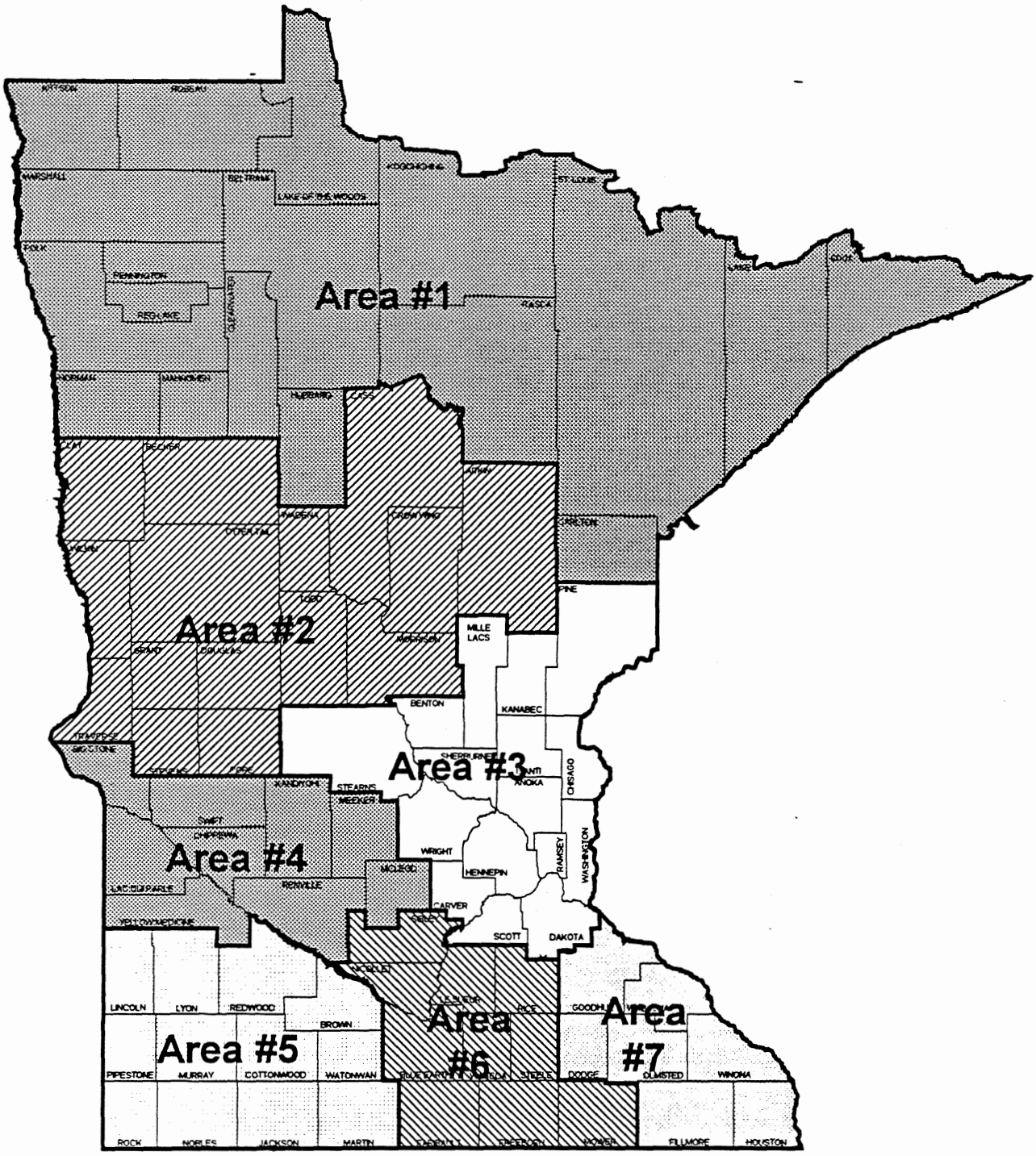
Activity	Respondents	Meets identified concern
Extension fact sheets/brochures	1	Y
MPCA bulletins on feedlots	1	Y

Radio Talk Shows

Activity	Respondents	Meets identified concern
Safety	1	N
Manure management	1	Y

APPENDIX C

MANURE EDUCATIONAL ACTIVITY AREAS



APPENDIX D

Analysis of *Concerns* and *Activities* by Area

Area 1: (Northern 1/3 of state)
Ranks 5th in the state in *Concerns* and *Activities.* Eight respondents identified 6 areas of concerns. The greatest concern is for *cost share assistance.* The concerns are identified as cost share assistance, more education, regulations, odor, and technical help.

