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NPS Pollution Pamphlet

NPS Pollution

What You Should Know



AGRICULTURAL NONPOINT SOURCE POLLUTION

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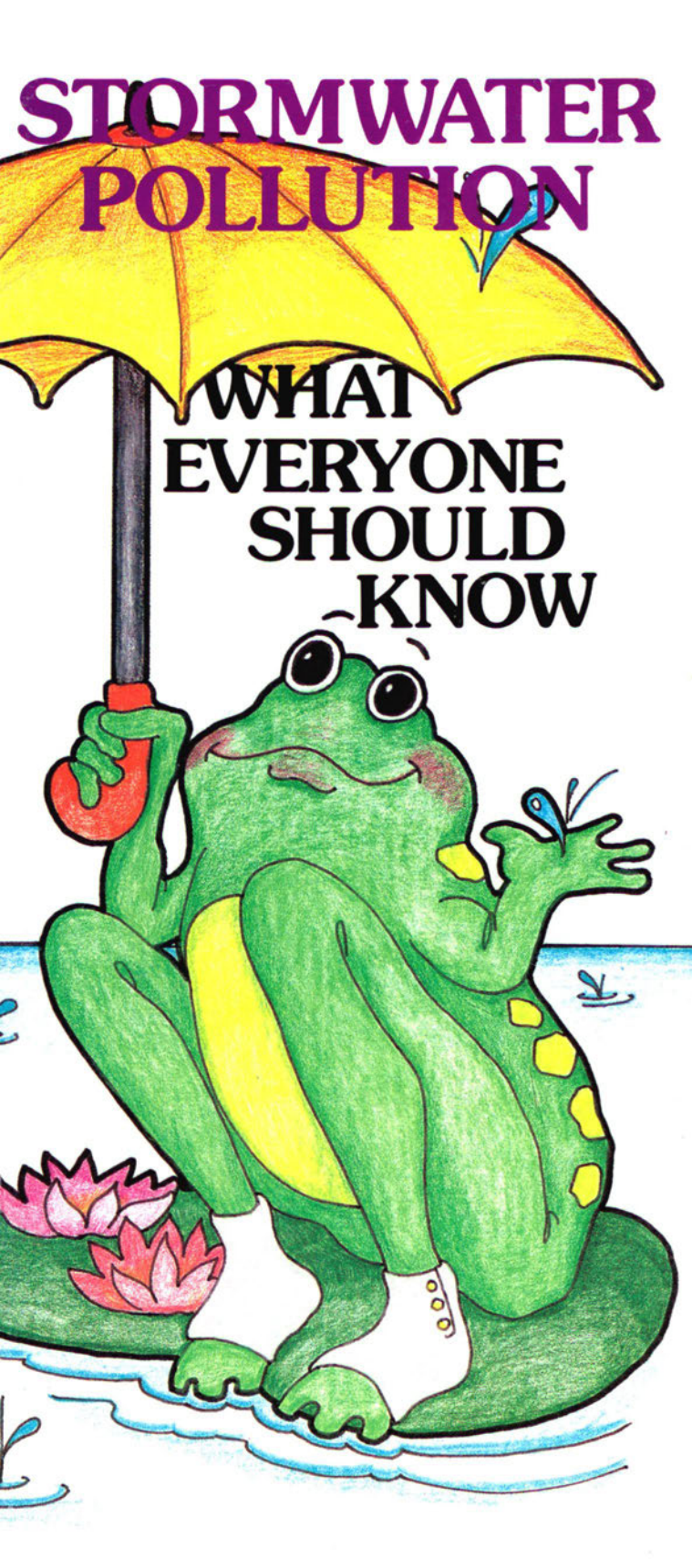
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stormwater Pollution
Pamphlet

STORMWATER POLLUTION

WHAT EVERYONE SHOULD KNOW



MICHIGAN STATE
UNIVERSITY

April 10, 1995

TO: Christina Coulon
11 Agriculture Hall

RE: IRB#: 95-160
TITLE: EVALUATING FARM*A*SYST USING THE PRECAUTION ADOPTION PROCESS MODEL
REVISION REQUESTED: N/A
CATEGORY: 1-C
APPROVAL DATE: 04/10/95

The University Committee on Research Involving Human Subjects'(UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project including any revision listed above.

RENEWAL: UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must use the green renewal form (enclosed with the original approval letter or when a project is renewed) to seek updated certification. There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB # and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.

PROBLEMS/ CHANGES: Should either of the following arise during the course of the work, investigators must notify UCRIHS promptly: (1) problems (unexpected side effects, complaints, etc.) involving human subjects or (2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of any future help, please do not hesitate to contact us at (517)355-2180 or FAX (517)336-1171.

Sincerely,

David E. Wright, Ph.D.
UCRIHS Chair

DEW:pjm

cc: Cynthia Fridgen

OFFICE OF
RESEARCH AND GRADUATE STUDIES

University Committee on Research Involving Human Subjects (UCRIHS)

Michigan State University
232 Administration Building
East Lansing, Michigan
48824-1046

517/355-2180
FAX: 517/432-1171

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FARMERS HOME ADMINISTRATION FARM ASSISTANCE PROJECT

The AmeriCorps target area's economically and socially disadvantaged farmers will be assisted in accessing Farmers Home Administration lending programs as well as technical assistance from other USDA agencies under the Farmers Home Administration AmeriCorps Farm Assistance Project. Economically and socially disadvantaged farmers will be assisted through the application process for FmHA farm loan programs for emergency, operation, or ownership farm assistance programs. AmeriCorps participants will be provided training by local FmHA staff and will be required to gain general knowledge about other technical assistance and benefit programs available to farmers. This will enabling them to outreach to farmers and then help the farmers in applying for Federal assistance or using other USDA farm services.

AmeriCorps workers can also coordinate with other types of service providers in the area when other needs are identified. Often housing, health services, transportation, education, and social services are needed by economically and socially disadvantaged farmers. Participants working with the FmHA project will be asked to identify other services available in the area so that referrals can be made as appropriate.

As participants gain experience, they will be asked to broaden the programs they advise the farmers on and the activities they undertake. This could include functioning as small business planning developers and information brokers with USDA's business and industry programs, agriculture cooperative development, and agriculture marketing services, as well as local market-oriented groups and organizations. This could result in the development of markets for unique local products or growing such products for unique markets or consumers. In addition, participants may be asked to perform surveys and other activities in their assigned areas that would help the Agency identify and address program or delivery constraints. This would tie their educational background to on-the-job needs and skills.

AmeriCorps participants would gain valuable work experience and job skills in this project that is easily transferable to both public and private sectors. This would make them attractive prospective employees for the agriculture industry, local cooperatives and businesses involved in agriculture, as well as local, State and Federal government agencies involved in agriculture-related activities.

FARMERS HOME ADMINISTRATION HOUSING PROJECT

The AmeriCorps target area's housing needs will be assisted through outreach and technical assistance to potential applicants under the Farmers Home Administration AmeriCorps Housing project. Low and very low-income families will be assisted through the application process for FmHA rural housing homeownership loans, housing repair loans and grants and water hook-up services as needed. AmeriCorps participants will be provided training by local FmHA staff enabling them to work with local community groups to provide outreach to families and then packaging loans for those families needing FmHA housing assistance.

Outreach workers can also coordinate with other service providers in the area when social service needs are identified. Often health services, transportation, education, and social services are needed by the same families living in substandard housing. Participants working with the FmHA project will be asked to identify other services available in the area so that referrals can be made as appropriate.

As participants gain familiarity with the Agency's programs, they will be asked to broaden the programs they advise the families and communities on. These could include other housing and rural development programs offered by USDA, as well as coordinate with other aspects of the program operating under Forest Service, Soil Conservation Service, Food and Nutrition Service, etc.. In addition, participants may be asked to perform surveys and other activities in their assigned areas that would help the Agency identify and address program or delivery constraints. This would tie their educational background to on-the-job needs and skills.

AmeriCorps participants would gain valuable work experience and job skills in this project that is easily transferable to both public and private sectors. This would make them attractive prospective employees for housing developers, non-profit and community-based groups, as well as local, State and Federal government agencies involved in housing and development activities

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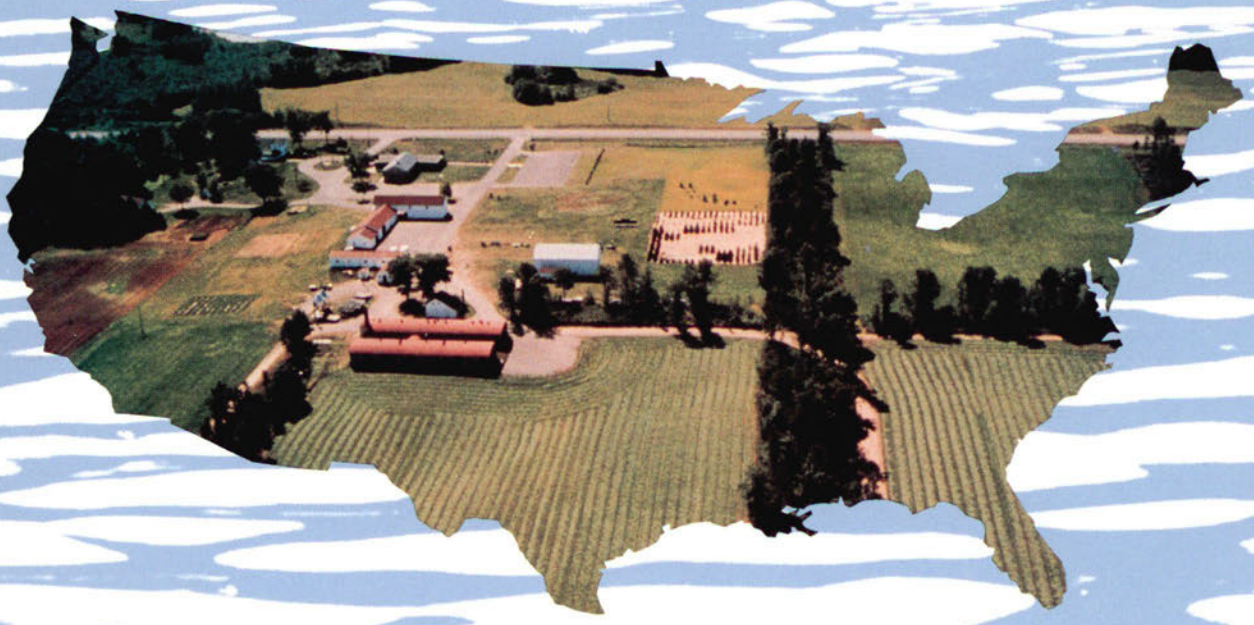
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Protecting Rural America's Water

FARM*A*SYST











Farm A Syst

FARM•A•SYST
Farmstead Assessment System

Guidelines for Developing and Implementing State Farmstead Pollution Potential Assessment Programs

Cooperative programming supported by
U.S. Department of Agriculture -
Extension Service and
Soil Conservation Service
U.S. Environmental Protection Agency

These guidelines were written by the National Farmstead Assessment Program Staff:

Jerry Griswold
Soil Conservation Service Coordinator

Gary Jackson
Extension Service Coordinator

Susan Jones
U.S. Environmental Protection Agency Coordinator

Please direct comments and questions about the National Program and suggestions for updates of this document to the staff at: B142 Steenbock Library, 550 Babcock Drive, Madison, Wisconsin 53706-1293, (608) 262-0024.

The prototype Farmstead Assessment System (Farm*A*Syst) was developed by the Universities of Wisconsin and Minnesota, Region V of the U.S. Environmental Protection Agency (EPA), and the Wisconsin Geological and Natural History Survey. Farm*A*Syst development Project Manager was Susan Jones (U.S. EPA Region V), and the project co-principal investigators were Gary Jackson (University of Wisconsin), and Jim Anderson (University of Minnesota). Major funding support for Farm*A*Syst development was provided by the North Central Regional Center for Rural Development, U.S. EPA Region V, U.S. EPA Great Lakes National Program Office, U.S. Department of Agriculture- Extension Service, Wisconsin Department of Natural Resources, and the Minnesota Pollution Control Agency.

Authors of the Wisconsin and Minnesota Farm*A*Syst worksheets and fact sheets are: Elaine Andrews, Kim Cates, James Converse, Brian Holmes, Nick Houtman, Susan Jones, David Kammel, Fred Madison, Leonard Massie, Jim Peterson, Jerry Tyler, and Pat Walsh.

GUIDELINES FOR DEVELOPING AND IMPLEMENTING STATE FARMSTEAD POLLUTION POTENTIAL ASSESSMENT PROGRAMS

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INTRODUCTION

The purpose of this manual is to provide guidance to state staff on modifying the prototype Farmstead Pollution Potential Assessment System (Farm*A*Syst) for their state's particular agricultural situations and program needs. Farm*A*Syst was designed to help farmers and rural residents voluntarily assess well water pollution risks at the farmstead: the house, farm buildings, and land around them. The system identifies management practices and structures at a specific site that present pollution risks. It also recommends actions to reduce or eliminate identified pollution risks. Ultimately, it should increase users' knowledge and understanding of their farmstead environment; existing policies, regulations and recommendations that relate to their activities and structures; and aid them in taking voluntary actions to reduce and prevent pollution risks.

Development of a state Farm*A*Syst program model can facilitate organization of farmstead and groundwater protection policies and programs into one system that aids farmers in:

- understanding and identifying pollution risks associated with their farm structures and activities;
- identifying actions that will reduce pollution risks;
- understanding how existing programs and policies can help reduce or prevent pollution;
- identifying and obtaining technical, financial and educational assistance to prevent pollution; and
- taking voluntary actions to reduce pollution risks.

The development and implementation of a Farm*A*Syst program will require interagency and inter-disciplinary cooperation and the development of state and local support systems. The results should be a program that assists farmers in incorporating pollution prevention actions into their everyday farm management system. It should also assist agencies in:

- identifying areas of need that are not being adequately addressed;
- developing support systems that assist with and encourage voluntary implementation of needed pollution prevention actions;
- facilitating cooperation between public agencies, agri-business, environmental and farm organizations in pollution prevention efforts.

Farm*A*Syst evolved out of a widespread recognition that:

- farmers are concerned about protecting their well water.
- the highest concentration of potential pollutants are usually located on the farmstead, often in close proximity to the well;
- many farmstead structures and management practices have the potential to contaminate groundwater and the farm well;
- factors that influence pollution risks are complex and often site-specific;

- numerous agencies have authorities and responsibilities related to farmstead structures and management practices; and
- public concern about water quality is resulting in increased efforts to develop regulatory and voluntary water protection programs.

HOW TO PROCEED

Modifying the prototype Farm*A*Syst program involves development of: state specific support materials, implementation approaches, practice implementation support systems, and evaluation materials and procedures. Steps to consider when initiating the development of a state program include:

1. Determining interest within your agency or organization in developing Farmstead Pollution Assessment materials as part of a voluntary rural water pollution prevention effort. To do this consider:

    a. Obtaining copies of Farm*A*Syst materials developed in other states (see Appendix A);
    b. Obtaining Farm*A*Syst newsletters that summarize potential water contamination problems and solutions (see Appendix A); and
    c. Determining perceived strengths and weaknesses associated with the Farm*A*Syst approach.

2. Contacting other agencies and organizations that have the authority and technical and educational resources related to components of the Farm*A*Syst program and facilitate discussion on the potential value and drawbacks related to adapting it for use within your state. Determine:

    a. Is private well water protection and agricultural nonpoint source pollution prevention a high enough priority to consider developing this type of program?
    b. Are all agencies that have authority or responsibility related to water quality management and/or practices and structures covered in the assessment willing to assist in the effort, or at least recognize that it is an appropriate effort for others to pursue?
    c. Are there technical resource staff available to review and modify the content of each fact sheet and work-sheet so that they accurately reflect policies and conditions in your state?
    d. How much funding and staff time is necessary to modify the support materials and develop a state project or program? (See Appendix B for estimates of modification time required.)
    e. Who will lead or coordinate this interagency, interdisciplinary effort?
    f. How will funding and staff assistance be obtained and managed? (Appendix C includes information on potential funding sources.)

3. Developing a framework for state Farm*A*Syst material development and program implementation including:

    a. Determining the leader(s) of the state effort;
    b. Establishing lead contacts in and roles of participating agencies and organizations;
    c. Identifying authors and reviewers of materials;
    d. Establishing a state coordinating committee or process; and,
    e. Estimating time commitments required of state-level and field staff for program implementation.

COORDINATION NETWORK AND WORKGROUP DEVELOPMENT

Involvement of appropriate representatives from state agencies and organizations and the private sector in a coordinated Farm*A*Syst materials development effort can ensure a stronger, more credible program. A multi-agency approach will also raise the quality of materials, and build the capacity to conduct staff training,

The approach that is used to involve agency staff, university specialists and organization representatives will likely vary from state to state. The approach described in this section may assist in attracting involvement from appropriate interested and affected parties.

Consider developing an interdisciplinary, multi-agency coordinating team - a small group of individuals who have interest in and expertise related to topics covered by the Farm*A*Syst program. Factors to consider when establishing a coordination team include:

a. Interest and commitment of individuals;
b. Technical needs;
c. Networking bridges established by involving individuals;
d. Balanced agency and technical representation;
e. Involvement of interested and affected citizens, organizations and private sector organizations;
f. Workable size.

Agencies that could be involved in the coordinating team include:

Lead Water Quality Agency
Soil Conservation Service
Extension Service
Environmental Protection Agency
State Department of Natural Resources
State Department of Agriculture
State Geological Survey and U.S. Geological Survey

State Department of Public Instruction
State Department of Health
State Vocational Education System
Farmers Home Administration

Organizations that could be involved include:
Federation of Cooperatives
State Association of Professional Agricultural Consultants
State Producer Associations, e.g.; Corn, Soybean and Vegetable Grower Organizations
Farm organizations, e.g.; Farm Bureau, Farmers Union
League of Women Voters
Environmental organizations, e.g.; State Wildlife Federation
State Association of Conservation Districts

Industries/Businesses that could be involved include:
Well Drillers/Pluggers
Agricultural Chemical Companies
Petroleum Industry and Distributors
Solid and Hazardous Waste Disposal Industries
Environmental and Engineering Consulting Firms
On-site Waste Disposal Industry

Involvement does not require active participation on coordination teams and workgroups. Involvement can also be:

- reviewing draft materials;
- participating in focus group discussions on material or program design and implementation; and,
- integrating development, review and implementation efforts into existing programs and committees.

New and separate groups do not need to be developed. This program can be incorporated into existing water quality management and education activities, but roles and responsibilities of cooperators should be clearly established. Appendix D describes potential agency and organization roles in Farm*A*Syst modification and implementation.

MATERIAL DEVELOPMENT OR MODIFICATION

The prototype Farm*A*Syst programs support site-specific assessments through the use of a series of worksheets and fact sheets. Twelve worksheets provide a numerical assessment system to evaluate pollution risks. Ten fact sheets provide information on factors that influence pollution risks, health and/or legal concerns related to the pollutants of concern, and sources of additional information or assistance.

The following potential pollution sources are addressed in prototype Farm*A*Syst programs:

Pesticide Storage and Handling
Fertilizer Storage and Handling
Petroleum Storage and Handling
Hazardous Waste Management
Household Wastewater Treatment
Livestock Waste Storage
Livestock Yard Management
Silage Storage
Milking Center Wastewater Treatment.

Soil, geologic and hydrologic factors that influence pollution, and factors related to well design and management are also evaluated.

Modification Considerations

Some of the potential pollution sources in the prototype may not be relevant in all states. Additional topics will need to be added in some states. For example, surface water protection is a benefit of the prototype Farm*A*Syst Program that could be made more explicit in some state versions.

Appendix G is a discussion of the program's surface water protection benefits. In general, the format used in the prototype, that of systematically organizing available technical and policy information into a user-friendly packet to assist farmers in identifying pollution risks and taking voluntary actions to reduce those risks; can be modified for most situations.

Because the Farm*A*Syst program is voluntary, information and education strategies must be especially action-oriented. They must be designed to motivate and help people adopt practices that will reduce and prevent pollution and support needed changes in public policy. During the modification process, it is useful to recognize and retain a Farm*A*Syst framework that results in:

1. Problem Recognition - Develop Farm*A*Syst materials that facilitate site specific recognition of farmstead pollution risks and related health, economic and liability concerns. Foster recognition of how the specific individual's management practices influence pollution risks.

2. Solutions Acceptance - Promote a sense of acceptance of practices and policies that reduce pollution risks and motivate individuals to take responsibility for voluntary actions.

3. Pollution Prevention Assistance - Provide information on technical, educational and financial assistance that is available to assist with voluntary implementation of recommended actions.

4. Action Recommendations - Provide a framework for developing site specific actions that reduce pollution risks

The strongest Farm*A*Syst material development or modification process usually involves interagency and interdisciplinary teams. Staff who become involved in this process may, in the future, assist with staff training and the development of support systems for implementation of practices that reduce pollution risk.

States should consider appointing a lead author for each fact sheet which is to be modified. This lead author should assume the primary responsibility for revising the text of the document and obtaining appropriate review comments from representatives from other agencies and organizations. Appropriate reviewers could be identified by the state coordination team.

