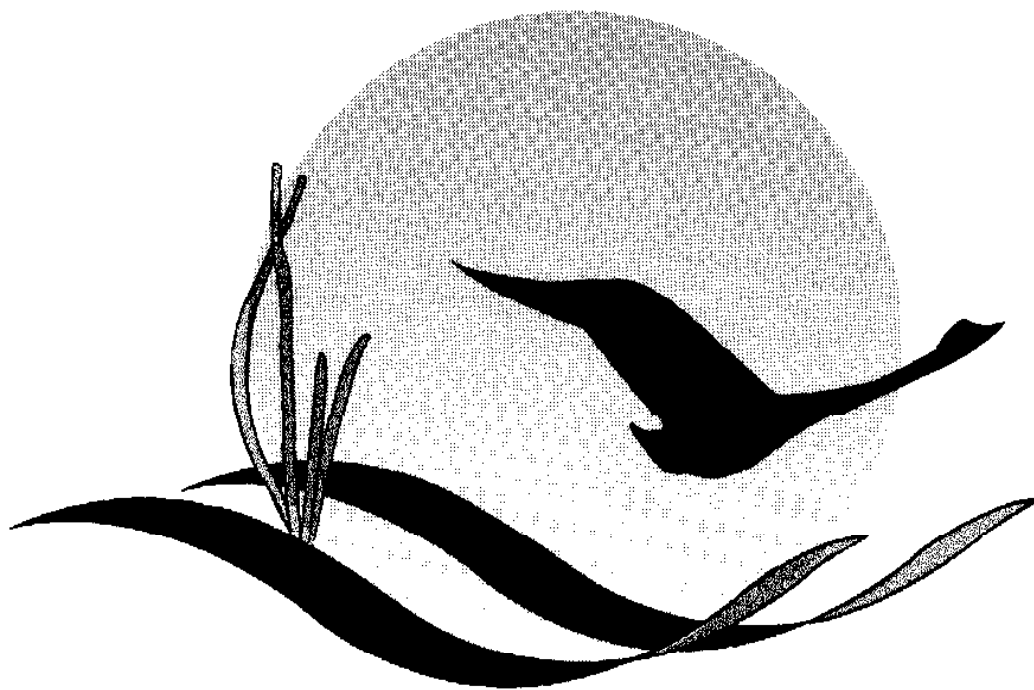


Executive Council's Agricultural Nonpoint Source Initiative

Subcommittee Reports

September 1993



Chesapeake Bay Program

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The following reports were prepared by the three subcommittees of the Executive Council's Agricultural Nonpoint Source Initiative and provided the basis of the Steering Committee's final recommendations to the Executive Council.

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Farm Organizations

American Farmland Trust
Maryland Association of Conservation Districts
Maryland Farm Bureau Federation
Maryland State Grange
Pennsylvania Association of Conservation Districts
Pennsylvania Farmers Association
Pennsylvania Farmers Union
Pennsylvania State Grange
Society of American Foresters
Soil Conservation Committees
Virginia Farm Bureau Federation

Agribusiness

Delaware/Maryland Agribusiness Association
Dupont
PENNAG Industries Association

State

Maryland Department of Agriculture
Maryland Department of the Environment
Maryland Department of Natural Resources
Maryland Governor's Office
Pennsylvania Department of Agriculture
Pennsylvania Department of Environmental Resources
Virginia Department of Environmental Quality
Virginia Department of Agriculture and Consumer Services

Universities

Center for Environmental and Estuarine Studies
College of Agriculture and Life Sciences, Virginia Polytechnic Institute and
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College of Agriculture, Penn State University
Maryland Institute of Agriculture and Natural Resources

Legislators

Legislators from Maryland, Pennsylvania and Virginia
Chesapeake Bay Commission

Federal Agencies

USDA Agricultural Stabilization and Conservation Service
USDA Cooperative Extension Service
USDA Forest Service
USDA Soil Conservation Service
US Environmental Protection Agency
National Oceanic and Atmospheric Administration

Environmental Organizations

Alliance for the Chesapeake Bay
Chesapeake Bay Foundation

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REPORT FROM THE TECHNICAL ASSISTANCE, OUTREACH AND EDUCATION SUBCOMMITTEE

Total Resource Management Planning

Introduction

Both the farming community and governmental agencies have experienced frustrations with the current way plans and permits for farms are developed and implemented. Farm plans and permits are not written by a single department within each state but by numerous local, state and federal agencies. Because there are so many different actors, planning for a single farm is a complex and contradictory process. Frequently farmers are placed in the difficult position of deciding which plan to follow and which one to violate because the plans contradict each other.

