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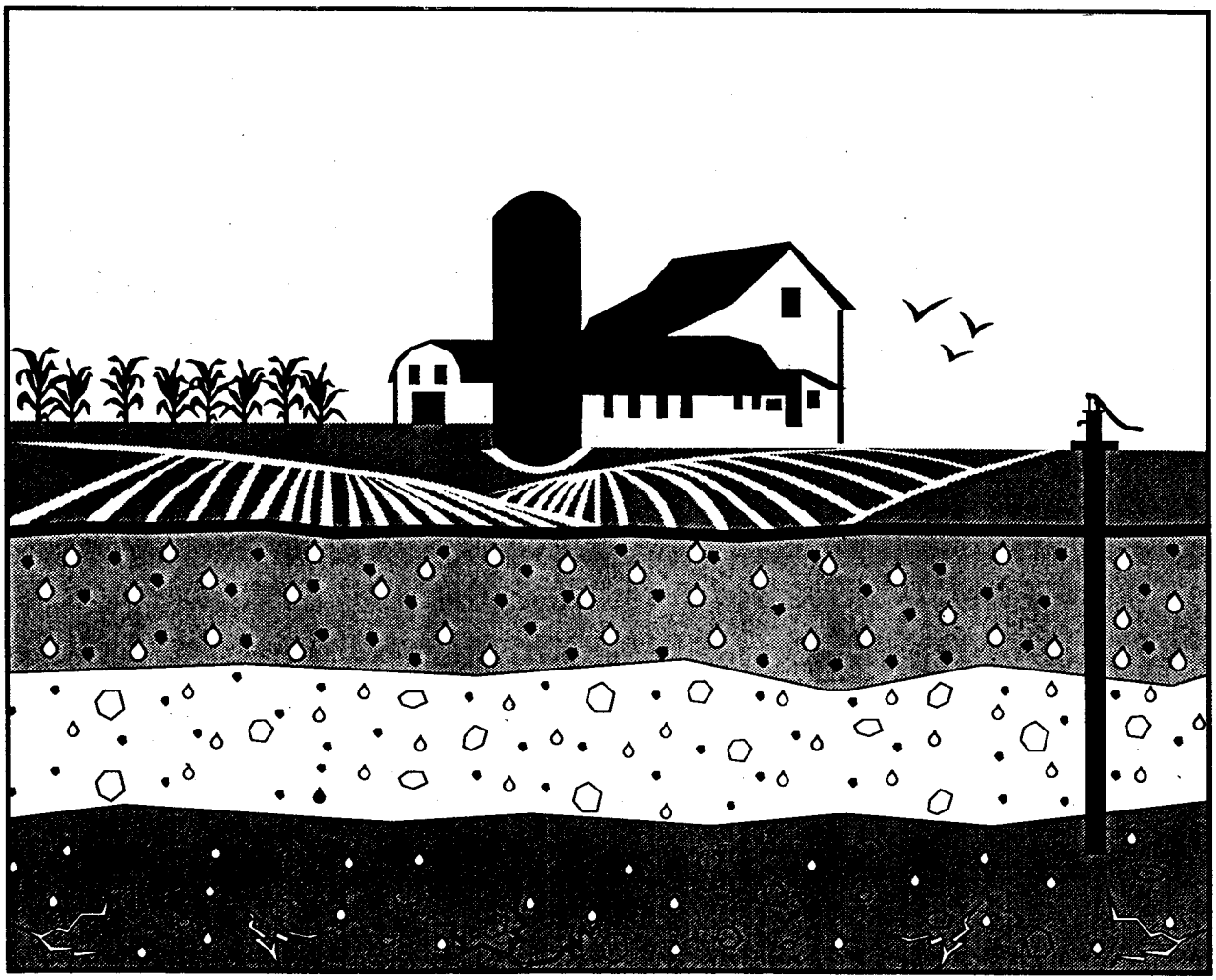
EPA Guidance for Pesticides and Ground Water State Management Plans



GUIDANCE FOR PESTICIDES AND GROUND WATER STATE MANAGEMENT PLANS

IMPLEMENTATION DOCUMENT FOR THE
PESTICIDES AND GROUND WATER STRATEGY

EPA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDE PROGRAMS

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Also available from the Office of Pesticide Programs:

APPENDIX A: REVIEW, APPROVAL, AND EVALUATION OF STATE MANAGEMENT PLANS

APPENDIX B: ASSESSMENT, PREVENTION, MONITORING, AND RESPONSE COMPONENTS OF STATE MANAGEMENT PLANS

Chapter 1
Introduction

A central goal of EPA's Pesticides and Ground Water Strategy (October 1991) is to provide States[1] with the opportunity to manage the use of pesticides in ways that protect ground water resources. Through the implementation of State Management Plans (SMPs) for pesticides, States may promote the environmentally sound use of pesticides that might otherwise pose an unreasonable risk to ground water resources. Through SMPs, States should address pesticide use in all areas, including rural and urban areas, golf courses, rights-of-way, and federal lands. Although EPA generally intends to require SMPs for specific pesticides through a chemical-specific regulatory action, States are strongly encouraged to take the initiative voluntarily to develop Generic SMPs which establish the framework for SMPs that address specific pesticides (Pesticide SMPs). This Guidance for Pesticides and Ground Water State Management Plans, with its Appendices, (Figure 1) establishes the components of SMPs and provides approaches and methods to assist States in developing and implementing SMPs. (In this Guidance, the phrase "State Management Plan" refers also to "Tribal Management Plan").

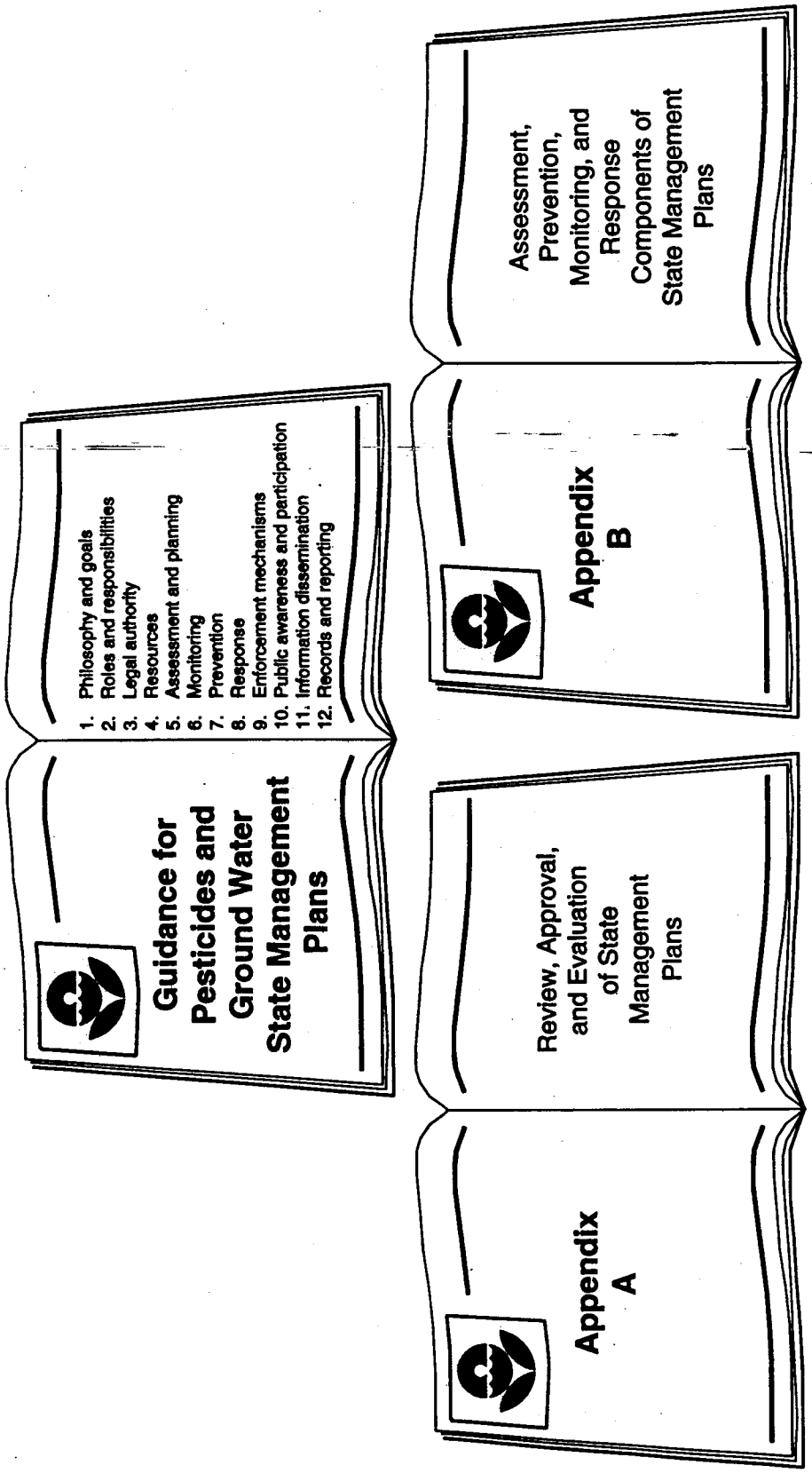
This Guidance Document provides background on the development of the Agency's ground water policy and the Pesticides and Ground Water Strategy. The Introduction to this Guidance addresses the benefits of the SMP approach and the relationship of SMPs to Comprehensive State Ground Water Protection Programs and other agriculture-related programs. The balance of this Guidance describes the two types of State Management Plans (Generic and Pesticide SMPs) and presents the required components and adequacy criteria of SMPs.