The process of obtaining review comments on draft publications is an appropriate means for broadening the participation of the interested and affected parties in the development of Farm*A*Syst. Lead authors retain editorial rights related to review comments. The review process will also serve to increase the awareness that this type of program is being developed and should help prepare staffs within other agencies to assist in staff training and program development and implementation efforts. Background on the prototype Farm*A*Syst material components and considerations for modification, including suggestions for reducing the volume of Farm*A*Syst publications, are included in Appendix E.

Evaluation During Modification

Once draft materials have been completed, consideration should be given to involving county-level staff and farmers in a focus group or other interactive small group evaluation of the materials. Their involvement should be used as a means of soliciting ideas to improve clarity and acceptability of the materials and options for program delivery. An explanation of the focus group process is included in Appendix H, Evaluation of Farm*A*Syst Modification. Model focus group questions are included in Appendix I, Evaluation Model Materials.

Consider the complete program, including material development, program implementation and program evaluation when determining who, how, and when to involve different individuals, agencies and organizations. The role of representatives from each group may vary as the program evolves through the development, implementation and evaluation process. See Appendix J, Farm*A*Syst Objective and a Strategic Planning Sequence, for additional information.

The most important factor to consider throughout the entire modification and development process is the end user. The materials must be clearly written and organized in such a way that allows them to be easily understood and used by farmers, local agency staff, private sector staff and others who are involved in implementation efforts.

Keeping Farm*A*Syst Current

Once your state has modified Farm*A*Syst, the state program coordinator should assume responsibility for keeping Farm*A*Syst publications current. Sections of Farm*A*Syst publications can become outdated due to changes in regulations and programs, knowledge, research results, and technology. Publications should be reviewed periodically to determine if changes are needed. The list of leachable pesticides in worksheet #2, for example, is updated annually by the Soil Conservation Service, and such updated information needs to be included.

IMPLEMENTATION APPROACHES

Interagency cooperation in the development of well designed fact sheets and worksheets provides a sound foundation for identifying, discussing and developing cooperative approaches for making this program available to farmers. Five primary delivery methods are:

1. One-on-one assistance on the farm;
2. Group assessments with educational and technical assistance;
3. Combination of group orientation with follow-up one-on-one assistance;
4. Incorporation into other education programs, i.e.; drinking water education, ground water education, pesticide application training, farm management education, etc.; and,
5. Self assessment (mailed/media).

Personnel and program delivery options that have been used or can be considered include:

1. Agency staff delivery in targeted watershed projects;
2. Crop consultant and agri-business staff (e.g. pesticide and fertilizer dealers) delivery to their clients;
3. Agency staff delivery in conjunction with drinking water education and groundwater education programs;
4. Agency staff delivery in conjunction with pesticide applicator training programs;
5. Agency staff delivery in conjunction with Homemaker or Family Living Education Programs;
6. Incorporation into adult education farm management training programs.
7. Incorporation into Future Farmers of America and youth farm management education programs
8. Incorporation into new projects into targeted areas (e.g., wellhead protection) or priority ground water areas;
9. Club activity or program promotion by environmental organizations, youth groups, community service organizations and farm organizations;
10. Program sponsorship by lending institutions and /or agri-businesses; and
11. Delivery by trained volunteers.

The objective is to get the program used on as many farms as possible and to encourage voluntary actions to reduce or prevent pollution. Thus, there may be benefits to using multiple delivery mechanisms. Appendix K provides more background on the above delivery options and on program implementation recommendations based on experience to date.

Evaluation During Implementation

During your farmstead assessment program implementation you will want to gather information to document effectiveness of the pollution prevention programs you conduct, and to improve your program delivery efforts. Appendix H includes program evaluation recommendations. Model evaluation materials are found in Appendix I.

IMPLEMENTATION SUPPORT SYSTEMS

Successful implementation efforts will require the development of state and local support systems. Many of these systems are already in place in existing agencies, organizations, and in the private sector. Successful involvement of those who are responsible for these support systems in material and program development will help to build the foundation for a coordinated implementation effort that is based upon the existing capacity of involved parties.

Two types of implementation support must be considered for delivering Farm*A*Syst programs:

- Systems that support conducting assessments and the development of action recommendations to reduce pollution risks; and

- Systems that support, encourage and assist farmers in voluntarily carrying out recommendations that reduce pollution risks.

Once the delivery mechanisms are identified, staff training needs and technical support mechanisms must be developed. At least three components of staff training must be addressed in order for staff to credibly implement farmstead assessment programs:

1. Orientation to water quality and relation to land use practices; farmstead pollution sources; factors that affect pollution risks; and, how to use the assessment support materials;
2. Supervised hands-on experience in conducting assessments; and,
3. Development of action recommendations to reduce identified risks; including information on existing policies and programs which influence recommendations and/or can assist with implementation of site-specific action recommendations.

Approaches to staff training and example agendas for training programs are contained in Appendix M.

Support systems that encourage and assist farmers in carrying out Farm*A*Syst recommendations must recognize factors that increase voluntary participation. These factors include:

1. A recognition that their management practices and/or structures present real pollution risks;
2. An understanding of the health and liability implications of the existing pollution risks;
3. An understanding of how management and structural changes can reduce risks;
4. The financial ability to make changes;
5. The managerial ability to make changes;
6. The convenience of support to make recommended changes; and
7. A recognition that implementation of pollution prevention actions is economically feasible as well as personally and environmentally beneficial.

Information on potential roles of agencies and private sector staff in developing and delivering pollution prevention implementation support systems is contained in Appendix L.

FARM*A*SYST PROGRAM MARKETING

Once a complete Farm*A*Syst Program has been developed, the challenge will be to get it used on as many farms and rural properties as possible. Due to limited resources, many if not most states will target initial implementation efforts to specific projects or areas. The willingness, for example, of the citizens in a targeted area to participate in the program will undoubtedly be a major factor affecting future program expansion. Therefore, it is very important that a sound and acceptable marketing strategy be developed. Appendix O contains program marketing recommendations.

APPENDIX A

FARM*A*SYST PROTOTYPE MATERIALS ORDER FORM

Farm*A*Syst Wisconsin Publication and Diskette Copies Order Form

Farm*A*Syst Wisconsin Publication Package (G3536):

____ (This package consists of 12 worksheets, 10 factsheets and program explanation sheet)	$12.00

Farm*A*Syst Diskettes (3.5" HD Disks):

____MacIntosh Pagemaker 4.0 Version (complete publication set)	$28.00
____IBM Pagemaker 4.0 Version (complete publication set)	$28.00
____MacIntosh Pagemaker 4.0 Version - 12 worksheets only	$14.00
____IBM Pagemaker 4.0 Version - 12 worksheets only	$14.00
____IBM WordPerfect 5.1 - 10 fact sheets and program explanation sheet	$10.00
____IBM ASCII - 10 fact sheets and program explanation sheet	$10.00
____MacIntosh Text Version - 10 fact sheets and program explanation sheet	$10.00

All prices include shipping and handling. Checks and POs should be made to the order of the University of Wisconsin. Send this form with your marked selection(s) to:

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B142 Steenbock Library
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APPENDIX B

HUMAN AND FINANCIAL RESOURCES NECESSARY FOR FARM*A*SYST MODIFICATION

MODIFICATION TIME REQUIREMENTS

Estimated Hours for Farm*A*Syst Coordinator to Adapt Prototype Materials

The estimates that follow assume that state interagency modification teams have already been organized, and that lead authors and review teams for each **Farm*A*Syst** publication have already been designated. The time estimates are strictly for coordinating review, modifying and revising 22 individual brochures (12 worksheets and 10 fact sheets). They do not take into account major rewriting or development of additional publications. The estimates also presume working within the prototype PageMaker format (computer diskettes available from national staff; see Appendix A, instead of developing a new format from scratch. Finally, they presume from two to four reviewers per set of brochures (#1 worksheet and #1 fact sheet, for example), or an average of 3 reviewers per set, or about thirty reviewers total.

The hours do not include time spent by reviewers actually reviewing the material. That would be an additional two to four hours per reviewer (30) for the first review, and perhaps an additional one to two hours per reviewer for the second review, plus time spent by selected reviewers for final sign off. This could total 200 additional hours.

These figures reflect estimates if everything goes smoothly, which is seldom the case.

Activity	Number of Hours
• Develop introductory materials and guidelines and select reviewers	8
• Pull out word-processed copy from 22 brochures and prepare for reviewers	6
• Send copy out for modification and review with intro letter and guidelines to selected viewers	8
• Receive all comments, follow up on those unreceived, synthesize comments, edit for clarification, and revise original copy on 22 brochures	60
• Clarification calls to deal with conflicting comments	8
• Send revised copy, incorporating all changes, out to reviewers, with general guidelines and specific questions for particular brochures	5
• Review graphics, consider alternatives and additional ones needed, and gather	15
• Get reviewer comments back; review, synthesize and make clarification calls again	30
• Prepare final word-processed copy of 22 brochures	30
• Enter final word-processed copy into PageMaker format (including entering graphics)	40
• Research contacts and references (reviewers will offer some	

suggestions, but plan to do groundwork on your own)
- includes finding and reviewing references, and researching contacts, and double-checking addresses and phone numbers 50
- Final proofing of all copy 16
- Prepare presentation folder, including format, copy, getting getting bids and overseeing printing 25
- Oversee printing of all brochures, including securing bids, selecting paper and ink colors, scheduling and coordinating with printer 15

TOTAL ESTIMATED COORDINATOR TIME: 8 WEEKS 316 Hours

Estimated Modification Time Line

The schedule below represents realistic estimates of time needed to carry out various tasks related to this project, including the upfront time necessary to obtain commitments from publication reviews, and to 'sell' the program to cooperating state agencies and organizations. It assumes that reviewers are busy people doing other things, and it also assumes that the person doing the main coordinating has more than just this one responsibility.

If you have one person assigned only to this project, and if your reviewers make this their top priority--or if you make very few changes in the charts and the basic facts--the times may be generous. Doublechecking with various experts, and clarifying differences in information, and being sure that the final product is as accurate as possible all take time and if significant disagreements occur can take significant time.

The time required can vary greatly depending on the history of cooperation in each state.

Activity	Number of Weeks
• Establishment of state interagency modification teams; designation of lead authors and review teams	8 weeks
• Prepare introductory letters and review guidelines; identify and solicit commitment of reviewers for all brochures; and pull word-processed copy from PageMaker documents	1 week
• Send copy out for first review and allow time for review	2 weeks
• Get copy back, follow up on nonreturns, review copy and make clarification calls	1 week
• Synthesize all copy changes into revised draft	2 weeks
• Send our revised draft for review. While waiting, work on graphics, contacts and references	3 weeks
• Get copy back again, call for clarifications on conflicting information, synthesize and make final changes to copy	1 week

- Dump into PageMaker (3 brochures per day) — 2 weeks
- Send final PageMaker copy out to selected reviewers for signoff. While waiting, work on folder and prepare to print all brochures (paper, bids, ink colors, etc.) — 3 weeks
- Enter final changes received and do final proof of copy — 1 week
- Order folders and send brochures to be printed; await delivery — 3-4 weeks

TOTAL MODIFICATION PERIOD: 28 WEEKS

Actual state estimates or experiences in total modification period

Arkansas	12-24 weeks (to develop draft for pilots)
South Dakota	20-24 weeks (to develop draft for pilots)
Kansas	36 weeks (for final publication after field test)
Tennessee	52 weeks (for final publication after field test)
Missouri	52 weeks (and still not ready for pilot testing)

Case studies of 4 state modification experiences are found in Appendix F

SUPPLY AND EXPENSE REQUIREMENTS

Printing 5000 copies of the prototype version of **Farm*A*Syst** (22 publications) **$23,000**

APPENDIX C

POTENTIAL FUNDING SOURCES FOR FARM*A*SYST MODIFICATION AND IMPLEMENTATION

Several potential options for funding state Farm*A*Syst initiatives are listed in this appendix. Specific eligibility requirements may vary by state or region. Contact the Farm*A*Syst office at (608) 262-0024 to discuss specific ideas or questions. Updated information on these and other potential sources will be shared in the National Farmstead Assessment Program newsletter, "Farmstead Pollution Prevention Update."

STATE PROGRAMS

The first step for states to take in considering funding for farmstead assessment programs is to evaluate their current drinking water and groundwater protection programs' effectiveness in protecting farmstead wells. If the Farm*A*Syst can provide better protection for farmstead wells than existing efforts, and protection of these wells is a state priority, then current funds and staff should be used to modify and implement this program.

If your state requires additional Farm*A*Syst program start-up costs, or there is an interest in implementation as part of broader projects, consider the potential funding sources listed in this document.

Potential sources of funding that could be explored in your state include state water resources research institutes and state-funded grant programs for groundwater and drinking water protection.

MULTI-STATE ENVIRONMENTAL ENDOWMENT

If your state is located in the Great Lakes Basin, your Farm*A*Syst efforts could possibly be assisted by the Great Lakes Protection Fund, a multi-state environmental endowment formed in October 1989 by the eight governors of the Great Lake States. For information on the Fund's priorities and funding cycles, call (312) 201-0660.

ENVIRONMENTAL PROTECTION AGENCY

Farm*A*Syst can complement EPA programs delegated to states. EPA may choose to defer to state programs that include voluntary farmstead assessment - type private well protection programs as meeting the requirements of the pollution prevention and public education components of comprehensive Groundwater Protection Programs and Pesticide State Management Plans.

Clean Water Act of 1987

Section 106 Grants (Groundwater Program)

Purpose:	To assist states and interstate agencies in establishing and maintaining adequate measures for prevention and control of groundwater pollution.
Farm*A*Syst Eligibility:	State water quality agencies may identify farmstead sources of contamination and control/pollution prevention as state comprehensive groundwater protection program priorities and thereby use the Farm*A*Syst approach.
Applicant Eligibility:	State and interstate water pollution control agencies. Funds can be contracted to cooperating agencies.
Application and Award Schedule:	FY 93 national and regional guidance for these funds will be issued in Spring of 1992. Grants will be awarded by October, 1992.
Contacts:	Requests for funding Farm*A*Syst programs as part of the state's groundwater program should be made to the groundwater section in the state or interstate water pollution control agency. Applications for assistance are submitted by the state water pollution control agency to the Regional EPA office.
Comments:	As a result of EPA's strategy (EPA Ground Water Task Force Report, July 1991) for assisting states and tribes in establishing Comprehensive Groundwater Protection Programs (CGPPs), the agency is relying on grants and the possibility of federal deference to state groundwater policies, regulations, and standards to encourage states to voluntarily strengthen their programs. This new policy increases the Agency's emphasis on prevention of groundwater contamination. EPA will issue a draft national guidance for public review and comment in Summer, 1992 based on a series of discussions with states in Winter 1991/92. A final national guidance is scheduled for release in November 1992. In 1992, EPA will work with each state to complete a profile of its groundwater protection program in light of the six CSGWPP "strategic activities" and adequacy criteria outlined in the guidance. These profiles will identify gaps in state programs and will serve as the basis for yearly grant workplan agreements for the states' program efforts. It is important for states interested in using groundwater 106 funding for farmstead assessments and action plans to include farmstead sources of contamination in their state groundwater program assessments and priority lists. Comprehensive Groundwater Protection Programs may address protection of private wells, as part of public education or pollution prevention activities.

Section 319 Nonpoint Source Grant Program

Purpose: Section 319(h)(1) authorizes grants to states only for the purpose of implementing approved nonpoint source management programs. Therefore, nonpoint source program development activities are generally not eligible for funding under section 319(h), with the exception that a portion of the grants may be used for various groundwater activities, pursuant to section 319(h)(5)(D).

Farm*A*Syst Eligibility: Section 319 (h) funds may support development and implementation of Farm*A*Syst programs if activities to address farmstead sources of water pollution are included in approved portions of State nonpoint source management programs. Section 319(h) funds may not, however, be used for cost sharing implementation of individual best management practices except in the case of demonstration projects.

Applicant Eligibility: One state lead nonpoint source agency (usually the state water quality agency but not always) submits a consolidated 319(h) grant. Numerous agencies are typically involved in implementation activities.

Award Amounts & Match Requirements: In FY 92 approximately $51 million was appropriated for 319(h) grants to states. EPA Regional Nonpoint Source staff in the ten EPA Regions award grants to the states in their respective Regions. Grant funding planning targets are established annually based on a national formula. Based on these planning targets and a competitive process, grants are awarded based on negotiations between EPA Regions and States.

Section 319(h)(3) provides that the Federal share shall not exceed 60 percent of the management program implementation costs. States must provide at least a 40 percent match from non-Federal sources.

Application Award Schedule: Final Section 319(h) grant guidance was issued in February 1991, and has been used as the basis for awarding section 319(h) grants in FY 91 and 92. Some EPA Regional offices also issue supplemental guidance indicating Regional priorities. Section 319 (h) work programs are due to EPA regions by March 1; Regions respond to states by May 1; and regions award grants to states by August 1.

Contacts: Contact the lead nonpoint source agency in your state (usually the state water quality agency but not always).

Environmental Education Act

Environmental Education Grants

Purpose: To support projects to design, demonstrate, or disseminate practices, methods or techniques related to environmental education and training.

	Priority projects for 1992 are new or significant improvement of environmental education practice, method, or technique; a practice, method, or technique which may have wide application; a practice, method, or technique which addresses a high priority environmental issue.
Farm*A*Syst Eligibility:	Farm*A*Syst modification and implementation can support the program's four 1992 objectives: 1) enhance environmental education teaching skills and curricula, 2) create partnerships and promote teamwork, 3) help the general public make informed decisions, and 4) motivate the general public to be more environmentally conscious.
Award Amounts & Match Requirements:	Proposals for up to $25,000 are considered at EPA regional offices. Proposals for $25,000 to $250,000 compete nationally. There are also "grassroots" project grants of $5,000 or less. There is a 25 percent match requirement.
Applicant Eligibility:	State , local, tribal education or environmental public and private organizations. Individuals may have their institution or organization apply on their behalf.
Application & Award Schedule:	Applications were due by March 9 for the 1992 program.
Contacts:	To apply, order an application kit by writing to: Environmental Education Grants-Applications, AScI, 1265 Beverly Rd., McLean, VA 22101 or by calling 703-847-3036. For programmatic or project-oriented information, contact the environmental education coordinator in your EPA Region. (see list of regional offices elsewhere in this appendix)
Comments:	1992 is the first year of this program, established by Section 6 of the Environmental Education Act of 1990. Award criteria and amounts may change in the second year of the program.

Pollution Prevention Act

Pollution Prevention Incentives for States (PPIS)

Purpose:	Project grants and cooperative agreements support state and regional pollution prevention programs that address the reduction of pollutants across all environmental media (air, land, surface water, groundwater, and wetlands).
Farm*A*Syst Eligibility:	Farm*A*Syst pollution prevention programs are eligible for funding if they support the establishment and expansion of state pollution prevention programs.

Applicant Eligibility:	State and territorial agencies, state universities, and federally-recognized Indian tribes.
Award Amounts & Match Requirements:	In FY 1992 the maximum award amount is $200,000 for projects up to 3 years. A 50 percent match (funds or in-kind) is required.
Application and Award Schedule:	For FY 1992, preproposal postmark deadline is April 20, 1992. EPA will request full proposals based on its review of the pre-proposals. Deadline for applications will be in June, 1992; recommendations for awards will be August, 1992; and awards will be made in September, 1992.
Contacts:	For more information, contact the Office of Pollution Prevention and Toxins (PM-222B), U.S. Environmental Protection Agency, 401 M. St., S.W., Washington, D.C. 20460, telephone (202) 260-2237.
Comments:	States that have not yet received PPIS grants will receive priority. Organizations awarded a pollution prevention grant in FY 1991 are not eligible for funding again in FY 1992.

Federal Insecticide, Fungicide, and Rodenticide Act

Pesticide Program Grants

Purpose:	The EPA Office of Pesticide Programs provides grants to State Lead Agencies for Pesticides to develop and maintain comprehensive pesticide programs that address all aspects of pesticide enforcement, certification of pesticide applicators, and special pesticide initiatives such as ground water protection, endangered species, and worker protection. State Lead Agencies for Pesticides can use the FIFRA ground-water protection grant funds to develop Pesticide Management Plans to protect ground water. In developing its FIFRA groundwater grant activities, a state may wish to consider including the Farm*A*Syst program as part of the grant program.
Farm*A*Syst Eligibility:	Each State Lead Agency for Pesticides has the opportunity to consider incorporating the Farm*A*Syst program into the grant program.
Applicant Eligibility:	State Lead Agency for Pesticides, which can subcontract with other agencies.
Award Amounts & Match Requirements:	N/A

Application Schedule: National grant guidance is issued in April, negotiations with Regional EPA offices and workplan development follows, and grants are awarded by October.

Contacts: Your State Lead Pesticide Agency, which is often the state department of agriculture.

Comments: EPA has provided program grants to State Lead Agencies for Pesticides for 3 years for the development of "Generic" or baseline State Management Plans that would address all pesticides. State Lead Agencies are required to coordinate with state agriculture, health, environmental, and water agencies in development of these plans. Eventually, specific pesticides of concern will require Pesticide-Specific State Management Plans to continue use of a pesticide that EPA would otherwise cancel due to groundwater contamination concerns.