To resolve these issues the Technical Assistance, Outreach and Education Subcommittee recommends that the Total Resource Management Planning process be adopted in the Chesapeake Bay states of Virginia, Pennsylvania and Maryland. This approach will provide the farmer with a menu of resource management options that can be adapted to the individual farm. Total Resource Management Plan is defined as:

A comprehensive coordinated approach to agricultural natural resource management that meets the goals of and demonstrates environmental stewardship, maintains a viable agricultural economy and complies with governmental regulations.

Goals

The goal of Total Resource Management Planning is to identify ways to manage agricultural land holistically by including both environmental and economic factors. The process makes the farmer aware of the relationship among the various plan components and moves the farmer toward full implementation of the plan. It represents a way to balance environmental needs with economics and limited planning resources. The process stresses the importance resource steward-

ship and economic viability as incentives for participation. In developing and implementing the plans, the talents of the farmers and the federal, state and local agencies that impact agriculture, the farmers and agribusiness should be combined into resource management teams. Wherever possible, opportunities for increased involvement of the private sector in the teams should be pursued.

These teams of agency personnel, the private sector and the individual farmer should work together to develop a site specific plan for the farm. By working together competition, conflicts, overlap and paperwork among the agencies should be reduced. This process should result in reliable, useful resource documents that the farmer can easily refer to as he/she manages his/her farm. By providing sound documentation, the plans can assist farmers in tracking the benefits of the practices and compliance with the permits and plans. The plans will help evaluate future management alternatives. However, the plans should maintain enough flexibility to allow farmers to change the practices when needed. While the process described here is specifically targeted to agriculture, the concepts of Total Resource Management are applicable in urban and suburban settings.

Components

While each state may vary on the specific content of the plan, a Total Resource Management plan should strive to include nine basic components with emphasis on Soil and Water Quality and Nutrient Management plans. The site specific needs will determine which plans should be used and their priority. The states may want to add other components to individual plans as necessary. It should be noted that each of these components is not a required subsection of a plan document. All farm operations may not need or want to involve all of the items. These "components" are listed as general guidance to direct efforts to ensure a "total" or comprehensive approach to the planning procedures. The list of basic components follows:

1. **Soil and Water Resource Management.** This plan component consists of planned best management practices (bmp) the land user (decision maker) has agreed to implement to reduce soil erosion and prevent surface water degradation. Levels of implementation can be tied to resource sustainability such as the soil loss

tolerance (T) or federal/state/local program criteria. Also, this component could contain optional bmp alternatives or recommendations that the decision maker may wish to consider in the future. Planned bmp's need to reflect consistency and potential effects on and by other plan components.

2. **Nutrient Management.** This plan component addresses the use of all nutrient inputs with plant uptake for crop and forage growth to achieve a nutrient balance. Total inputs from crop residues, legumes, manure, sludges, other organic inputs, as well as commercially applied fertilizers are balanced with realistic yield estimates of desired crops and forages. In addition, factors such as timing, method of application, associated bmps, etc may be included.

3. **Crop and Pest Management.** This plan component addresses the agronomic and management related needs of the decision maker. Bmps related to production and management objectives as well as the control of pests (insects, diseases, and weeds) would be included. This component will often appear as recommendations or advice due to the reactionary nature of management due to specific but variable conditions such as the weather, disease outbreaks, increases in insect populations, etc.

4. **Animal Management.** This component addresses the production aspects and environmental concerns of animal production or diversified agricultural operations. Included within this component would be bmps designed around specific animal production operations such as swine, beef or dairy production facilities. This would include a greater degree of management related decisions and recommendations than what might be included in the Nutrient Management or Soil and Water Resource Management components.

5. **Farmstead Assessment.** The storage, handling, and container disposal of both nutrients and chemicals are addressed in this component. Major issues involve both surface and ground water protection, health impacts as well as related worker protection concerns. This assessment is confidential to the farmer.

