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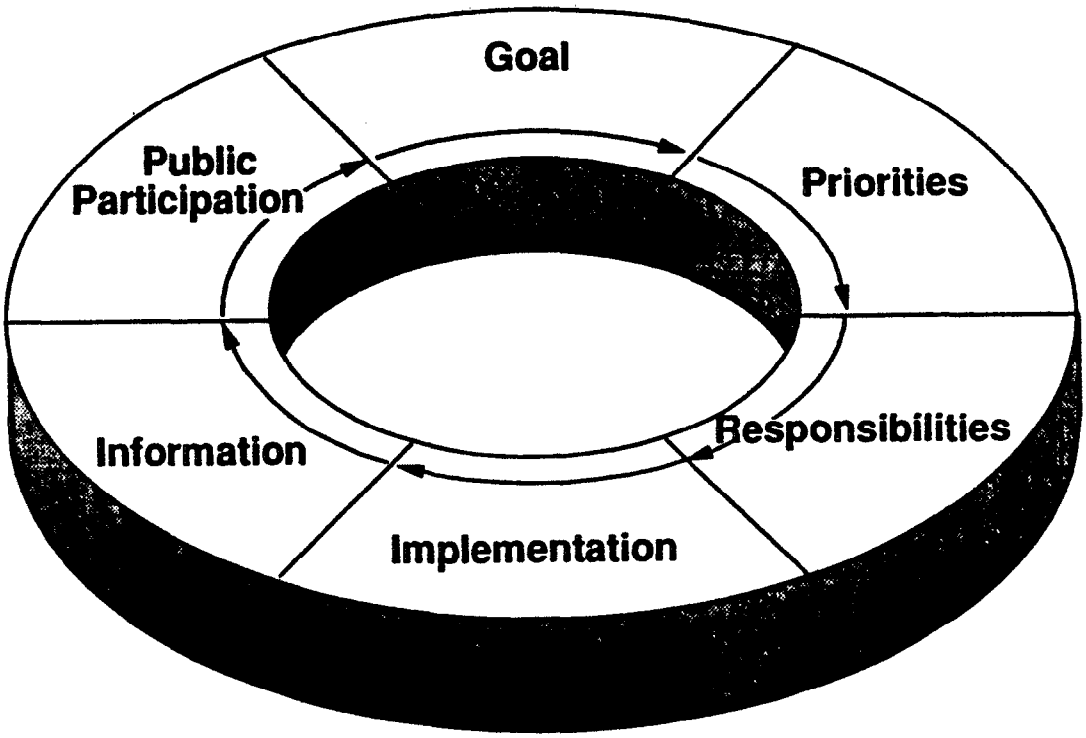
EPA

Final Comprehensive State Ground Water Protection Program Guidance



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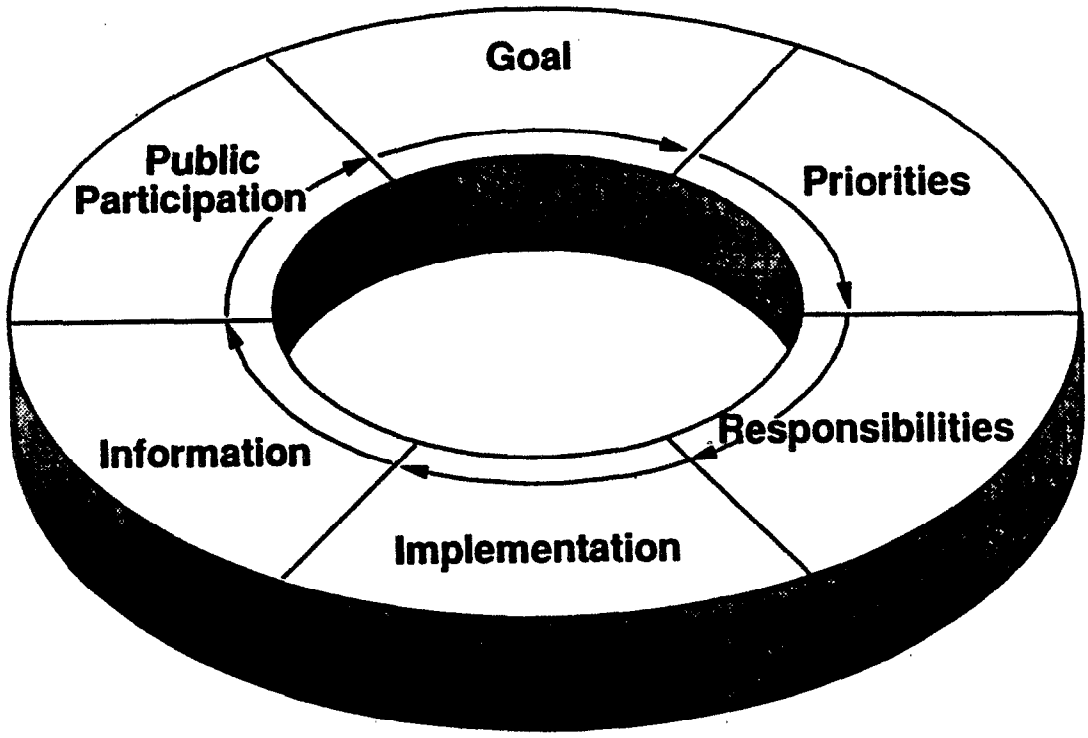

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1. INTRODUCTION

Comprehensive State Ground Water Protection Programs (CSGWPPs) are the focal point for a new partnership between EPA, the States, Native American Tribes,[1] and local governments to achieve a more efficient, coherent, and comprehensive approach to protecting the nation's ground water resources. CSGWPPs are also an important step in implementing EPA's ground water protection goal and principles.

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:[2]

- **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.

  Other factors may need to be taken into account when making ground water protection decisions. The relative vulnerability[3] of the ground

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[1] Except where necessary to reflect differences between States and Native American Tribes, the balance of this Guidance uses "State" to refer to both States and Tribes.

[2] See Appendix A for a more detailed discussion of EPA's ground water goal and its relationship to State programs.

[3] EPA defines ground water vulnerability as the relative ease with which a contaminant introduced into the environment can migrate to an aquifer under a given set of management practices, contaminant characteristics, and aquifer sensitivity conditions. Ground water vulnerability assessment methods assess hydrogeologic characteristics, contaminant characteristics, and management practices related to contaminants.

water should help determine the level of source control measures necessary to prevent contamination. As an additional preventive measure, the relative use, value, and vulnerability of ground waters at different locations should be considered in decisions regarding the siting of facilities or activities. Also, due to limited government personnel and financial resources, the relative use, value, and vulnerability of ground waters should be key factors in setting priorities for day-to-day operations of relevant programs (e.g. which permits to write first, which inspections to do first, which clean-ups to begin first).

Finally, in some cases, EPA is required by statute to base regulation on consideration of the risks and the benefits of activities that may pose health or environmental concerns. Such consideration could result in targeting prevention measures to those areas where ground waters are considered to have certain uses and values that, if not protected and conserved, would pose an unreasonable risk to human health or the environment now or for future generations. While under these federal statutes EPA and the States will need to ensure protection of ground waters with certain uses and values, States are encouraged to pursue prevention whenever possible.

- **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. EPA's goal is to remediate all aquifers to meet their designated uses. Given the expense of cleaning up ground water contamination and the need to focus more effort and resources on prevention, EPA and the States must take a realistic approach to restoration based upon the actual and reasonably expected uses of the resource as well as on social and economic values. EPA, the States, and other federal agencies must work together to ensure consistent approaches to determining clean-up objectives.

EPA is seeking to make the Comprehensive Program approach the catalyst for fundamental change in the development and implementation of ground water protection programs at the federal, State, and local levels. To achieve this end, CSGWPPs will further empower States with the primary role in coordinating all ground water-related programs and will expedite this coordination based on a State-directed, resource-based approach. The CSGWPP approach will effect the changes required for realization of the principles by meeting the following objectives:

- Provide States with greater flexibility in directing their ground water protection activities across the various EPA programs, sources of

contamination, and geographic areas to achieve comprehensive resource-based ground water protection;

- Eliminate the potential for ground water-related programs to be at cross-purposes, resulting in confusion and inefficient expenditure of efforts;

- Demonstrate the States' effectiveness in ground water protection to better justify additional funds for program development and implementation and additional flexibility from EPA and other federal agencies;

- Recognize and further delineate the appropriate roles for federal, State, and local governments as partners in ground water protection;

- Establish a forum for a better understanding and recognition of the interrelatedness of ground water quantity and quality concerns;

- Improve public understanding of ground water protection concerns in each State and provide a broader context for public participation; and

- Build a consensus across all levels of government on the need for comprehensive protection and on the basic structure of comprehensive programs.