The guidance has two appendices:

(1) Appendix A: Review, Approval, and Evaluation of State Management Plans, describes the process and time frame for EPA's review, approval/concurrence, and oversight of SMPs. Specifically, Appendix A outlines the procedures for assessing the SMP in terms of completeness (whether it includes all the relevant components), content (how well it addresses the components), and evaluation (how well a State is implementing its SMP).

[1] "State" denotes the 50 States, Puerto Rico, the U.S. Virgin Islands, the District of Columbia, Guam, American Samoa and other Pacific Island Territories of the United States, as well as Indian Lands under Tribal jurisdiction.

Figure 1
Sources of Guidance on SMPs



(2) Appendix B: Assessment, Prevention, Monitoring, and Response Components of State Management Plans, provides States with technical guidance to assist in developing assessment, prevention, monitoring, and response measures. Appendix B includes information on various ground water protection practices and methods for implementing prevention measures that States may adopt in the development of their prevention components. The document also discusses the value and limitations of several assessment, monitoring, and prevention approaches. For selected approaches, it provides comparative costs and factors for evaluating site-specific appropriateness. An array of response actions, such as education, regulation, and remedial action, also are described in Appendix B.

This document represents EPA guidance to States on developing Generic and Pesticide SMPs. EPA plans to propose the 12 components of a Pesticide SMP for public comment in an upcoming regulation specifying pesticides for which a Pesticide SMP will be required. This guidance document does not establish a binding norm -- Agency decisions to approve or disapprove Pesticide SMPs will be made on a case-by-case basis by applying the regulation to the specific facts of the case.

1.1 Background

In July 1989 EPA Administrator William K. Reilly established a Ground Water Task Force to review the Agency's ground water protection program and to develop concrete principles and objectives to ensure effective and consistent decision-making across all Agency activities affecting ground water resources. The Task Force's efforts resulted in the publication of Protecting the Nation's Ground Water: EPA's Strategy for the 1990's (Task Force Report) in May 1991. This publication articulates the Agency's policies and implementation principles, which are intended to set forth an aggressive approach to protecting the nation's ground water resource and to direct the Agency's activities and efforts over the coming years.

The stated goal of EPA's ground water policy is to prevent adverse effects to human health and the environment and to protect the environmental integrity of the nation's ground water resources. In determining appropriate prevention and protection strategies, EPA will also consider the use, value, and vulnerability of the resource, as well as social and economic values. To implement this policy, EPA is using the Comprehensive State Ground Water Protection Program (CSGWPP) approach. Under the CSGWPP approach, States are encouraged to integrate all ground water-related programs, authorities, and statutes into a comprehensive program consisting of six strategic activities. A core premise of the CSGWPP approach is the recognition that the States have primary responsibility in protecting the ground water resource, and that the States need to design and implement programs consistent with distinctive local needs and conditions.

Pesticides and Ground Water Strategy

The Agency's Pesticides and Ground Water Strategy is an integral part of the Agency's new CSGWPP approach. It describes the policies, management programs, and regulatory approaches that the Agency will use to protect the nation's ground water resources from risks of contamination by pesticides. The Strategy describes how Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) authorities can be used to achieve the Agency's ground-water policy goal of preventing adverse effects to human health and protecting the environmental integrity of the resource. It emphasizes prevention and resource protection over remedial treatment, envisions a variety of means to protect the resource, and provides flexibility for decisions to be made on a geographic basis.

The centerpiece of the Strategy is the development and implementation of SMPs for pesticides that pose a significant risk to ground water resources. The SMP approach provides flexibility to States to tailor pesticide management approaches to local conditions.

EPA began to develop the Strategy in 1986 by holding a major public workshop in Coolfont, West Virginia, with representatives from federal agencies, State agriculture, environment, and health agencies, industry groups, environmental groups, farmers and representatives of grower groups, ground water experts, and Congressional staff. The workshop identified a need for an overall plan to coordinate federal and State efforts and to establish a common goal for ground water protection. It also identified the need to balance national consistency in environmental and public health protection with flexibility in tailoring management measures to local conditions.

A second public workshop was held at Coolfont during the Summer of 1987, also with broad participation. Input from the first workshop formed the basis for a proposed Strategy reviewed at the 1987 workshop. Participants were asked to comment on the Agency's proposed Strategy and a number of associated implementation issues.

In February 1988, the Agency released for public comment the "Agricultural Chemicals in Ground Water: Proposed Pesticide Strategy" (53 FR 5830) and distributed the document widely to Congressional representatives, governors, federal and State agency officials, members of the agricultural and environmental communities, and many other interested parties. Comments from this review were incorporated into the document and the Pesticides and Ground Water Strategy was released by the Agency in October 1991.

State Management Plan Guidance

In June 1988, EPA issued a Technical Support Document for the Aldicarb Preliminary Determination (PD 2/3) (53 FR 24630). A draft State Management Plan Guidance Document was issued as an appendix to the Aldicarb PD. The draft Guidance Document was designed to help the States, Indian Tribes, and territories determine what

efforts and resources would be necessary to develop an SMP that would protect ground water from contamination that may result in unreasonable risks to human health or the environment.

EPA sought comment on the draft Guidance Document from various State and federal officials throughout the country during ten two-day Regional workshops held in late 1988. The workshop participants included officials from State agriculture, environment, and health agencies, as well as representatives from the U.S. Geological Survey (USGS), the U.S. Department of Agriculture (USDA), and Indian Tribes. Participants explored the SMP concept, including the appropriate components and emphasis of such plans, and the degree of involvement that EPA should have in developing and implementing SMPs.

In addition to the information provided to EPA at the ten Regional workshops, the Agency received written comments on the concept of SMPs and their proposed components in response to the June 1988 Aldicarb PD. Many of the comments received were similar to those provided at the Regional workshops.

One major theme of the comments was that the Guidance Document did not provide enough detail in four specific areas: (1) EPA's approval process for SMPs; (2) how SMPs would be evaluated; (3) what an acceptable response program for the States would be; and (4) what an acceptable monitoring component would be. In order to address these concerns, EPA committed itself to develop support documents in these areas. As a first step, in October and November 1989, EPA held two week-long workshops in Fredericksburg, Virginia to discuss, with federal and State managers and experts, the appropriate content and format of these support documents. After obtaining this input, EPA's Office of Pesticide Programs developed Appendix A: Review, Approval, and Evaluation of State Management Plans and Appendix B: Assessment, Prevention, Monitoring, and Response Components of State Management Plans.

All three documents (the Guidance, Appendix A and Appendix B) underwent several major reviews in 1991 and 1992. Input was provided by many offices within EPA, as well as by States, other Federal agencies, and ground water experts. In July 1992, the Office of Pesticide Programs conducted a final review of the documents in which EPA received over 40 sets of comments from State agriculture, health, environment, and natural resource agencies as well as EPA offices, USDA, and USGS. The Office of Management and Budget conducted its review of all three documents in the Fall of 1993. Before finalizing the guidance documents, revisions were made based on the comments received from the various agencies.

1.2 Benefits of the SMP Approach

Until the development of the Pesticides and Ground Water Strategy and the SMP Guidance, EPA's policy for pesticides that pose an unreasonable threat to ground water despite national labeling and restricted use designations probably would have been to

cancel them nationally (in the case of pesticides currently in use) or not register them (for pesticides not yet in use). National prohibition based on a national risk/benefit assessment may not always fully consider local variability of the use, value, and vulnerability of ground water. The goal of the SMP approach is to prevent contamination of ground water resources that present adverse effects to human health and the environment resulting from the normal, registered use of pesticides, by taking appropriate actions in vulnerable areas where such risks occur. Priorities should be focused on currently used and reasonably expected sources of drinking water and ground water closely hydrologically connected with surface water.

The SMP approach offers States the opportunity to continue to use a pesticide that would otherwise be unavailable due to cancellation or lack of registration. In developing SMPs, States address:

- Local ground water vulnerability;
- Current use and value of ground water;
- Future trends of ground water use for various locations; and
- Social and economic values of alternative preventive strategies.

SMPs allow States to tailor prevention measures in a given area to reflect local characteristics.

The SMP approach is also a significant part of the Agency's larger ground water protection policy, which seeks to develop Comprehensive State Ground Water Protection Programs (CSGWPPs) that integrate all State and federal programs to protect ground water resources. As a result, the SMP approach will benefit from the increased efficiency and effectiveness of efforts by EPA and the States to coordinate new and existing ground water protection efforts. A State, with the assistance of EPA, should develop and implement its SMPs in the context of the State's CSGWPP, which outlines the State's overall ground water protection approach. The additional benefits of coordinated implementation of a State's CSGWPP and its SMPs include:

- More effective and consistent protection of the resource;
- Increased State control to target efforts towards highest priority protection;
- More efficient use of limited program resources; and
- Reduced potential for ground water protection activities to be at cross-purposes.