6. **Forest Management.** Many agricultural operations include woodland as a part of a total farm operation. These woodland areas provide multiple uses such as timber production, wildlife habitat, aesthetic beauty, windbreak protection, and improved watershed runoff characteristics.

7. **Wildlife Habitat Management.** This component may be separate but complimentary to the Forest and Soil and Water Resource Management components. For certain land owners and decision makers, wildlife is the main emphasis of land management activities on a

portion or the entire farm. Secondary wildlife uses of cropland, hedgerow, windbreaks, etc. are extremely common.

8. **Economic Impact Analysis.** For most land management operations, the activities, techniques and practices used must provide some economic benefit to the operation. Other considerations such as recreational use and aesthetics may be viewed in a negative cash flow situation, but most operations have to produce a profit in order to remain viable. This component provides the necessary documentation of the effects of the plan and its components to an operation. Items contained within this component might include cash flow scenarios of projected expenses and income, amortization over time of the cost of bmps, and a variety of farm management alternatives and record keeping options, according to the operators needs.

9. **Regulatory Compliance.** This component addresses many of the documentation or report processes a land user or decision maker faces in their land management operation. Items may include specific federal/state/local program documentation dealing with highly erodible land, wetlands, pesticide application, local or state environmental zoning requirements, etc.

Recommendations

The subcommittee recommends that the Executive Council develop and utilize the concept of Total Resource Management Planning Bay wide. The subcommittee further recommends that the Executive Council sign an agreement at its August 1993 meeting reflecting this focus.

The agreement should include the following components:

- ◇ If not already in place, each state shall draft and sign memorandums of understanding among the appropriate federal, state and local agencies to assign responsibilities for developing Total Resource Management Planning.
- ◇ Each state should develop a work plan for implementing Total Resource Management Planning, in consultation with farmers, farm organizations, agribusiness and other states if necessary.
- ◇ The agencies and private sector representatives that are coordinating Total Resource Management Planning within each state should meet regularly with the coordinators in the other states to share information and solve problems.

The following is a suggested workplan for states to follow:

Interagency Commitment and the Memorandum of Understanding (MOU)

- ◆ Identify planning resources available within the federal and state conservation agencies and the private sector for the nine components listed above. Identify which groups have the resources to write or work on each component and how developed their capabilities are.
- ◆ Develop and sign a MOU among the conservation and planning agencies and possibly the private sector that designates roles in the process. The states should examine funding and other resources available to the effort to implement Total Resource Management Planning in the state.
- ◆ It is highly desirable to designate a project manager to oversee and manage the process.
- ◆ Each signatory should appoint appropriate staff to spearhead the development and implementation of Total Resource Management within the state and inform all appropriate staff of this assignment.

Developing the Plan

- ◆ Develop a format for the Total Resource Management Planning process. Include a review of applicable regulations that impact farmers so that they may be incorporated into the plan.
- ◆ Review the format plan with the signatories and obtain approval.

Producing the Plan

- ◆ Identify planning capabilities among field staff in each geographic region of the state. If necessary, develop local level MOUs.
- ◆ Assess field personnel training, communication and logistical needs within each geographic region. Circulate assessments to appropriate managers of each signatory organization for approval.
- ◆ Prepare instructions for guidance and training of field personnel, including roles and responsibilities of various agencies, progress reporting and relationships to existing programs. Circulate instructions and guidance to appropriate managers in each signatory organization.
- ◆ Use best available tracking systems to monitor results. Work with NPS subcommittee efforts to develop a Baywide tracking system.

- ◆ Implement or install any improvements needed in communications and logistics within each geographic region.
- ◆ Conduct field personnel training in each geographic region of state. Include district managers as well as planners in training.
- ◆ Set up local interagency planning teams and assign specific responsibilities within the team to individual employees. Agencies may want to include the specific team responsibilities as a part of the position description for field personnel. Involve the private sector in service delivery as much as possible.
- ◆ Set up training for local delivery teams.

Marketing the Plans

- ◆ Develop educational strategies and prepare informational products. Make local conservation and farm organizations aware of the plans. Inform local conservation groups and signatory agencies of the completion of training. Carry out educational strategies according to plan.