Many of these objectives are already being met at the State level. However, additional effort is necessary at both the federal and State levels to ensure comprehensive ground water protection. To achieve the changes necessary to implement the CSGWPP approach, EPA and the States need to commit jointly to the CSGWPP approach as the focus of a long-term process for effecting both improvement in existing State programs and fundamental changes in the operation of federal programs related to ground water. This Guidance describes the cooperative process that States and EPA will use in developing and implementing the CSGWPP approach. It clarifies why this is the best approach to protection, given current or threatened contamination and the wide ranging responses to contamination over the past two decades, as well as the future legislative, regulatory, and other federal initiatives on the horizon.

1.1 GROUND WATER CONTAMINATION IS A NATIONAL CONCERN

Until the late 1970s, ground water was generally considered to be a pristine resource. Both experts and the public believed that the subsurface waters were naturally protected by layers of soil and earth and were self-cleansing. Contamination,

where it occurred, was thought to be primarily localized and the result of septic systems operations.

Threats to Ground Water

In the late 1970s and early 1980s, releases from waste sites such as Love Canal and the "Valley of the Drums," pesticide incidents such as releases of EDB and widespread discoveries of DBCP and Aldicarb in ground water and increased reports of drinking water well closures slowly focused the public's attention on ground water contamination. Through further research, news reports, and studies, we are now aware that there are many threats to ground water: man-made chemicals of many kinds and uses, including synthetic organic compounds; fertilizers; pesticides; wastes from mineral and petroleum exploration, production, transportation, storage, and use; and human and animal wastes, among others. Over 30 major categories of sources of ground water contamination have been identified. They include underground storage tanks, surface impoundments, municipal and other landfills, active and inactive hazardous waste management sites, pesticide storage, mixing, and application sites, septic tanks, underground injection wells and a variety of other sources.

Importance of Ground Water

At the same time as these threats to ground water began to be more clearly recognized, the importance of protecting ground water also became clearer, not only as a source of drinking water but also for its other beneficial uses and ecological roles. About 50 percent of the population of the United States receives its drinking water from ground water. While ground water supplies about 35 percent of the drinking water used in urban areas, it supplies close to 95 percent of the drinking water in rural areas. Several states depend on ground water for over 90 percent of their drinking water.

Ground water is also critical for other beneficial uses such as agriculture and industry. Ninety percent of the ground water withdrawals in Arkansas, Colorado, Kansas and Nebraska are for agricultural activities. In the eastern and mid-western industrial states, 30 percent of the ground water withdrawn is used in industrial processes.

Ground water also has important ecological functions. Ground water and surface water are interconnected. The U.S. Geological Survey estimates that 40 percent of the annual average streamflow in the United States is derived from ground water, or baseflow. (U.S. Geological Survey, 1988, National Water Summary - 1986, USGS Water Supply Paper 2325, p. 3) In some places, particularly humid zones, over 90 percent of the stream flow is from ground water. Recent research findings point to intrinsic ground water ecology, i.e., numerous species living in ground water, as being another reason to be concerned about the quality of ground water. Clearly, ground water is important in maintaining ecosystems and habitats.

1.2 WIDE-RANGING RESPONSES OVER THE LAST TWO DECADES

From the mid-1970's to the present, the federal government, State and local governments, and the private sector have responded to incidents of ground water contamination with a diverse array of actions and studies. Additional actions are likely in the near future.

Ground Water as a Focus of Environmental Action

Federal Laws, Regulations, and National Guidances. Many of the federal environmental statutes enacted in the past two decades had as their primary objective the protection or remediation of ground water. The Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which at their initial enactments already contained major ground water protection components, were both reauthorized in the mid 1980's with provisions that increased their emphasis on ground water protection. The 1984 Hazardous and Solid Waste Amendments Act (HSWA) to RCRA added tight restrictions on land disposal of hazardous waste, additional technical requirements for hazardous waste management facilities, new requirements for municipal landfills, new restrictions on surface impoundments, and a new program to address underground storage tanks. In addition, new corrective action requirements for cleanup of earlier contamination at existing hazardous waste management facilities were imposed by HSWA and may ultimately involve thousands of sites. The Superfund Amendments and Reauthorization Act in 1986 (SARA) placed new emphasis on remediation of abandoned hazardous waste sites and gave new specificity to the cleanup requirements.

The 1988 Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) amendments modified pesticide registration and re-registration processes, which enhance the Agency's ability to regulate leachable products. In 1986, the Safe Drinking Water Act (SDWA) was amended by a new provision requiring each State to develop and implement a Wellhead Protection Program to serve as a mechanism for States and local governments to protect the recharge areas of public drinking water wells. The 1986 Amendments to the SDWA also strengthened EPA's regulatory role in protecting ground water from underground injection control wells and in protecting current underground sources of drinking water from contaminants.

States' Efforts. State activities to protect ground water in the 1980's and early 1990's have been extensive. Studies by the National Conference of State Legislatures indicated that all fifty States enacted legislation with ground water management provisions during the calendar years 1985-1991. This legislation included statements of State-wide ground water policies, establishment of ground water classification systems, definition of ground water quality standards, establishment of ground water protection funds, and/or numerous efforts to control sources of contamination.

At the same time, EPA has provided nearly $80 million since 1985 under the Clean Water Act to all the States to develop State-wide Ground Water Strategies. With this funding, each of the 50 States developed a Strategy and implemented significant ground water management efforts pursuant to it. Since 1987, States have been working to control non-point sources of ground water and surface water contamination under Section 319 of the Clean Water Act. From FY 1990 to FY 1993, EPA will spend about $180 million under §319 grants, with at least $20 million devoted to ground water protection. In addition, the States developed and are implementing many regulatory and non-regulatory programs under State statutes to address sources of ground water contamination not addressed by the federal government, such as diffuse sources like septic tanks.

Private Sector Activities. The private sector has also been influenced by the trend toward greater attention to ground water. Industry has spent hundreds of millions of dollars to clean up ground water at Superfund sites and to protect ground water at RCRA hazardous waste sites. Environmental audits are now routinely undertaken by industry to identify and address ground water contamination problems before they become unmanageable. Such environmental audits are also becoming a common practice in commercial real estate transactions to ensure that land being sold is clear of any ground water contamination or other environmental problems.

Coordination Efforts. Beginning in the late 1980's, EPA and many other federal agencies embarked upon a number of actions to pull together the disparate strands of ground water protection and to undertake new initiatives. In 1991 EPA developed and released a Strategy for ground water that established EPA's policy of promoting a comprehensive federal/State partnership in ground water protection. EPA also published the Pesticides and Ground Water Strategy addressing a specific threat to ground water. EPA's RCRA, Superfund, and Radiation Programs are also working to develop new approaches to protect ground water that will encompass a more comprehensive partnership with the States. Other federal agencies have been working with EPA's programs as well as refocusing their programs or starting new initiatives to protect ground water.

Possible New Initiatives Focusing on Ground Water

A new set of responses to ground water issues, ranging from possible legislation to regulatory and policy initiatives, could occur in the next few months or years.

Legislation in the 103rd Congress. There will likely be efforts to reauthorize many of the laws that currently address ground water, including the Safe Drinking Water Act, which includes the Wellhead Protection Program and the Underground Injection Control Program; RCRA Subtitles C and D and the Underground Storage

Tank Program; Superfund, including the criteria for the National Priorities List; and FIFRA. Bills also may be submitted dealing with above-ground storage tanks, wastes from oil and gas exploration and production, and fertilizers.