EPA REGIONAL OFFICES

Region I
One Congress St.
Boston, MA 02203
(617) 565-3420
CT, ME, MA, NH, RI, VT

Region II
Jacob Javitz Federal Bldg.
26 Federal Plaza
New York, NY 10278
(212) 264-2657
NJ, NY, PR, VI

Region III
841 Chestnut St.
Philadelphia, PA 19107
(215) 597-9800
DE, DC, MD, PA, VA, WV

Region IV
345 Courtland St., N.E.
Atlanta, GA 30365
(404) 347-4727
AL, FL, GA, KY, MS, NC, SC, TN

Region V
77 W. Jackson Blvd.
Chicago, IL 60604
(312) 353-2000
IL, IN, MI, MN, OH, WI

Region VI
1445 Ross Ave.
Dallas, TX 75202
(214) 655-6444
AR, LA, MN, OK, TX

Region VII
726 Minnesota Ave.
Kansas City, KS 66101
(913) 551-7000
IA, KS, MO, NE

Region VIII
999 18th St., Suite 500
Denver, CO 80202-2405
(303) 293-1603
CO, MT, ND, SD, UT, WY

Region IX
75 Hawthorne St.
San Francisco, CA 94105
(415) 744-1305
AZ, CA, HI, NV, AS, GU

Region X
1200 Sixth Ave.
Seattle, WA 98101
(206) 553-4181
AK, ID, OR, WA

US EPA and USDA COOPERATIVE PROGRAMS

Agriculture in Concert with the Environment (ACE) and Sustainable Agriculture Research and Education Program (SAREP)

Purpose: These are cooperative EPA/USDA grant programs, to promote the adoption of sustainable agriculture practices and reduce nitrogen applications and inappropriate pesticide use. There are standard national criteria for award, which may be modified by region.

Farm*A*Syst Eligibility: These programs are funding a range of innovative projects involving education and training, demonstrations of promising sustainable farming practices, and research on the impact of sustainable agriculture on the environment. Special consideration has been given to projects in which farmers actively participate in the design and implementation. Farm*A*Syst modification and implementation are eligible, but perhaps not a high priority in any of the regions administering the program. Proposals could be most successful if Farm*A*Syst is a component of whole farm research and education.

Applicant Eligibility: ACE: public entities. Most awards to date have gone to universities. SAREP: public entities, nonprofit, private firms, individuals.

Application and Award Schedule: Varies slightly by USDA CSRS region. Some CSRS regions have combined proposal procedures. Generally, preproposals (if required) due in September 1992; full proposals due January 1993; notification of approved projects in May 1993.

Contacts:

NORTH CENTRAL REGION: (ND, SD, NE, KS, MN, IA, MO, WI, IL, IN, MI, OH)	Steve Waller University of Nebraska (402) 472-7081
NORTHEAST REGION: (ME, VT, NH, MA, RI, CT, NJ, DE, MD, NY, PA, WV)	Fred Magdoff University of Vermont (802) 656-0471
SOUTHERN REGION: (VA, NC, SC, GA, FL, KY, TN AL, MS, AR, LA, TX, OK, Puerto Rico, Virgin Islands)	William Brown Louisiana Ag Experiment Station (504) 388-4182
WESTERN REGION: (AK, HI, WA, OR, MT, WY, CA, NV, AZ, UT, ID, CO, NM, Guam, Micronesia, Northern Marianas)	David Schlegel University of California (510) 987-0029

Comments: Write to regional contacts now to be placed on the mailing list for notification of grant guidance and application deadlines for the next round of awards.

U.S. DEPARTMENT OF AGRICULTURE-COOPERATIVE STATES RESEARCH SERVICE

Special Research Grants, Water Quality Program

Purpose: Current emphasis is to support special research in water quality, particularly groundwater.

Farm*A*Syst Eligibility: Most of the research problem areas identified in the request for proposals are consistent with farmstead pollution potential research needs.

Applicant Eligibility: State agricultural experiment stations, colleges and universities and other research institutions, Federal agencies, private organizations or corporations, and individuals.

Award Amounts & Match Requirements: Maximum total funding in FY 92 was $135,000 for a single institution/organization proposal, and $225,000 for a multi-institution/organization proposal, for a maximum funding period of up to 3 years.

No match required, but contributions to projects help show the cooperative nature of the project and likelihood of more productivity in research.

Application Schedule: Request for proposals comes out in November in the Federal Register. Applications are generally due in January, and awards are made in April.

Contacts: To obtain copies of the Request for Proposals, and a Grant Application Kit contact the following: Proposal Services Unit, Office of Grants and Program Systems, CSRS, USDA, Room 303, Aerospace Center, Washington, D.C. 20250-2200, Telephone: (202) 401-5048.

Comments: These funds could be pursued to help document environmental impact of Farm*A*Syst program implementation.

U.S. DEPARTMENT OF AGRICULTURE - EXTENSION SERVICE

Water Quality Grants

Purpose: To enhance state Extension Service water quality programming capacity.

Farm*A*Syst Eligibility: Yes.

Applicant Eligibility: State Extension.

Award Amounts & Match Requirements: These are formula grants.

Contacts: Contact your state Extension Water Quality Coordinator located at the state Land Grant University for more information.

U.S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

Resource Conservation and Development Program (RC & D)

Purpose: RC&Ds are multi-county programs that focus on conservation, development, and using natural resources to improve the standard of living in an area. The projects are directed by RC&D Councils, and can undertake almost any effort that is consistent with their plan of work. Usually the Council committees, frequently tied to a natural resource, e.g. water or forests, solicit proposals. Almost all states have a state RC&D association, and often projects that have statewide impact are brought to the association and funded through a cooperative agreement.

Farm*A*Syst Eligibility: Local Resource Conservation and Development (RC&D) projects, which exist in nearly all states, could be a source of seed money for Farm*A*Syst programs, especially if there is an emphasis on groundwater and drinking water in your state.

Contacts: Contact your state SCS office for information about RC&D projects in your state, and the possibility of Farm*A*Syst linkage with these projects.

Other Water Quality Programs

Farm*A*Syst funding proposals could be included in several other established SCS programs such as the Public Law 566 Watershed Protection and Flood Prevention Program, and the Cooperative River Basin Program. Farm*A*Syst implementation can also be part of USDA Water Quality Initiative Demonstration and Hydrologic Unit projects funded jointly by Extension Service, Agricultural Stabilization and Conservation Service, and SCS. Contact you state SCS water resources staff for more information.

FOUNDATIONS

Private foundations may also be interested in funding Farm*A*Syst modification projects. Deadlines, foundation priorities, and eligible programs vary. Some possible foundation sources are listed below.

PRIORITY	EXAMPLE FOUNDATIONS SUPPORTING THIS PRIORITY
water resources	WILLIAM H. DONNER JESSIE SMITH NOYES
natural resources	JOYCE ANDREW W. MELLON TINKER
environment/conservation	PUBLIC WELFARE ROCKEFELLER BROTHERS ROCKEFELLER FAMILY FLORENCE & JOHN SCHUMANN SCHERMAN PEW CHARITABLE TRUSTS
environmental affairs	WALLACE GENETIC YOUTH PROJECT
agricultural sciences	ROCKEFELLER
groundwater education in the Great Lakes basin	W.K. KELLOGG
healthy and sustainable Mississippi River Basin environment	MCKNIGHT
community development/education	CHARLES STEWART MOTT
assistance to rural communities	BREMER

An excellent source of information on these and other foundations, and their research interests and application procedures is the Foundation Center. The Foundation Center is an independent national service organization established by foundations to provide an authoritative source of information on private philanthropic giving. The New York, Washington D.C., Cleveland, and San Francisco reference collections operated by the Foundation Center offer a wide variety of services and comprehensive collections of information on foundations and grants. There are also one or more Cooperating Collections in each state that provide a core collection of Foundation Center publications

and a variety of supplementary materials and services in areas useful to grant seekers. These Cooperating Collections are located at libraries, community foundations and other nonprofit agencies. Call the Foundation at 800-424-9836 (9 a.m. to 5 p.m. EST) for specific collections and hours of reference collections and Cooperating Collections. Research service offices at land grant universities in each state are also helpful sources of information.

Reference Collections Operated by the Foundation Center:

The Foundation Center
8th Floor
79 Fifth Ave.
New York, NY 10003
(212) 620-4230

The Foundation Center
1001 Connecticut Ave.
Washington, D.C. 20036
(202) 331-1400

The Foundation Center
Room 312
312 Sutter St.
San Francisco, CA 94108
(415) 397-0902

The Foundation Center
Kent H. Smith Library
1422 Euclid, Suite 1356
Cleveland, OH 44115
(216) 861-1933

APPENDIX D

IDENTIFYING AGENCY ROLES AS PART OF THE FARM*A*SYST MODIFICATION PROCESS

The most crucial phase in creating a successful Farm*A*Syst program lies at the very beginning of a project. This is the time when roles are defined, communication channels built, relationships developed and expectations set. These activities will produce either a firm or soft foundation on which the rest of the project must stand. They should be considered in terms of both staff organization and the organization of functional committees. As described below, these activities can be used by the Project Team to help guide the organization of the Coordinating Committees and Work Groups as well as development of training and implementation support.

Staff Organization - The roles of staff who become involved will vary from state to state. Many factors, such as work loads, pre-existing working relationships and staffing levels will determine who is involved and how the development and implementation of strategy evolves. Given these complexities, several steps are important in the organizational process:

1. Conduct individual meetings - Persons responsible for organizing the state Farm*A*Syst effort should conduct individual personal meetings with potential work group members. These meetings can be useful in initiating good working relationships, promoting a teamwork approach and identifying important concerns or potential conflicts.

2. Conduct organizing meetings - A formal meeting should be held to organize the projects. The meeting should involve all agency staff and inter-disciplinary university faculty who will have current or future roles in the development and implementation efforts. People who have future roles should be involved from the beginning so they have a sense of ownership in the project.

3. Make the commitment to a teamwork approach - No project "belongs" to any one agency or staff person. From the first organizing meeting onward, special effort must be made to ensure that all appropriate people are invited to meetings, that their contributions and talents are seen as valuable, that ongoing communications channels are maintained, and that everyone's contribution is recognized in reports, brochures, newsletters, videotapes, media coverage, and other forms of public information.

4. Define roles - One of the most important functions of early organizational meetings is to clearly define roles. Poorly defined roles are one of the most

frequently mentioned detriments to successful information and education programs. Roles of different agency staff will differ from one project to the next. Part of the definition of roles should be a discussion of how roles will change over the course of the project. Also, it is important to set realistic expectations in defining roles. At the beginning of a project, people are susceptible to setting unrealistic expectations of themselves or others, producing disappointment later on.

5. Assign responsibilities and create accountability measures - The next logical step after defining roles is to assign specific responsibilities. The key to assuring that these responsibilities will be carried out is to build accountability into the process. Without some type of accountability measures, project commitments often get pushed aside by other pressing responsibilities. There are several ways that accountability can be maintained. Formal meetings of involved staff can be scheduled at appropriate intervals to review accomplishments. Integrating project responsibilities into annual work plans will help ensure they receive attention.

6. Write it down - Roles and responsibilities for the project should be documented and distributed. Projected beginning and ending dates should be assigned to specific tasks. This documentation should be a guide in evaluating progress and performance.

Leadership for Farm*A*Syst program development and implementation will likely vary greatly from state to state. In most cases, the strongest programs will require appropriate involvement of inter-disciplinary teams and a real commitment to shared ownership of the materials and program that evolves. Potential roles for some of state agencies that could be involved are identified below:

Extension Service Roles:

Farm*A*Syst was designed as a voluntary education program. If it remains a voluntary education effort in your state, it is logical that the Extension Service could play a lead role in development and publication of education materials. If Extension does not have adequate staff resources or interest, it may be appropriate for others to assume this lead or to have co-leaders. The Extension bulletin distribution system should be considered as a major approach for publication distribution. Other agency publication management and distribution mechanisms should also be identified and considered.

Soil Conservation Service (SCS) Roles:

The soil geologic and hydrologic risk assessment procedures may need to be modified for each state. The SCS may assume the lead in a cooperative effort with the State Geologic Survey, State Water Quality Agency and Extension Service staff to review and modify these assessment materials and procedures. They may be also assume lead roles in implementation.

Lead Water Quality Agency Roles :

The Farm*A*Syst Program relates to a number of authorities and responsibilities of most lead Water Quality Agencies. This agency could assume the lead role in assuring that existing programs and regulations are appropriately and accurately referenced in the educational materials. The relationship of Farm*A*Syst to the State Comprehensive Groundwater Protection Programs, Wellhead Protection Program, Nonpoint Source Program, State Pesticides and Groundwater Programs and other EPA-delegated and state programs should be determined. Potential funding support for Farm*A*Syst program development and implementation should be identified. Leadership in discussing agency roles and delivery of Farm*A*Syst could also be provided by the water quality agency.

State Agriculture Agency Roles:

As with this state water quality agency, a number of the components of Farmstead Assessment System relate to authorities and responsibilities of State Agricultural Agencies. Programs related to pesticides, fertilizer, livestock waste and livestock feed often involve State Agricultural agency staff. How Farm*A*Syst relates to these and other agricultural programs should be determined and appropriately referenced. State Agriculture Agencies could also assume lead roles in program development and implementation.

Soil and Water Conservation Districts (SWCDs) Roles

SWCDs should be involved in determining Farm*A*Syst development and implementation approaches and the assistance that they can provide. They may also assume lead implementation roles.

APPENDIX E

CONSIDERATIONS FOR MODIFYING FARM*A*SYST PUBLICATIONS

This appendix contains information on items to consider when modifying Farm*A*Syst for your state. Broad areas that need consideration during the modification process are:

1) potential modifications to prototype Farm*A*Syst publications
2) potential additional publications
3) potential system format changes
4) developing non-farm assessments
5) adding a surface water protection emphasis

I. POTENTIAL MODIFICATIONS TO PROTOTYPE PUBLICATIONS

A. Overall Considerations

The national Farm*A*Syst staff encourages innovative adaptation of the base Farm*A*Syst materials to fit individual state situations. We strongly encourage that states adapting Farm*A*Syst maintain two aspects of the prototype system, however: the numerical ranking system and incorporation of regulatory information.

1. Numerical Ranking System and Action Plan Development

The numerical ranking system (e.g., high risk = 1, low risk = 4) used in Farm*A*Syst is not intended as a scientific predictor or model. Rather, overall risk rankings for each structure and practice assessed with Farm*A*Syst provide a mechanism for comparing risk results of all practices that are addressed. Without the numerical ranking system, Farm*A*Syst becomes just a fact sheet series.

2. Regulatory Information and Agriculture\Environmental Program

Farm*A*Syst program developers included regulatory program references in worksheets and fact sheets. Some reviewers suggested that letting farmers know right in the worksheets that some of their practices and activities were illegal under state law would dissuade them from completing the worksheets and participating in the program. Developers disagreed. Publishing the regulations does not imply blanket agreement with them. In fact, some illegal activities in Wisconsin are noted in the worksheets to be low-moderate risk for drinking water contamination, according to the best professional judgement of the authors. Inclusion of regulations does provide farmers information on the legality of what they

are doing, and can encourage modification of activities or structures that are not consistent with existing policies. Since this is a voluntary program, information about all practices remains with the participant. Their use of the information to modify structures or practices also remains voluntary. The awareness created by including references to existing regulations may increase their willingness to make changes.

References to State Administrative Codes, programs, potential resource people who can be contacted, and support materials and publications must be modified in all publications. The explanation of boldface type in each assessment worksheet should be modified to indicate that the boldface condition is a violation of existing law. It is not always a higher groundwater and drinking water pollution risk.

Farm*A*Syst worksheets and fact sheets refer to off-site practices presenting lower risks to well water contamination; and sources farther away from the well posing lower risks than sources close to the well. System developers focused on protection of well water quality at a particular site as the primary motivation for farmer actions to reduce contamination risks, and from this perspective, more distant activities provide greater protection. However, every effort was made to state that distant activities can still contaminate the groundwater resource and neighbors' wells.

B. Potential Modifications for Individual Fact Sheets and Worksheets.

The National Farm*A*Syst staff believes that the prototype Farmstead Assessment is a technically sound and easy-to-use tool. However, the following notes and recommendations for improvement have been received, and are offered for state teams' consideration as they modify the prototype materials.

#1 Drinking Water Well Condition

Factsheet

Be sure the well abandonment procedures, including the use of chipped bentonite, accurately reflect requirements and recommendations made in your state.

Worksheet

Procedures for obtaining the information that is needed to assess the well must be made clear. Footnoting information sources and procedures at the end of the worksheet should be considered.

#2 Pesticide Storage and Handling

Factsheet

1. Determine what types of pesticides, if any, are groundwater contamination problems in your state. Use examples of these problems in your publications when possible.

2. State standards and federal standards or MCLs (maximum contaminant levels) may vary. Be sure your information is correct and clearly stated.

3. You may want to include information on the availability and effectiveness of pre-fabricated chemical storage structures with thermostats, and of portable contaminant facilities for pesticide mixing and loading.

4. The section on pesticide container disposal should emphasize the need to immediately triple rinse containers, since failure to do so will result in inadequate removal of residues later.

Worksheet

1. Do not refer to pesticides and chemicals as if they are one-and-the same. Many chemicals are not pesticides.

2. Determine how to keep the pesticide leachability chart up to date.

3. The length of storage is not included as a category in the assessment worksheet. The original authors and reviewers felt that storage for any period of time presents real risks, and that identifying decreased risks for short storage periods could build a false sense of security.

4. Pesticide leachability rankings are based on field trials. If there is research data on mobility of various types of pesticides when spilled, it should be incorporated into Farm*A*Syst.

#3 Fertilizer Storage and Handling

Factsheet

1. Add information on how to dispose of rainwater and snow melt that falls and/or collects on the mixing and loading pad. If possible, use spill response examples from your state.

2. Identify how to locate the closest "approved landfill."

Worksheet

1. The length of storage is not included as a category in the assessment worksheet. The original authors and reviewers felt that storage for any period of time presents real contamination risks, and that identifying decreased risks for short storage periods could build a false sense of security.

#4 Petroleum Product Storage

Factsheet

1. Specific references should be made on the type of equipment that can be used to prevent overfills and spills and how to obtain it. This information will assist participants in acting to prevent pollution.

2. More extensive information on health risks of petroleum products in drinking water would help to dispel an often common perception that since pesticides get more media attention, they are a more significant health risk.

Worksheet

A comparison of the benzene standard in relationship to pesticide standards should be made so that the relative health risk of each of the substances becomes more apparent to the reader.

#5 Hazardous Waste Management

Factsheet

References to "Shed" waste should be clarified. If this refers to farm shop waste, it should be so stated.

Worksheet

Some Farm*A*Syst program participants have questioned the length and detail of this worksheet. The length results from educating readers about the many hazardous compound they handle on farms and around homes. Listing these compounds helps to educate individuals that real pollution and environmental contamination problems can result from improper use and/or disposal of these compounds. Although participants are likely to dispose of all the compounds identified in this worksheet in the same way, use of the worksheet helps individuals identify different disposal/recycling options for their hazardous materials. States may still want to consider condensing this worksheet in ways that allow these points to be made.

The information presented under the Section "Why Should I Be Concerned" could be strengthened by including examples of specific toxic materials that come from different hazardous wastes and examples of health problems and/or risks associated with those compounds.

#6 Household Wastewater Treatment

Factsheet

Consideration should be given to organizing this worksheet based on the type of on-site waste disposal systems in use. These may include: conventional septic system, mound systems, cesspools, connection to field tile systems, and/or direct pipe to ditch or waterway, etc. An explanation of each complete system and factors that influence pollution risk would assist participants in clearly identifying risks associated with their particular system.

Worksheet

1. Expand the section "Why Should I Be Concerned" to include references to parasites. It would be beneficial to have an example of harmful effects related to each of the microorganisms that are identified.

2. The category identified as "additional treatment (all systems)" should be removed from the assessment table. Virtually no on-site waste disposal systems are being installed with additional treatment. Thus, nearly all systems come out with a high risk ranking. It is not likely that states will routinely recommend that additional treatment be required. Thus, no appropriate recommended action can be identified for inclusion in the summary worksheet. Information on additional treatment should remain in the factsheet for educational purposes, however.

3. Although substantial effort was made to separate the different components of the on-site waste disposal system into broad categories, this worksheet still caused confusion at times. It may be more appropriate to develop risk assessments for each type of on-site waste disposal system and the components of that system. Participants would find the on-site waste disposal system which they have, and use criteria for each component of that system to evaluate pollution risks.

#7 Livestock Waste Storage

Factsheet

No substantial comments about this publication have been received.

Worksheet

No substantial comments about this worksheet have been received.

#8 Livestock Yards Management

Factsheet

The potential for abandoned livestock yards to be sources of groundwater and well water contamination for slow release of nitrate should be clearly identified and discussed.

Worksheet

1. A category should be added regarding the identification of the abandoned barnyard or feedlot sites. Information on pollution risk associated with abandoned barnyards or feedlots should be included in the factsheet.