Writing an Individual Plan

- ◆ After receiving a request from a farmer to develop a Total Resource Management Plan, the Delivery Team meets with the land owner to determine which priority components are needed and who will provide that expertise. Critical issues such as soil and water conservation, manure/nutrient management, weed and pest control and general crop management and production issues should be addressed.
- ◆ To obtain the best input from the land owner, the plans should be developed off-season.
- ◆ Determine lead person for developing and coordinating the plan.
- ◆ Lead person coordinates plan writing in consultation with the other personnel and the land owner.
- ◆ Plan to follow-up contact with the land owner to revise the plan as needed.
- ◆ While the various planners should work to eliminate conflicts among the various plan components, the land user should be an integral part of the process.

REPORT FROM THE INTERGOVERNMENTAL, COORDINATION AND PARTNERSHIPS SUBCOMMITTEE

The Team Approach

Introduction

The Intergovernmental Coordination and Partnerships Subcommittee recommends that the states of Maryland, Pennsylvania, and Virginia adopt a team approach to agricultural nonpoint source pollution management and regulation in the Chesapeake Bay watershed. The team strategy should focus primarily on two areas: coordination among the management agencies and coordination of service delivery to the farmer. This multilevel team approach to agricultural issues should include the following three teams: policy, tributary coordination and watershed delivery.

The goal of the team approach is to bring the agricultural assistance and regulatory agencies at the federal, state and local levels together to address agricultural nonpoint source issues. By working together, the agencies can develop coordinated policies, procedures, databases, etc thus maximizing the use of their resources. The benefits of improved coordination include better service to the farmer by streamlining the permit process, reducing conflicts between permits and reducing the number of visits by agency personnel. Increasing the role of the private sector in service delivery will be an additional benefit.

Policy Team. A senior level agricultural policy team within each state with high level representation from state and federal agencies that are responsible for regulating or assisting the agricultural community. The role of this team will be to guide and shape agricultural policy in the state and to coordinate and promote interagency efforts. The Policy Team may be appointed by the Governor in each state or may be based on existing bodies such as the State Conservation Committee or Commission.

Tributary Coordination Teams. Tributary Coordination Teams are regionally based teams in the primarily agricultural watersheds of the Chesapeake Bay Basin. The membership of these teams will range from regional representatives to the farming community to state and federal agencies that have an interest or impact on agricultural practices in the watershed. The teams will carry out the policy of the state in the watershed and work with the local delivery system to plan the whole range of programs within the watershed

from costshare to education. These teams should be a part of the states overall tributary strategy and coordinate with other efforts in their tributary.

Watershed Delivery Teams. Watershed Delivery Teams are small, interagency teams that provide the actual services to the farmer. As certification programs develop the private sector also should be included in these teams. Several teams may be based in each watershed to provide coordinated service delivery to the farmer. These teams will work together with the farmer to implement total resource management plans.

Redirecting agricultural agencies toward a team approach will require a fundamental change in individual and agency thought processes. A true team approach should include everyone from the front line service deliverers to the heads of agencies. By bringing all the actors together, the agencies that assist or regulate the agricultural community can ensure the farmer that they are providing the best service possible. The efforts to reduce agriculture's contribution to nonpoint source pollution also should tie into a the total effort to reduce pollution in the watershed.

Challenges

Potential challenges to developing an interagency team approach include obtaining commitments, recognition and direction from the Governors and the agency heads. Direction from agency heads is important in allocating limited resources and avoiding creation of additional bureaucracy. Prioritizing resources to the watersheds, counties and districts will provide additional challenges. Substantial local leadership will be needed to develop the team approach because the teams will go beyond the current county and district based organizational structures. Also, agencies need to develop methods for recognizing and rewarding teamwork that cross traditional agency lines will need to be developed.

Policy Teams

Description

A senior level agricultural policy team within each state that has high level representation from the state and federal agencies that are responsible for regulating or assisting the agricultural community. The role of this team will be to guide and shape agricultural policy in the state and to coordinate and promote interagency efforts. In most states, the Policy Team could be based on existing bodies such as the State Conservation Committee or Commission.