National Regulations and Guidances over the next five years. EPA is likely to promulgate regulatory changes and issue new national guidelines affecting ground water under the current statutes, whether there are legislative changes or not. These new initiatives include: actions affecting RCRA requirements for corrective action, municipal landfills and State/Tribal implementation, definition of hazardous waste, and requirements for ground water monitoring; revisions to the Superfund National Priorities List; the FIFRA Restricted-Use Rule for Ground Water Protection; the SDWA Underground Injection Control rule on Class V wells; new rules on sewage sludge use and disposal; requirements for stormwater management; and rules on ground water disinfection. EPA is also reviewing policy options for addressing ground water ecological concerns. Table 1-1 on the following pages provides a list of some of EPA's upcoming actions relating to ground water.

Other Federal Agencies. Several federal agencies are implementing new initiatives relating to ground water protection. USDA is implementing a Water Quality Initiative; DOI is reorienting the Federal/State Cooperative Program to implement a national assessment of ground water quality, taking steps to begin implementing a new mapping program nationwide in cooperation with the State geologists, and engaging in joint activity with the Bureau of Reclamation on the High Plains Aquifer Study; action by the Department of Energy is underway to implement a massive effort to clean up radioactive nuclear sites; action by the Department of Defense has begun to implement a massive effort to convert facilities to civilian use by cleaning up the sites to be transferred; and the Department of Transportation is working to develop new means of ensuring safe interstate transport of hazardous materials. These are only some of the initiatives by other federal agencies that will have an impact on ground water. Detailed descriptions of these agency's ground water-related programs are provided in Part II, Section 2.

Table 1-1
Upcoming EPA Regulatory and Guidance Actions Relating to Ground Water

Office of Prevention, Pesticides, and Toxic Substances (OPPTS):

- Guidance to States on developing Pesticide State Management Plans;
- SMP Rule Workgroup;
- Restricted Use Classification for Groundwater Contaminating Pesticides;
- Aldicarb Special Review;
- Storage and Disposal of Pesticides Residues;
- OPTS Annual Operating Guidance;
- FIFRA Cooperative Agreement Guidance;
- PCB Disposal Amendments; and
- Pesticide Data Requirements.

Office of Air and Radiation (OAR):

- Ground Water Protection for Inactive Uranium Mill Tailings Sites;
- Land Disposal of Low-Level Radioactive Wastes; and
- Disposal of High-Level Transuranic Radioactive Wastes.

Office of Solid Waste and Emergency Response (OSWER):

- Corrective Action for Releases from Solid Waste Management Units;
- Ground Water Monitoring Rule;
- Ground Water Amendments;
- Mining Waste Program Rule;
- Municipal Solid Waste Landfills, State/Tribal Implementation Rule;
- Liners and Leak Detection for Hazardous Waste Land Disposal Units;
- Standards for the Location of Hazardous Waste Treatment, Storage, and Disposal Facilities;
- Ground-Water Monitoring Analytes;
- Disposal of Containerized Liquids in Hazardous Waste Landfills;
- Modification of Mixture/Derived From Rule;
- Toxicity Characteristics Rule Suspension for Oil Spill Cleanups;
- Use of Ground Water Data in Hazardous Waste Delisting Decisions;
- Corrective Action Stabilization Strategy and Guidance;
- Hazardous Waste Land Disposal Restrictions "Third-Thirds" Rule Implementation Guidance;
- Land Disposal Restrictions: Treatment Standards for Newly Identified and Listed Wastes & Contaminated Soils;

Table 1-1 (continued)
Upcoming EPA Regulatory and Guidance Actions Relating to Ground Water

Office of Solid Waste and Emergency Response (OSWER) (continued):

- Revisions to the National Oil and Hazardous Pollution Contingency Plan;
- OERR Strategic Plan for Addressing Ground Water Contamination at Superfund Sites;
- Guidance on Remedial Action for Contaminated Ground Water at Superfund Sites;
- Superfund/RCRA Technical Impracticability Waiver/Guidance;
- Multi-Source Groundwater Guidance;
- Preliminary Assessment Guidance for HRS;
- Data Useability for Site Assessment for HRS;
- Site Investigation Guidance for HRS; and
- HRS Guidance Document for Commonly Encountered HRS Scoring Questions.

Office of Water (OW):

- National Primary Drinking Water Regulations: Contaminants from First Drinking Water Priority List (Phase VI);
- Ground Water Disinfection Rule;
- UIC Class V Well Regulation;
- Technical Standards for the Use and Disposal of Sewage Sludge;
- Guidance for 106 funds;
- Guidance for 319 funds;
- Guidance for 319 State Management Plans; and
- Naturally Occurring Radioactive Nuclides.

Office of Enforcement (OE):

- Guidance for State-EPA Enforcement Agreements.

1.3 WHAT EPA AND THE STATES HAVE LEARNED

The activities focused on protecting and cleaning up ground water for the past twenty years have been marked by both successes and failures and have led States and EPA to conclude that:

- **A greater emphasis on prevention of ground water contamination is needed.** Preventing a problem before it starts or gets worse is generally sound public policy. Prevention of ground water contamination is usually much less costly than cleaning up after contamination has occurred.

  One way to demonstrate the high costs of contamination is to consider the cost of well replacement. For example, at Prices Landfill in New Jersey, a Superfund site, a municipal well field of ten wells was abandoned due to contamination and a new wellfield was established at a cost of about $5 million, or about $500,000 per well. In most cases, the costs of cleaning up ground water contamination are also extremely high. A 1988 study of 153 Superfund sites showed that projected ground water remediation costs, at about a quarter of these sites, were over $10 million per site, with the most expensive site being $120 million.

  Prevention, in contrast, usually costs significantly less. Communities with small water supply systems serving hundreds to thousands of consumers have implemented Wellhead Protection Programs at a cost of about 5 to 10 percent of the capital costs of well installation. Economies of scale in larger wellfields, such as South Florida, have led to a cost of protection as low as 1 percent of the capital costs required for facilities to treat drinking water supplies that have been contaminated.

  In 1991, the U.S. General Accounting Office, looking at these cost differences, concluded that a "shift of emphasis between prevention and remedial programs is warranted to help states implement preventive groundwater protection programs more effectively." GAO recommended that EPA work with the States to develop ways to reorient some of their existing ground water programs to provide greater emphasis on preventive activities. ("More Emphasis Needed on Prevention in EPA's Efforts to Protect Groundwater," U.S. General Accounting Office, December 1991, GAO/RCED-92-47)

  Even if the costs of prevention and cleanup were roughly equivalent, prevention provides the only feasible means of addressing certain problems. We are increasingly finding that current ground water cleanup technologies cannot always succeed in removing certain categories of contaminants to the degree desired, especially non-aqueous phase liquids (NAPLs and DNAPLs) from aquifers.

- **Remediation should be based on differential protection.** While prevention of contamination will be promoted to the extent possible, decision-making concerning the appropriate level of remediation will need to be based, in part, on the relative use and value of the contaminated ground water. Cleanup of contaminated ground water is both time and resource intensive. Because of the need to attend to other environmental and societal issues in a time of limited resources, choices will have to be made about where to focus remedial actions and the extent of the remediation to be sought.

- **A local understanding of the resource is needed to establish priorities.** The number and variety of potential threats to ground water and the unique hydrological features of the resource vary extensively from one location to another. The total impact on the resource of all sources of contamination in a particular area, taking into consideration the unique features of the ground water, must be considered in establishing priorities and appropriate strategies for prevention and/or remediation.

  Thus, we must use the knowledge base held by State and local governments and private and non-profit organizations. Indeed, the technical experience of State and local personnel is a very important component of ground water protection. Because Statewide programs, including all component local efforts, must address ground water protection efforts in the field on a day-to-day basis, State and local personnel have gained useful insights into problems and remedies.

- **Flexibility in setting and addressing priorities at the State and local level is needed.** EPA, through extensive discussions with the States, has come to know more about inconsistencies and rigidities among federal ground water-related programs, which result in inefficient expenditures of efforts and less cost effective protection from a total resource-based perspective. EPA also has come to realize that the federal rigidity may be largely a result of ignorance or misconceptions regarding State ground water protection capabilities as well as State needs, priorities, and approaches.