1.3 SMP Coordination with Comprehensive State Ground Water Protection Program

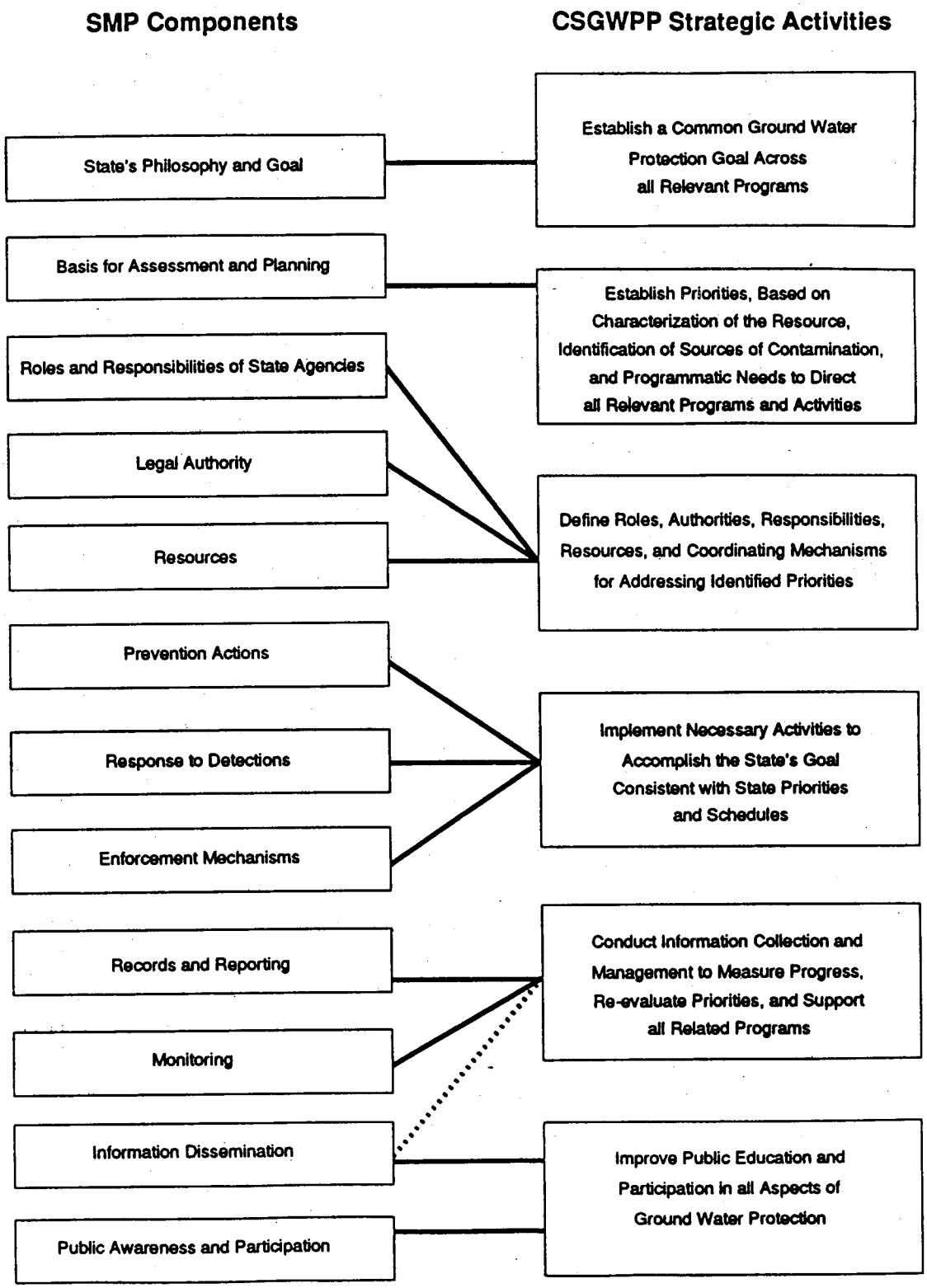
EPA's Comprehensive State Ground Water Protection Program (CSGWPP) approach seeks to integrate all ground water protection activities within a State to avoid duplication of effort as well as to provide a coordinated approach to ground water protection. The six strategic activities of a CSGWPP (outlined in the CSGWPP Guidance) provide an underlying framework ensuring that all ground water protection activities occurring under State, local, and federal laws are based on a consistent understanding of the characteristics of a State's ground water, priority geographic areas, priority contaminants, and other similar parameters. The CSGWPP approach, like the SMP approach, is based on recognition of the State's primary responsibilities in protecting the ground water resource, and the State's need to design and implement programs consistent with distinctive local needs and conditions.

The Pesticides and Ground Water Strategy is one of the first EPA programs to be developed based on principles consistent with the CSGWPP approach. In this respect, State Management Plans should be considered a program-specific subset of a CSGWPP. Undertaking all six CSGWPP strategic activities, which spell out the goals, objectives, and approaches of the State's overall ground water protection program, will address most, if not all, requirements for a Generic SMP, as illustrated by Figure 2. However, both Generic and Pesticide SMPs have certain requirements specific to pesticides concerns that are more detailed than what is required under a completed CSGWPP. For example, under the Prevention SMP component, specific pesticide best management practices need to be listed and described. To meet SMP requirements efficiently, a State can extensively reference relevant portions of its CSGWPP, but the State also will need to build on the basic policies and approaches of the CSGWPP. Similarly, in the development of its CSGWPP, a State should ensure that aspects relevant to pesticides management are consistent with the requirements of an SMP. Because development of SMPs and CSGWPPs will occur at the same time in most States, the development of SMPs should not wait until a CSGWPP is completed.

On an operational level, significant overlap exists between the SMP components that States must address for SMP approval and the six strategic activities of a CSGWPP. By addressing SMP components States will also be fulfilling many requirements for a EPA-recognized CSGWPP. In order to avoid duplication, Chapter 3 of this Guidance highlights and describes SMP requirements that should also be part of the State's overall ground water protection program and CSGWPP.

Figure 2

Crosswalk Between SMP Components and CSGWPP Strategic Activities



1.4 SMP Coordination with Other Agriculture-Related Programs

Through the CSGWPP approach and the Agency's Ground Water Protection Principles, the SMP approach is linked to and can be integrated with other evolving EPA programs in order to avoid duplication of effort while promoting related activities (i.e., State-level assessments of various threats to ground water). This is particularly true of other programs focusing on agricultural pollution prevention measures (e.g., best management practices). SMP activities and prevention measures should be coordinated and integrated with programs having agricultural components, including:

- Nonpoint source (NPS) programs under Section 319 of the Clean Water Act (CWA). Under the NPS program, States have developed management plans to protect surface and ground waters from all types of nonpoint source pollution.

- State Ground Water Protection Grants under Section 106 of the CWA. These grants promote State inter-agency coordination for the assessment, classification, and protection of ground water resources.

- Wellhead Protection (WHP) Programs under the Safe Drinking Water Act (SDWA). WHP programs include State assessment of hydrologic data and sources of contamination around public water supply wells.

- National Primary Drinking Water Regulations under the SDWA. EPA has developed Maximum Contaminant Levels for 18 pesticides that are enforceable for public drinking water supply systems.

- Underground Injection Control (UIC) Program under the SDWA. The UIC program affords protection of underground sources of drinking water from contamination by injection well operations, including agricultural drainage wells.

- Coastal Nonpoint Source Program under Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990. Under the Coastal NPS program, States are to develop State programs to ensure implementation of NPS management measures to restore and protect coastal waters.

Ground water protection and related pesticides issues are also being addressed through a variety of initiatives involving agencies in addition to EPA. For example, water quality programs in the U.S. Department of Agriculture (USDA) are part of a coordinated government-wide initiative. A major objective of the USDA water quality initiative is to provide farmers, ranchers, and other land managers with information necessary to voluntarily adopt improved, environmentally sound management practices that do not sacrifice profitability.

The SMP approach should be viewed as a piece of a larger mosaic that includes regulatory, research, and legislative initiatives in which agricultural and environmental policy issues converge. In developing their SMPs, States with the assistance of EPA should work to coordinate and where appropriate integrate these existing authorities to meet the objective of promoting both a healthy agricultural economy and responsible environmental protection.

Chapter 2

State Management Plans

There are two types of SMPs: Generic SMPs that address the SMP components in generalized terms and Pesticide SMPs that address specific pesticides. Both types of SMPs consist of twelve components that must be addressed to varying degrees to reflect the degree of risk represented by the differences in aquifer sensitivity, pesticide use, and agronomic practices in a particular State. The components of SMPs are discussed in detail in Chapter 3.

2.1 Generic State Management Plans

States are **strongly encouraged** to take the initiative voluntarily in the development of Generic SMPs even before EPA requires Pesticide SMPs through a chemical-specific regulatory action. In addition, FIFRA ground water-related and CWA Section 106 (ground water) grant funds are available to support activities to develop a Generic SMP (requirements for FIFRA grant funds are described in the Agency document Consolidated Pesticide Cooperative Agreement Guidance, issued annually by the Office of Pesticide Programs).

EPA acknowledges that development of Pesticide SMPs initially will be time- and resource-intensive. Therefore, EPA encourages States to begin developing a Generic SMP prior to identification of a specific pesticide of concern. A Generic SMP should assist the State in preparing for the eventuality that SMPs are required for specific pesticides of concern.

EPA believes that certain aspects of each SMP component will be generic within a State regardless of the specific pesticide in question. Under a Generic SMP, a State will address all SMP components, but will cover those elements in generalized terms that are not specific to a particular pesticide. For example, the Generic SMP could describe fully the State's general philosophy and goals toward protection of ground water; describe fully the various agencies and entities involved in SMP implementation and their responsibilities for carrying out the SMP, including coordination mechanisms; and set forth a detailed scheme of varying degrees of preventive measures, educational efforts, and pesticide use and agronomic practices the State may employ in a Pesticide SMP. The Generic Plan should also give schedules and milestones. Moreover, the Generic SMP needs to go beyond a planning document. States should use the Generic SMP to put in place the resources and coordinating mechanisms that will be required to develop and implement a Pesticide SMP. A Generic SMP, for example, might provide the State's program and time frame for mapping its ground water resources and even describe their basic operations; a Pesticide SMP would require the mapping program to be in operation.