Composition

At a minimum, the team should consist of the Secretaries or Commissioners of Agriculture, Environment and Natural Resources, the directors of the Agricultural Stabilization and Conservation Service, the Extension Service and the Soil Conservation Service, the directors of the land grant institutions and local leadership in the state. Other agencies with NPS responsibility also should be included as members. If the State Conservation Committee or Commission does not include these individuals as voting members then these individuals should be added. If the Committees or Commissions are not adequate, the states may need to develop separate policy teams with appointments made by the Governor.

Memorandum of Understanding

The official members of the policy team should sign a memorandum of understanding to provide direction and spell out responsibilities. The members of the team should have sufficient authority to make decisions about resource allocation; to agree that plans meet various regulatory and individual agency requirements; and to prioritize treatment areas by watershed. The team also should include environmental and farm organizations as advisory members.

Roles

The role of the team will be as follows:

- ◆ Set the tone for major decisions concerning in the agricultural nonpoint source pollution in the state.
- ◆ Refine the objectives of the Executive Council to fit the needs of the state
- ◆ Resolve conflicts among participating agencies.
- ◆ Develop a statement of objectives, clarify and facilitate relationships between federal, state and local agencies.
- ◆ Promote the total resource management concept within the member agencies and the state.
- ◆ Initiate development of an accurate accounting and assessment system to track the implementation of bmps and clearly show the results.
- ◆ Establish the guidelines for what the Tributary Coordination Teams will address.
- ◆ Continually, monitor and respond to the needs of the Tributary Coordination Teams.
- ◆ Identify potential problems in implementing the resource management plans.

- ◆ Implement both technical and team building training for the Tributary Coordination Management Teams and the Watershed Delivery Teams.
- ◆ Strive to incorporate farmer participation in the programs and decision making.

Tributary Coordination Teams

Description

Tributary Coordination Teams are regionally based teams in the primarily agricultural watersheds of the Chesapeake Bay Basin. The teams will consist of regional representatives that have an interest in or impact on the installation of agricultural practices in the watershed. The membership should represent a broad range of interests that impact the individual watersheds from the farming community to state and federal agencies. The teams will carry out the policies of the different levels of government in the state in the watershed and work with the local delivery system to plan a range of programs within the watershed from costshare to education.

Identification of Tributaries

Each state, through the Agricultural Policy Team should identify the agricultural watersheds within its boundaries where the teams will be located. The location of these teams may be based on the Tributary Strategies that are already being developed, based on the 1992 Amendments to the Chesapeake Bay Agreements.

Composition

Within the identified agricultural watersheds, local involvement is critical to the developing teams. Input from agency heads along with local leaders should decide which individuals are best suited to the team. By encouraging local involvement from initial team development, the farming community is included as an active participant from the beginning of the process.

Although the make up of the teams will vary from watershed to watershed, the following primary agencies should be represented on each team:

Farmers
Soil Conservation Districts
Soil Conservation Service
Extension Service
Agricultural Stabilization and Conservation Service
State Conservation Agencies:
County officials

Depending on the watershed, other agencies or organizations may need to be added to team. These agencies include:

- Private industry
- Nutrient management consultants
- State and federal natural resource agencies
- State environmental agencies
- Farm organizations
- Others as required

Relationship to Other Teams

The Tributary Coordination Teams within each state will report their progress and problems that they have encountered to the policy team. Open communication between the Policy Team and the Tributary Coordination Team is critical to the success of a team approach. The Policy Team must understand the technical and organizational workings at the watershed level to make effective and beneficial policies. The Tributary Coordination Team also will help coordinate the efforts of the Watershed Delivery Teams to ensure that services are being provided to the most critical areas in an efficient manner.

Role

The role of the team is described as follows:

- ◆ Facilitate implementation of public policy by the local districts and agencies within the watershed.
- ◆ Inventory water relevant resource information for the watershed.
- ◆ Collect and coordinate data gathered within the watershed from the districts.
- ◆ Identify resource issues and needs.
- ◆ Act as coordinator between the districts within the watershed.
- ◆ Work with local delivery systems to meet nutrient goals.
- ◆ Keep the watershed focused on meeting reduction goals.
- ◆ Recommend and coordinate whole range of programs within watershed including costshare, education, demonstration, etc.
- ◆ Set priorities for watershed delivery teams.
- ◆ Develop and implement team training programs for agencies within their tributary.