- **Additional coordination of ground water-related programs and authorities is needed.** The current patchwork of ground water-related programs and efforts (See Figure 1-1) is not fully effective in protecting the resource. Federal source control programs, which provide the authority for many State efforts, focus on contamination that, in

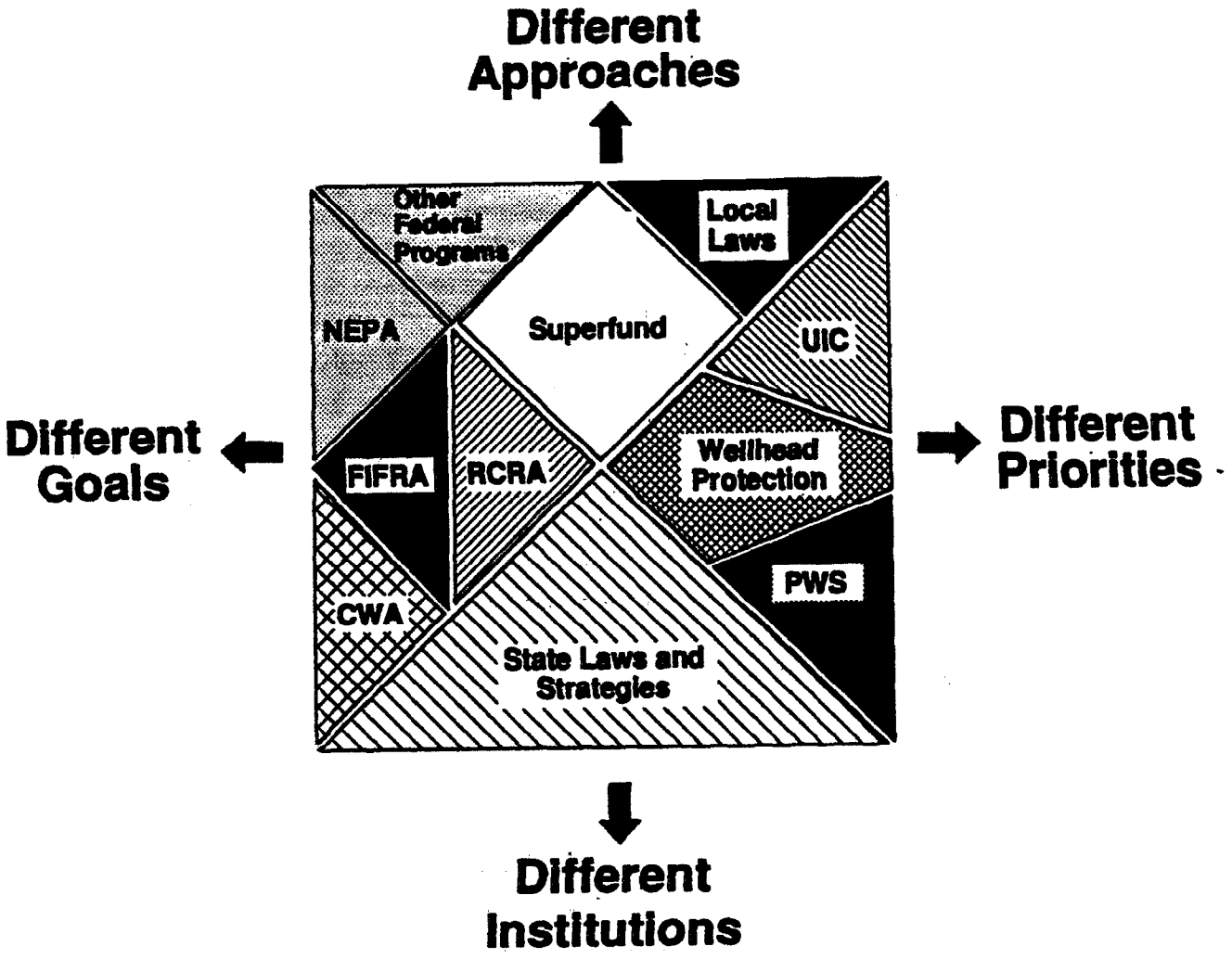

Figure 1-1. Coordination of the patchwork of programs and efforts is difficult.

aggregate, presents significant risks on a national basis, but may not represent the most important threats at specific locations to either drinking water supplies or ground water discharge to aquatic ecosystems.

Many small, dispersed, or nonpoint sources of contamination remain unaddressed. Commercial, residential, and industrial development frequently occurs with little or no recognition of the long-term impacts on the quality of ground water. The programs that address particular threats are not always consistent in their approaches or requirements. In some cases, duplication of effort may occur, while in others gaps in coverage for a resource-based perspective may exist. The programs address different goals with differing priorities, and the institutions and levels of government that implement them can differ from program to program.

- **A resource-based perspective needs a better understanding and recognition of the interrelatedness of ground water quantity and quality.** EPA is exploring the linkage between ground water quantity and quality through a study of the western States. At the urging of many groups involved in protecting ground water, EPA wants to work with States to further explore the interrelatedness of ground water quantity and quality. In the future, States may need to address methods that they will use to minimize the impacts of ground water withdrawals on ground water quality, to ensure that both aspects of ground water are considered. EPA continues to maintain that States have the primary role in ground water quantity policy.

- **Broad public education and participation is necessary.** Because the ground water resource is faced with such a broad array of potential threats, the best means for protection often will be derived from public education and support. The effectiveness of such an approach has already been demonstrated by Wellhead Protection activities, in which local programs successfully achieve protection of the ground water resource through public outreach and education.

- **More flexible funding at all levels of government is needed.** While a clear need may exist for all levels of government to increase the total amount of staff and grant resources devoted to ground water, much could be accomplished by removing some of the constraints to resource allocation for ground water at all levels of government. Existing resources need to be more flexible to address varying State priorities. Some of this flexibility can be provided by reducing the potential for programs to be at cross-purposes and avoiding inefficient expenditure across related programs. There also is a need to bring the federal

agencies to a better understanding of each other's programs and State programs and to provide additional federal flexibility to each of the States based upon their identified priority needs. Finally, there is a need to increase both the availability, quantity and quality of technical assistance to the States to set priorities and to implement programs to address those priorities.

- **A consensus on the nature of a comprehensive state ground water protection program is needed.** Missed opportunities have arisen from the lack of agreement about what constitutes a comprehensive State ground water protection program and the absence of a current vehicle for communicating the details of State capabilities and needs to other federal programs. Given the strong and highly-varied presence of the federal government in ground water protection issues (i.e., EPA regulatory programs, other agencies' regulatory programs, federal facilities, and federal assistance to States and local governments), such a situation is problematic even for those States that believe they have, or could accomplish, a comprehensive program alone.

1.4 CSGWPPS AS THE FOCUS OF A NEW FEDERAL/STATE/LOCAL PARTNERSHIP IN GROUND WATER PROTECTION.

CSGWPPs are intended to build on what we have learned about ground water protection and remediation efforts over the past two decades and to provide a national consensus on what actually comprises comprehensive ground water protection. Consequently, this Guidance and the CSGWPP approach incorporate many of the lessons learned directly into CSGWPP activities. When existing federal and State laws limit the successful incorporation of these lessons, the CSGWPP approach will help serve as the catalyst for the necessary changes in existing and emerging laws, regulations, and policies necessary to address the remaining lessons.

Therefore, CSGWPPs will have the following aspects:

- **Prevention.** A State's goal must, at least, be based on preventing ground water contamination whenever possible. EPA encourages each State to determine what is "possible" explicitly and through adequate public participation.

  EPA recognizes that preventing all discharges to all ground waters in the State is unrealistic. Therefore, States are encouraged to consider the relative vulnerability of ground water in determining necessary prevention measures and to consider the relative use and value, as well as, vulnerability, of ground waters when deciding where to site potential contamination sources or activities. EPA recognizes that the economic

and social impacts of prevention measures may need to be weighed against the use and value of specific ground water resources. As described in Appendix A, EPA believes that such balancing should be done primarily at the State level, often through representative government processes, except when federal statutes (e.g., FIFRA) or certain conditions call for a stronger federal role. However, EPA believes that prevention and reduction of contamination must be the first priority of each State's CSGWPP and that some level of protection should be considered for all ground waters in a State.

Where appropriate, the State should allow local governments to make decisions concerning what is "possible" in regard to preventing ground water contamination. Federal law will still need to be followed when prescribing what is possible. A State's goal must be at least as stringent as EPA's goal for prevention. A State's goal may be more stringent than EPA's, and may include a goal based on non-degradation or anti-degradation. This does not mean that EPA expects a State to prevent all discharges to ground water. EPA recognizes that the need will occasionally arise for realistic balancing of the economic and social costs of prevention against the underlying ground water's use and value. Such decisions, however, need to be based on an understanding of the current and reasonably expected uses of the ground water and a desire to conserve resources for future generations.