2. The section on "Why Should I Be Concerned" may need to be revised to clarify information contained in the last paragraph. As it currently reads, it implies that fecal bacteria cause dysentery, typhoid and hepatitis. Fecal bacteria could be replaced with the word "microorganisms", or the specific types of microorganisms that cause the various types of diseases or health problems (including parasitic infections) could be referenced more specifically.

#9 Silage Storage

Factsheet

Discussion on the merits of having a solid floor in silos should be more clearly discussed in the factsheet. The worksheet identifies that the lack of a solid floor in silage storage facilities presents a high risk. Little research data exist to support this statement for vertical silos. However, trench and bag silage storage over a permeable surface may present a high risk for groundwater contamination. If research data is available regarding this, it should be referenced in the factsheet; if not, available information relating to the merits and drawbacks in vertical silos should be clearly presented. System developers felt that given incomplete research on this topic, it was best to be conservative in assigning risk factors.

Worksheet

1. In the section "Why Should I Be Concerned," consider clarification of the statement that leachate from 300 tons of high moisture silage has been

compared to the sewage generated by a city of 80,000 people. The meaning is unclear. Does it imply the total amount of leachate is equal to the total amount of sewage generated in one day, or the entire year? Or does it imply that the strength of the pollutants within the leachate is equivalent to that of a community of 80,000? If this cannot be clarified, then that reference should be deleted.

2. Additional evaluation of the need for solid floors in upright silos should be obtained and evaluated to determine whether or not these floors are needed or can be justified for groundwater protection. The risk evaluation table should be modified to reflect findings, perhaps by differentiating various types of silage storage structures and the risk of permeable surfaces under each type.

#10 Milkhouse Waste

Factsheet

Consideration should be given to adding information on the benefits of collecting the first flush of cleansing water from milk pipelines. Research data supports that by collecting this rinse water the life of conventional septic systems can be extended three to four times. Design of such a system should also be discussed.

Worksheet

1. The "Why Should I Be Concerned" section could be modified to quantify the total amount of nutrients--both nitrate and phosphorus--that may be generated through this potential pollution source. Clear statements on how a design which would facilitate the direct inflow of those contaminants to groundwater or surface water occurs would strengthen this document.

2. A category for milkhouse waste directly discharged to a pipe for distant surface disposal could be added to the worksheet.

#11 Site Evaluation

Worksheet

1. Many farmers have found the prototype site evaluation worksheet difficult to complete on their own. This worksheet could be simplified (see suggestions below) or implementation staff may have to complete the current comprehensive site evaluation for the farmer.

2. The use of tables related to soil, geologic and hydrologic conditions would greatly simplify the process of identifying pollution risk related to the physical site conditions. Development of those tables means greater, up-front commitment of technical staff, but will ultimately increase the ease of implementation of a whole farmstead assessment system.

3. The use of the farmstead diagram as a mechanism for identifying high pollution risks that result from the use of the assessment should be considered. This diagram can also provide the foundation for making action recommendations to reduce high risk problems that have been identified.

4. Modification of this worksheet could be done for an entire region of states with similar soil, geologic and hydrologic conditions.

5. If your state chooses to develop a table identifying the relative pollution risk associated with each soil type, it should be included in the site evaluation worksheet. If local maps on subsurface geologic materials, groundwater flow directions, and depth to water table are available, they should also be referenced.

#12 Overall Farmstead Assessment

Worksheet

1. The value of developing a combined risk ranking for each potential pollution source has been extensively discussed. The original intent of developing this ranking system was to provide a site and practice vulnerability framework to assist farmers in determining structure and practice priorities (e.g., pesticide handling practices might rank a higher priority than milking center wastewater treatment) related to actions to reduce pollution risk. To date, however, the high risk activities table (where each high risk from all worksheets is listed) appears to be a more functional framework for identifying high pollution risks and the short term and long term strategies to reduce those risks.

2. Another option for establishing priority actions that could be pursued is to consider the toxicity and exposure potential of the practices. For example, benzene has a higher toxicity than nitrate, so addressing high risks related to petroleum product storage should come before improving livestock waste storage using this criteria.

3. The response options category on the high risk activities table should be modified. References to "check one" should be removed. The response categories should be used to identify specific actions that can be taken by

farmers to reduce pollution risks related to the high risk activity that was identified. The "Taking Action" section should be used to establish a timetable for taking recommended actions.

4. The instructions for the "High Risk Activities" chart can be confusing, and should be clarified.

II. POTENTIAL ADDITIONAL PUBLICATIONS

State interagency teams will need to decide about creating new worksheets and factsheets for other relevant agricultural activities. Possible new publications include:

1) poultry waste management and poultry disposal

2) manure application to field nearest barn

3) artificial farmstead drainage and how this affects assessment of farmstead risks

4) liability and environmental audits

5) dead stock disposal

6) irrigation management

7) water conservation

III. POTENTIAL SYSTEM FORMAT CHANGES

Reducing the Volume of Publications

Some Farm*A*Syst program users have expressed concern about the volume of materials associated with the program. Several approaches can be considered the volume if this is a problem in your state.

A. Worksheets can be combined into a workbook or several workbooks (see suggested worksheet groupings). This would reduce the total size by:

   1. removing the scoring instructions from each worksheet by providing them once at the beginning of the workbook.

   2. providing one overview of the workbook, combining information on the overview of the system and reasons for concern, that are common in all worksheets while maintaining specific information unique to specific practices or structures.

3. consolidating the author and credit information from each worksheet and fact sheet in one location in the workbook.

B. Fact sheets could be combined into one or several publications. Groupings could include: household sources (septic systems, hazardous waste, wells); livestock sources (manure storage, livestock yards, milking center wastes, and silage) and other farm sources (pesticide, fertilizer and petroleum storage handling and disposal, and hazardous waste management)

This would reduce volume by:

1. reducing repetition of information about health risks;

2. consolidating author and credit information; and,

3. eliminating duplication of references for educational, technical, and/or financial assistance.

C. Fact sheets and worksheets for each topic could be combined into single publications. This would reduce volume by eliminating duplication of author and credit information, and consolidating publication titles.

The development of separate publications for each potential pollution source was intended to facilitate tailoring Farm*A*Syst packages to specific site needs and to accommodate requests for information on specific topics. The flexibility of the program will be reduced by combining existing information into fewer publications, but the advantages by far outweigh the drawbacks.

IV. DEVELOPING NON-FARM ASSESSMENTS

While adapting Farm*A*Syst for your state, you may also want to consider development of a non-farm assessment system. This system could be easily adapted from Farm*A*Syst by:

A. keeping the overall system organization, but modifying worksheets and fact sheets that apply to non-farm residences (wells; household wastewater treatment; petroleum management; and hazardous material handling and storage, including pesticides; and hazardous waste disposal) by deleting references to farms and characterizing typical household management practices in the worksheet risk categories;

B. considering the addition of publication on lawn and garden management;

C. considering broadening the focus on water quality protection to complete environmental assessment and risk reduction. Then additional publication topics could be considered, such as lead, indoor air quality, and radon.

V. ADDING A SURFACE WATER PROTECTION EMPHASIS

You may want to consider expanding Farm*A*Syst to include specific surface water protection criteria. However, the current system recommendations to reduce drinking water contamination risks also can have surface water protection benefits.

VI. CREDITING PROTOTYPE Farm*A*Syst MATERIALS

At a minimum, we suggest that you credit the National Farmstead Assessment Program for support of state program development, and the Wisconsin and Minnesota prototype versions of Farm*A*Syst.

In cases where you've drawn heavily from the technical content of prototype Farm*A*Syst worksheets and fact sheets, it would be appropriate to credit the original Farm*A*Syst publication authors. These authors are listed below for your convenience.

Topic	Wisconsin\Minnesota Author
Drinking Water Well	Susan Jones, U.S. EPA Region V
Pesticides	David W. Kammel, University of Wisconsin
Fertilizers	David W. Kammel, University of Wisconsin
Petroleum Products	Pat Walsh, University of Wisconsin
Hazardous Waste	Elaine Andrews, University of Wisconsin
Household Wastewater	Jim O. Peterson, James C. Converse, and E. Jerry Tyler; University of Wisconsin
Livestock Waste	Fred Madison, University of Wisconsin
Livestock Yards	Leonard Massie, University of Wisconsin
Silage	David W. Kammel, University of Wisconsin, and Nick Houtman, now at University of Maine
Milking Center Wastewater	Brian Holmes, University of Wisconsin
Site Evaluation	Kim Cates, Wisconsin Geological and Natural History Survey; and Fred Madison, University of Wisconsin
Overall Farmstead Assessment	Susan Jones, U.S. EPA Region V

APPENDIX F

CASE STUDIES OF FARM*A*SYST MODIFICATION

I. **Arkansas** (notes as of May 1992)
Contact: Phil Tacker, Extension Agricultural Engineer, (501) 671-2000.

Reasons for Adaptations

- complements nitrate testing and wellhead protection efforts

Modification Process/Plans

- review Farm*A*Syst prototype by 3 State Extension staff
- interagency review of fact sheets
- reviewers and authors assigned
- multiple reviewers of draft
- EPA review drafts
- print materials

Funding

- Section 319 through Arkansas Soil and Water Conservation Commission $37,000 grant, $28,667 match. 2 years, $37,000 budgeted for technician salaries and fringes, travel expenses, printing, supplies, meeting facilities, promotion. Intent is that Arkansas Extension will recommend Farm*A*Syst approach for the state to the Soil and Water Conservation Commission.

Agencies Involved

- Arkansas Soil and Water Conservation Commission
- Soil Conservation Service
- Health Department
- DPC&E
- Arkansas Water Well Group

- Arkansas Water Resources Research Institute
- University of Arkansas
- Cooperative Extension
- Arkansas Geological Survey
- U.S. Geological Survey

Implementation Plans

- 2 pilot counties, Fall 1992 with latest draft of materials
- Information meeting - water test
- workshop
- site visits
- recommendations

Material Adaptation

- Prototype Factsheet/Worksheets #1-6 (Wells, pesticides, fertilizers, petroleum storage, hazardous waste, household wastewater) being customized for Arkansas conditions
- Prototype Factsheet/Worksheet #7 (livestock waste) changed to "Livestock Yard and Facility Management"
- Prototype Factsheet/Worksheet #8 (livestock yards) changed to "Animal Waste Management"
- Prototype Factsheet/Worksheet #9 (silage) changed to "Poultry Litter Management and Carcass Disposal"
- Prototype Factsheet/Worksheet #10 (milking center wastewater) changed to "Animal Liquid Waste Management"

II. **Kansas** (notes as of May 1992)
Contact: John Hickman, Extension Specialist and Coordinator, Environmental Quality, (913) 532-5776.

Reasons for Adaptation

- state farmstead well survey
- complements Extension wellhead protection program (including well plugging demonstration)
- local environmental protection programs
- excellent materials

Modification Process/Plans

- team identified authors
- initial review
- pilot testing
- final review

Support Needs

- Staff:
  - assistant dedicated to Farm*A*Syst
  - devoted staff
  - excellent interagency working relationship
- Financial:
  - assistant salary and support $19,000
  - publication $7,000 (est)
  - training $5,000 (est)

Modification Team

- Extension specialists

Agencies Involved

- Authors:
  - Kansas Cooperative Extension Service
  - Kansas Department of Health and Environment
  - Soil Conservation Service
  - Kansas Geological Survey
- Reviewers:
  - Kansas Cooperative Extension Service
  - Kansas Department of Health and Environment
  - Soil Conservation Service
  - Kansas Geological Survey
  - Groundwater Management Districts
  - Kansas Association of Sanitarians
  - Kansas State Board of Agriculture
  - State Conservation Commission
  - Kansas Farm Bureau

Material Publication and Distribution

- Publication:
  - Kansas Cooperative Extension Service
  - Farm*A*Syst team prepared camera - ready copy from prototype Pagemaker computer disks
- Distribution:
  - state, area and local agencies

- Extension, Soil Conservation Service, Health and others
- for sale publication

Implementation

- Pilot:
  - one on one contacts (volunteer; water tests)
  - group meetings (Hydrologic unit, county Extension meeting, annual Extension conference)
- Future projects:
  - training
  - Finney County wellhead Protection Demonstration
    - wellhead protection survey - youth
    - model farmstead and homesite

Helpful Hints

- early interagency communication
- organizational skills of Farm*A*Syst assistant
- Early communication with Extension Communications Office
- Individual author consultation
  - Before initial review
  - During final review
- Schedule pilot review for winter months
- Careful selection of pilot project area

Program Problems

- lack of knowledge in pollution potential of farmstead activities

- slow review
- inadequate review of some materials
- Timing of pilot projects
- Slow distribution of computer diskettes from national staff
- Have to work on Macintosh computer for Pagemaker (blessing in disguise?)
- Lack of response from other agencies

III. **South Dakota** (notes as of April 1992)
Contact: Russell Derickson, Extension Associate, Water and Natural Resources, (605) 688-5677

Farm*A*Syst was selected up front as an educational implementation project within the USDA Big Sioux Aquifer (BSA) Demo project, Richmond Lake HUA and Lower Rapid Valley HUA.

Modification Process/Plans

- Obtained copy of Minnesota Farm*A*Syst pilot version
- Work study student entered text into word processor
- Factsheets and Worksheets given to extension specialist by topic area
- specialists revised Factsheets and Worksheets as needed and returned
- Factsheets and Worksheets updated by Farm*A*Syst coordinator
- Factsheets and Worksheets sent to:
  DENR for review
  SD Department of Agriculture (regulatory)
  EDWDD (regulatory)
  3 Agricultural agents (readability and usage)
  4 Home Ec agents
- incorporated above reviews into Factsheets and Worksheets
- specialists reviewed materials again
- Factsheets and Worksheets sent to DENR and SD Department of Agriculture again for review

- Factsheets and Worksheets updated
- Pilot project draft created and printed (120 copies)
- Distribute pilot project draft to: (for comments)
  SD Soil Conservation Service, ASCS, SDGS, WDDs, 319 NPS-TF, local conservation districts. (any agency mentioned as a source of information, technical assistance, or funding source)
- Send final draft to Agricultural Communications Department for final editing and printing. (hopeful completion date: June 15)

Implementation Plans

- Farm*A*Syst one-on-one implementation in BSA Demo (SCS cost share well-testing program
- Farm*A*Syst demonstration during BSA Demo summer tour
- Booth at SD state fair (part of annual Extension Booth)
- Delivery training for BSA Demo and HUA's extension agents and Mellette and Todd counties (Rose Bud Indian Reservation)
- Full scale implementation during winter 92-93 in BSA Demo (HUA's as needed)
- Delivery training for East River extension agents
- East River implementation during winter 93-94 (East River - East of the Missouri river)
- Delivery training for West River extension agents (West River -West of the Missouri river)

Evaluate Plans

- complete 1 year after Farm*A*Syst follow ups
- complete 5 year after Farm*A*Syst follow ups in BSA Demo and two HUA's at the end of their projects life span

IV. **Tennessee** (notes from May 1992)
Contact: George Smith, Tennessee Extension, (615) 974-7306

Reasons to Adapt

- 1989 - 19 wells in HUA sampled as part of 50 well county study
- 1991 - 46 wells in HUA sampled as part of 200 well 2-county study

Funding

- Section 319 funds through state water quality agency $60,000 - for 2 years. Farm*A*Syst only part of project funded by grant.
- Contract between Tennessee water quality agency, Extension, and Experiment Station

Modification Process/Plans

- technical writer working with Extension specialists

Implementation

- in North Forks-Fall Creek Hydrologic Unit project
- identify possible sources of contamination, implement BMPs, and evaluate results through quarterly sampling
- use modified Farm*A*Syst in individual assessments, and in designing management practices
- conduct workshops using modified materials
- evaluate, make additional modifications, and print final materials

State-wide Distribution

- "train-the-trainer" in-service for county Extension staff
- awareness workshops for other agencies

V. **Texas** (notes from May 1992)
Contact: Bill Harris, Texas Extension, (409) 845-2425

Implementation

- Section 319 pilot implementation in 2 counties
- vision:
  SCS, Extension at county level
  family living
  youth

Modification Notes

- may not include state laws and regulations to a great extent
- will change "Farm*A*Syst" title to include rural residents as well as farmers
- education is important part of process

Modification Process

- used prototype computer disks
- new publications
- combine some publications
- simplify language

Evaluation

- short term
- long term

APPENDIX G

SURFACE WATER PROTECTION BENEFITS OF FARM*A*SYST

Although the motivating factor for farmer or rural resident action to assess their farmsteads or rural homesteads was viewed by Farm*A*Syst developers as drinking water and groundwater protection, and publications are written to highlight that motivation, use of the farmstead assessment system also has surface water protection benefits. There are two major reasons for this: 1) the hydrologic link between groundwater and surface water, and 2) direct benefits of improved farmstead management and structures on all water resources.

As described succinctly in Groundwater Hydrology (Todd, 1980), practically all groundwater originates as surface water. Principal sources of natural recharge include precipitation, streamflow, lakes, and reservoirs. Other contributions, known as artificial recharge, occur from excess irrigation, seepage from canals, and water purposely applied to augment groundwater supplies. Even seawater can enter underground along coasts where hydraulic gradients slope downward in an inland direction. Water within the ground moves downward through the unsaturated zone under the action of gravity, whereas in the saturated zone it moves in a direction determined by the surrounding hydraulic situation.

Discharge of groundwater occurs when water emerges from underground. Most natural discharge occurs as flow into surface water bodies, such as streams, lakes and oceans; flow to the surface appears as a spring. Groundwater near the surface may return directly to the atmosphere by evaporation from within the soil and by transpiration from vegetation. Pumpage from wells constitutes the major artificial discharge of groundwater (Todd, 1980).

In addition to the hydrologic link described above, when farmers act to reduce risks of drinking water and groundwater contamination as a result of using Farm*A*Syst, these actions often also have surface water protection benefits. For example, one recommendation in Farm*A*Syst is to store pesticides in a separate facility with secondary containment to reduce drinking water contamination risks associated with fire or accidental spills. Fires in storage areas without secondary containment can result in damaged pesticide containers, and stored chemicals being carried away over a large area, potentially to the well, by the water used to fight the fire. Prevention of such a large chemical/water runoff event can also protect nearby surface water bodies. Another Farm*A*Syst recommendation is to share leftover household solvents, or recycle them where possible. This minimizes the amount stored, and therefore the release to the environment, protecting surface water as well as drinking water and groundwater. A Farm*A*Syst recommendation for livestock yards is to reduce the amount of clean water entering the yard using waterways, small terraces, roof gutters, and other mechanisms. This reduces the amount of contaminated water that can flow toward the well and possibly contaminate it, but also reduces the potential contamination of nearby streams with the same runoff. With all the structures and practices addressed by Farm*A*Syst, reducing the amount of contaminants used or stored, or reducing their potential for release

to the environment by improved management or structures, reduces the potential for contaminating any resource - water, air, or land.

Some states may want to expand on these surface water protection benefits during the modification process by including more specific surface water protection recommendations in farmstead assessment publications.

APPENDIX H

EVALUATION OF FARM*A*SYST MODIFICATION AND IMPLEMENTATION

This appendix contains advice for evaluating Farm*A*Syst programs. Evaluation can play an important role in the modification of Farm*A*Syst prototype materials for your own state situations, and in using your resulting state-specific Farm*A*Syst version in watershed projects and other groundwater pollution prevention efforts.

This appendix suggests some approaches for conducting evaluation and using the results to improve on the program being developed or implemented. Model evaluation materials are provided in Appendix I. Your evaluation approach and instruments developed or modified will obviously vary with the format of Farm*A*Syst used in your state, and how you choose to structure Farm*A*Syst program implementation. These recommendations and the model materials are based on the prototype version of Farm*A*Syst.

Regardless of how you choose to incorporate evaluation into your Farm*A*Syst program, you need to answer the questions below as you plan how to use evaluation.

1. What is the purpose of the evaluation?
2. Who will use the results?
3. What approach or methodology will be used?
4. What critical questions need to be answered by this evaluation?
5. What financial and human resources are necessary/available to conduct the evaluation?
6. Who will be involved in evaluation design and implementation?
7. How will data be collected and analyzed?
8. Who is responsible for conducting and completing the evaluation?
9. What form will the evaluation product take, when will it be done, and how will it be distributed?

The Farm*A*Syst National Staff is interested in your experiences and results of evaluating Farm*A*Syst programs. We will be conducting a national survey of Farm*A*Syst modification and implementation (see later section of this appendix for more information) but would also appreciate hearing from you in more detail at any point in your modification and implementation process. Please send us your case studies of how you used evaluation in the modification and implementation process, summary results, and evaluation instruments so that we may share them with other programs across the United States. Send them to: Farmstead Assessment Program, B142 Steenbock Library, 550 Babcock Drive, Madison, WI 53706, phone (608) 262-0024.

I. EVALUATION DURING MODIFICATION

A. Evaluation Using Focus Groups

Focus group discussions can help state interagency teams determine farmer and local delivery personnel reactions to draft materials in order to improve the final

product. The final published Farm*A*Syst materials can then reflect modifications that addressed concerns raised or suggestions made. Focus groups can also help state interagency teams refine delivery approaches, which may also influence publication content and format.