Watershed Delivery Teams

Description

Watershed Delivery Teams are small, local teams of individuals from agencies and the private sector that

provide planning and implementation services to the farmer. As teams, their primary function will be to deliver Total Resource Management Planning and other planning services to farmers in their region. The teams, while primarily based in the Soil Conservation Districts, should combine the efforts of all of the agencies that impact the delivery of planning services to farmers. As certification programs develop, the role of the private sector in the teams should increase. Watershed Delivery Teams should work closely with the Tributary Coordination Team in their area to allocate planning resources to the most critical areas.

Composition

The team approach to service delivery caters to the site specific needs of the land and the land and the land owner. Therefore, the membership of each team will vary according to these needs. However, each District should identify the primary agencies that need to be involved in this team approach. If necessary, these agencies may want to sign a Memorandum of Understanding to further develop the team approach.

In order to implement delivery teams at the local level, agencies will need to have greater flexibility in allocating personnel and resources to meet the needs of the tributary strategies and other environmental programs. Substantial training in team building and cross-training of personnel to address a broader array of issues will be required. Teams may include, but are not limited to the following groups:

Team Membership

- Soil Conservation Districts
- Soil Conservation Service
- Extension Service
- Agricultural Stabilization and Conservation Service
- State Conservation Agencies
- County Officials
- State and Federal Natural Resource Agencies
- Private Sector
- Others as required

Role

- ◆ Develop and implement Total Resource Management Planning on farms within their jurisdiction.
- ◆ Work with the Tributary Coordination Team to set priorities for developing plans within their jurisdiction.
- ◆ Meet jurisdictional agricultural nutrient reduction goals.
- ◆ Educate and market TRM planning to the agri-

REPORT FROM THE RESEARCH SUBCOMMITTEE

Research Coordination

Introduction

The Subcommittee focused on three primary areas that must be addressed to better coordinate nonpoint source (NPS) research within the Chesapeake Bay watershed and assure research results are expeditiously transferred to policy makers and agency managers. The focus areas are:

- ◇ research synthesis and consensus regarding current and new NPS pollution control/prevention measures.
- ◇ improved coordination, communication and collaboration among NPS research activities in the Bay states.
- ◇ establishment of mechanisms to assure timely communication of research results to policy makers and agency managers.

The recommendations which follow provide a framework for addressing these focus areas.

Nonpoint Source Workgroup

The Subcommittee recommends that the Scientific and Technical Advisory Committee (STAC) of the Chesapeake Bay Program establish a Nonpoint Source Workgroup.

The Workgroup should be chaired by a member of STAC with primary emphasis on agricultural sources. Members should include agricultural scientists from each state. The chair should be appointed by STAC. The Director of the Agricultural Experiment Station of each state should appoint a scientist to the Workgroup. One member from each state should be an Extension Specialist appointed by the Director of Extension. One nonagricultural scientist from each state involved in NPS research should be appointed by STAC. The role of the Workgroup will be:

- ◇ To act as a resource group to provide STAC with technical input on nonpoint source issues.
- ◇ To work with the STAC representative to the Nonpoint Source Subcommittee to provide technical guidance.
- ◇ To coordinate the development of literature syntheses/ consensus on priority research topics.
- ◇ To coordinate annual NPS research conferences.

- ◇ To coordinate communication of scientific information regarding NPS pollution controls to policy makers and agency managers in each state and the federal government.

The Nonpoint Source Workgroup should be appointed and operational by January 1994. By mid-1994, literature syntheses on priority topics should be contracted for completion no later than mid-1995.

Research Synthesis and Consensus

The Subcommittee finds that existing NPS research on specific topics has not been reviewed and synthesized adequately to provide "state of the art" technical guidance to policy makers and managers.

The Subcommittee recommends that literature syntheses and scientific consensus papers be developed for priority nonpoint sources topics.

Research synthesis and consensus papers should be developed for the following topics listed by priority. However, the papers should not be limited to this list of topics. As appropriate for this initiative, the topics below focus on agricultural NPS. However, other topics, such as storm water quality, septic tank drainfields, etc., may need to be identified and prioritized by the Workgroup.