- **Remediation.** A State's goal must, at a minimum, be based on both current and reasonably expected uses of ground water, as well as ground waters that are closely hydrologically connected to surface waters (See Appendix B). For drinking waters, the attainment of Maximum Contaminant Levels (MCLs) established under the Safe Drinking Water Act (SDWA) should be the remediation goal. For ground waters closely hydrologically connected to surface waters, the goal should be to reduce contamination so that its discharge to surface water does not exceed water quality standards established under the Clean Water Act. A State's goal for cleanup of contaminated ground water could also be based on "relative risk to human health and/or the environment" or on "remediation to the extent practicable." However, the cleanup levels resulting from these alternative approaches should be at least as stringent, and could be more stringent, as levels resulting from the methods described above.

- **State-directed, resource-based priority setting.** Under a CSGWPP, States are encouraged to set priorities for overall ground water management efforts based on a local understanding of the relative use, value, and vulnerability of the underlying ground water and potential contamination threats. Because resources are limited, States cannot

focus their ground water efforts (prevention, siting, and remediation) everywhere. Therefore, priorities need to be set across these activities.

- **State flexibility.** Flexibility will be provided to a State based on the State's meeting adequacy criteria. EPA is using the CSGWPP approach to catalyze further State flexibility while increasing the consistency among individual programs of the adequacy criteria that States must meet. At a minimum, the approach is intended to reduce the burden on the States in meeting numerous program criteria from several different programs. EPA's intention is that this integrated approach will provide a broader decision-making framework for States across programs, sources of contamination, and geographic areas. EPA also will use the CSGWPP approach as a basis for suggesting appropriate changes to existing federal statutes and regulations to allow States greater flexibility to achieve comprehensive resource-based ground water protection.

- **Program coordination.** The CSGWPP approach will help to ensure that programs work toward the same goal in a coordinated manner. Currently, the actions of the numerous programs that affect ground water, either directly or indirectly, can be at cross-purposes, resulting in confusion and inefficient expenditure of efforts. By integrating all programs and activities through a State-directed, resource-based approach, a CSGWPP will significantly reduce or eliminate such situations (See Figure 1-2). States will have a key role side-by-side with EPA in designing and implementing programs to protect the resource. States also will have greater flexibility in implementing each Agency program related to ground water protection based on the States' understanding of the relative use, value, and vulnerability of their ground water resources.

- **Increased Recognition of the Interrelationship between Ground Water Quantity and Quality.** Under their CSGWPPs, States are encouraged to coordinate their ground water quality and quantity objectives, particularly with regard to maintaining aquatic habitats.

- **Increased Public Participation and Support.** Another objective of the CSGWPP is to improve public understanding of the ground water protection concerns in each State and to provide a broader context for public participation. This will enhance understanding of choices for addressing those concerns and the social and economic as well as the environmental implications and trade-offs of those choices. The CSGWPP emphasis on public participation will help gain public support for State ground water protection decision-making.

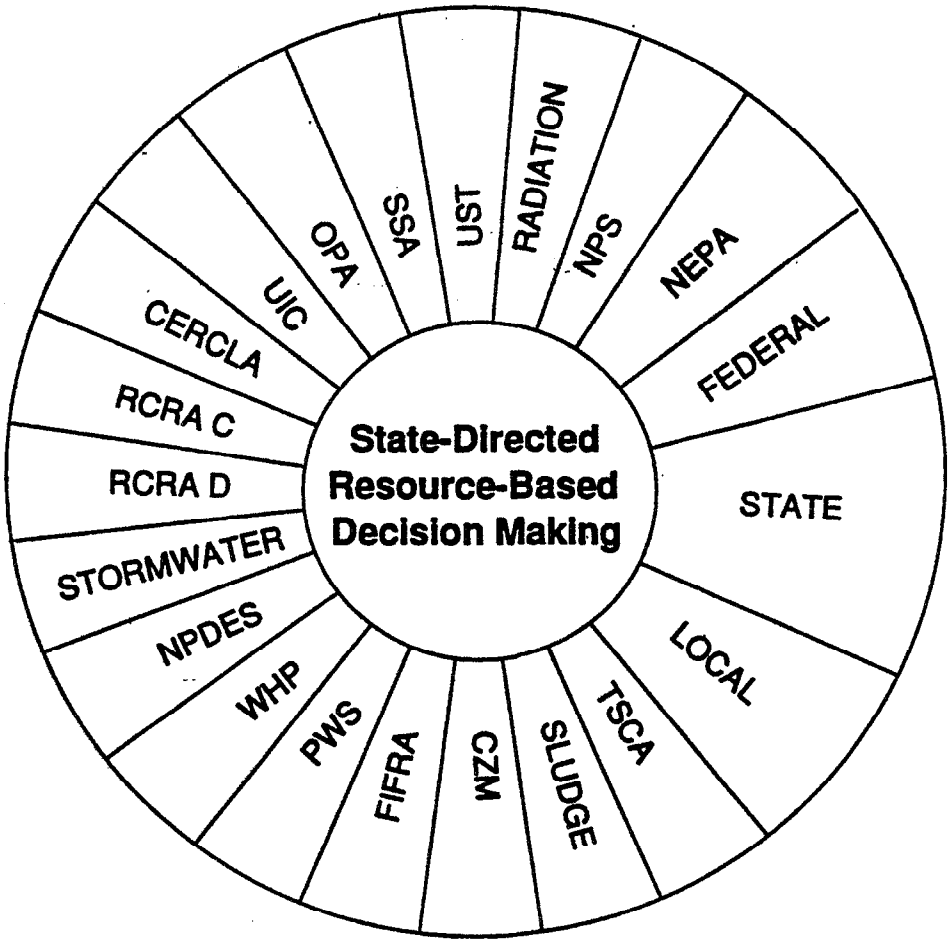

Figure 1-2. By centering all programs on a core of resource-based State goals and priorities, and integrating all programs, coordination will be significantly enhanced and the resource better protected.

- **More flexible funding**. Through increased program coordination, States with Comprehensive Programs will be able to better coordinate the expenditure of their limited resources under each relevant program. More importantly, because the CSGWPP approach recognizes the need to set priorities to manage ground water resources, it allows for a greater focus of financial resources and personnel for a variety of functions (i.e., site clean-ups, permitting, inspection activities) on the most critical human health and environmental risks within the statutory constraints presented by ground water protection laws such as RCRA, FIFRA, and CERCLA.

- **Consensus and future direction.** This Guidance provides the vehicle for establishing the needed consensus on the nature of a CSGWPP. In turn, this CSGWPP approach will help EPA, the States, and other federal agencies to further recognize, delineate, and coordinate their appropriate roles across ground water-related activities. Chapter 4 and Part II of this document describe how the CSGWPP approach can benefit specific ground water-related programs. For example, States, working with EPA through the CSGWPP approach, will identify where their capacity for ground water protection allows for increased flexibility under specific programs (e.g., RCRA, FIFRA) to better tailor protection efforts. These benefits will be realized as a result of CSGWPP development and implementation, which include a long-term strategy by EPA to adopt the CSGWPP approach in new and existing regulations, as well as program operational changes laid out in State negotiations with EPA Regional Offices. This Guidance, therefore, cannot be a comprehensive catalog of the benefits that eventually will be realized through the CSGWPP.