Fifteen respondents identified 7 areas of activities. The greatest area of activity is *help with finances.* Other activities identified are: workshops/meetings, one-on-one consultation, utilize MAP program, information through newspaper, surveys, and information sheets. Activities lacking in Area 1 are demonstration plots, informational mailings, correspondence courses, farms tours, special agriculture related events, information on alternative solutions, conducting a needs assessment, related courses, information through the radio and demonstration farms.

Area 2: (Upper West Central)
Ranks 4th in the state for *Concerns* and 3rd for *Activities.* Nine respondents identified 8 concerns. The highest concern is for *more education.* Other areas of concern identified are cost share assistance, value of manure, regulations, economic information, information on the entire process and expansion, and the future.

Nineteen respondents identified nine activity areas. The highest occurring activity is workshop/meetings. Other informational activities include help with finances, one-on-one consultation, utilize MAP program, demonstration plots, newspaper, articles/columns, mailings, related courses, and radio spots and programs. Activities that were not identified in Area 2 include six part correspondence course, farm tours, special agriculture-related events, information on alternative solutions, conducting a needs assessment and survey, information sheets, and demonstration farm.

Area 3: (East Central)
Area 3 ties for 2nd in the state, with Area 7, for unmet *Concerns,* and ties for 1st with Area 5 for number of *Activities.* Seventeen respondents identified 10 concerns. The highest concern is for *value of manure and manure application.* Other areas of concern identified are cost share assistance, getting a permit, winter spreading, economic information, information on the entire process, one-on-one consultation, and corporate farms.

Twenty-three respondents identified 11 areas of activities. The highest activity is help with finances. Other activities include workshop/meetings, one-on-one consultation, utilize MAP program, demonstration plots, information through newspaper, radio, fact sheets, farm tours, conducting a needs assessment, and demonstration farms. Activities that were not identified in Area 3 include information through mailings, six part correspondence course, special agriculture-related events, information on alternative solutions, sheets related courses and conducting a survey.

Area 4: (Lower West Central)
Ranks 6th in the state for *Concerns* and 4th for *Activities.* Six respondents identified 5 concerns. The highest concern is for cost share assistance. Other areas of concern identified are value of manure, one agency ("one-stop shopping"), information on the entire process, and technical help.

Twelve respondents identified 8 areas of activities. The highest activity is *help with finances.* Other activities identified are workshop/meetings, one-on-one consultation, utilize MAP program,

demonstration plots, information through mailings, special agriculture related events, and related courses. Activities not identified are information through newspaper, mailings, radio and information sheets, six part correspondence course, farm tours, information on alternative solutions, conducting a needs assessment and survey, and demonstration farm.

Area 5: (Southwest)
Ranks 1st in the state for *Concerns* and ties for 1st with Area 3 for *Activities*. Nineteen respondents identified 13 concerns. The highest concern is for education. Other areas of concern are value of manure, getting a permit, odor, manure application, winter spreading, one agency, economic information, information on expanding, alternative, corporate farms, and the environment.

Thirty-six respondents identified 11 areas of activities. The highest activity is workshop/meetings. Other activities are help with finances, one-on-one consultation, utilize MAP program, demonstration plots and farms, information through newspaper, six part correspondence course, farm tours, special agriculture related events, information on alternative solutions, and conducting surveys. Activities not identified include information through mailings, radio and information sheets, conducting a needs assessment, and related course.

Area 6: (South central)
Ranks 3rd in the state for *Concerns* and 2nd for *Activities*. Seventeen respondents identified 9 concerns. The highest concern is for cost share assistance. Other areas of concern include more education, value of manure, regulations, getting a permit, odor, manure application, one agency, information on the entire process, and one-on-one consultation.

Thirty-five respondents identified 10 area of activities. The highest activity is help with finances. Other activities include workshop/meetings, one-on-one consultation, utilize MAP program, information through newspaper, mailings, six part correspondence course, special agriculture related events, information on alternative solutions, related courses, and demonstration farms. Activities not identified are utilize MAP program, information through newspapers, radio, and information sheets, farm tours, conducting a needs assessment, and conducting a survey.

Area 7: (Southeast)
Ranks 2nd in the state for *Concerns* and 4th for *Activities*. Fourteen respondents identified 10 concerns. The highest concern is for regulations. Other areas of concerns are cost share assistance, more education, getting a permit, odor, winter spreading, information on the entire process and expansion, technical help, and storing manure.