A focus group is a carefully planned discussion designed to obtain perceptions about a defined area of interest in a permissive, non-threatening environment. It involves six to ten people with a skilled moderator. The discussion is relaxed, comfortable, and often enjoyable for participants as they share ideas and perceptions. Group members influence each other by responding to ideas and comments in the discussion. If the focus group process is carefully conducted and appropriately analyzed, users are able to generalize about others with similar characteristics. A good reference for planning and conducting focus groups is Krueger, 1988 (see later reference list).

During development of the prototype Farm*A*Syst materials, focus group sessions were used to gather input from farmers and delivery staff on the appropriateness and understandability of the materials being developed, and the implementation methods that would be most well received and most likely to result in farmer actions to reduce drinking water contamination risks. Model A in Appendix I is a copy of the focus group questioning route used in Farm*A*Syst prototype development.

Use of focus groups up-front in the modification process could be a good way to draw attention to the modification effort both on the part of farmers and potential delivery staff, in addition to the benefit of getting their input.

B. Evaluation Using Pilot Testing

Another way of gathering input for Farm*A*Syst program development and improvement is to pilot test draft modified materials, using pilot delivery mechanisms, or to use the prototype materials in a targeted area. For example, in some states, state interagency modification teams first selected an area for piloting the prototype materials. From trial implementation experiences and with focus group results, they continued modification of prototype materials to meet specific state needs. State teams could also pilot test just a few of the publications without modification to assess farmer reactions and get their input.

II. EVALUATION DURING IMPLEMENTATION

The primary reasons for evaluating program implementation include: analysis for program improvement, and documenting successes to assist favorable review of funding proposals. Below you will find lists of elements that you might want to use for evaluations, and model survey instruments.

As you modify the model instruments in Appendix I for your state use, think about what would motivate farmers to fill out these survey instruments and how they will be administered. Is there a survey completion incentive that you can provide that would also reinforce pollution prevention - for example a backflow prevention device for hydrants? Would farmers be motivated to complete the surveys knowing that their input will help improve the program and its service to them and their neighbors? Farmers are likely to respond more favorably to these surveys if they understand that they are being asked about their experiences in order to help improve the Farm*A*Syst program, and not because data is being gathered to spotlight farmstead management problems.

The model materials provided in Appendix I are for farmers only. Some Farm*A*Syst implementation programs will involve a mix of farmers and rural residents, or rural residents only. If that is the case for your program, we recommend developing a separate questionnaire for rural residents only, rather than having one survey used for both farmers and rural residents with irrelevant parts for both groups. Targeting both groups in one survey may be too confusing.

Ideally, you will have a way to compare individual data pre and post, so that you can see which individuals made changes in their behavior and what factors (e.g. source of assistance, type of operation, contamination risks) may have influenced that. Code numbers can be assigned to surveys, for example. If information is collected only on a watershed or project basis, you can still learn if the program has been effective overall in influencing change, but not necessarily why or how, which is crucial to know in order to capitalize on and repeat the successful elements that influenced change.

A. Baseline information about participants (see Model B in Appendix I). In the pretest, you may want to gather information about:

- knowledge about groundwater resource
- knowledge about risks posed by farmstead structures and practices
- planned actions to protect water quality or reduce current level of contamination
- perception of local resources available for water protection assistance
- demographics

B. Six months post farmstead assessment (see Model C in Appendix I). This could also be shortened to be appropriate for a for 12 months post farmstead assessment, by focusing just on actions taken and assistance sought. With this 6 month follow-up survey, you may want to gather information on:

Knowledge change

- change in knowledge about groundwater resource

- change in knowledge about risks posed by farmstead structures and practices

Assessment Results

- high risk practices identified
- actions planned or taken to reduce risks
- reasons why actions were taken (awareness, influence of delivery personnel, etc.) or not taken
- reactions to program, including advantages and disadvantages of participation
- acceptance of tool and process
- recommendations for program delivery improvement
- barriers and incentives for use
- plans to contact local resources for assistance in reducing risks
- cost, source of needed technical and educational assistance

C. Post assessment project summary data (can be compiled locally or statewide; can compile results using model instrument above). You may also want to gather information on:

Program Participants
- numbers of farmers and rural residents involved
- characteristics of participants

Delivery Participants and Program Sponsors

- number of personnel trained
- type and amount of interagency and private sector support and involvement
- number and percent of participants who completed an action plan in worksheet #12
- number and percent of those who implemented (at least some of) the action plan they completed
- type of follow-up assistance indicated as needed by participants
- delivery methods used, assessment of effectiveness
- type and frequency of mod/high or high risks
- trend analysis - were risks reduced over time?
- which structures and practices pose the highest risks in the project (this useful for targeting education programs)

Program Costs

- cost of delivery
- cost/benefit results
- most cost-effective (results) delivery

D. Post assessment for delivery staff (Model D, focus group questioning route, in Appendix I)

Responses to open-ended questions in a group discussion would likely yield the most helpful information for local and statewide program improvement recommendations. A group discussion organized around the following types of questions is recommended:

- reactions to program, including advantages and disadvantages of participation
- recommendations for program delivery improvement
- barriers and incentives for use
- identification of case studies to share with other states

The model focus group questioning route gets at these questions. For more information about planning and conducting focus groups, again see the Krueger reference noted at the end of this appendix.

III. NATIONAL FARM*A*SYST PROGRAM EVALUATION

The national Farm*A*Syst staff plans to collect information from states (possibly a survey coordinated by the Rural Development Center directors again, similar to the national survey of state needs and interests conducted in Spring 1992) about their activities and the helpfulness of national staff efforts. The information is important because it will be used to document progress to our national funds (resulting in continuing state support), and can result in helpful examples of program modification and implementation experiences to share with other states.

Some of the information we will ask in this survey will be about your modification process, and other information already suggested for your collection in the section of project summary data above.

Questions about your modification process from national Farm*A*Syst staff will likely include:

- what modifications have you made to the prototype system and why?
- what agencies/organizations were involved in modification?
- have national staff met the needs of state interagency teams for modification and implementation support?

Questions about the implementation process will likely include:

- what are the results of state Farm*A*Syst implementation efforts? (changes in knowledge and action as a result of program participation?)
- what delivery mechanisms were helpful to farmers?
- what are delivery personnel attitudes toward Farm*A*Syst and its results?
- have program participants reacted positively to the program and the results of their actions in it?

IV. EVALUATION REFERENCES

For practical advice about why evaluation is important, and how to obtain and use results, consult the following references.

Bennett, Claude F. (1982) "Reflective Appraisal of Programs," Ithaca, N.Y. Cornell University.

Herman, Joan L., editor, 1987, Program Evaluation Kit, (2nd edition) Newbury Park, CA: Sage.

This includes a series of nine paperback books, available individually or as a total kit from Sage Publishing:

1. Evaluator's Handbook
2. How to Focus an Evaluation
3. How to Design a Program Evaluation
4. How to use Qualitative Methods in Evaluation
5. How to Assess Program Implementation
6. How to Measure Attitudes
7. How to Measure Performance and Use Tests
8. How to Analyze Data
9. How to Communicate Evaluation Findings

Krueger, Richard. (1988) Focus Groups: A Practical Guide for Applied Research. Newbury Park, CA: Sage.

Patton, Michael Q. (1982) Practical Evaluation. Newbury Park, CA: Sage.

Patton, Michael Q. (1986) Utilization Focused Evaluation. Newbury Park, CA: Sage.

APPENDIX I

EVALUATION MODEL MATERIALS

See Appendix H for a discussion of how these model tools can be used, and for recommendations on reassuring farmers that results are strictly to improve local farmstead assessment programs.

MODIFICATION EVALUATION MODELS

Focus Group Questioning Route Used in Farm*A*Syst Prototype Development

1. Focus Group Questions for Farmers

(Participants were sent 4 Farm*A*Syst fact sheets in the mail to read prior to meeting: Instructions, Site Evaluation, Pesticides, Petroleum. Participants were asked to complete the site assessment and assessment and the structure/practice assessment for either pesticides or petroleum. They were asked to look through one of the sheets at the beginning of the session to refresh their memories.)

What do you think of these fact sheets?

Probes
- clear?
- easy to use?
- readable?
- understand purpose or function?
- if unclear, etc, what part is confusing & why?

(Moderator briefly described other fact sheets in the series; explained farmstead assessment concept a little more.)

What barriers or roadblocks do you see for using these at your farm?

Probes

- time to complete assessment?
- would there be enough time at a particular time of year?
- do you have enough info?
- confidentiality of results?
- situations on the farmstead that wouldn't be addressed by this series?

Think back to the time it took you to complete the site evaluation and other fact sheet. Given the fact that the assessment consists of the site evaluation sheet and 10 worksheets like the petroleum and pesticide sheets, how long do you think it might take farmers you know to complete the full farmstead assessment?

What would get farmers you know to use them on their farms?

Probes

- concern about groundwater in your area?
- cross compliance provision in USDA or state programs
  (e.g. Farm*A*Syst implemented to be eligible)
- and you?

How could the materials be improved to get your neighbors to use them?

If you want to get technical information on using Farm*A*Syst, or in acting on recommendations that come out of using the assessment, where would you like to get it?

Probes

- would you feel comfortable going to SCS for assistance?
- Extension?
- Soil and Water Conservation Districts?

How do you picture yourself using materials like this? Tell pros and cons of the following options:

a) a professional comes out to your farm and you work together to conducts a complete farmstead assessment at no charge
(ask about charge, too?)

b) you or a member of your family learns about using the system and does it on her/his own

c) someone local is trained and supervised by professional staff, comes to your farm and does a complete farmstead assessment for a fee

d) you or a member of your family do your own assessment at a meeting with other farmers where professional staff assists the groups

If you had conducted a complete farmstead assessment and identified actions to minimize groundwater contamination risk, do you think you would make the changes recommended in the assessment tool?

Probes

- low cost (behavior/management) v. higher cost (structural)?
- if it didn't involve calling anyone; it was easy to just go ahead?
- if you were concerned about your groundwater/drinking water quality?

If you were asked to give advice to the farmstead assessment project developers, what would you say?

2. Focus Group Questions for Potential Program Delivery Staff

(Participants were sent 4 Farm*A*Syst fact sheets in the mail to read prior to meeting: Instructions, Site Evaluation, Pesticides, Petroleum. Participants were asked to complete the site assessment and assessment and the structure/practice assessment for either pesticides or petroleum. They were asked to look through one of the sheets at the beginning of the session to refresh their memories. Moderator opened by stressing that interagency and public/private participants were all agricultural specialists, all concerned about water quality and farmer involvement in natural resource protection, all with daily interaction with farmers.)

What do you think of the fact sheets?

Probes:

- clear?
- easy to use?
- readable?
- understand function or purpose?
- if unclear, etc, what part is confusing & why?

(Moderator briefly described other fact sheets in the series; explained farmstead assessment concept a little more.)

Would you feel comfortable using these with your existing background and knowledge of information availability?

What barriers or roadblocks do you see for using these with clientele?

Probes

- need for coverage of other topics?
- time/workload problem?
- don't feel comfortable providing advice on topics?

What would get you to use these materials?

Probes

- training?
- if so, what type?

How do you picture yourself using materials like this? Tell pros and cons of the following options:

a) a professional goes out to farms and works together with farmers to conduct complete farmstead assessments at no charge
(with charge, too?)
b) farm families learn about using the system and do it on their own

c) someone local is trained and supervised by professional staff, and works together with farmers to conduct a complete farmstead assessment for a fee
d) farm family member does his/her own assessment at a meeting with other farmers, where professional staff assist them

If you were asked to give advice to the farmstead assessment project developers, what would you say?

IMPLEMENTATION EVALUATION MODELS

3. Model Pretest

SECTION I. First, we'd like to ask about specific farmstead and rural residence structures and practices and their relationship to groundwater quality.

1. In the following list of structures and practices around farmsteads and rural residences in your area, please circle the response that indicates which level of risk to groundwater or well water contamination each poses.

	Risk		
well construction	High	Moderate	Low
pesticide storage and handling	High	Moderate	Low
fertilizer storage and handling	High	Moderate	Low
petroleum product storage	High	Moderate	Low
hazardous waste	High	Moderate	Low
household wastewater treatment	High	Moderate	Low
livestock waste storage	High	Moderate	Low
livestock yards	High	Moderate	Low
silage storage	High	Moderate	Low
milking center wastewater	High	Moderate	Low

2. Please indicate in your best judgement whether you think the following conditions present high, moderate, or low pollution risks to well water. Circle one answer for each.

	Risk		
a. Paint stripper or thinner and other solvents disposed of on the farm or rural residence.	High	Moderate	Low
b. Petroleum storage tanks have catch basins and automatic shutoff for protection in case of spills and overfills.	High	Moderate	Low
c. Spills from paint stripper or thinner or other solvents are contained. Extra product used up or taken to hazardous waste contractor collection service.	High	Moderate	Low
d. Settling or depression near well casing allows surface water runoff to pond near the well.	High	Moderate	Low
e. Septic tanks do not leak and are pumped at least once every three years.	High	Moderate	Low
f. Petroleum storage tank is not located on impermeable floor.	High	Moderate	Low
g. Well is uphill from all pollution sources. No surface water runoff reaches well.	High	Moderate	Low
h. Septic tank leaks and is located less than 25 feet from well or less than 3 feet over saturated soil or bedrock.	High	Moderate	Low
i. Silos with concrete or asphalt floor.	High	Moderate	Low
j. Concrete livestock yard with less than 50 square feet per dairy cow. Earthen livestock yard with less than 100 square feet per dairy cow.	High	Moderate	Low
k. Short-term livestock waste storage structures are water-tight and covered with roof.	High	Moderate	Low
l. Cows confined to barn or roofed livestock yard.	High	Moderate	Low

	Risk		
m. Pesticides mixed and loaded within 10 feet downslope or 100 feet upslope from well.	High	Moderate	Low
n. Liquid fertilizer is stored over concrete pad or other impermeable surface.	High	Moderate	Low
o. Milking center wastewater is applied uniformly to moderately or highly permeable soil where the vegetation is not removed.	High	Moderate	Low
p. Liquid fertilizer is stored over permeable soil (sand).	High	Moderate	Low
q. Pesticides mixed and loaded 100 feet or more downslope from well.	High	Moderate	Low
r. Silo floor is permeable soil (sand) or gravel.	High	Moderate	Low
s. Short-term livestock waste storage facility was properly installed, but is not properly maintained.	High	Moderate	Low
t. Milking center wastewater applied uniformly to slowly permeable soil. Vegetation is regularly removed.	High	Moderate	Low

SECTION II. Finally, we would like to ask a few questions about your background to help compare your answers to those of other people. All of your answers will remain confidential.

3. How old are you? ___ years

4. From the following general categories below, please select the range which best describes your total gross farm or household income in 1991. (Total gross farm income includes the value of products sold, farm land rental income, custom work, government programs, etc.)

   ___ 0 - $ 20,000
   ___ $ 21,000 - $ 40,000
   ___ $ 41,000 - $ 60,000

___ $ 61,000 - $ 80,000
___ $ 81,000 - $100,000
___ $101,000 or more

5. How long have you been a farm operator or managed a farm? ____ years

6. Please place a check in the column that best describes the percentage of your 1991 gross farm income coming from each of the following sources (the categories should add up to roughly 100 percent.).

	none	1-24%	25-49%	50-74%	75-100%
dairy (milk production only)					
livestock (animals sold)					
cash crops					
government programs					
other					

THANK YOU FOR YOUR TIME IN ANSWERING THESE QUESTIONS.

4. Farmer Post-Test Questions

(Intended for use 6 months after farmstead assessment completion, but can also be modified for use 12 months after assessment, to measure trends)

SECTION I. First, we'd like to ask about specific farmstead and rural residence structures and practices and their relationship to groundwater quality.

1. In the following list of structures and practices around farmsteads and rural residences in your area, please circle the response that indicates which level of risk to groundwater or well water contamination each poses.

Condition	Risk		
well construction	High	Moderate	Low
pesticide storage and handling	High	Moderate	Low
fertilizer storage and handling	High	Moderate	Low
petroleum product storage	High	Moderate	Low
hazardous waste	High	Moderate	Low
household wastewater treatment	High	Moderate	Low

Condition	Risk		
livestock waste storage	High	Moderate	Low
livestock yards	High	Moderate	Low
silage storage	High	Moderate	Low
milking center wastewater	High	Moderate	Low

2. Please indicate in your best judgment whether you think the following conditions present high, moderate, or low pollution risks to well water. Circle one answer for each.

Condition	Risk		
a. Paint stripper or thinner and other solvents disposed of on the farm or rural residence.	High	Moderate	Low
b. Petroleum storage tanks have catch basins and automatic shutoff for protection in case of spills and overfills.	High	Moderate	Low
c. Spills from paint stripper or thinner or other solvents are contained. Extra product used up or taken to hazardous waste contractor collection service.	High	Moderate	Low
d. Settling or depression near well casing allows surface water runoff to pond near the well.	High	Moderate	Low
e. Septic tanks do not leak and are pumped at least once every three years.	High	Moderate	Low
f. Petroleum storage tank is not located on impermeable floor.	High	Moderate	Low
g. Well is uphill from all pollution sources. No surface water runoff reaches well.	High	Moderate	Low

h. Septic tank leaks and is located less than 25 feet from well or less than 3 feet over saturated soil or bedrock.	High	Moderate	Low
i. Silos with concrete or asphalt floor.	High	Moderate	Low
j. Concrete livestock yard with less than 50 square feet per dairy cow. Earthen livestock yard with less than 100 square feet per dairy cow.	High	Moderate	Low
k. Short-term livestock waste storage structures are water-tight and covered with roof.	High	Moderate	Low
l. Cows confined to barn or roofed livestock yard.	High	Moderate	Low
m. Pesticides mixed and loaded within 10 feet downslope or 100 feet upslope from well.	High	Moderate	Low
n. Liquid fertilizer is stored over concrete pad or other impermeable surface.	High	Moderate	Low
o. Milking center wastewater is applied uniformly to moderately or highly permeable soil where the vegetation is not removed.	High	Moderate	Low
p. Liquid fertilizer is stored over permeable soil (sand).	High	Moderate	Low
q. Pesticides mixed and loaded 100 feet or more downslope from well.	High	Moderate	Low
r. Silo floor is permeable soil (sand) or gravel.	High	Moderate	Low
s. Short-term livestock waste storage facility was properly installed, but is not properly maintained.	High	Moderate	Low

t. Milking center wastewater applied uniformly to slowly permeable soil. Vegetation is regularly removed.	High	Moderate	Low

SECTION II. The following questions relate to your experience with and opinions about Farm*A*Syst. You'll recall that the Farm*A*Syst consisted of worksheets (assessment charts) for 10 topics such as pesticide mixing and loading and petroleum product storage, and separate fact sheets for each topic providing additional information and references and contacts.

3a. Where did you complete most of the assessment of your farmstead? (Check all appropriate answers.)

_____ At a group meeting.
_____ At my farm
_____ Other (please describe) _____

3b. Who assisted you with your assessment?

_____ No one.
_____ Extension agent
_____ County staff (please describe) _____
_____ Private agribusiness staff
_____ Family members (spouse/children) or other farm partner.
_____ Other. Please describe_____

4. On a scale of 1 to 10, with 1 being a waste of time and 10 being extremely useful, circle the number that most closely describes your feeling about completing the entire assessment of your farmstead, and acting to reduce contamination risks.

waste of time				OK					extremely useful
1	2	3	4	5	6	7	8	9	10

5. For each Farm*A*Syst worksheet you did not complete, please place a check mark to indicate why. Skip to question 6 if all were completed.

	Don't Have On My Farm Or Residence	Worksheet Too Complicated	Priority (no time)	This Topic Is A Low Other (briefly describe)
#1 Wells	___	___	___	_____
#2 Pesticides	___	___	___	_____
#3 Fertilizers	___	___	___	_____

#4 Petroleum	___	___	___	_____
#5 Hazardous Waste	___	___	___	_____
#6 Household Wastewater	___	___	___	_____
#7 Livestock Waste	___	___	___	_____
#8 Livestock Yards	___	___	___	_____
#9 Silage	___	___	___	_____
#10 Milking Center Wastewater	___	___	___	_____
#11 Site Evaluation	___	___	___	_____
#12 Overall Assessment	___	___	___	_____

6. About how much time altogether did you spend with the Farm*A*Syst worksheets (#1 - 10) appropriate for your farm?

___ less than 1 hour
___ 1 to 2 hours
___ 2 to 3 hours
___ 3 to 4 hours
___ more than 4 hours

7. For each Farm*A*Syst fact sheet you did not read, please place a check mark to indicate why. Skip to question 8 if all were completed.