Technical Issues

- ◇ Nitrogen availability from animal wastes (completed).
- ◇ Cover crops (underway).
- ◇ Stream side buffers and stream protection from livestock (forest buffers only — underway).
- ◇ Bioavailable phosphorus in runoff.
- ◇ Nitrogen loss from, and organic nitrogen application to, legumes.
- ◇ Incorporating soil productivity and historical yield data into nutrient recommendations.
- ◇ Potential for changing feed ration to change manure nutrient composition.
- ◇ Seasonal effects of practices relative to water quality and living resources.
- ◇ Significance of atmospheric ammonia discharges from animal wastes.
- ◇ Farmstead impact on water quality.
- ◇ Watershed nutrient status and animal agriculture.
- ◇ Rating farms for potential water quality impacts.
- ◇ Biosecurity of manure distribution off farm.

Policy, Economic and Social Issues

- ◆ Natural resource versus jurisdictional based management of NPS pollution.
- ◆ Factors influencing, and rates of, NPS control practice adoption.
- ◆ Policy options to implement NPS controls.
- ◆ Economic impact on farmers and industry sectors to meet the "limit of technology".
- ◆ Environmental factors in farm and service industry decision making.
- ◆ Impact of changes in farm and service industries on rural communities and urban markets.

Practice Evaluation and Information Systems

- ◆ Animal density and NPS pollution.
- ◆ Whole farm management models.
- ◆ Information management systems for NPS pollution control.
- ◆ Sediment reduction to Bay from current conservation programs.
- ◆ Sludge utilization and Bay Program goals.
- ◆ Animal waste storage structures and NPS pollution control.
- ◆ Status of watershed or regional nutrient budgets.

The literature syntheses should answer the following questions:

- ◆ What is the current state of knowledge?
- ◆ What recommendations can be made and with what level of confidence?
- ◆ What other knowledge or information is needed?
- ◆ How critical is the need for additional knowledge needed?

Funding of Research Synthesis

The STAC will be responsible for the operation and support of the Workgroup as part of its activities, but the cost of publication and circulation of the consensus papers will be the responsibility of the Bay Program Nonpoint Source Subcommittee. The cost to develop and write each research synthesis is estimated at \$10,000. Five to ten priority topics should be reviewed each year for at least three years.

Research Coordination, Collaboration and Communication

Research Funding

Chesapeake Bay Program

The Subcommittee has found that only one percent (\$190,000 of \$18,500,000) of Bay program funding is

currently used for research on all aspects of NPS pollution control. This would seem to be in conflict with the 1992 Amendments to the Bay Agreement which call for extending the limits of technology for NPS controls. Clearly, all aspects of the restoration effort, particularly implementation, are important. However, the nutrient reevaluation concluded that unless new technologies for NPS control are developed, it is unlikely that we will achieve our nutrient reduction and associated living resources goals.

The Subcommittee recommends that 5 to 10% of the Bay Program budget for the next five years be committed to applied research on nonpoint source pollution control with primary emphasis on agricultural sources. This could be accomplished either through additional funding or redirection of existing funds. The funds should be managed by the NPS Subcommittee with technical support from the STAC NPS Workgroup. Request for proposals for these funds should encourage collaborative projects by researchers in each state.

Section 319 Clean Water Act and Coastal Zone Management

The Subcommittee also discussed the opportunity for coordinating Section 319, Clean Water Act, and Coastal Zone Management funding in support of applied research and demonstrations on new agricultural NPS technologies. Current restrictions limit the application of these funds for such activities.

The Subcommittee recommends that EPA and NOAA evaluate options for allowing more flexibility in use of these funds by the Bay states to support applied research and/or demonstrations of new NPS control technologies. The states should write their requests for proposals for these funds to encourage proposals on NPS controls within the limitations established by EPA or NOAA and should coordinate these funds with Bay Program objectives.

Agricultural Experiment Stations

The Subcommittee found that 25% of all federal research money going to state Agricultural Experiment Stations must be used for regional (multi-state) projects. The use of these funds is largely determined by the state Experiment Station Directors. There has been limited use of these funds for agricultural NPS research.

It is recommended that Bay State Experiment Station Directors commit one-third to one-half of their regional funding for the next five years to support collaborative research on NPS pollution prevention.

USDA-Agricultural Research Service

The USDA-Agricultural Research Service (ARS) has substantial research expertise located in the Bay states. Certain researchers are doing NPS work, but it is not coordinated with, or integrated into the Bay Program, except to a limited extent in Pennsylvania.