Nineteen respondents identified 8 activities. The highest activity is workshop/meetings. Other activities are help with finances, one-on-one consultation, utilize MAP program, demonstration plots, information mailings, farm tours, and information on alternative solutions. Activities not identified are information through newspapers, six part correspondence course, special agriculture related events, conducting a needs assessment, related courses, conducting surveys, information through radio and information sheets, and demonstration farms.

Appendix E

Catalog of Current Events and Activities

March, 1995

WORKSHOPS

Location of Event	Who Organized	Topic Covered	Date of Event
Aitkin County	Extension	Manure Management	Within the last year.
Aitkin, Cass, Crow King, Wadena, Todd & Morrison	Extension	MAP program	February, 1995
Albert Lea, MN	Southcentral Technical College	Value of Manure	March, 1995
Alexandria, MN	Alexandria Technical College & Dept. of Agriculture	Nutrient Management Planning	January/February, 1995
Austin, MN	Riverland Technical College	Soil Fertility	January, 1995
Big Stone County	Feedlot Office	Permitting/Manure Management	Within the last year
Blue Earth County	Extension/Feedlot Office	Manure Management	Fall, 1994
Brown County	Extension/Waterplan Committee	Permitting, Odor, Nutrient Management	March, 1995
Goodhue County	Extension	Value of Manure	January, 1995
Litchfield, MN	Willmar Technical College	Cost sharing	
Martin County	Extension	Permits/Value of Manure	February, 1995
Martin County	Feedlot Office	Manure Management	1992
Morrison County	Extension/SWCD	Manure Management	March, 1995
Otter Tail County	Extension/MPCA	Permitting process	Every year
Pine County	Extension	Manure Management	1995
Pipestone County	Extension	Manure Management	Spring or Fall, 1995
Redwood County	Extension	Manure Management	Within the last year.
Rochester, MN	Extension	Manure Management	February 1, 1995
Sibley County	Extension	Feedlot permits	Within the last year.
Stearns County	Extension	Manure Management	February, 1995
Wabasha County	Extension	Dealer Manure Application Equipment	February, 1995
Waseca County	Extension/Feedlot Office	Feedlots/Value of Manure	1994
Winona County	Extension	Value of Manure	Within the last two years.

DEMONSTRATION PLOTS

Location of Event	Who Organized	Topic Covered	Date of Event
Brown County	Extension	Manure Management	Spring, 1995
Carlton County	Extension	Manure Management	1995
Chippewa County	Extension	Manure Application	Within the last year
Dakota County	Extension	Manure Application	1995
Fillmore County	Extension	Value of Manure	Spring, 1995
Freeborn County	Extension	Value of Manure	February, 1995
Olmsted County	Extension	Value of Manure	Spring, 1995
Otter Tail County	Extension	Value of Manure	Spring, 1995
Wabasha County	Extension	Manure Application	Within the last year

MISCELLANEOUS EVENTS

Type of Event	Location of Event	Who Organized	Topic Covered	Date of Event
Video	Blue Earth County	Extension/SWCD	Manure Management/BMP's	1995
Newsletter	Blue Earth County	Extension	Manure Management/BMP's	2X/Year
Video	Carlton County	Extension	Manure-by-products	1995
Farm Tour	Carver County	Extension	Alternative Manure Waste Management	Within the last year.
Demonstration Farm	Carver County	Extension/ U of MN	Nutrient Cycling Monitoring	Within the last year
One-on-One Consultation(grant)	Chippewa Area Cluster	Extension	Manure Management	1994-1996
Special ag-related event	Chippewa County	Extension/MDA	Value of Manure	Within the last year.
Special ag-related event	Jackson County	Feedlot Office	Manure Management	Within the last year.
Correspondence Course	Murray County	Extension	Manure Management	Within the last year.
Special ag-related event	Redwood County	Extension/MDA	Value of Manure	Within the last year.
Farm Tours	Rock County	SWCD	Feedlots	Within the last year.
Farm Tour	Wabasha County	Extension	Animal Waste Facilities	April, 1995
Correspondence Course	Waseca County	Extension	Manure Management	Within the last year.
Farm Tours	Winona County	Extension	Value of Manure	Within the last two years.
Needs Assessment	Wright, Stearns, Benton & Sherburne Counties	Extension	Manure Management	January, 1995 to June, 1996