1.5 WHAT WILL CONSTITUTE A COMPREHENSIVE STATE GROUND WATER PROTECTION PROGRAM?

A Comprehensive State Ground Water Protection Program consists of a set of six Strategic Activities (Figure 1-3), which foster more efficient and effective protection of ground water through more cooperative, consistent, and coordinated operation of all relevant federal, State, and local programs within a State. The six Strategic Activities are:

- Establishing a ground water protection goal to guide all relevant federal, State, and local programs operating within the State;

- Establishing priorities, based on characterization of the resource, identification of sources of contamination, and programmatic needs, to guide all relevant federal, State, and local programs and activities in the State toward the most efficient and effective means of achieving the State's common ground water protection goal;

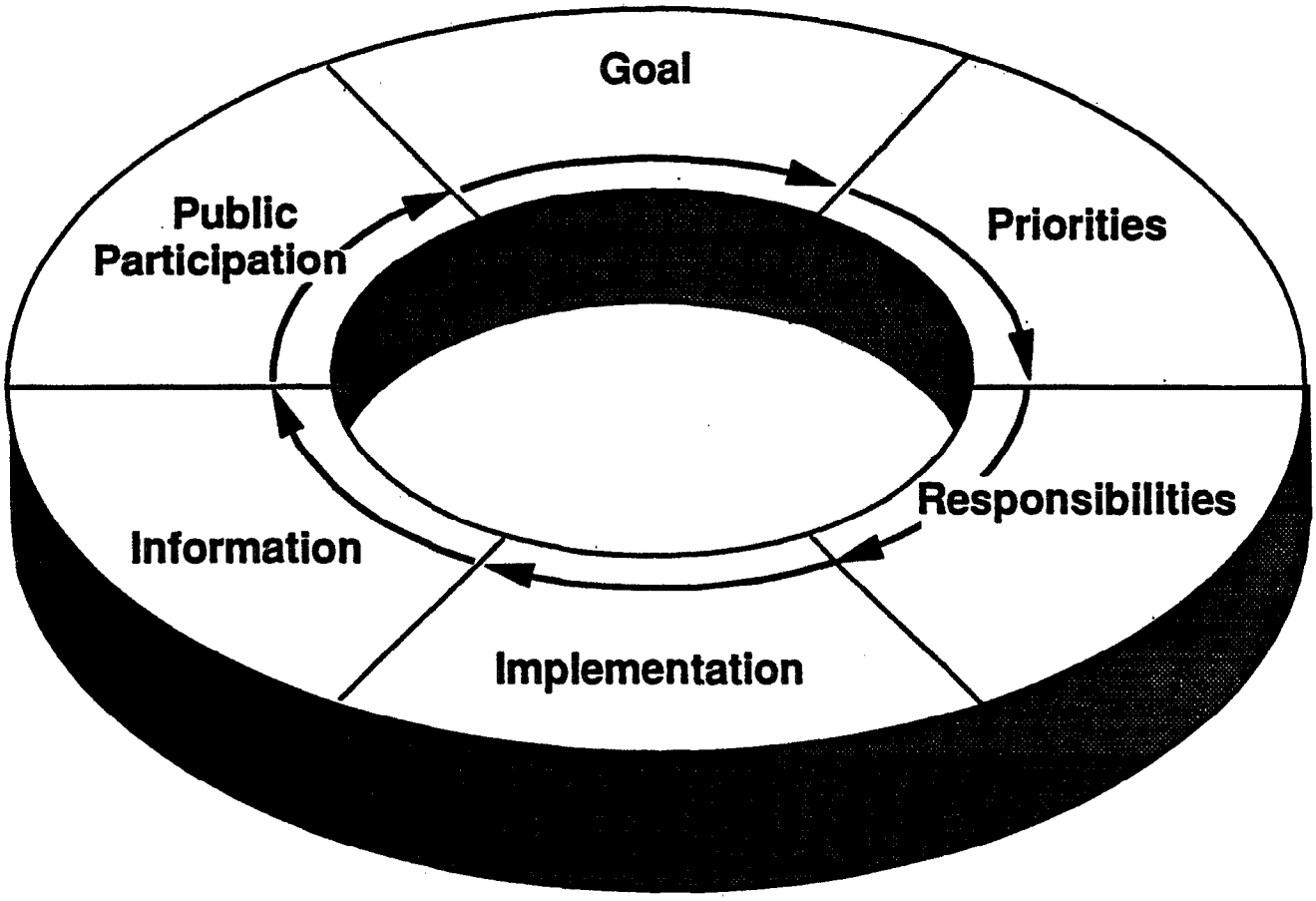

Figure 1-3. The six Strategic Activities of a CSGWPP are dynamic and inter-related; improvements in one activity lead to improvements in the other five.

- Defining authorities, roles, responsibilities, resources, and coordinating mechanisms across relevant federal, State, tribal, and local programs for addressing identified ground water protection priorities;

- Implementing all necessary efforts to accomplish the State's ground water protection goal consistent with the State's priorities and schedules;

- Coordinating information collection and management to measure progress, re-evaluate priorities, and support all ground water-related programs; and

- Improving public education and participation in all aspects of ground water protection to achieve support of the State's protection goal, priorities, and programs.

While planning is necessary in developing and implementing these Strategic Activities, a plan does not by itself constitute a CSGWPP. The Comprehensive Program focuses on the coordinated and consistent implementation of the six Strategic Activities across all ground water-related programs. The Strategic Activities of a CSGWPP are meant to influence all ground water-related programs within the State, including those of EPA and, where appropriate, other federal programs in a way that results in fundamental changes in their overall approach to ground water protection. Such influence should result in greater integration and efficiency of all program efforts through its attention to State-directed, resource-based protection priorities.

1.6 THE CSGWPP DEVELOPMENT PROCESS: THE NEW PARTNERSHIP IN ACTION

While many States have made enormous strides in ground water protection, EPA recognizes that significant gaps in ground water protection remain in most States in achieving a Fully-Integrating CSGWPP. More importantly, the Agency understands that movement towards a State-directed, resource-based comprehensive approach to ground water protection will also require fundamental changes in a number of federal programs, particularly in terms of regulatory policy and federal financial support to the States. EPA expects the development of CSGWPPs that achieve all the benefits of the approach to take place over the next several years. States will have the lead in developing and implementing their CSGWPPs. However, EPA and the States need to commit jointly to the CSGWPP approach as the focus of a long-term process for effecting both improvements in existing State programs and fundamental changes in the operation of federal programs.

From "Core" CSGWPP to "Fully-Integrating" CSGWPP

A key aspect of the process envisioned by EPA for achieving a State-directed, resource-based approach to ground water protection relies on a State's continuous improvement from a "Core" CSGWPP to an eventual "Fully-Integrating" CSGWPP as is illustrated in Figure 1-4. To parallel the States' efforts to improve their six Strategic Activities of a CSGWPP, EPA will undertake self-assessments of its own programs and will work with other federal agencies and the Congress to tailor new programs or modify existing programs so they are flexible and capable of adopting the ground water protection goal and priorities of each State's CSGWPP. Improvements in a State's CSGWPP Strategic Activities will both catalyze and be energized by changes in federal programs to achieve a State-directed, resource-based comprehensive approach to ground water protection, i.e., a Fully-Integrating CSGWPP (Figure 1-5).

The eventual goal -- attainment of a Fully-Integrating CSGWPP -- means that ground water protection efforts are coordinated and focused across all federal, State, and local programs based on a State's understanding and decisions regarding the relative use, value, and vulnerability of its ground water resources, including the relative threat of all actual or potential contamination sources. A Fully-Integrating CSGWPP addresses all of the adequacy criteria for each of the six Strategic Activities of a CSGWPP described in Chapter 2 of this Guidance. The adequacy criteria for a Fully-Integrating CSGWPP provide considerable flexibility in what each State's Fully-Integrating CSGWPP will actually encompass. Thus, a State can tailor its Fully-Integrating CSGWPP to emphasize those decision-making responsibilities it believes are most suitable to its own purposes. EPA is committed to working with each State in a joint effort to gain additional decision-making responsibilities under various federal programs and achieve a Fully-Integrating CSGWPP.

A "Core" CSGWPP represents a State's initial commitment to working jointly with EPA to move toward a Fully-Integrating CSGWPP. A Core CSGWPP provides the means for States to demonstrate, and for EPA to endorse, the State's potential to be the primary decision-maker in ground water protection efforts. A State will attain a Core CSGWPP when it has met the Core adequacy criteria for each of the six Strategic Activities, which are also described in Chapter 2. EPA will assist a State in attaining the Core CSGWPP by contributing to the development and review of program submissions and either endorsing[4] the State's Comprehensive Program as having achieved the Core level or recommending changes and improvements.