The Subcommittee recommends that the Executive Council request that USDA, through ARS, establish a coordinated NPS research program at Bay state facilities based on the needs of the Bay program. This effort should be developed in consultation with the NPS Subcommittee and STAC NPS Workgroup. The program could be modelled after the Management Systems Evaluation Areas in the mid-west.

Research Coordination

The Subcommittee feels that many of the recommendations for funding will also aid research coordination. However, it is important that a group review and evaluate research efforts to assure continued focus and coordination of NPS research activities in the Bay states.

The Subcommittee recommends that the Nonpoint Source Workgroup review and evaluate NPS research activities in the Bay states annually. The Workgroup should submit a report, with recommendations on needed change or redirection, to the NPS Subcommittee, the Experiment Station Directors and the Director of USDA-ARS.

Communication Among Scientists

The Subcommittee finds that there is not adequate opportunity for scientists to discuss NPS research results in relation to the goals and objectives of the Bay program.

Agricultural Research Conference

In order to improve communication and collaboration among researchers, an annual agricultural NPS research conference should be held. It is suggested that the conference be conducted in two parts. At the beginning of the conference, all NPS researchers would hear presentations on major new findings or results of literature syntheses to maintain coordination across various NPS research topics. Following this, concurrent sessions should be held that allow for presentation and discussion of research results on specific subjects by small groups of researchers actively working on the topic. Results of collaborative research projects and literature syntheses should be presented. Consensus discussions should be encouraged. The conference should conclude with brief presentations summarizing discus-

sions in the concurrent sessions. These conferences will provide agricultural researchers the opportunity to exchange information and encourage the development of team projects. While the primary participants will be agricultural researchers and extension specialists, representatives from agencies may attend. The STAC's Nonpoint Source Workgroup should coordinate the meetings.

The Subcommittee recommends the Agricultural Nonpoint Source Workgroup of STAC annually conduct a Bay state conference for researchers as described above. A sum of \$15,000 should be allocated annually by the NPS Subcommittee to the Workgroup to support attendance at the conference.

Research Transfer to Policy Makers and Agency Managers

There is a clear need to improve and expedite the transfer of research results to policy makers and agency managers. The Subcommittee feels that leadership for this effort should be by scientists involved in or familiar with the research.

The Subcommittee recommends that the STAC NPS Workgroup coordinate efforts directed at scientific communication to policy makers and agency managers. This effort should be lead by a taskgroup coordinated by the three Extension representatives. The taskgroup will serve as the forum to assure scientific communication to the Bay program, including its subcommittees and the federal agencies. Each of the Extension representatives will be responsible for coordinating scientific communication to agricultural and environmental agencies in their respective states. This group should inform agencies of new research results that relate to existing policy and programs.

The Subcommittee recommends that a separate executive summary oriented to the goals and objectives of the Bay program be required for all final reports for projects funded through the Bay Program, Sec. 319, CZM, Experiment Station Regional Funds or any USDA-ARS Chesapeake Bay related program. These summaries should be distributed to NPS Subcommittee members and key state and federal agency managers.

The Subcommittee recommends that each state establish an annual one day forum where NPS research results and their policy and programmatic implications are presented by researchers to policy makers and agency managers.

The Subcommittee recommends that the NPS Subcommittee have a thirty minute to one hour

research update at each meeting. The research updates should be no more than fifteen minute briefings by scientists to the Subcommittee. The topics should be selected by the STAC-NPS Workgroup based on research relevance and current NPS Subcommittee needs.

General Recommendations

The success of the recommendations above depends upon a strong commitment and reprioritization by agency and university administrators. It also requires a substantial commitment of time and effort by scientists and others. The Subcommittee recommends that the Executive Council request agency and/or university administrators to strongly support the proposed activi-

ties. Scientists should be appropriately recognized and rewarded for their involvement.

The Nonpoint Source Workgroup of STAC would have numerous tasks and responsibilities under the proposed recommendations. It is recommended that the Workgroup have one full time technical or administrative staff or intern to support its activities. It is suggested that the staff person be assigned either through the NPS Subcommittee or the Chesapeake Research Consortium.