EPA does not intend to require that Generic SMPs be submitted for concurrence. However, EPA strongly encourages States to seek EPA review, comment, and concurrence on their Generic SMPs. This will not only facilitate EPA's review of future Pesticide SMPs, but will also ensure that States have adequate time to develop the pesticide-specific information within the time allowed once a pesticide is identified as requiring an approved Pesticide SMP for continued use. If a State is required to have an approved Pesticide SMP and fails to gain approval, legal sale and use of that pesticide within the State will not be permitted. Thus, to assist in ensuring the continued availability of a pesticide of concern, EPA encourages States to develop Generic SMPs prior to the need for a Pesticide SMP.

Finally, development of Generic SMPs will complement the overall Ground Water Protection Principles and their objective of implementing Comprehensive State Ground Water Protection Programs (CSGWPPs) because many of the components that would be adequately addressed in a Generic SMP are activities that also need to be defined within the context of a CSGWPP. The Agency believes that developing coordination mechanisms within the States, outlining responsibilities and authorities, and working with the Agency toward an acceptable SMP will accomplish two critical objectives: (1) it will improve a State's institutional framework for coordinating all ground water activities (i.e., program enforcement, ground water classification/mapping, monitoring, etc.), which will better prepare the States to focus prevention and source reduction measures on areas of ground water vulnerability and high use and value; and (2) it will build the relationships necessary to comprehensively manage ground water as a resource within the States and between the States and federal government.

2.2 Pesticide State Management Plans

EPA will invoke the SMP approach for a specific chemical if: (1) the Agency concludes from the evidence of a chemical's contamination potential that the pesticide "may cause unreasonable adverse effects to human health or the environment" in the absence of effective local management measures; and (2) the Agency determines that, although labelling and restricted use classification measures are insufficient to ensure adequate protection of ground water resources, national cancellation would not be necessary if States assume the management of the pesticide in sensitive areas to address effectively the contamination risk. If EPA invokes the SMP approach for a specific chemical, its legal sale and use would be confined to States with an EPA-approved Pesticide SMP.

As with Generic SMPs, Pesticide SMPs must address all twelve components as illustrated in Figure 1 and described in Chapter 3. However, a Pesticide SMP should contain all the generic information appropriate to the Generic SMP plus all the information specific to the pesticide of concern. If EPA determines that a Pesticide SMP is necessary for a specific pesticide, both the generic and specific aspects of the SMP components will have to be addressed in order for the Pesticide SMP to be deemed adequate. In addition, the Pesticide SMP must demonstrate that a State's programs are in place and

operating to protect ground water from pesticide contamination. Pesticide SMPs will be allowed a substantial range of flexibility in the form and manner of their assessment, prevention, monitoring, and response actions, reflecting each State's ground water protection philosophy and differing regulatory approaches. Further, the components may vary in detail in relation to the prospective magnitude of the ground water contamination threat.

2.3 Legal Framework for State Management Plans

Two provisions of FIFRA support the use of SMPs as a condition of initial registration, continued registration, or legal availability of a pesticide. These are the restricted use provisions under Section 3, and the cancellation provision under Section 6 of the Act. Under Section 3 "other regulatory restrictions" authority, EPA would undertake a rulemaking, with publication in the Federal Register, of the details of the proposed action and opportunity for public comment, to classify one or more pesticides for restricted use. SMPs would be specified as part of the restrictions required. The basis for the action is a determination that the reduction in risk outweighs the decrease in benefits (this may be quantified as an increase in costs) imposed by restrictions.

The Section 6 approach is to propose cancellation of the pesticide, unless there is an approved SMP in place. The basis for the action is a determination that, as the pesticide is currently used, its risks outweigh benefits, and cancellation is warranted. However, use under an approved SMP is found to have an acceptable balance of benefits over risks.

In actions under either Section 3 or Section 6, the SMP requirement is referenced on the product label, so that the product can be legally sold and used only in States with an approved SMP.

Chapter 3

State Management Plan Components

A thorough and complete SMP will contain twelve program components that are developed in sufficient detail and scope to attain the ultimate objective of preventing ground water contamination that may present adverse effects to human health and the environment.

The Agency has identified the following 12 program components that must be included in a Generic and a Pesticide SMP.

1. State's philosophy and goals toward protecting ground water;
2. Roles and responsibilities of State agencies;
3. Legal authority;
4. Resources;
5. Basis for assessment and planning;
6. Monitoring;
7. Prevention actions;
8. Response to detections of pesticides;
9. Enforcement mechanisms;
10. Public awareness and participation;
11. Information dissemination; and
12. Records and reporting.

While all twelve of these components need to be discussed in both a Generic and a Pesticide SMP, the extent to which each is addressed will depend on the State's unique hydrogeologic and institutional characteristics, including its ground water protection philosophy, ground water sensitivity, degree of pesticide use, agronomic practices, and the use, value, and vulnerability of ground water.

A discussion of SMP components for both Generic and Pesticide SMPs follows:

Component 1: State's Philosophy and Goals Toward Protecting Ground Water

The general goal of EPA's Pesticides and Ground Water Strategy is to manage the use of pesticides in order to prevent unreasonable adverse effects to human health and the environment and to protect the environmental integrity of the nation's ground water resources. This strategic approach emphasizes the prevention of contamination over remedial treatment. Further, it focuses priorities on currently used or reasonably expected sources of drinking water and ground water that is closely hydrologically

connected to surface waters.[1] The goal of EPA's Pesticides and Ground Water Strategy fits in with that of EPA's Ground Water Protection Principles, which guide all the Agency's ground water programs.

Through the Final Comprehensive State Ground Water Protection Program (CSGWPP) Guidance, EPA has expanded and clarified its ground water protection goal as shown on page 3-3. In order to strive to meet this expanded goal, States are encouraged to develop SMPs that pursue prevention of contamination whenever possible and that share the same goals as CSGWPPs. While States are encouraged to protect all ground water in SMPs, protection of the nations currently used and reasonably expected sources of drinking water supplies, both public and private, is a required SMP priority. Further, ground water that is closely hydrologically connected to surface water must receive priority attention to ensure the attainment of surface water quality standards, which are necessary to protect the integrity of associated ecosystems.

To ensure the quality of the resource, the Agency will use maximum contaminant levels (MCLs) under the Safe Drinking Water Act (SDWA), water quality standards under the Clean Water Act (CWA), EPA Health Advisory (HA) numbers, or other approved health-based reference points. EPA's policy on the use of Quality Standards is included on page 3-15.

Generic and Pesticide SMP Adequacy Criteria

Both a Generic and a Pesticide State Management Plan must include:

- A statement that addresses both the ground waters to be protected and the degree of protection to be achieved under the SMP. The States goal must be no less protective than EPA's Pesticides and Ground Water Strategy goal of preventing unreasonable adverse effects to human health and the environment and protecting the environmental integrity of the nation's ground water.

- The stated goal of protection efforts, whether it is the use of established reference points, a more stringent standard, or a goal of pristine ground water quality. If established reference points are used, reaching those points should be considered a failure of prevention and therefore failure to meet the ground water protection goal.

[1]The process that States can use to define reasonably expected sources of drinking water and ground water supporting surface water ecosystems is described in the Final Comprehensive State Ground Water Protection Program Guidance.

An Excerpt from the Final Comprehensive State Ground Water Protection Program Guidance (December 1992, pages 1-1 and 1-2)

"EPA's overall goal is to prevent adverse effects to human health and the environment and to protect the environmental integrity of the nation's ground water. This goal calls for CSGWPPs that ensure protection of drinking water supplies and maintenance of the environmental integrity of ecosystems associated with ground water. In addition, EPA's goal statement notes that "in determining appropriate prevention and protection strategies, EPA will also consider the use, value, and vulnerability of the resource, as well as social and economic values." Given the lessons learned over the last several years regarding the extensive use and high value of ground water, its vulnerability to contamination, and the social and economic consequences of such contamination, EPA will pursue the following three-tiered hierarchy of preferred ground water protection objectives:

- **Prevention of contamination whenever possible**. In order to meet the Agency's goal of preventing adverse effects to human health and the environment and protecting environmental integrity, prevention of contamination must be the first priority of the CSGWPP approach.

- **Prevention of contamination based on the relative vulnerability of the resource, and where necessary the ground water's use and value.** While prevention of contamination whenever possible must be the first priority of a CSGWPP, EPA also recognizes that basic human activity has impacts on ground water. Prevention of all discharges to all ground water is not possible. This should not be construed as allowing ground waters to be "written-off." Rather, EPA believes that some level of protection should be considered for all ground water resources...

- **Remediation based on relative use and value of ground water.** Although the focus of ground water protection should be on the prevention of contamination, remediation must be pursued as a final option when prevention fails or where contamination already exists..."

Component 2: Roles and Responsibilities of State Agencies

State efforts to implement the EPA's Pesticides and Ground Water Strategy will, out of necessity, require extensive coordination among State health, environment, agriculture, and water agencies. The SMP must include a description of the roles and responsibilities and coordination mechanisms of involved State agencies. While a description of **intraState** coordination is required, a State may choose to include a discussion of potential **interState** ground water issues and coordination efforts. For example, the State may wish to enter into an agreement with an adjoining State to share monitoring data relevant to a common aquifer or compliance monitoring data identifying violators and/or violations relevant to a common aquifer.

Generic Plan Adequacy Criteria

Both a Generic and a Pesticide State Management Plan must:

- Identify and describe the general responsibility of each participating agency responsible for the development and implementation (including enforcement) of the SMP. This should also include a description of how the State agencies intend to use the programs and expertise of federal agencies -- e.g., the U.S. Geological Survey, USDA Soil Conservation Service, USDA Extension Service, etc. -- in carrying out the SMP. Appendix B provides a description of technical assistance that is available from other agencies.