	Don't Have On My Farm Or Residence	Information Not Useful	Priority (no time)	This Topic Is A Low Other (briefly descri be)
#1 Wells	___	___	___	_____
#2 Pesticides	___	___	___	_____
#3 Fertilizers	___	___	___	_____
#4 Petroleum	___	___	___	_____
#5 Hazardous Waste	___	___	___	_____
#6 Household Wastewater	___	___	___	_____
#7 Livestock Waste	___	___	___	_____
#8 Livestock Yards	___	___	___	_____
#9 Silage	___	___	___	_____
#10 Milking Center Wastewater	___	___	___	_____

8. About how much time altogether did you spend reading Farm*A*Syst fact sheets (1 - 10) appropriate for your farm?

___less than 1 hour
___1 to 2 hours
___2 to 3 hours

___3 to 4 hours
___more than 4 hours

9. About how much time did you spend calculating your risk ranking and developing a plan for actions to minimize the risk of drinking water contamination? (This is in worksheet #12, "Overall Farmstead Assessment")

___0 minutes.

___20 minutes or less

___20-30 minutes

___30-45 minutes

___45-60 minutes

___60 minutes or more

10. Please place a check mark in the appropriate column for each topic in the farmstead assessment any structures and practices, if any, you identified as having a high risk to groundwater contamination? (This information will remain confidential.) Also indicate if you have made or plan to make changes to reduce risks identified.

Worksheet	High Risk Identified	Practices Planned?	Changes Made?	Changes
#1 Wells				
#2 Pesticides				
#3 Fertilizers				
#4 Petroleum				
#5 Hazardous Waste				
#6 Household Wastewater				
#7 Livestock Waste				
#8 Livestock Yards				
#9 Silage				
#10 Milking Center Wastewater				
#11 Site Evaluation		N.A.	N.A.	

11. What type of assistance, if any, is or was needed to help you make those changes?

_____ technical design
_____ engineering
_____ education on management options
_____ cost sharing
_____ other

12. If you don't plan to make changes in some high risk situations, please indicate why. (check all that apply)

_____ too expensive
_____ don't believe it will make a difference
_____ changes in management are too time-consuming

13. Which, if any, of the following persons did you or do you plan to contact for advice or assistance in making the changes you identified in question #10, and why would you contact each type of group (apart from personality factors)? (Check all that apply.)

CONTACT	TECHNICAL KNOWLEDGE	OBJECTIVITY	FUNDING	CONFIDENTIALITY	OTHER
___None					
___State Environmental Agency					
___State Department of Agriculture					
___County Extension Office					
___SCS Office					
___Soil & Water Conservation District					
___ASCS Staff					
___Agrichemical Dealer					
___Vocational Agriculture Instructor					
___Fellow Farmer					
___Crop Consultant					
___Other (Please list): _____					

17. Please add any other comments about your use of Farm*A*Syst, or suggestions for modification.

THANK YOU FOR COMPLETING THIS SURVEY.

5. Delivery Staff Focus Group Questions

(see Appendix H text for focus group process description)

1. Please briefly (in less than a minute) describe the type of Farm*A*Syst program you were involved in.

2. What were the advantages and disadvantages of the type of program delivery that you participated in?

   Probes
   - group meeting
   - one on one visit.
   - group orientation followed by individual assistance
   - other

3. Please comment on the amount of assistance required by farmers or rural residents in filling out the assessment worksheets.

   Probes
   - In developing an action plan?
   - In acting to reduce risk to their drinking water supply?

4. Were there any comments that you or the farmer/rural resident had about the materials?

   Probes
   - seen as worthwhile?
   - seen as helpful and non-threatening

5. What, in your opinion, would motivate farmers and rural residents to use this assessment, and make changes to reduce the risk of drinking water contamination?

6. What detailed assistance information or implementation incentives might be helpful?

   Probes
   - signs identifying farmers as "groundwater protection cooperators"
   - contacts and references for local level resources

7. Who participated in the program, and how were they selected or encouraged to attend?

Probes
- general publicity
- targeted by watershed project
- targeted by water test results
- other

8. Did anyone contact you after completing the assessment for follow-up assistance?

   Probes
   - people you'd already worked with?
   - new people?
   - why did they say they contacted you?

9. How could Farm*A*Syst be most effectively used?

10. Were you comfortable providing technical assistance to farmers with their assessments or with taking actions to reduce risks?

11. Could Farm*A*Syst easily be incorporated into the services you provide or your existing programming?

    Probes
    - How?
    - Why not? What could remove the obstacles for you?
    - what about incorporation into the services provided by your public and private colleagues in the area?

12. What training would be helpful to you if you were to provide these assessments in the future?

    Probes
    - what about training needs for other local agricultural/land use/environmental professionals?

Farm*A*Syst Objectives and A Strategic Planning Sequence

Stage	Objective	Audience	Potential Activities
I. Material and Program Development	Obtain interagency and interdisciplinary involvement and support	Lead Water Quality Agency State Dept of Agriculture SCS ASCS Extension Service Engineering Soils/Agronomy Home Economics 4-H and Youth Farm Organizations Conservation Organizations Agri-business Lending Institutions	Contact individuals to determine interest; Discuss with appropriate administrators; Establish: - Coordinating Committee - Work groups - Lead authors and reviewers - Focus group reviews
	Modify and/or develop materials for your state		Develop: - Funding proposals - Roles and responsibilities of those who are involved - Timetables
		State Project Coordinators	Obtain hard copy of WI or MN publications

Stage	Objective	Audience	Potential Activities
I. Material and Program Development (cont)			Obtain word process computer disk copies of materials
	Determine program delivery options and design materials for preferred option(s)	Coordinating Committee	Meetings of Coordinating Committees and/or Work Groups Participate in Regional **Farm*A*Syst** Conferences Establish development modification support system - Editor / Development assistance - Printing and publication procedures and responsibility
II. Implementation (1 - ? years)	Train Implementation Staff	Agency and private staff involved in delivery	Determine Development and Printing Costs Identify mechanism to cover development & printing costs Develop training materials Develop training programs on: 1.sources of pollution and factors affecting pollution risks 2.assessing soil, geologic and hydrologic vulnerability

Stage

II. Implementation (cont)	Objective		Potential Activities
			3. Using the worksheets and fact sheets to conduct assessments--including supervised on-site application
			4. Developing action recommendations.
			5. Developing support systems for implementation of recommendations
			6. Incorporating the program into existing education systems, ie., teacher training and staff training.
	Develop support systems for implementation	Agency and staff involved in deliver - SCS - USGS - State Geologic Survey - Water Testing Staff - Extension Soils specialists - Others as appropriate	Guidelines on what information is available, how to collect it, interpret it and use it when conducting an assessment, i.e., soil vulnerability interpretation, water testing, geologic and hydrologic assessments
	Audience		

Stage	Objective	Audience	Workload agreement with cooperating agencies that provide support data
			News Releases Demonstration Farm Field Day
	Create awareness of farmstead pollution problems and the **Farm*A*Syst** Program	Farmers Rural non-farm residents Local governments Agri-business Lenders	Demonstration Project Exhibits Public Meeting
			Area Exhibits Public Meeting Incorporation of information into other programming Newsletters
	Develop local practice implementation support teams	- SWCD Staff and Zoning staff - County Sanitarians - Emergency Government - County Health Dept - Lenders - Agribusiness - Agricultural Consultants - Adult and Youth Vocational Agriculture and Environmental Instructors - Community Service and Environmental Organizations	Meeting to orient local agencies and businesses on the program Involvement of appropriate local staff in presenting information at local education and/or group planning sessions Establish workgroup on developing support (incentives, reminders, etc.)
		Potential Activities	Stage II Implementation (cont)

Objective	Audience	Potential Activities	II Implementation (cont)
		to increase participation in the program and implementation of action recommendations that result. Incorporation of delivery into other programs, i.e., - Drinking Water Education - Pesticide Application Training - Farm Manager Education Programs - Annual Meetings of Farm Cooperate Members - Lending Institutions' Meeting with Clients	
Increase voluntary implementation of recommendations resulting from assessments	Farmers Rural Property Owners Agri-business Lenders Vo-ag Educators	Reminder letters with information on special offers, education and/or technical assistance Followup visits, face-to-face or by telephone Media information on problems and benefits of prevention and corrective actions Special, limited time offers Stage	III. Evaluation (1 - 5 years)

Objective		
		businesses
		Public Service Announcements
	Farmers Rural Property Owners	Workshops Education Programs Fact Sheets Newsletters Demonstrations Local Referral Network Incorporation into other Programs Curriculum Development
Improve knowledge and skills needed to implement action recommendations		
		Develop survey evaluation
	Farmers Rural Property Owners Implementation Staff	Conduct pre-test, short term and long term post-tests
Document changes in knowledge about pollution risks		Document and report results
	Farmers Rural Property Owners Implementation Staff	
Document effectiveness of delivery options		Survey participants to determine factors that affect willingness to participate
		Conduct surveys or follow-up assessments to determine actions taken within 6
	Participating Farmers and Rural Property Owners	Stage
Document the extent of voluntary implementation of recommendations resulting	Potential Activities	III Evaluation (cont)
Audience	on needed materials and/or equipment by local	

Objective
from the assessment
Document changes in water quality resulting from

implementation efforts	Audience	Potential Activity
		months and within 2 years
Document cost/benefits		Analyze and report the results
	Water Quality Agencies Legislature	Develop research proposals Conduct research on changes in pollution, load reaching groundwater, pollution risks and economic costs
		Conduct research at Research Farms
		Determine cost/benefits through case studies of participating farms
		Analyze and report results

APPENDIX K

FARM*A*SYST IMPLEMENTATION RECOMMENDATIONS

Based on Farm*A*Syst program implementation experiences, the following program delivery recommendations are offered.

1. Delivery Methods

As mentioned in the overview text, there are five primary delivery methods for Farm*A*Syst: one-on-one assistance on the farm, group assessments with educational and technical assistance, a combination of group orientation with one-on-one follow-up assistance, incorporation into other education programs, and self assessment by farmers.

Choice of delivery method should be based on local needs. Consider a combination of approaches and personnel to ensure broader farmer coverage, recognizing that some farmers will prefer one approach or delivery source over another.

The delivery methods are described below, along with estimates of farmer contact time for each approach. The time estimates provided do not include staff program preparation time, which could include:

- becoming familiar with Farm*A*Syst materials
- contacting fellow delivery team members (if applicable)
- inviting farmers/publicizing meeting
- completing site evaluations for farmers before meeting optional
- preparing overview information on groundwater resource, flow, land use practices and how they can affect groundwater

a. One-on-one assistance on the farm

In this approach, delivery personnel meet with the farmer and work though the assessment worksheets appropriate to that farm operation, complete the site evaluation (sometimes this is done beforehand for the farmer), and complete the overall assessment in Worksheet #12. Implementation experience to date suggests that once delivery staff is familiar with the Farm*A*Syst materials and process, farmer contact time for this approach is 1.5 to 2 hours.

b. Group assessments with educational and technical assistance

In this method, interagency delivery teams (representing local public and private experts on the topics addressed in Farm*A*Syst) meet with farmers in a group setting and lead them through the assessment worksheets. Different team members lead portions of Farm*A*Syst depending on their areas of expertise. For example, the county sanitarian could lead the assessment of household wastewater treatment and answer related questions; county emergency government staff could lead farmers through hazardous waste and petroleum product storage worksheets; the county extension agent could lead

the site evaluation worksheet; soil and water conservation district personnel could discuss livestock waste storage and yards management; and a private crop consultant could lead the assessments of pesticide and fertilizer storage and handling practices. Farm*A*Syst program participants learn in this process where to go for follow-up technical assistance as they implement their action plans to reduce identified risks.

Another option for the group meeting process is to have the program leader give an overview of Farm*A*Syst, then have farmers individually go to each of 10 stations where topic experts would be available to answer questions and help farmers complete worksheets. Participants sign up for later appointments with program sponsors to go over the results of individual worksheets, summarize the results in the overall farmstead assessment, and develop an action plan to minimize identified risks.

Group meeting contact time with farmers can take 3 to 5 hours, depending on how the meeting is structured.

c. Group orientation with follow-up one-on-one assistance

In this variation of the group meeting, Farm*A*Syst program participants come to an orientation meeting where they learn about the goals of the program, its voluntary nature, how farmstead assessments work, etc. They then take the assessment worksheets and fact sheets home with them, begin some of the assessment on their own, and then have follow-up assistance from one or more topic experts or program sponsors.

d. Incorporation into other education programs

Use of Farm*A*Syst in conjunction with existing programs can help to capture farmer interest. For example, conducting programs in conjunction with water quality testing or drinking water education programs can capitalize on the awareness that land use practices can affect drinking water quality. Some examples of these programs with which Farm*A*Syst can be implemented or promoted include:

- USDA water quality demonstration and hydrologic unit projects
- State watershed projects
- Municipal wellhead protection efforts
- Groundwater protection plan implementation
- Drinking water education programs
- Whole farm assessments (use in conjunction with nutrient and pesticide management plan development)
- SCS Conservation Planning
- Pesticide applicator training programs
- Homemaker or Family Living Education programs
- Adult education farm management training programs
- Club activity or program promotion by trained volunteers from environmental organizations, youth groups, community service organizations, and farm organizations
- Youth farm management education programs
- Program sponsorship by lending institutions and/or agribusinesses
- Programs targeted at rural nonfarmers (use only components of Farm*A*Syst that apply)

e. Self-assessments

In this delivery option, farmers are mailed Farm*A*Syst packages, receive them at a display or program, or use a version printed in a farm magazine series. Farmers complete the assessments and make any follow-up contacts for assistance completely on their own.

2. Delivery team members

Delivery cooperation between public, private and nonprofit sectors increases options for farmer assistance. In general, the more options for delivery the more likely Farm*A*Syst will be used. Use of interagency and interorganization teams is an important aspect of Farm*A*Syst use, and preparation for a group meeting can help to build those teams. Local sponsors, and members of delivery and follow-up resource teams or program sponsors could include:

- county health departments
- county planning and zoning departments;
- Extension Service;
- Soil Conservation Service;
- Soil and Water Conservation Districts;
- private sector (farm cooperatives, crop consultants);
- youth groups (4-H, FFA);
- trained volunteers;
- vocational agriculture consultants (youth and adult);
- environmental groups;
- producer associations; and
- lenders.

These delivery team members can also help provide linkages with ongoing programs that can assist in promoting or implementing Farm*A*Syst programs, as described in Section 5 below.

3. Trained volunteers as a delivery group

A Master Volunteer Program can be considered for Farm*A*Syst delivery, as a method of reducing time commitment required by agency personnel and of expanding available delivery options. Each county could select a small team of retired farmers, retired agriculture professionals (teachers, SCS, Extension) or farmers who are in family partnerships where one can devote time to a volunteer activity and is interested in water quality.

Farm*A*Syst program implementation leaders at the county level could help volunteers take the lead in both assisting with individual assessments and in organizing group meetings. (The number might depend on the size of the county.) The volunteers might be chosen from various sectors of the county and logically would work with those on the same telephone line or adjacent townships. However, there should be a freedom to call on someone from another part of the county, if, for some reason, a farmer preferred to work with a different volunteer.

Other potential volunteers, who could also be seen as a less threatening source of assistance for some people, include youth organizations, community service groups, environmental groups, and farm organizations.

4. Program Implementation Issues and Notes

Program publicity and timing

* Farm*A*Syst should be promoted as a voluntary program, to overcome a potential barrier to participation.

* Establishing Farm*A*Syst demonstration farms in the program area is one way to draw attention to program and allow farmer networking. For example, program leaders could publicize a tour of a farm where a farmstead assessment has been completed and farmers are implementing practices to reduce risks.

* Timing of programs must be linked to farm schedules (seasonal and daily schedule variability)

* The Farm*A*Syst program can be presented as an investment that will result in water quality protection, protection of family and livestock health, protection of property value, and reduced risk for personal liability.

Site evaluation considerations

* The site pollution vulnerability assessment can be completed by the local resource team before working with the farmer on the rest of the assessment. This reduces overall assessment time required of the farmer. Summary soil vulnerability tables and geologic and hydrologic maps can be developed and supplied to increase efficiency of the physical site assessment completion. However, farmers' involvement in completion of the site evaluation worksheet can provide an opportunity for them to learn more about the useful information contained in the county soil survey.

Action plan recommendations

* An example of a completed list of high risk practices from worksheet #12, Overall Farmstead Assessment, is part of this appendix. In Farm*A*Syst implementation experiences to date, this chart has been used as the basis for action plan development. However, the importance of site vulnerability in overall assessment should not be ignored (see the combination of site vulnerability and practice/structure risks earlier in worksheet #12).

* The high risks/action list can potentially be long, and farmers may need some help in prioritizing actions. Farmers can prioritize risks by considering toxicity of contaminants involved. Milkhouse waste contaminants possibly rank lower than petroleum product storage high risks if you use this criteria.

Follow-up contacts and implementation incentives

* Consider follow-up contacts that will help to overcome farmer resistance to change. For example, provide information on cost sharing available for structural replacement or upgrade. See the appendix on implementation support for more ideas.

* In Wisconsin, the Stevens Point, Whiting Plover Wellhead Protection Hydrologic Unit Project staff is working with farmers to fill out an SCS long term agreement form (example attached) for actions to reduce drinking water risks identified, and proposing action schedules with a follow-up letter to the Farm*A*Syst participant.

* Cost of some remedial measures may be high, but program sponsors can emphasize management changes that are no or low cost and reduce risk.

* Emphasize incentives for Farm*A*Syst use in programs. Consider tangible incentives for use such as signs indicating that farmers who have completed assessments are "pollution prevention cooperators," or "groundwater protection cooperators," adhesive signs indicating petroleum storage contents, and signs indicating pesticide storage locations. Use incentives that directly assist participants in acting to prevent pollution whenever possible, such as antibackflow devices.

* Follow-up action implementation support similar to that provided in home energy audits may increase voluntary implementation of actions to reduce pollution risks.

Confidentiality of assessment results

* Farmers are quite sensitive to the confidentiality of the information shared during the assessment process. Program sponsors will have to decide what data farmers should keep, and what data delivery personnel should keep, and be clear and upfront with farmers about it.

* To address farmer sensitivity about confidentiality of their individual assessment results, consider two distinct uses of information from farmstead assessment programs: 1) farmer use alone of results, and 2) research and project use. For the first option, program delivery staff would keep no information about farmstead assessment results. Program sponsors would ask participant permission to cite examples observed without releasing the farmer name or in any way identifying an individual farm. For the second option, research and project use, staff would compile farmstead assessment results on a watershed or political division basis (e.g. county), with participant permission, and without linking results to specific sites. This would allow documentation of baseline conditions and provide the basis for determining trends.

Farm*A*Syst program evaluation

* State Farm*A*Syst program coordinators should monitor the extent to which changes in farmstead practices have occurred, and evaluate how effective they have been in improving or maintaining environmental quality. See Appendix H for recommendations and model materials for evaluating implementation effectiveness.

APPENDIX L

FARM*A*SYST IMPLEMENTATION SUPPORT PACKAGE

The farmstead assessment system (Farm*A*Syst) was designed to provide rural residents with accurate firsthand information about farmstead structures and activities that affect their drinking water, some of those structures and activities can result in high risk to groundwater and drinking water supplies. Since about 95 percent of this country's rural residents use groundwater to supply their drinking water needs, the farmstead assessment system can provide critical information about protecting their water supplies.

In addition, there are side benefits from farmer actions to reduce drinking water contamination risks using Farm*A*Syst. Surface water protection benefits also accrue from Farm*A*Syst. Diverting clean water around a livestock yard so that it does not pick up and carry contaminants to the well, can also help keep nearby streams clean. Improvements in other farmstead structures and management practices can also help protect surface water.

After a farmstead assessment has been completed and potential contamination sources have been identified, decisions have to be made about correcting hazardous or potentially hazardous situations. The recipient will need information that is reliable to decide what courses of action can be pursued. The urgency of corrective actions depends somewhat on the severity of the identified pollution problem and the potential risk.

If a private drinking water supply has already been contaminated, immediate steps for supplying safe drinking water will need to be taken. If high risk activities are identified during the farmstead assessment, but the drinking water has not yet been contaminated, corrective actions may be able to avert future contamination. In either case, good information should be available for the individual to make sound decisions.

FARM*A*SYST SUPPORT PACKAGE OBJECTIVE

The objective of this model support package has been to provide guidance to organizations and/or units of government in developing their own local support system in preparation of implementing the farmstead assessment program. This document provides suggested information sources for farmstead assessment users. Dissemination of this information may be vital to those recipients for solving or alleviating a high risk pollution potential to their drinking water supplies.

The main text of the document has been divided into four categories; safety and health concerns, technical assistance, applicable farmstead laws and codes, and financial assistance.

HOW TO DEVELOP A LOCAL FARM*A*SYST SUPPORT PACKAGE

Development of a local support package needs to include assistance information for each of the farmstead assessment worksheets. The format of the information provided can be on an individual worksheet basis or by groupings of worksheets. Four general areas of assistance need to discussed for each worksheet. These generally will include safety and health considerations, technical assistance, applicable farmstead laws and administrative codes, and available financial assistance. Information on these topics would be the most common requests from recipients of a farmstead assessment.

Persons providing the farmstead assessment assistance should be prepared to give responses to these requests for information. The responses are relatively straight-forward, if prior planning and consideration is conducted before initiating a farmstead assessment program.

Unfortunately, the national Farm*A*Syst staff cannot develop a support package that would be immediately ready for use at the field level. The specific information on local sources of products, services and technical assistance needed to take corrective or preventative actions must be collected at the local level. This model support package is intended to provide an example of how a local implementation team would put together such a document.