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[4] EPA's Ground Water Protection Strategy stated that EPA would "concur" on a State's determination that it had obtained a CSGWPP. Comments from State officials suggest that this term does not characterize the State/EPA partnership necessary to the CSGWPP approach correctly, but instead implies program delegation as usual. Because this program is meant to be fundamentally cooperative and consensual, the term "endorse" has now been adopted to better indicate the intended relationship. Endorsement is a means for EPA to bring recognition to a State's success in initiating a more comprehensive approach to protecting its ground water resources.

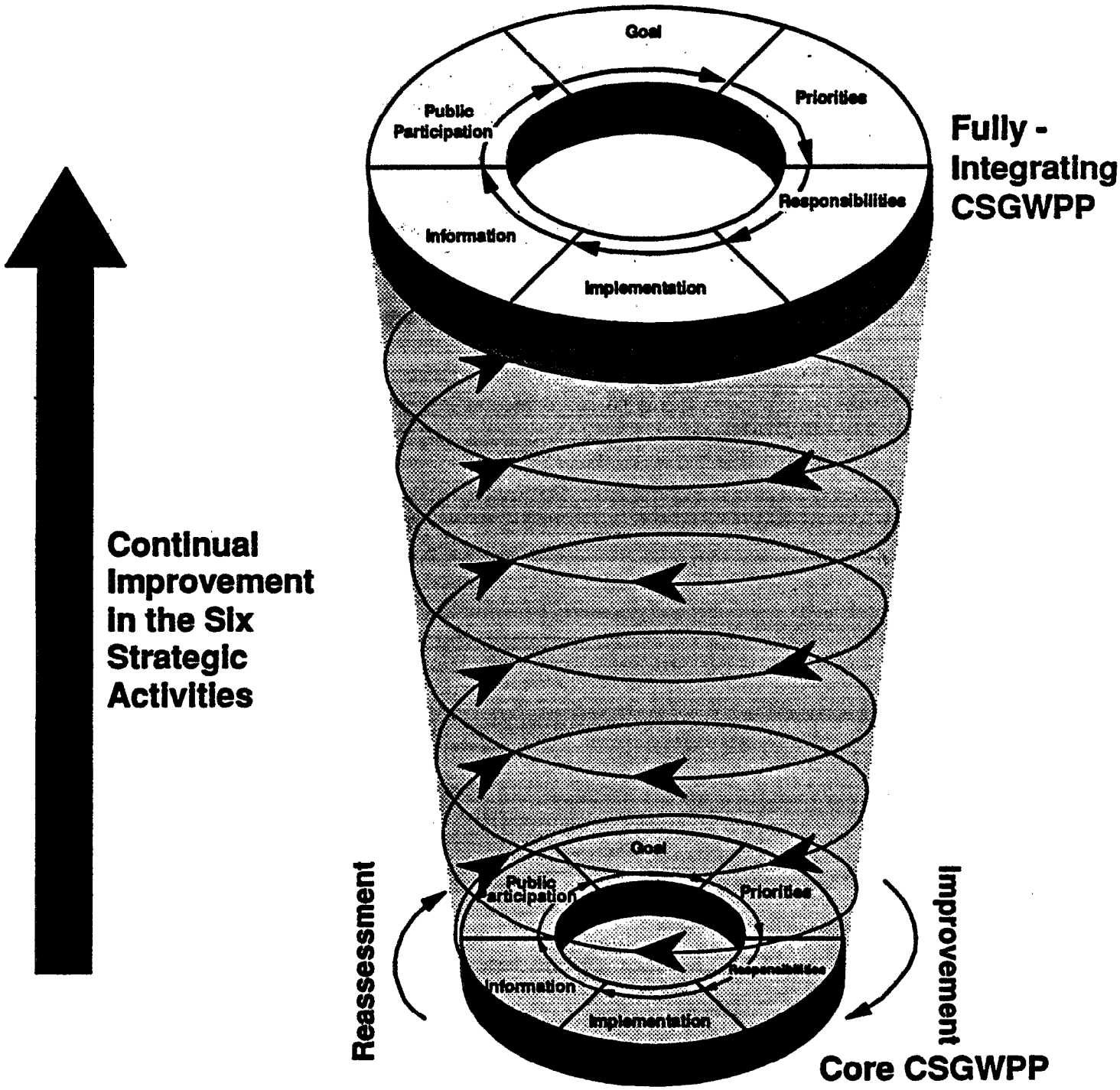

Figure 1-4. Continuous improvements in each of the six interrelated Strategic Activities move a State from a "Core" program to a "Fully-Integrating" CSGWPP.

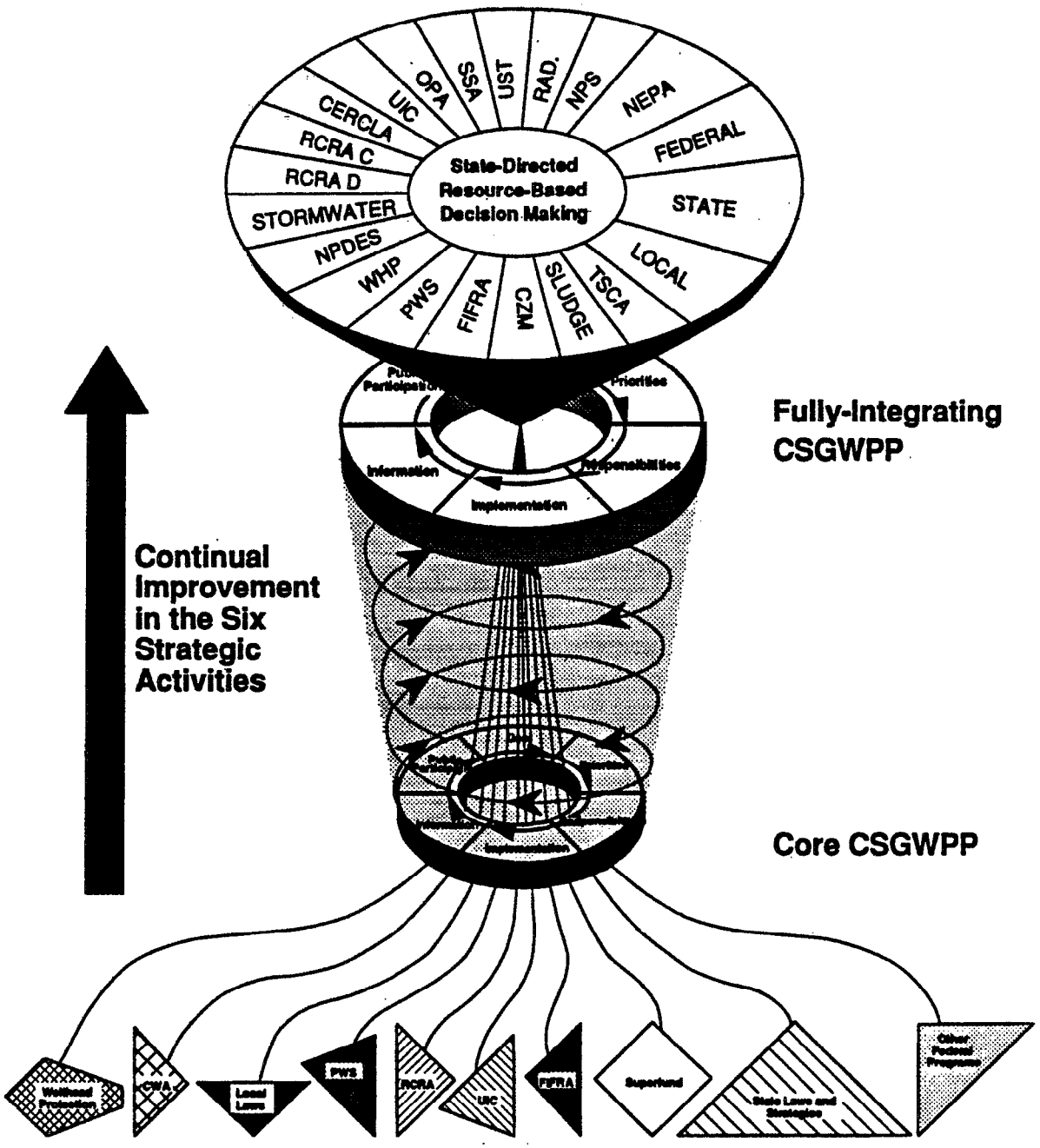

Figure 1-5. Improvement in a State's CSGWPP will both catalyze and be energized by changes in federal programs leading to more coherent ground water protection.