- Identify a liaison who will serve as a single contact point for all formal communications concerning the SMP process between EPA and the State. The purpose is to have a single contact point responsible for the transmittal and receipt of official correspondence and information. The nature of the liaison could take the form of a task force chairperson, a special council secretary, or any other entity or person that is able to communicate with EPA regarding the SMP.

- Describe the coordination mechanisms between all participating State agencies, local entities, and appropriate federal agencies. This must include a description of the process the State will use to work with the USDA Soil Conservation Service State office to coordinate pesticide management measures of SMPs and Conservation Compliance Plans developed under the Food Security Act of 1985. Any Memoranda of Understanding between participating agencies or other coordination mechanisms to implement the SMP should be discussed.

- Describe how local governments are included in activities under the SMP. If the State delegates pesticide management responsibilities

to localities, describe the general responsibilities delegated, the criteria, if any, for delegation, and the State's oversight of these activities. When local governments have authority to address State ground water-related objectives and priorities, States must demonstrate that program coordination, guidance, or oversight is provided.

- Contain official concurrences from the directors of all State agencies with responsibilities under the SMPs stating their agreement with the plan.

Pesticide SMP Adequacy Criteria

In addition to the Generic Plan Criteria listed above, a Pesticide Plan must:

- Describe the specific technical and administrative tasks to be performed by each participating State agency.

- Contain official concurrences from the directors of all State agencies with responsibilities under the SMP stating their commitment to carry out their responsibilities under the program.

- Contain a statement that the State has worked with the USDA Soil Conservation Service State office in coordinating pesticide management measures of Pesticide State Management Plans and Conservation Compliance Plans (CCPs) in the State. The reason for this is to ensure that management measures do not conflict with one another. (See Appendix A for more information on CCPs.) In reviewing Plans, EPA will consult with the USDA Soil Conservation Service Office and provide an opportunity to appeal measures under the SMP.

- Discuss any relevant intraState multi-jurisdictional coordination. For example, States that are monitoring ground water for pesticides under different authorities may coordinate their efforts and share data. Relevant intraState multi-jurisdictional issues should be discussed, including how they will be resolved for purposes of implementing the SMP.

Component 3: Legal Authority

The foundation for a State's ability to carry out prevention and response actions for pesticides in ground water is dependent on its legal authority to regulate pesticide use and protect ground water. Regulatory authorities must be sufficient to accomplish the

desired outcomes of the SMP. (This component should be considered in parallel with Component 9 on enforcement mechanisms. Descriptions of enforcement authorities provided in this component should be cross-referenced in Component 9.)

Generic Plan Adequacy Criteria

Both a Generic and a Pesticide State Management Plan must:

- Describe the general legal authorities of the State to implement the plan successfully. This includes federal legislation, regulations and program delegation, and State legislation and regulations, available to the State. The SMP should cite relevant State laws and regulations. Gaps that may exist in current authorities must be identified and measures to remedy those deficiencies should be outlined (include a timeline).

Pesticide SMP Adequacy Criteria

In addition to the Generic Plan Criteria listed above, a Pesticide Plan must:

- Specify the State's authority to impose any necessary preventive measures and its remedial action authority.

- Identify the specific authorities that will be used to carry out the specific commitments made in the Pesticide SMP. For example, the authority to conduct or require others to conduct monitoring, prohibit use in specific areas, close public wells, or supply or require others to supply alternative sources of water, where such actions are elements of the SMP, should be identified.

Component 4: Resources

A State's ability to carry out the commitments delineated in its SMP depends on the resources available to implement the program. Resources include technical expertise and personnel, physical, and operational capabilities, and funding. The SMP must demonstrate there is an adequate match between revenues and proposed expenditures and that the necessary expertise is available.

Generic Plan Adequacy Criteria

Both a Generic and a Pesticide State Management Plan must:

- Indicate generally what categories of personnel or technical expertise are anticipated to be necessary for planning and implementation of

the SMP and whether the State currently has access to those categories of individuals.

- Include an estimate of the costs, both physical and operational, to develop and implement the plan. Costs associated with implementing preventive measures, conducting vulnerability assessments, public education, monitoring (including laboratory costs), and enforcement, responding to detections, promoting public participation, record-keeping, and reporting should be considered when projecting costs.

- Discuss the current funding available for implementation of the program, existing and potential funding sources for the future, and a commitment to pursue additional funding if needed. If the SMP indicates that adequate funding is not available at the present time, the State should indicate what activities in the SMP will go unfunded and what impact less than full implementation will have on the goal of protecting the ground water resource.

Pesticide SMP Adequacy Criteria

In addition to the Generic Plan Criteria listed above, a Pesticide Plan must:

- Indicate categories of personnel and technical expertise that the State has available for SMP implementation. For example, if an element of an SMP is to conduct sampling of existing drinking water wells that meet pre-described construction standards, the plan must indicate the availability of expertise, personnel, and laboratory capacity to characterize the adequacy of the wells, take the samples, and analyze the samples.

- Contain an estimate of the costs to implement Pesticide SMP measures beyond those projected in the Generic Plan estimate.

Component 5: Basis for Assessment and Planning

One of the fundamental principles in EPA's Pesticides and Ground Water Strategy is the tailoring of protection activities to the unique hydrogeologic settings, pesticide usage patterns, and agronomic practices of each State. The effectiveness of protection activities depends to a large extent on the degree to which vulnerable areas in need of protection can be accurately identified. Therefore, States must have an ongoing program that provides basic information on the occurrence, movement, and quality of ground water in relation to the occurrence, movement, and quantity of pesticides. State Agencies of environment, water, agriculture, and health must all have input into this program.

Prevention is the central principle of EPA's approach to managing pesticide use in order to protect ground water resources. To this end, EPA will pursue a goal of preventing and reducing contamination whenever possible.

Prevention and response priorities under an adequate SMP need to be based, in part, on the relative vulnerability of the resource, and the ground water's use and value. A State may also establish priorities based on the magnitude of risks and the costs of prevention or remediation actions, provided these priorities are consistent with the overall goal of the SMP. While a State is encouraged to protect all ground water, protection of the nation's currently used and reasonably expected sources of drinking water supplies, both public and private, is a required SMP priority. Further, ground water that is closely hydrologically connected to surface water must receive priority protection to ensure the attainment of surface water quality standards, which are necessary to protect the integrity of associated ecosystems. Even when a State's goal is to protect all of its ground water, the State should assure priority attention in day-to-day program operations to ground water with these valuable uses. Further, priority setting under the SMP must be coordinated with the efforts of the State's ongoing or planned CSGWPP. EPA encourages this integration of effort rather than setting up a separate and possibly duplicative program under SMPs.

Ground water use may be considered in terms of the currently used or reasonably expected sources of drinking water supplies as well as other uses important to the State, including crop irrigation, livestock watering, mining, and industrial use. Ground water value reflects the relative worth of the resource and its benefits to society. For instance, ground water with high value may include irreplaceable sources of drinking water, and ground water that is ecologically vital.

Ground water vulnerability refers to the relative ease with which a contaminant (in this case a pesticide) applied on or near the land surface can migrate to the aquifer of interest under a given set of agronomic management practices, pesticide characteristics, and aquifer sensitivity conditions. Appendix B: Assessment, Prevention, Monitoring, and Response Components of State Management Plans, as well as EPA's Technical Assistance Documents on ground water resource assessments, provides methods and tools that can be used to conduct aquifer and ground water assessments.

Generic and Pesticide SMP Adequacy Criteria

Both a Generic and a Pesticide State Management Plan must:

- Discuss the State's approach and activities to assess vulnerability (considering factors such as pesticide usage, soil type, depth to ground water, aquifer material, precipitation, and irrigation use) on

a sub-county level[2] for the geographic area in which the State intends to allow pesticide use.

In addition, the use of monitoring (see Component 6), modeling, other geographic planning methods or tools, such as Geographic Information Systems (GIS), or work developed by other programs used in developing the approach should be described. Sources of the above data must be identified. Assessment and planning efforts should utilize and integrate the data available from ongoing State and federal assessment and mapping programs such as those available from the USGS and USDA's Soil Conservation Service.

- Discuss how the State will determine current or reasonably expected sources of drinking water (taking into account factors such as land use, remoteness, quality and/or availability of alternative water supplies) and ground water that is hydrologically connected to surface water. If a State is affording priority protection to all ground water no matter the use and value, as many States are, then the State may not have to delineate and define these.

- Discuss how the State's assessment of ground water vulnerability and monitoring, and the use and value of ground water, will be used to set priorities for protection activities, design and implement prevention and response programs, and determine and evaluate the effectiveness of management measures.

  For example, the SMP may discuss how a combination of modeling and monitoring will be used to determine what management practices should be employed in those areas. Some States may choose to use information developed by one agency on pesticide use and cropping practices in combination with hydrogeologic sensitivity maps produced by another agency to determine specific ground water protection management measures to be implemented in vulnerable areas. A State also may decide to place a moratorium on pesticide use within Wellhead Protection Areas, critical recharge areas, or highly valued aquifers.

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[2] Both the General Accounting Office (GAO), in its report, Groundwater Protection, Measurement of Relative Vulnerability to Pesticide Contamination, and EPA, in the National Pesticide Survey Phase II Report, have reported that assessing vulnerability on the county level generally is not useful in predicting the vulnerability at smaller scales. Therefore, vulnerability assessments developed for State Management Plans should consider including sub-county level, rather than county level, data (see Appendix B, Chapter 3).