PART I

SAFETY AND HEALTH CONSIDERATIONS AND EMERGENCY SOLUTIONS

An often overlooked, but extremely important result from a farmstead assessment could be serious family safety and health concerns if problems areas are identified. If a rural well is found to be contaminated as a result of testing, the most important question by the user will probably be "what are the associated family health and/or safety risks". Many of the agencies or agri-business firms conducting farmstead assessments will not be fully prepared to answer some of these questions. However, organizations conducting farmstead assessments should be prepared to offer suggested sources of information that are readily available to the resident. They should also be prepared to start discussing potential solutions to the problems encountered. This does not only include suggested solutions for the problems identified, but alternatives for obtaining clean drinking water or medical assistance.

The following is list of agencies or persons who could be contacted for safety and health concerns as they may be identified. This list certainly is not all inclusive but should provide guidance to local units of government or agri-business firms with a general list of information sources.

Local Health Officials
State Department of Health
Environmental Protection Agency Safe Drinking Water Hotline (800-426-4791)
County Human Services
County or local sanitarian
National Pesticide Telecommunication Network (800-858-7378)
Chemical Manufacturers Association Referral Center (800-262-8200)
Local Emergency Government
State Emergency Government
State Water Quality Agency
State Agriculture Agency
Local poison control center
State poison control center

The person(s) conducting the farmstead assessment should have a telephone number, address and possibly the name of a contact for each agency or service listed above. This information should be organized and be available to present to the recipient of a farmstead assessment upon request or when high risk situations are observed.

Every effort should be taken by the organization providing farmstead assessments to provide up-to-date and accurate information. Emphasis should be placed on local contacts, especially for emergency situations. Local sources of supplies, equipment and technical assistance that are needed to reduce the identified risks must also be developed.

PART II

TECHNICAL ASSISTANCE

Technical assistance requests will probably be the most common request of organizations providing farmstead assessment services to rural residents. When high risk or potentially high risk situations are identified during the assessment process, the land user is most likely going to need information to correct the situation.

Persons conducting farmstead assessments need to be prepared to offer suggested sources of technical assistance. They should be able to provide rural residents with information about technical assistance available to them and contractors that can provide services for correcting the risk situation. They should also be prepared to discuss potential solutions to the problems encountered, costs and any state and local code requirements. Code requirements will be discussed more thoroughly later in this document.

The following is a list of agencies and contractors that could be contacted for technical assistance or construction assistance. The list is not inclusive but should provide guidance to local units of government or agri-business firms.

Agri-Business Firms
- Crop consultants
- Agronomic service agri-businesses
- Cooperatives
- Farm Equipment Dealers

Contractors
- Sanitary Treatment System Installers
- Plumbing Contractors
- Well Drillers
- General Contractors
- Land Surveyors
- Local Permit Officials
- Concrete Contractors
- Well Plugging Contractors
- Local Environmental Consulting Firms
- Earthwork/excavation Contractors
- Drainage/tiling Contractors
- Roof and Gutter Contractors
- Material Suppliers
- Hazardous Waste Contractors
- Underground Petroleum Storage Tank Removal Contractors
- Recycling Services
- Solid Waste Disposal Services
- Private laboratories (water and soil testing)

State Government Agencies
- Department of Natural Resources
- State Environmental Protection Agency
- State Department of Agricultural
- State Geological Survey
- State Laboratories (water and soil testing)
- Universities
- Cooperative Extension Service

Federal Government Agencies
- Soil Conservation Service
- Bureau of Land Management
- Forest Service
- US Geological Survey
- Regional Environmental Protection Agency
- State Laboratories (water and soil testing)

Inspection Units
- State Emergency Government
- Local Emergency Government
- State Department of Agriculture
- Local Zoning Officials
- State Zoning Officials
- Local Construction Inspectors
- Local Environmental Consulting Firms

The person(s) conducting farmstead assessments should have a telephone number, address and possibly the name of a contact for each agency or service listed above. This information should be organized and be available to present to the recipient of a farmstead assessment upon request or when high risk situations are observed.

Every effort should be taken by the organization providing farmstead assessments to provide up-to-date and accurate information. Emphasis should be placed on local contacts, especially for emergency situations.

PART III

APPLICABLE FARMSTEAD LAWS AND CODES

A myriad of local, state and federal codes and laws exist when dealing with potential farmstead contamination sources. Basically they are intended to protect the health and safety of individual rural residents and for the public at large.

Any organization, governmental unit or agri-business firm should be advised that anyone attempting to implement a farmstead assessment system should have a basic understanding of local and state codes and laws which exert jurisdiction over the farmstead.

Liability of the landowner may become a concern of the land user as a result of the farmstead assessment. During the farmstead assessment process, high environmental risks may be identified, some of which could result in legal action if discovered. Persons conducting farmstead assessments must be aware of the these potential situations and advise the rural resident accordingly. Potential personal liability on the part of the farmer may become apparent.

It should also be recognized that in some cases latest technology may have outdistanced existing laws and/or codes. Laws are difficult to enact or revise when technological continues to advance.

The following partial list of agencies and units of government should be contacted for information about zoning, building, and environmental protection requirements. The person(s) conducting farmstead assessments should have a telephone number, address and
possibly the name of a contact for each agency or service listed. Attempts should be made by authors to reference the most relevant laws and codes in the fact sheets and worksheets. The list is not all inclusive but should provide guidance to local units of government or agri-business firms with a list of contacts.

Government Agencies
- Department of Natural Resources
- State Environmental Protection Agency
- State Department of Agricultural
  Environmental Protection Agency

Units of Government
- State Emergency Government
- Local Emergency Government
- State Department of Agriculture
- Local Planning Officials
- State Planning Officials
- Local Construction Inspectors
- Local Environmental Consulting Firms
- Shoreland, Streambanks, Floodplains, Wetlands
- Federal/State/County/Local Planning Officials

Consultant Services
- Private Attorneys
- Environmental Consultants

Inspection/Permit Personnel
- Building Inspector
- Weed Commissioner
- Humane Officer
- Building Permit Officer/Board
- Zoning Officer/Board
- Well Construction (State/County/Local Zoning)
- Electrical Inspector
- State/County Emergency Government

Utilities
- Public Works Director
- Diggers Hot Line

State fact sheets developed as part of the Farm*A*Syst program should contain references to most relevant state laws and provide addresses and phone numbers for appropriate contacts related to those laws.

PART IV

FINANCIAL ASSISTANCE

Financial assistance may become an important concern after a farmstead assessment has been conducted. If environmental risks are identified during the assessment that pose high or unacceptable risks to the private well, the family may want to take immediate action to reduce those risks. If corrections involve structural changes in farmstead practices, the cost could be considerably higher than the family can readily afford. Persons conducting farmstead assessments should be prepared to suggest potential sources of assistance, both technical and financial. Some potential sources include:

Governmental Agencies Providing Financial Assistance Programs
- USDA Agricultural Stabilization and Conservation Service
- Local Soil and Water Conservation Districts
- USDA Farmers Home Administration
- State Department of Natural Resources
- State Department of Agriculture

Private Lending Institutions
- Local Banks
- Local Savings and Loan Institutions
- Local Credit Unions

Local Conservation Organizations
- Local Recreational Organizations
- Local Environmental Organizations
- Local Wildlife Organizations

Local Businesses
- Farm Cooperatives
- Suppliers
- Contractors

SUMMARY

Conducting the actual farmstead assessment may only be the beginning of the process. If the rural resident is lucky enough to detect no high environmental risks associated with farmstead practices then the process may well have been completed. However, if some high or potentially high environmental risks have been detected during the assessment, further information may be required to assist the land user in taking actions to reduce those risks.

The person(s) assisting in the assessment must be prepared to offer solutions or guidance to individuals seeking assistance for reducing or eliminating high risks that are identified. This can most likely be accomplished though organizing information on sources of assistance for practices that reduce pollution risks prior to implementing the Farm*A*Syst program locally.

APPENDIX M

TRAINING FOR FARM*A*SYST IMPLEMENTATION

INTRODUCTION

Design and implementation of Farm*A*Syst programs involves four phases. These phases include:

1. Modification of Farm*A*Syst materials to reflect state and local policies, programs and needs;
2. Training staff in Farm*A*Syst delivery;
3. Developing practice implementation support systems; and,
4. Developing, implementing and interpreting evaluations.

The following information focuses on training staff in Farm*A*Syst delivery. Training needs vary depending on implementation strategies which are selected by participating states. In general, Farm*A*Syst can be implemented through: formal comprehensive delivery by professional agency and private sector staff; informal comprehensive delivery through volunteers such as homemakers, youth organizations, community service organizations and other groups ; and, component delivery resulting from integration of components of Farm*A*Syst into existing programs. Training must be tailored to the delivery mechanisms and staff or volunteers that will be involved. In general, however, all training programs should contain an orientation to the use of Farm*A*Syst; applied assessment experiences; guidance in developing action plans that address identified high pollution risks; and, information on developing or using practice implementation support systems.

When conducting training it should not be assumed that the staff understand basic hydrologic principles related to groundwater recharge and flow. Developing this basic understanding is very important. If the implementation staff do not understand that in most cases groundwater withdrawn through shallow private wells is recharged by local precipitation, they will not be effective in convincing their clients that local land uses can contaminate local groundwater. Use of a groundwater flow model as part of the training program is an effective approach to building this understanding. Basic groundwater flow information could be incorporated into the Farm*A*Syst orientation training, or the on farm, applied assessment training. An example on-farm agenda is included as attachment 1.

Pollution Sources Orientation

Factsheets and worksheets in the Farm*A*Syst program address ten potential pollution

sources. The pollution sources orientation provides an opportunity to have technical specialists, potentially the lead authors of fact sheets and worksheets provide training support. The nature of contaminants that come from each potential pollution source should be covered, as should design factors, and management factors which influence pollution risk. Information on health risks associated with potential contaminants should be provided by a health professional. Technical information on practice design and management training should involve appropriate interagency technical experts. Since much of this information is in the worksheets and fact sheets, those materials should provide the foundation for training programs.

Although it is possible to cram a very brief orientation of each Farm*A*Syst topic into a half day, it is desirable and some would say necessary to hold a full day training program to provide a reasonable technical overview of the entire Farm*A*Syst program. An example agenda and program evaluation used for this type of orientation is included as attachment 2.

Applied Assessment Experiences

The level of training resulting from the orientation to pollution sources does not allow for adequate presentation and discussion of the full range of situations that will be encountered when conducting assessments. It is also difficult to explain the types of interpretations which must be made when categories in worksheets do not accurately describe the situations at the site which is being assessed. On-farm training can provide hands-on experience that result in developing the interpretation and judgement skills which implementation staff need.

Action Plan Development

Training on developing action plans based on results of the assessment is also needed. Staff with many types of backgrounds will likely become involved with implementation of Farm*A*Syst assessments. The worksheets provide an easy-to-follow format for conducting the assessment, and identifying high risks. They do not provide an easy-to-follow recipe for identifying recommendations to reduce identified pollution risks. Because of the range of topics that are covered in the assessment, few implementation staff will feel competent in making technical recommendations to reduce all of the types of risks that may be identified. It is important to provide training on recommendations to reduce identified risks, and on development of a referral network to assist staff in developing recommendations on topics with which they are not comfortable. Implementation staff want to feel they are helping their clientele. If they are not confident that they can provide recommendations, or "answers" to potential problems or high risks that are identified through the assessment, they may become hesitant to deliver the program. An example action plan is provided as attachment 3. This example can help to begin addressing this training need, but feedback received to date indicates that a more comprehensive cookbook listing of actions to recommend to reduce specific risks is probably needed.

Practice Implementation Support Systems

The goal of the Farm*A*Syst program is to help participants identify management practices and structures that present high pollution risks and take cost-effective, voluntary actions that reduce them. All of the training to this point has focused on identifying high risks and actions to reduce them. To increase voluntary implementation of recommended actions to reduce pollution risks, the development of practice implementation support systems should be considered.

Simply stated, practice implementation support systems involve making the products and services that are needed to reduce pollution risks, readily available at a reasonable price. They may also involve follow-up contacts that encourage farmers to implement recommendations. If possible, the support system should:

1. Strive to have common messages sent from numerous sources.
2. Actively market the products and services that reduce pollution risks.
3. Provide reminders or follow-up messages to participants that products and services are available that can help them reduce pollution risks.
4. Identify ways to reduce the costs of pollution reduction products and services.

Implementation support systems are discussed in Appendix L.

Staff who are involved in Farm*A*Syst delivery may not need training in the development and use of practice implementation support systems, but those who are involved in developing a Farm*A*Syst program implementation effort should consider this need.

If practice implementation support systems are developed, then information on their existence should be provided to implementation staff so they can share it with their clients.

Formal Comprehensive Delivery

Formal comprehensive delivery has been defined as providing direct technical assistance to participants through one-on-one contact, participation in group education and planning programs, or self assessments with technical support available to answer questions or assist with development of action plans. In general, staff who will be working directly with clients will need the most comprehensive training. At a minimum that training should include each of the previously discussed training activities. Additional technical training and training on using local, regional, state and if appropriate national referral networks may also be appropriate.

Informal Comprehensive Delivery

Training approaches for implementing the program through informal comprehensive delivery systems, must recognize the backgrounds and limitation of the people who will be

involved. In many cases the training or orientation will need to be designed to be effective with volunteer leaders. To date, no programs to train volunteer leaders in Farm*A*Syst delivery have been conducted. The information which follows reflects discussions with representatives from states that intend to use volunteers in Farm*A*Syst implementation.

The entire Farm*A*Syst packet should not be presented all at once in a one time setting. It contains too much information. Provide a sequential training program. Consider at least 3 sessions on the pollution sources; an on-farm, hands-on training half-day program; and, a session on developing voluntary action plans. Another approach could be to cover one pollution source per month at monthly meetings.

In some cases, it may be necessary to modify the actual assessment mechanisms. This is especially true for delivery with youth groups.

Component Delivery

Training needs for component delivery are not as extensive as needs for the delivery of the entire Farm*A*Syst packet. Component delivery will usually involve technical experts or specialists incorporating components of Farm*A*Syst materials into existing programs. Staff who are incorporating these pieces into their programs are usually technical experts on that topic. They may become technical support staff for training programs and support staff for those implementing the complete Farm*A*Syst program.

FARM*A*SYST ON-FARM APPLIED TRAINING

9:00-9:15	Opening Comments
9:15	Groundwater Basics - Groundwater Flow Model Demonstration
9:45	Discussion
10:00	Coffee
10:15	Discussion with host farmer
10:40	Begin farmstead assessment
12:30	Lunch
1:15	Review results and discuss the process
2:00	Develop Action Plans
2:45	Discuss Plans
3:15	Adjourn

EVALUATING POLLUTION POTENTIAL USING FARMSTEAD ASSESSMENTS
UWEX IN-SERVICE

9:00-9:15 a.m.	**Overview of Farmstead Assessments** Gary Jackson and Sue Jones Environmental Resources Center
9:10-9:30 a.m.	**County Agent Experiences in Farmstead Assessment Pilots** Jim Schmid, Jefferson County Crops and Soils Agent Greg Blonde, Waupaca County Agriculture Agent
	TRAINING ON SPECIFIC FARMSTEAD ASSESSMENT TOPICS
9:30-10:15 a.m.	**Drinking Water Wells and Household Wastewater Treatment (Farm*A*Syst Publications #1 and #6)** Sue Jones and Jim Peterson, Environmental Resources Center
10:15-10:45 a.m.	**Petroleum Product Storage (#4)** Pat Walsh, Department of Agricultural Engineering
10:45-11:00 a.m.	**BREAK**
11:00-11:30 a.m.	**Livestock Yards and Runoff Control Systems (#8)** Leonard Massis, Department of Agricultural Engineering
11:30-12:00 p.m.	**Livestock Waste Storage (#7)** Fred Madison, Wisconsin Geological and Natural History Survey
12:00-12:45 p.m.	**LUNCH**
12:45-1:30 p.m.	**Silage Storage (#9), Pesticide and Fertilizer Storage and Handling (#2 and #3)** David Kammel, Department of Agricultural Engineering
1:30-2:00 p.m.	**Hazardous Waste Management and Disposal (#5)** Elaine Andrews, Environmental Resources Center
2:00-2:30 p.m.	**Milking Center Wastewater Treatment (#10)** Brian Holmes, Department of Agricultural Engineering
2:30-2:45 p.m.	**BREAK**
2:45-3:15 p.m.	**Site Evaluation** Kim Cates, Wisconsin Geological and Natural History Survey
3:15-3:30 p.m.	**Overall Farmstead Assessment (#12)** Sue Jones
3:30-4:00 p.m.	**In-service Evaluation: Questions and Discussion Among A Specialists, Agents, and Participants**

Attachment 3

High-Risk Activities

A listing of individual activities or structures that ranked "1" on your Farm•A•Syst worksheets

After completing **each** of the 10 assessments appropriate to your farmstead, list **any individual activities or structures** that you ranked as "1" (high risk). Fill in the worksheet number, the worksheet name and the individual activity of concern. Don't fill in the blanks to the right of the double line. You'll do that later, when you're completing Worksheet #12.

Work-sheet number	Worksheet name	Individual activity identified as being high risk (1)	Response Options (check one)		Taking Action (proposed first step to address concern)
			Immediate action possible (change in practice only; cost not a factor)	Further planning required (requires major structural improvement or relocation; involves major effort or high cost)	
1	Drinking Water well	Unused, unsealed well in farmstead		✓	Contact District DNR office for closure procedures; ask about chipped bentonite
"	"	No anti backflow devices + no air gap	✓		Maintain air gap when filling tanks; buy anti-backflow devices
"	"	well doesn't meet all minimum separation distances		✓	Careful management; consider long-term building & well location changes
2	Pesticides	Sprayer washed at farmstead + rinsate dumped at farmstead	✓		Rinse sprayer in field; apply rinsate to labeled crop
		Partially filled pesticide containers dumped on farm	✓		Take triple-rinsed plastic containers to dealer licensed landfill. Return bags to supplier or hazardous waste collection service.
3	Fertilizer	Liquid formulation stored with no secondary containment in case of spills.		✓	Call Ag Engineering at UW for secondary containment plans.
4	Petroleum	Bare steel underground storage tank is 20 years old		✓	Notify fire dept. and DNR that tank will be pulled; properly dis- rent certified tank remover. Install new above ground tanks
5	Hazardous Waste	All products dumped or burned on farm	✓		Reduce, reuse, recycle. Dispose of rest at properly designed landfills. Ask about Clean Sweeps in area

(Continue listing on next page as necessary.)

Work-sheet number	Worksheet name	Individual activity identified as being high risk (1)	Response Options (check one)		Taking Action (proposed first step to address concern)
			Immediate action possible (change in practice only; cost not a factor)	Further planning required (requires major structural improvements or relocation; involves major effort or high cost)	
6	household wastewater	Single septic tank never pumped	✓		Schedule pumping; reduce H_2O consumption - reduce chemical use to prolong system life
"	"	wastewater disposal - piped to ravine from tank		✓	Call county zoning or health dept. for help on replacement of; install and maintain properly designed system
7	livestock waste storage	undesigned earthen waste storage pit more than 10 years old (long-term storage)		✓	properly abandon pit (call county Ext. SCS or LCD for advice); install properly designed long-term storage; in
"	"	short-term storage in field on coarse soil	✓		store on finer-textured soils; or move to designed temporary storage pad
8	livestock yards management	lot runoff uncontrolled		✓	Call county Ext SCS or LCD for advice on designing runoff control system
"	"	yard rarely cleaned and scraped	✓		scrape frequently (once/week)
9	silage storage	silage moisture content >70%, or store canning company wastes	✓		Stop harvesting/storing such moisture materials; consider leachate collection system if ongoing practice
10	milking center wastewater	wastewater discharged directly to soil as generated		✓	If liquid manure storage available, combine milking center waste with this. Otherwise, apply wastewater to growing crops or slowly permeable soil and remove vegetation regularly
"	"	manure and excess feed are washed down drain	✓		Improve cleanup practices

APPENDIX N

LIABILITY ISSUES FOR LOCAL FARM*A*SYST DELIVERY PERSONNEL

The farmstead assessment system (Farm*A*Syst) was designed to provide rural residents with information about environmental risks to drinking water as influenced by homestead and farmstead structures and activities. The ultimate delivery vehicle of the system will be at the local community, watershed or county level. Technically trained professionals from private organizations and public agencies will be involved in actual farmstead assessments. Successful implementation of the program depends on strong local inter-agency and private sector cooperation.

As a part of successful implementation of the farmstead assessment at the local level, there appears to be associated legal implications, especially from the agency perspective. Two issues need to be explored and clarified prior to local implementation. First, what obligation does the professional technical person conducting the farmstead assessment have to report observations of potential violations to regulatory agencies. Second, can the confidentiality of data collected be protected. If data can not be protected, voluntary participation of rural residents would be jeopardized if they believed the information could be observed by regulatory agencies.

During the on-site farmstead assessments, individuals are likely to observe possible violations of local, state or federal codes and regulations. In some cases the rural resident may not be aware of the potential violations and associated risks. It is assumed that personnel from both public and private organizations conducting assessments would inform land users about possible violations and provide suggested solutions and/or additional sources of information and technical assistance.

It is conceivable that land users may be unable to take corrective action in a timely manner and may elect to delay corrective actions of possible violations. Subsequently, they run the risk of being discovered and required to make corrections when violations are observed by regulatory agency personnel.