- Identify the limitations of the assessment and discuss how those limitations are taken into account in the design of prevention and response programs. For example, if a State applies prevention measures on broad regional or county-level designations, then sub-county level assessments may not be needed, but the State should explain why the measures chosen are likely to be adequate to meet program goals. Conversely, if a State plan allows sub-county or farm-level distinctions in applying prevention measures in order to avoid overregulation, it should explain the basis for making such distinctions, and how protection goals will be met.

Note: The State's assessment and priority should reflect the SMP goal (Component 1) and should be at a level that complements monitoring (Component 6), prevention (Component 7), and response (Component 8) activities. Over time, new or changed information from monitoring and on-going assessment activities should be used to refine and update the assessment.

Pesticide SMP Adequacy Criteria

In addition to the Generic Plan Criteria listed above, a Pesticide Plan must:

- Describe the State's available pesticide use data (e.g., geographic use, application rates) and how it will be factored into assessing vulnerability.

Component 6: Monitoring

Broadly defined, "ground water monitoring" is the set of activities that provide chemical, physical, geological, biological, and other environmental data needed by environmental managers/decision-makers to assist in developing and implementing ground water protection policies and programs. Ground water monitoring is viewed as a continuum of activities ranging from defining background conditions, to defining the existence and extent of contamination, to defining the success of prevention and response measures and programs to protect the ground water resource.

EPA recognizes that many States have already implemented monitoring programs as part of their ground water protection strategy. The Agency also recognizes that there are various functions, designs, and ways of conducting monitoring programs. Therefore, EPA will not specify how a State will conduct its monitoring program, but will allow each State to choose an approach most appropriate to its control strategy, its resources, the use patterns of the pesticide in the State, and sensitivity of areas where the pesticide is used. EPA will assess whether the State's program is appropriate for its intended purpose and if there are assurances that the program will be carried out adequately.

State Agencies of environment, water, agriculture, and health must all have input into this program. The scope and design of the State's monitoring program must reflect and support the State's goal (Component 1), assessment and priority-setting scheme (Component 5), and prevention and response programs (Components 7 and 8).

In addition to monitoring performed by the State during implementation of its SMP, States can obtain monitoring data through: 1) EPA or State registration requirements, or 2) other regulatory programs and private efforts. States could also request that registrants provide monitoring protocols to assist in the evaluation of their pesticide.

To ensure that monitoring data can be communicated efficiently and shared within the ground water community at all levels of government, States are encouraged to use EPA's Minimum Set of Data Elements for Ground Water Quality (MSDE). The MSDE is a set of 21 ground water quality-related data elements that contain geographic, well, and sample descriptors. EPA is required to use the MSDE for all ground water data collection activities, including research and development and enforcement. EPA encourages States to implement the MSDE when developing a new ground water quality data base or when updating an existing data base that contains ground water quality information. The 21 data elements that make up the MSDE are listed on page 3-12. For more information on the MSDE refer to EPA's Definitions for the Minimum Set of Data Elements for Ground Water Quality. EPA encourages use of the MSDE, but if States choose not to use the EPA set, they should at least have their own set of data elements that are consistently collected at each sampling site.

Technical considerations and various monitoring designs for the development and implementation of the monitoring component for SMPs are presented in Chapter 5 of Appendix B: Assessment, Prevention, Monitoring, and Response Components of State Management Plans.

Generic Plan Adequacy Criteria

Both a Generic and a Pesticide State Management Plan must:

- Describe the State's monitoring program for pesticides and pesticide degradates (breakdown products or metabolites); the uses to which monitoring will be applied; and the parties responsible for various functions associated with monitoring. Key elements of a monitoring program must include scope and objective, design and justification, monitoring protocols, quality assurance/quality control, sampling methodology, analytical methods, and analytes.

MINIMUM SET OF DATA ELEMENTS FOR GROUND WATER QUALITY

Element Category	Element Names
General Descriptor: describes where the well information is maintained	1. Data Sources
Geographic Descriptors: describe the well or spring in relation to the earth's surface	2. Latitude 3. Longitude 4. Method Used to Determine Latitude and Longitude 5. Description of Entity 6. Accuracy of Latitude and Longitude 7. Altitude 8. Method Used to Determine Altitude 9. State FIPS[a] Code 10. County FIPS[a] Code
Well Descriptors: describe various features of a well or spring	11. Well Identifier 12. Well Use 13. Type of Log 14. Depth of Well at Completion 15. Screened/Open Interval
Sample Descriptors: describe different aspects of collecting, analyzing, and recording the results of a ground water sample	16. Sample Identifier 17. Depth to Water 18. Constituent or Parameter Measured 19. Concentration/Value 20. Analytical Results Qualifier 21. Quality Assurance Indicator

[a] Federal Information Processing Standard.

Pesticide SMP Adequacy Criteria

In addition to the Generic Plan Criteria listed above, a Pesticide Plan must:

- Describe the purpose of each specific monitoring protocol. For example, SMP monitoring may be used (1) to confirm detections at specific sites; (2) to define the extent of the problem at a specific site; and/or (3) to evaluate the quality of ground water on an annual basis. Each SMP would describe, for each of the three uses, the

specific monitoring protocols to be used and who will conduct sampling, analysis, quality assurance/quality control, etc.

- Include specific monitoring designs and justifications that address the number of sites to be sampled, the number of samples to be taken, the frequency of sampling, and the analytical methodology that will be used to evaluate the samples. Quality Assurance/Quality Control measures must be provided. Monitoring data collected by the State should be of known and reliable quality and properly stored for retrieval and use. (See Component 12)

- Include Quality Assurance/Quality Control measures as described in Section 5.4 of Appendix B.

- Describe how the placement of monitoring wells ~~relates to the~~ State's priorities for protecting ground water and how the placement will allow for evaluation of the effectiveness of prevention and response measures. (See Component 5).

Component 7: Prevention Actions

The emphasis of EPA's Pesticides and Ground Water Strategy is on the prevention of contamination. The SMP must identify general management approaches designed to prevent ground water contamination associated with the use of registered pesticides. Preventive management approaches may vary based on ground water vulnerability, ground water use and value, and social and economic factors, and may range from education efforts to use restrictions or prohibitions in certain areas. This discussion of prevention measures overlaps with the presentation of response measures at the point that pesticide contamination of ground water is found. At the point of pesticide detection, however, preventive actions can still be pursued to prevent further contamination. States may choose to combine their prevention and response discussions because of this overlap. (See Component 8)

The Office of Pesticide Programs' Appendix B: Assessment, Prevention, Monitoring, and Response Components of State Management Plans support document identifies ground water protection practices and methods for implementing prevention efforts that States can consider in the development of their prevention component. (See Chapter 4.) In addition, in order to assist States in determining specific prevention approaches and measures, EPA will be disclosing information about the physical/chemical characteristics of each pesticide that requires a Pesticide State Management Plan.

EPA encourages adoption of best management practices, use of integrated pest and crop management, sustainable agriculture, and other approaches that result in

reduced risk of ground water contamination, even in the absence of any actual detections of pesticides in ground water. If additional measures are applied to an area where detections have been found, EPA supports application of those measures to other areas where similar factors (e.g., ground water vulnerability, use and value) are present. Further, a State's prevention and response measures must be based on its ground water protection philosophy and the considerations described in Components 5 and 6. Finally, in developing SMPs, States should coordinate preventive measures with measures under existing EPA programs, such as the Nonpoint Source, Coastal Zone Management, Wellhead Protection, and Comprehensive State Ground Water Protection Programs. Measures must also be coordinated with the USDA Soil Conservation Service's Conservation Compliance Plans.

Generic Plan Adequacy Criteria

Both a Generic and a Pesticide State Management Plan must:

- Address the types of preventive measures that will be implemented in the absence of actual detection of pesticides in ground water which the State has deemed to be valuable or vulnerable. Indicate how prevention measures will be reevaluated and what increasingly stringent types of measures will be imposed if contamination of ground water is found or is increasing toward the reference point. The SMP must also indicate the factors and rationale considered in choosing these measures and the triggers that would lead to a State's implementation of more stringent measures. At a minimum, confirmed detections of a pesticide in ground water need to be treated as a cause for concern and should trigger some action to diagnose the cause of the particular detection and determine whether any further regulatory/management approaches are needed. For example, a State may indicate that it will implement educational efforts regarding source reduction of pesticides, even when the pesticide has not been detected in ground water; that if detections are confirmed in ground water the State will move to measures that involve enforceable use limitations; and that if the level of a pesticide or breakdown product in ground water is found to be increasing toward the MCL or other established reference point, the State will implement use prohibitions.

Pesticide SMP Plan Adequacy Criteria

In addition to the Generic Plan Criteria listed above, a Pesticide Plan must:

- Identify specific preventive approaches (i.e., specific application rates, specific tilling practices or other best management practices, use restrictions and prohibitions, etc.) that will be employed on a

voluntary or required basis. Pesticide SMPs should be self adjusting and include a range of contingency plans that would be triggered by pesticide detections found in ground water, or new information on the level of risk posed by the contamination, pesticide usage patterns, as well as ground water vulnerability, use and value.

- Explain the rationale for the specific prevention measures chosen and indicate the feasibility of implementing those measures. For example, the plan could briefly document how the specific prevention measures have been used successfully in the State or, for new measures, the results of research or demonstration trials where the measures have been shown to be effective.

- Describe at what levels of detection (from zero to the reference point) the State will implement certain prevention or response measures. (See EPA's Policy on Use of Quality Standards.)