The following discussion has been designed to provide guidance to agencies representing units of government in developing a local implementation strategy for dealing with liability and confidentiality issues. Similar discussion could be conducted for private consulting firms, however they would most likely request assistance from their organizations legal services. The following discussion is intended to assist local agencies involved to investigate the potential legal risks involved with farmstead assessment implementation.

Suggested procedures for professional technical staff to avoid personal liability

Prior to implementation of a farmstead assessment program and during the process of making farmstead visits for the purpose of conducting a farmstead assessment, the following points should be observed by agency personnel.

1 Prior to implementing a farmstead assessment program, cooperating agencies should discuss procedures with legal representatives of the local unit of government concerning how staff liability will be handled. The local agencies will most likely have

somewhat differing methods because of differences in organizational objectives each operates under. Some agencies do not serve regulatory functions (Extension Service and Soil Conservation Service), some agencies do serve regulatory functions (Zoning offices and Department of Natural Resources, Environmental Protection Agency), and some agencies may serve both (Soil and Water Conservation Districts).

2 It is the general opinion that agencies such as Extension Service and Soil Conservation Service are non regulatory agencies, but instead provide education and technical assistance. Personnel representing these agencies are not obligated to disclose suspected violations governed by regulatory agencies unless disclosure is required by law.

3 The non-regulatory agencies are committed to providing accurate information concerning high risk activities and structures around farmsteads. However, personnel should be aware of activities that come under jurisdiction of regulatory agencies and should present that information to the land user during the farmstead assessment.

4 When a suspected illegal activity is observed on a farmstead, the situation should be pointed out and discussed with the land user/owner/resident. Technical solutions should be offered or additional sources information and assistance should be identified.

5 Suspected activities and structures that may be in conflict with local, state or federal regulations should be documented. It should also be documented that the land user/owner/resident was informed of possible violations of regulations and of any suggested corrections that could be taken. Document specific facts relating to the activities and structures. Do not make side comments pertaining to specific regulation violations. Document only the facts as they are observed or activities as the resident describes.

6 Agency personnel providing technical advice to rural residents are obligated to provide accurate and factual information. Persons providing information that is not factual or accurate can be held liable.

Suggested procedures for protecting confidentiality of landowner/user data

Prior to implementation of a farmstead assessment program and during the process of making farmstead visits for the purpose of conducting a farmstead assessment, the following points should be observed by agency personnel for maintaining confidentiality of data collected.

1 Prior to implementing a farmstead assessment program, cooperating agencies should discuss procedures with legal representatives of the local unit of government concerning confidentiality of data collected. Similarly to the liability issue, local agencies will most likely have somewhat differing methods because of differences in mission statements each operates under. Those serving regulatory functions will probably want the data disclosed, while those not serving regulatory functions will want the data to remain confidential. This issue needs to be resolved prior to implementation.

2 If local agri-business firms are implementing the program, they should also contact legal advice on their responsibilities toward confidentiality. The issue is most likely more clear because of the professional/client relationship that appears to be protected by law.

3 Non regulatory agency personnel need to understand that any client data they collect and place in their file may not actually be confidential because of the open files law (see case example 2 below). It may be remote, but individuals with reason may have access to files maintained in public locations which includes agency offices.

4 If confidentiality becomes a concern among agencies proposing to promote farmstead assessment, they may need to develop a policy of discussing the issue with the farmer prior to conducting the farmstead assessment.

Case Example: John Tallman, Extension Service Attorney

Liability

1 In Wisconsin, extension agents are under no obligation to report suspected violations of local, state or federal regulations other than to the landowner unless specified in state statute or grant. An extension agent is not personally liable for not reporting a suspected code violation if working on the job and not specified in state statute or grant.

Confidentiality

2 Based on a recent Wisconsin Supreme Court ruling, data collected for educational purposes can be confidential unless administrative rules supersede. The data can be maintained in office files or on a computer database. The data is part of the public record, but if it is for educational purposes, it is exempt from the open records law.

Case Example: Mike Danaher, US Office of General Council

Liability

1 SCS personnel are protected from liability if they are properly conducting official government business such as a farmstead assessment. If they make comment on something outside of their official business, they may be personally liable for actions they take. For example, if they enter a property for the purpose of conducting a farmstead assessment, and they note and comment on a suspected illegal activity that is not directly related to private drinking water protection, they can be personally liable.

Confidentiality

2 Data collected during a farmstead assessment and stored in a record keeping system, can not be fully confidential. Open records laws provide outsiders with the opportunity to view data.

APPENDIX O

FARM*A*SYST PROGRAM MARKETING

Preparing to offer implementation of the Farm*A*Syst program at the farm or local level requires a three-step process. First, participating states and agencies must adopt the farmstead assessment concept into their plans of operation. Second, individual states must in turn provide leadership in assisting local units of government, private agri-business firms and others to adopt the concept into their field operations. Third, when the first two steps are successfully accomplished, the farmstead assessment system should be marketed at the local resident level and become a useful tool for identifying pollution risks and encouraging voluntary actions to reduce those risks. For purposes of this document, the assumption has been made that the first two steps have or will be accomplished. The objective of this strategy concentrates on marketing the concept of farmstead assessments to rural residents from local units of government and/or local agri-business firms.

Background Of Marketing

Concept of Marketing:

Marketing creates an environment in which a buying decision can be made, and provides information designed to create interest. Marketing utilizes a variety of tools including, but not limited to: planning, program packaging, demographics, forecasting, public information, focus groups, public relations, industry trends, group meetings, broadcast and print media.

Strategic Marketing:

Strategic marketing combines organizational goals with market knowledge looking at the big picture and reflecting long range goals. A strategic marketing plan remains relatively constant as it is based on values, mission, and long range goals.

Tactical Marketing:

Tactical marketing is dynamic and short term, generally made up of a series of campaigns that target specific market segments. While each campaign may vary in approach they all reflect the goals and objectives of the strategic plan.

Teamwork And Coordination

WHO: Who are appropriate team players on the farmstead assessment implementation team?

Extension Service, Soil Conservation Service, Environmental Protection Agency, State lead water quality agency, State agricultural agency, Soil and Water Conservation Districts, Farmers Home Administration, Agri-business firms, Agricultural lending

institutions, Environmental groups, Educational groups, Agricultural organizations and Civic groups.

WHY: Why a farmstead assessment implementation team is important.

To make best use of existing, limited money and people. Adds legitimacy and credibility. Ties into informal network of farmer contacts. Avoids duplication of services and conflicting messages. Clear up farmers' confusion about agencies.

HOW: How to build a conservation team.

Need for cooperative philosophy among main organizations.
Need for local political leadership or approval.
Build on memoranda of understanding.
Develop interest and commitment of all organizations.
Recognize and emphasize common objectives.
No standard formula (unique formula in each local area).
Work within historical and existing framework.
Involve existing farmer groups.
Clearly define division of labor and responsibility.
Emphasize complementary resources and expertise.
Recognize and overcome barriers to teamwork.

WHAT: What are the responsibilities of the team members?

Identify and meet farmer information needs.
Plan and implement program activities.
Develop and implement strategies for encouraging adoption.
Refer farmers to proper sources of assistance.

Strategies For Encouraging Application of Farmstead Assessment

1 Increase recognition and admission of on-farm groundwater contamination and risks of polluting drinking water.
Increase understanding of pollution risks.
Dramatize local costs of groundwater pollution and health risks.
Publicize ways to visualize and understand groundwater pollution.

2 Increase understanding of surface water protection.
Increase understanding of risks of surface water pollution.
Dramatize local costs of surface water pollution.

3 Increase understanding of types and sources of available assistance to eliminate groundwater contamination sources.
Public information materials (posters, pamphlets, PSA's.
Central clearinghouse (e.g. with phone no.)

Groundwater contamination information bank.
Rural resident testimonials and case studies.

4 Increase recognition and prestige of rural residents practicing good management by eliminating groundwater contamination risk and protecting water quality.
Good management + production = professionalism.
Awards for conservationists.
Farm businesses recognize assessment users (signs, preferred treatment).
Bankers emphasize their concern for groundwater protection.

5 Use peer pressure to influence those who refuse to practice sound management practices to protect water quality.
Friendly competition among watershed or townships.
Educate and involve children and whole families.
Make land abusers feel uncomfortable in how they use their land.
Publicize examples of severe problems.

6 Promote rural resident to rural resident referral networks.
Encourage communication and interaction.
Tap into existing, informal social networks.
Basis for clubs, conservation tours, and meetings.
Have team identify leading conservation farmers.
Contact these farmers to enlist participation.
Develop directory of who's doing what.
Publicize information through mass media, farm businesses, and existing agency newsletters.
Feature farmers on tours and at meetings.
Encourage follow-up throughout year.
Tie into other strategies.

7 Interpersonal information sources.
They are local experts on groundwater protection.
They are accessible, trustworthy, and locally relevant.
Farmers rely on watching other's experience.
Can serve to reinforce good behavior.

Obstacles To Prevent Adoption of Farmstead Assessment

Residents may lack awareness and understanding of:
On-farm groundwater and surface water contamination problems.
Causes and recognition of water contamination problems.
Off-farm costs caused by on-farm contamination problems.
Benefits of reducing the risks of groundwater and drinking water contamination (short term and long term).
Types and sources of available assistance.
Complexity of the problems and costs involved.

Residents may lack technical information:
- For selection of management systems that may reduce water contamination.
- For adoption of complex management systems.

Social system constraints:
- Lack of support from peers.
- Lack of community support (financial institutions).
- Peer pressure against initiating management practices.
- Unequal access to financial and informational support.
- Lack of access to alternatives that reduce pollution risks.
- Recycling programs.
- Hazardous waste collection programs.

Social-Psychological characteristics:
- Traditionalism.
- Adversity to risk.
- Lack of necessary management skills.
- Independence.
- Negative attitudes.

Organizational Barriers:
- Lack of sufficient financial assistance.
- Conflicting messages from different sources.
- Past reliance on walk-in clientele.
- Those with less need may get most assistance and information.
- Resident confusion over roles and responsibility of various organizations.
- Farmer belief they will encounter unnecessary run-around or red tape.
- Lack of support from financial institutions and farm business.

Economic Obstacles:
- Lack of finances for initial investment in farmstead practices.
- Lack of finances for farmers share of cost-share.
- Heavy debt load.

Landlord/tenant obstacles:
- Lack of communication about water quality protection.
- Each uses other as a convenient excuse.
- Landlord not experienced in farming and little appreciation for farmers situation.
- Cash rent encourages exploitation.

Marketing depends on a series of controlled and uncontrolled variables. Adoption of the farmstead assessment system on a broad scale depends on rural resident acceptance. Uncontrolled variables are just that, uncontrolled. Local units of government and local agri-business organizations have to deal with the reality of the environment within which they operate during normal activities they carry out. The controlled variables are the variables agencies can influence and essentially make up the marketing strategy or marketing plan of getting wide scale acceptance of the

farmstead assessment system. Successful marketing of the farmstead assessment system also requires a knowledge of the environment

Uncontrolled Variables that agencies cannot influence:
Cultural and social environment.
Resources and objectives of the agencies and agri-business firms.
Competitive environment.
Economic and technological environment.
Political and legal environment.

Controlled Variables that agencies can influence for a successful marketing program include:
Product
Place
Promotion
Price

When farmers or rural residents buy into farmstead assessment they are buying:
* Security from health concerns
* Security from financial burden
* Security from liability
* Peace of mind
* Pride in ownership
* Safe environment in which to live

The Marketing Approach
* Find out what is important to the land user
* Emphasize meeting the needs of the land user
* Farmstead assessment can identify problems to the land user
* Follow-up to farmstead assessment can identify solutions to problems

Developing a marketing plan
* Identify the target market or clientele.
  A homogeneous group having similar preferences or problems. Individuals should be grouped by similar social, cultural, or demographic characteristics; or by similar source problem; or by similar preference.

* Identify the social and resource needs of the target clientele

* Identify the marketing mix necessary to meet target clientele needs.
  The market mix will include the product, place, price and promotion.

Product:	Technical and information assistance in the farmstead assessment.
Place:	Number and location of farmsteads eligible for assessment.
Price:	Cost of remedial action for potentially hazardous environmental conditions located.

Promotion: Campaign of getting awareness among the target clientele. Includes personal visits, media, group meetings, etc.

Developing A Local Marketing Strategy

Development of a sound local marketing strategy depends on basic marketing principles coupled with a lot of local expertise. Basic marketing principles can come from most marketing textbooks. However, the local expertise comes from experience and accumulation of data and knowledge.

Based on these two important basic principles, the following suggestions for developing a local marketing strategy have been made. It is not a step-by-step guide but instead provides some suggestions for consideration in developing your strategy.

GENERAL CONCEPTS AND OVERVIEW OF A MARKETING STRATEGY

Marketing Strategy As A Dynamic Tool

An effective marketing strategy should remain dynamic. It should be flexible enough so changes can be made throughout the time period for which the strategy applies. If part of the strategy is not proving to be effective, program managers should not hesitate to consider making adjustments.

Evaluation Of Marketing Strategy

The selected marketing strategy for a specific project should undergo continual critical evaluation to assess effectiveness in meeting program objectives. Evaluation within the project area should be targeted at areas identified during project planning as being "hard to sell". Evaluation of effectiveness may best be served in these difficult areas. If the marketing strategy is not working in those areas, it is most likely not working in other areas of the project.

Targeted "hard to sell" areas may include those where specific water quality problems are concentrated, similar site conditions with high contamination vulnerability, limited accessibility to technical and financial assistance, etc. These areas can provide effective evaluation potential for a marketing strategy.

Feedback Mechanisms

Feedback about the effectiveness of the marketing strategy can be collected directly from target area residents through use of surveys or it can be collected through intermediary sources such as rural agri-business firms or other governmental agencies having direct contact. Use of promotional items will also provide feedback information to evaluate the marketing strategy and provide basis for adjustment.

Reality Check

An impediment to marketing farmstead assessment may come from farmers' unwillingness to accept the message. Those marketing the program must deal with the fact that many farmers may not want to hear bad news and subsequently do not participate in a farmstead assessment. Farmers must be given sound reasons why they want to have a farmstead assessment conducted on their property.

GUIDELINES FOR DEVELOPING A MARKETING STRATEGY

Segment The Audience On the Basis Of Need

Segment the audience based on similarities due to need or site conditions. For example, susceptibility to groundwater pollution; unique activities that may impact groundwater; unglaciated area susceptibility.

Focus Marketing on Areas Identified As High Need Or High Risk

Introduce marketing efforts to the high contamination risk areas first. If it does not work in a high risk area, it probably won't work in a moderate or low risk area.

Identify areas vulnerable to drinking water contamination. These areas of high risk may be due to excessive application of chemicals, they may be vulnerable due to soil conditions, or geologic conditions.

Increase Farmer Understanding and Perception Of the Problem

A key ingredient of successfully marketing a program is increasing the understanding and perception of an existing problem. For example, research has shown that farmers do not have a good understanding of potential contamination risks to their drinking water supplies. Therefore, an accurate assessment of existing understanding and perception should be made. This information could be assembled through review of past data collected from the farmers in the project area. These data could come from prior surveys conducted in the area or in adjacent areas with similar conditions. Some local areas have considerable good data from which analysis can be made. If sound information is not available or if old, consideration should be given to collecting additional data. A survey could be applied to a sample of the rural residents through random selection in the project area. Data collection costs vary considerably from an elaborate face to face interview to a brief telephone survey. A basic telephone survey of up to five minutes could be done relatively easily and with a minimum of cost, yet provide vital information needed for the marketing strategy.

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To overcome the lack of understanding or awareness on the part of farmers in the project area, a major effort may be required. Identify real problems and use them as case study examples to increase awareness of need in the project area. Demonstrate serious health concerns associated with contaminated water supplies, increased financial costs, liability concerns or other difficulties caused by those problems that exist in the project area.

Risk Assessment As It Relates To Marketing Farm*A*Syst

Rural residents may not be aware of risks associated with drinking water contamination. As part of the marketing strategy, program managers should try to determine what knowledge rural residents in the selected area have about contamination risks. Risks include health risks to their family if water quality conditions are poor. Risks also include problems with local lending policies and implications to future property transfers. Finally, risks include costs associated with clean-up or corrective actions if problems do occur.

The probability, severity, and cost of correction of a high risk occurrence has a strong influence on whether an individual takes corrective action. Research suggests that if you have a low probability of an event occurring (well contamination) and the seriousness is relatively low (mild stomach irritation), people will not be inclined to take corrective action, especially if the cost of correction is high.

From a marketing perspective, a situation with high occurrence potential, causing serious health problems, with low cost solutions, should be considerably easier to market than the previous situation. A sound marketing strategy could involve remedial actions residents have control of, which results in protection of their private wells from contamination.

Sell The Farmstead Assessment Process

Educate residents on the importance of assessing potential sources that can contaminate their drinking water supplies. It is recognized that implementation of the entire farmstead assessment process may not be feasible with existing staff. A potential solution to this problem is a strong local team commitment between agencies and the private sector.

Sell Components Of The Farmstead Assessment Process

Marketing new technologies is likely to encounter some resistance. Individuals may be unwilling to implement new technology because of personal reasons or they may be

unable to adopt new technology because of limited resources or technical abilities. If rural residents of the target area are either unwilling or unable to accept the entire farmstead assessment process, select a component(s) and sell it alone. Select components that are especially pertinent to the target area and where trained staff are available to promote it.

Consequences Of Poor Water Quality Or Not Controlling Contamination Sources

Educating the public about human health concerns, financial and legal consequences of poor water quality can be an important step in overcoming individuals that are unwilling and/or unable to control contamination sources. A marketing strategy should include information about each of these consequences of poor water quality conditions. The strategy could include specific causes of diseases and infections common in the target area, or that may be unique to the area. It could also include specific instances where property transfers have been stalled or been abandoned because of existing poor water quality conditions. The strategy should include some discussion about causal relationships between contamination of water and specific health problems and diseases; factors that are evaluated in property transfers; and, existing legal requirements.

Along with the these issues that can be brought forth, other concerns should also be presented. They include the health of livestock, especially those involved in milk production. Others include liability of rural residents if contamination sources are allowed to persist. They include, liability issues during property transfer and liability expenses brought about by clean-up of a contamination occurrence.

Educate The Public On Solutions To Farmstead Contamination Causes

Potential alternative solutions to farmstead contamination sources are addressed in the farmstead assessment support package. The marketing strategy should help develop and then utilize the information provided in that document for education and assistance to residents of the target area.

The support package is designed for use after a farmstead assessment has been completed and potential contamination sources have been identified. It provides sources of assistance for correcting hazardous or potentially hazardous situations. The recipient may need information that is reliable from which to base informed decisions about courses of action that can be pursued.

The document provides suggested sources of information and technical and financial assistance that can be made available to farmstead assessment recipients. Dissemination of this information may be vital to those recipients for solving or alleviating a high risk pollution potential to their drinking water supplies.

The information contained in the document is divided into four categories; safety and health, technical assistance, applicable farmstead laws and codes, and financial assistance. It can be used to build teamwork among local agencies and agri-business firms.

IMPLEMENTATION OF THE MARKETING STRATEGY

Delivery Methods Of The Farm*A*Syst Message

There are numerous methods of delivering the message about farmstead assessments to the target audience. Local situations will dictate which method of combination of methods will be most effective. The following list of potential delivery methods are provided for local consideration. Some specified delivery methods may not be available locally while others may have been omitted.

Local Organizations or Programs for Delivery
- Future Farmers of America Organization
- Soils Stewardship Sunday (Every May)
- Farm Organizations
- Environmental Organizations
- 4-H Programs
- Homemakers Programs
- Vocation Technical Agricultural Education
- Farm Safety Week
- Safe Drinking Water Week
- County Fairs
- State Farm Shows

Private Sector Agri-business Firms
- Agricultural Cooperatives
- Pesticide Dealers
- Crop Consultants
- Lending Institutions
- Petroleum Jobbers

Existing or Potential Federal and State Programs
- Resource Conservation and Development Program
- River Basin Planning Authority
- Small Watershed Program
- Water Quality Projects (USDA WQ initiative)
- State Water Quality Programs
- Wellhead Protection Programs

Delivery Through Mass Media Channels

Local and regional print media
Agricultural Periodicals
Local and Regional Ag Weekly Newspapers
Television
Radio

Format Of Delivery Of The Farm*A*Syst Message

Various formats of information can be utilized and provided to the delivery mechanisms listed above. Different strategies will encourage different groups to become involved with the farmstead assessment system.

Prepare a printed publicity folder with a collage of media headlines depicting water quality headlines and/or damages caused by contaminated water supplies.

Prepare and Utilize old press clippings about water quality issues
Atrazine detection in farm wells
Chemical spills and clean up
Importance of safe storage/handling of pesticides
Wellhead protection activities

Generate local news coverage which can include the following examples of information.
Press releases to local and regional print media that provide up to date information about the program.

Feature Stories can be utilized to highlight activities where farmers have taken preventative actions to protect their drinking water supply and the publics groundwater.

News Stories

Short items of local interest that will attract local TV/Radio stations.
Coverage of demonstrations and field days.