Agency Policy on EPA's Use of Quality Standards in Ground Water Prevention Activities

When EPA is carrying out its programs, the Agency will use maximum contaminant levels (MCLs) under the Safe Drinking Water Act as 'reference points' for water resource protection efforts when the ground water in question is a potential source of drinking water. Water quality standards, under the Clean Water Act, will be used as reference points when ground water is closely hydrologically connected to surface water ecological systems. Where MCLs are not available, EPA Health Advisory numbers or other approved health-based levels are recommended as the point of reference. If such numbers are not available, reference points may be derived from the health-effects literature where appropriate. In certain cases, maximum contaminant level goals (MCLGs) under the Safe Drinking Water Act, or background levels may be used in order to comply with Federal statutory requirements. Reference points are to be applied differently for prevention and cleanup purposes.

- **Prevention:** Best technologies and management practices should be relied on to protect ground water to the maximum extent practicable. Detection of a percentage of the reference point at an appropriate monitoring location would then be used to trigger consideration of additional action (e.g., additional monitoring; restricting, limiting use or banning the use of a pesticide). Reaching the MCL or other appropriate reference point would be considered a failure of prevention.

In establishing preventive steps and response actions the State should consider, among other factors, the level of contamination compared to the MCL or other established reference point. Where a pesticide has or is considered likely to reach reference points (reaching the reference point marks the point of failure of the ground

water protection goal), the most stringent actions should be taken to stop further contamination. These actions can range from enforcement actions to modification of the way a pesticide is managed, including geographically-defined prohibitions or moratoria on the pesticide's use. (See Component 8.)

- Address potential adverse impacts of the specific measures employed by a State to surface water in addition to ground water. For example, the plan would address whether a change in a tillage practice instituted to reduce ground water contamination infiltration may in some instances increase surface water runoff. In addition, if a State expects that a risk reduction measure will lead users to use alternative chemicals, then EPA encourages the State to consider whether the alternative chemicals will cause adverse effects for ground water, surface water or other areas. (EPA rulemaking will have analyzed the most likely alternative chemicals including their risks and benefits.)

  EPA also strongly encourages States to implement measures to protect surface water from pesticide contamination that is likely to impair water quality.

Component 8: Response to Detections of Pesticides

The Agency's priorities for contamination response, stated in the Ground Water Protection Principles in Protecting the Nation's Ground Water: EPA's Strategy for the 1990's, are to limit the risk of adverse effects to human health first and then to restore currently used and reasonably expected drinking water supplies and ground water closely hydrologically connected to surface waters, whenever such restorations are practicable and attainable. The Agency's Principles state that given the costs and technical limitations associated with ground water cleanup, the environmental and public health benefit of each dollar spent should be maximized. In making remediation decisions, a realistic approach to restoration should be taken based on actual and reasonably expected uses of the resource as well as social and economic values.

This component describes how the State will respond to contamination to ensure that reference points (MCLs, HAs, or State quality standards) will not be reached, and actions the State will take in the event that the reference points are reached and/or exceeded. Response measures should be based on the State's ground water philosophy and Components 5 and 6 of this guidance. Further, this component is closely tied to Component 7 concerning **prevention standards** that specifies that an SMP must describe actions that the State will take initially in the absence of actual detection and those it will implement if the plan appears to be failing to protect ground water. SMPs should describe how the appropriate State agencies will be brought into remedial actions.

Details about how those agencies carry out remedial decision-making is not necessary. It should be noted that EPA's philosophy is that contamination reaching the reference point is considered failure of the State Management Plan goal.

Response actions, such as increasing implementation of best management practices, and use restrictions or prohibitions, are the focus of this component, rather than remediation activities. Since FIFRA provides limited means for responding to contamination, however, States should increase efforts to coordinate enforcement and other response activities under a number of other federal/State authorities. In addition, as in Component 7, States should coordinate response measures with measures under existing EPA programs, such as Nonpoint Source, Coastal Zone Management, Wellhead Protection, and Comprehensive State Ground Water Protection Programs. Appendix B: Assessment, Prevention, Monitoring, and Response Components of State Management Plans presents a framework for assessing and responding to ground water contamination by pesticides as well as response alternatives.

Generic Plan Adequacy Criteria

Both a Generic and a Pesticide State Management Plan must:

- Describe the actions the State will take if a pesticide has exceeded or is expected to exceed reference points in ground water. When a pesticide level in ground water approaches, reaches, or exceeds an MCL or other reference point as a result of normal agricultural use, an aggressive stance should be taken, including the possibility of prohibiting further use of the pesticide in the affected areas. Detections below reference points should also trigger actions to prevent contamination with the potential to pose risks to human health and the environment (See Component 7.) The State's response section of its SMP may overlap with its prevention section. However, it must at a minimum pick up where the prevention section left off.

- Describe the steps that will be taken, and who will be responsible for: (1) identifying, if possible, the source of contamination, (2) ascertaining whether contamination resulted from normal use in accordance with label directions and other requirements, or from misuse or accident, and (3) determining whether the detection was found in a vulnerable or non-vulnerable area, which may be critical in establishing how the State assesses leaching potential (Component 5). In cases of misuse, enforcement actions should be pursued.

- Describe the State's response policy regarding contaminated ground water that is used as a source of drinking water. The SMP must

discuss generally what steps will be taken to protect public health. The State may need to provide or fund interim sources of drinking water if necessary. If the contamination constitutes a violation of the SDWA regulations[3] for which the Public Water System is responsible, these detections should be referred for enforcement action under authority of SDWA. The State will also need to determine actions for responding to contamination in private wells, including notifying well owners.

- The requirements listed above should be presented in the form of a general corrective response scheme, including timeframe(s) and identification of the agencies responsible for various activities, thereby illustrating the State's capacity for timely, coordinated response to contamination.

Pesticide SMP Adequacy Criteria

In addition to the Generic Plan Criteria listed above, a Pesticide Plan must:

- Indicate the levels (at the MCL or other reference point, or above these standards) at which the State intends to take or require remedial action to reduce contamination of currently used or reasonably expected sources of drinking water. The SMP must also indicate what specific steps the State will take, and the timeframe in which it will act, to initiate measures commensurate with contamination levels to reduce the possibility of further contamination toward significant health or environmental concern (i.e., levels at the reference point).

Component 9: Enforcement Mechanisms

Regulatory approaches are often required to ensure compliance with protective measures and control of ground water contamination sources. Compliance monitoring and enforcement of pesticide regulations are best conducted at the State and local level. Therefore, delegation of these authorities to the appropriate State officials is essential. Emphasis should be placed on coordinating State enforcement authorities, enforcement activities of delegated programs under FIFRA, SDWA, RCRA, and CERCLA, and enforcement activities under programs administered by EPA to identify parties responsible for ground water contamination as a result of the misuse of pesticides, including illegal disposal or leaks and spills (See Component 3).

[3] A violation under the SDWA relates to the average contaminant concentration over four consecutive quarters or to a single sample that is greater than 4 times the MCL.

Generic Plan Adequacy Criteria

Both a Generic and a Pesticide State Management Plan must:

- Describe the State's enforcement capabilities, authorities, and compliance activities (i.e., inspections, technical support, penalty provision, etc.). (If such authorities are described in Component 3 on Legal Authority that discussion can be cross referenced in this Component and need not be repeated.) The SMP should also identify the State agency with each enforcement authority.

Pesticide SMP Adequacy Criteria

In addition to the Generic Plan Criteria listed above, a Pesticide Plan must:

- Discuss the State's enforcement authorities and capabilities to monitor compliance with the specific measures included in the SMP, both those intended to protect ground water from contamination and response actions where contamination has already occurred. Enforcement authority must be identified by the State, and the roles and responsibilities of each State agency must be defined. If not already discussed in reference to "coordination mechanisms," the SMP will specify how coordination of enforcement capabilities within agencies will work to prevent and respond to contamination.

Component 10: Public Awareness and Participation

Most government activities are subject to citizen involvement and review. The State must demonstrate that the public is involved in the process of SMP development and will be informed of significant SMP implementation activities.

Generic Plan Adequacy Criteria

Both a Generic and a Pesticide State Management Plan must:

- Address the public role regarding development of both Generic and Pesticide SMPs and decision-making in implementing the SMPs. The SMP must identify or describe existing legal requirements within the State that would ensure public participation in the process (i.e., an Administrative Procedure Act requiring notice and comment, etc.). If no such legal requirements exist within the State, the SMP must describe any other public participation process the State intends to use in the development of the SMP.

- Indicate how, when, and by whom the public will be informed of detections in ground water that are considered significant. At a minimum, States must notify the well owner of any detections in ground water. Also, if detections are above the reference point, the State should ensure that all users are notified.

Pesticide SMP Adequacy Criteria

In addition to the Generic Plan Criteria listed above, a Pesticide Plan must:

- Include the level of detection in ground water that is considered by the State to be of such significance that the State will inform the public.

- Include a description of the process and means of communication by which the public will be made aware of important regulatory actions taken under the SMP.

Component 11: Information Dissemination

The user is responsible for directly controlling the use of pesticides in the field. Therefore, measures prescribed in a SMP must be communicated to pesticide users as well as appropriate industry groups and regulatory officials (See Component 7).

Generic Plan Adequacy Criteria

Both a Generic and a Pesticide State Management Plan must:

- Describe how information regarding prevention measures (e.g., use limitations and precautions) will be relayed to the appropriate audiences. The SMP must describe how the State will update information provided to pesticide users as SMP requirements change due to changing circumstances.

- Describe how pesticide users will be trained or educated in complying with requirements of applying a pesticide where use is governed by an SMP. This description should include identities of the principal groups or agencies to provide training (e.g., USDA Extension Service) and their qualifications, types of information to be included in the training, and timeframes for revising and presenting new training as SMP requirements change. Any entities (e.g., pesticide dealers, manufacturers, special interest groups) whose assistance in the training and education is anticipated should be identified and their anticipated roles should also be described.

Pesticide SMP Adequacy Criteria

In addition to the Generic Plan Criteria listed above, a Pesticide SMP must:

- Identify the targeted audiences and discuss how information will be relayed. For example, if the State determines that the only use of the pesticide in sensitive areas occurred on a particular crop, the SMP should indicate how the contamination prevention measures would be relayed to persons involved in the production of that specific crop. The State may possess and choose to use records of commodity production within the State to identify the appropriate people and mail information to them, or the State may have arranged with the pesticide manufacturer to provide the information with their product.

- Explain why the information dissemination approach is appropriate for the type of contamination prevention actions being employed, and the education and/or awareness of the targeted audience is required. For example, under a strictly educational approach, making information available at various locations may be adequate. If use limitations are being implemented, however, the State would likely need to have a mechanism that better ensures direct receipt by the pesticide users of the necessary information.

- Describe how information will be updated as requirements change. Such discussion should include the form these updates will take and the distribution methods. The SMP should also discuss any existing mechanisms (i.e., Memoranda of Understanding, cooperative agreements, etc.) between the State and other entities that will be involved in this effort if they are not addressed as part of Component 2: Roles and Responsibilities of State Agencies.

Component 12: Records and Reporting

Documentation of a State's program not only provides a source of data to share with EPA and other involved federal and State agencies, but also provides a basis with which to assess the implementation and effectiveness of a State's prevention and response measures. The SMP discussion of records and reporting should identify both management measures relating to the State's progress in implementing the SMP and environmental indicators of the effectiveness of the program. States report on the development of Generic SMPs under the FIFRA ground water grant program. Therefore, SMP Biennial Reports are not required for Generic SMPs.

Pesticide State Management Plan Adequacy Criteria

- Include a commitment by the State to maintain all records relating to SMP implementation for a period of at least four years. The information maintained must include, but is not limited to, records on any monitoring or sampling conducted, results of analyses, issuance of permits, types and numbers of enforcement actions taken, records of any site-specific regulatory actions, and administrative actions. The State must commit to make available to EPA, upon request, any and all records related to the development or implementation of the SMP.

- Commit to developing and submitting to the appropriate Regional Office an SMP Biennial Report every second year. The Biennial Report will provide a basis for measuring the State's progress toward protection of ground water resources from pesticide contamination. More specifically, this report will (1) provide an assessment of the status of implementation efforts, (2) provide an assessment of the environmental effectiveness and the level of ground water protection provided by an implemented SMP, and (3) provide information to be used to help ensure national consistency of protection. EPA will also use the information provided in each State's report in the Agency's own budget process, to indicate national or regional trends. The report must be concurred on by State Administrators from the key State agencies that play a role in implementing the SMP.

  Additional reporting may be requested on programmatic activities and how States are using grants for State Management Plans as part of normal programmatic evaluations (e.g., FIFRA cooperative agreement in the case of a Pesticide Office lead; CWA Section 106 Grant in the case of a Ground Water Office lead).

  The SMP Biennial Report will need to consist of two components: a programmatic evaluation and an environmental evaluation. The programmatic component will describe whether and how a State is implementing all the components of the SMP. This component of the report will consist of the following:

  -- Demonstration that all 12 components are fully operational to protect ground water and a discussion of the accomplishments and progress for each of the 12 components of an SMP;

- Identification of any special issues (e.g., change in resources to implement the SMP, change in legal authority) within the State regarding the SMP;

- Description of projected available resources for the next two years, with a comparison to the resources necessary to carry out the Plan;

- Description of any proposed modifications or updates to the SMP. (These can also be submitted at other times as well.);

- Data on the number of inspections performed to determine compliance with provisions of the SMP, completed enforcement actions related to noncompliance, and a summary of findings; and

- Description of response actions taken for detections of the specific pesticide.

The environmental component of the Report will be used to determine if SMPs are successfully protecting ground water from pesticide contamination. EPA recognizes that direct measurement of environmental benefit may not be obtainable over the first few years of SMP implementation. Over time, and through evaluation of ground water monitoring results, pesticide usage, and perhaps additional or other environmental indicators, however, EPA expects to draw conclusions on the effectiveness of Pesticide SMPs. The environmental component of the Biennial Report consists of the following:

- Results and analyses from ground water sampling and monitoring as well as a summary of significant finds which would prompt a State to increase its degree of oversight of use of the pesticide or modify its SMP.

- An assessment of pesticide usage and whether use of the specific pesticide has increased, decreased, or remained essentially the same over the past two years.

- Report to the appropriate EPA Regional Office as indicated below. EPA encourages States to ensure that all State agencies with duties and responsibilities pertaining to the SMP be party to all reports submitted to EPA.

-- Information to Report as it is Obtained: The SMP must indicate the State's commitment to report any significant findings to the appropriate EPA Regional Office. The State need not report a detection of a pesticide in a monitoring sample until its subsequent investigation is completed and a determination of significance is made. Significant finds would include, but are not limited to, those that prompt a State to increase its degree of oversight of use of the pesticide, or modify its SMP.

- EPA strongly encourages States to submit a final or interim report of their monitoring data to EPA Headquarters' Pesticides in Ground Water Data Base during their Biennial Evaluation or at any other time.

Note: For more information about the process for States submitting and Regions reviewing Biennial Reports, see Chapter 5 of Appendix A.

Chapter 4

Development of Support Documents

Program Offices within EPA, including the Office of Pesticide Programs, have developed procedural and technical support documents, some of which will be included as appendices to this Guidance Document. A summary of the content of these documents follows. In addition, other offices within EPA are developing technical information that will support the Pesticides and Ground Water Strategy and SMP efforts (see Appendix B, Chapter 7 for additional information).

Office of Pesticide Programs Documents

The Office of Pesticide Programs has developed two support documents for this Guidance that address: (1) review, approval, and evaluation of SMPs; and (2) assessment, monitoring, prevention, and response measures.

- **Appendix A - Review, Approval, and Evaluation:** This is a procedural document that outlines the process and timeframe for EPA's review, approval/concurrence, and oversight of SMPs.

- **Appendix B - Assessment, Prevention, Monitoring, and Response Measures:** This document provides the user with technical considerations and alternative methods for assessment, prevention, monitoring, and response actions. First, this document describes various ground water protection practices and methods for implementing prevention measures that States may adopt in the development of their prevention component. The document also describes a variety of ground water assessment methods and tools and how assessment information can be obtained. For each of several monitoring approaches, this document discusses the value and limitations of each approach, the comparative costs, and under what conditions the use of each approach might be most appropriate. Finally, the document will provide an array of response actions, including regulation, and remedial action. It will also provide a discussion of under what circumstances each response action might be most appropriate.

Office of Research and Development Documents

The Agency's Office of Research and Development (ORD) in cooperation with the Office of Pesticide Programs and Region III is developing a set of technical tools and guidance entitled, "Prevention of Ground Water Contamination from Pesticides: Information Systems for State Use." Products include documents that will:

- Discuss effective monitoring strategies for pesticides in ground water; and

- Develop an integrated system for modeling and geographic information systems to aid in identifying areas sensitive to ground water contamination.

Office of Ground Water and Drinking Water Documents

The Office of Ground Water and Drinking Water has issued or will issue the following support documents:

- A Review of Methods for Assessing Aquifer Sensitivity and Ground Water Vulnerability to Pesticide Contamination. 1993. EPA 813-R-93-002. A technical assistance document to assist State resource managers in choosing among the many methods for assessing the susceptibility of ground water to pesticide contamination. The document describes the general categories of assessment methods, provides examples of each, and discusses their characteristics and limitations, including their suitability for different purposes and hydrogeologic zones.

- Ground Water Resource Assessment. 1993. EPA 813-R-93-003. A technical assistance document to assist State resource managers in conducting ground water resource assessments. The document discusses the key components of a ground water resource assessment and approaches to assessing aquifer sensitivity and ground water vulnerability.

- Ground Water Information Systems Roadmap. 1993 (Draft). The document describes EPA's electronic data systems and hard copy filing systems that contain ground water data. This report also identifies the types of ground water data contained within the systems and the extent to which they conform to EPA's Minimum Set of Data Elements for Ground Water Quality.

- Definitions for the Minimum Set of Data Elements for Ground Water Quality. 1992. EPA 813/B-92-002. The guidance document identifies and defines a minimum set of 21 ground water data elements for ground water quality that are needed to share data efficiently within the ground water community at all levels of government. For each of the data elements, the document provides information on the element's name, the element's definition, a discussion on the element's definition, and examples of possible data conventions for the element.

- Comprehensive State Ground Water Protection Program Guidance. 1992. EPA 100-R-93-001. The guidance document describes the six CSGWPP Strategic Activities and the established adequacy criteria for each activity. The document also discusses the development process that States will follow to attain their Core CSGWPPs and Fully-Integrating CSGWPPs. In addition, the CSGWPP Guidance describes how the CSGWPP approach is linked to EPA and other federal agency programs, including the SMP approach.

- A Handbook for State Ground Water Managers. 1992. EPA 813-B-92-001. The handbook assists State ground water managers in identifying existing EPA ground water-related grants that may support the development and implementation of CSGWPPs. For each grant program, the handbook provides information on the program office, statutory authority, type of grant, objective of grant, how the grant can be used to support the CSGWPP approach, restriction on uses for supporting the CSGWPP approach, eligibility requirements, financial assistance considerations, and program funding levels.

- A Review of Methods for Assessing Nonpoint Source Contaminated Ground Water Discharge to Surface Water. 1991. EPA 570/9-91-010. A summary of the technical literature describing seven general assessment methods. The document includes a detailed annotated bibliography describing over 120 technical papers.