Steps for States to Take

The development process for both a Core and Fully-Integrating CSGWPP involves, as noted above, meeting adequacy criteria under the six Strategic Activities. The development process should build on the often extensive ground water protection efforts already being conducted within a State. States will have the lead in developing and implementing their Core and Fully-Integrating CSGWPP. The starting point is a State's ground water protection strategy[5] and its recent profile of current ground water programs and activities. The development process entails the following four general steps, which a State may undertake in combination or separately:

- Based on a State's ground water strategy and profile, this Guidance, and negotiations with the appropriate EPA Regional Offices, each State should establish a more specific vision for what its Fully-Integrating CSGWPP will ultimately comprise in order to reflect not only its unique environmental and institutional circumstances, but also what roles and responsibilities the State wants, and believes itself capable of undertaking, in ground water protection decision-making. Because this vision sets the State's long-term direction for its CSGWPP, all relevant programs within the State, as well as the public, need to be involved in its formulation.

- Each State should compare its more specific CSGWPP vision to the information it collected during profiling to develop a written assessment of the activities the State must undertake to achieve, first, a Core CSGWPP and, eventually, a Fully-Integrating CSGWPP. A State in working with the Regions may document that it has already achieved a Core CSGWPP. For many States, the written assessment will be the documentation describing their Core CSGWPP and no other document will be needed. States should have a continuous dialogue with EPA Regional Offices, so that the EPA can assist States when possible and provide direction for each of the ground water-related programs.

- States will attain EPA's formal endorsement of their Core CSGWPPs. Formal EPA endorsement of a State's achievement of a Core CSGWPP will provide the Agency, the States, other federal agencies, the Congress and State legislatures with a foundation for understanding State capabilities and, thereby, gain further support for the movement toward a Fully-Integrating CSGWPP. Demonstration of a State's tangible commitment to comprehensive ground water protection through its endorsed Core program will be key to bringing relevant federal programs and agencies to the table to negotiate a Multi-Year Program

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[5] All States have completed a draft ground water protection strategy. However, a number of these strategies are several years old, not finalized, or no longer operational.

Agreement. Each State is expected to obtain a Core CSGWPP as early as possible, but no later than the end of 1995.

- Following EPA endorsement of its Core CSGWPP, each State should co-develop with EPA a written Multi-Year Program Agreement. This Agreement should describe how the State will further implement and over time improve the Strategic Activities of its Core CSGWPP and identify the specific actions EPA will take to support the State's efforts across all relevant programs, including milestones for increased program flexibility.

- The annual State/EPA agreements or all program workplans relevant to ground water protection currently used by EPA and the States will be the focus for implementing the multi-year CSGWPP program agreements. Each completed yearly workplan will outline specific activities to be accomplished in that year to move the State towards implementing comprehensive protection of the ground water resource.

The emphasis of the CSGWPP development process is on inclusion and coordinated action. While including all affected parties in the process may take longer, EPA believes that it is necessary for coordinated action based on State-directed, resource-based priorities. States will develop CSGWPPs with participation from appropriate State and federal agencies and Tribal and local governments to the extent possible. Indian Tribes or consortia that choose to develop CSGWPPs will include all relevant State agencies, federal programs, and local governments.

EPA understands that the status of each State or Tribal ground water protection effort is different and that each State or Tribe will have an individual starting point for developing its CSGWPP. In addition, EPA recognizes and is encouraged that some States, given their history of effort in ground water protection, have already met many of the adequacy criteria outlined in this Guidance.

Steps EPA Has Taken and Will Continue to Take to Assist the States

EPA has already taken and will continue to take several steps indicating its commitment to the CSGWPP approach and the long-term process for eventually achieving Fully-Integrating CSGWPPs. These steps include:

- Issuing EPA's 1991 Ground Water Protection Strategy, which makes a strong Agency policy statement supporting the State-directed, resource-based CSGWPP approach;

- Investing, over the last eight years, more than $80 million under Clean Water Act §106 in building States' general ground water protection capacity and planning to continue such grants;

- Incorporating the CSGWPP approach in emerging Agency strategies, regulations, and national guidances (e.g., Pesticides and Ground Water Strategy, RCRA Subtitle D rulemaking);

- Gathering support for the CSGWPP approach in the Executive Branch of the federal government, including discussions with the White House and the Office of Management and Budget, and holding a forum with other federal agencies;

- Establishing a Ground Water Regulatory Cluster Workgroup to examine all new relevant Agency regulations to incorporate the CSGWPP approach, including increased flexibility to the States;

- Testifying before Congress, in oversight hearings, explaining the CSGWPP approach and its utility as part of emerging regulations under a variety of programs;

- Establishing a Ground Water Coordinating Committee in each EPA Region to oversee implementation of ground water policy in the Regions. These Committees will be the focus for implementing the CSGWPP approach;

- Conducting a series of Roundtables with many State and Tribal officials to discuss how the CSGWPP approach could best address State and local needs and concerns;

- Supporting a Ground Water Subcommittee to the State/EPA Operations Committee to provide on-going State input into EPA's efforts to further the CSGWPP approach;

- Developing this Guidance in close consultation with State representatives; and

- Issuing this Guidance, which furthers the concept of the CSGWPP approach and reflects a multi-program Agency effort. Of particular note, Chapter 4 and Part II of this Guidance provide an initial overview of all EPA ground water-related programs, which EPA and the States can now build upon to further define and develop the relationships between these programs and the CSGWPP approach.

1.7 OPPORTUNITIES PRESENTED BY THE NEW PARTNERSHIP AND THE CSGWPP APPROACH

As the catalyst for fundamental changes in the development and implementation of ground water protection programs at the federal, State, and local

levels, the CSGWPP approach provides unique opportunities for the successful implementation of State-directed, resource-based ground water protection programs, including:

- Addressing federally unregulated sources: Presently unregulated sources of ground water contamination may be addressed by State programs. As each State integrates its ground water protection programs through a CSGWPP, it will be able to identify gaps that may exist in ground water protection efforts (e.g., oil and gas; industrial pits, ponds and lagoons; fertilizers) and specify where additional federal/State efforts are needed.

- Funding: By endorsing Core CSGWPPs in the States and moving toward a Fully-Integrating CSGWPP, EPA and the States will be better able to demonstrate their effectiveness in protecting ground water and thereby justify additional investment in ground water program development and implementation.

- Legislation: This Guidance and the joint implementation efforts of the EPA and States will build a constituency for ground water legislation that will assist the States in setting ground water protection priorities and using federal resources to achieve them. Successful CSGWPP implementation should help ensure that State capabilities for ground water protection and needs are considered in any new ground water-related legislation.

- EPA Regulations: Development and implementation of the CSGWPP approach by the States will affect at least 50 pending EPA regulatory efforts (See Table 1-1 on page 1-8) that will impact different aspects of ground water protection or remediation efforts. EPA will establish a multi-program ground water regulatory agenda to set priorities for appropriate changes to existing regulations to allow States greater flexibility to achieve comprehensive State-directed, resource-based ground water protection.

- Other Federal efforts: Joint EPA and State implementation of the CSGWPP approach will affect other federal agencies and their pending federal regulatory and non-regulatory efforts. EPA is currently working with other federal agencies to make the CSGWPP approach the centerpiece of rational, consistent, and meaningful coordination across all federal ground water protection activities. EPA will encourage other federal agencies to enter into the planned Multi-Year Program Agreements that EPA will be undertaking with States that have Core CSGWPPs. (See Part II Section 2 for descriptions of how USDA, DoD, DOE, DOI, DOT, and NRC could coordinate programs with CSGWPPs.)

- EPA Regional operations: EPA's Regions will be reviewing all their programs in Fiscal 1993 to assess where opportunities exist for operational flexibility across all EPA ground water protection and remediation programs.

- Technical Support: EPA is developing numerous documents to assist the States with ground water protection efforts, including a Resource Assessment Technical Assistance Document to assist States in setting priorities and an Inter-Federal Agency Directory of Technical Specialties to assist States in identifying and using federal technical assistance for ground water protection programs. The Agency is also developing a technical guidance on how to delineate areas with ground water and surface water interfaces important to aquatic ecosystems. EPA will also assist States in the development and submission of their ground water protection profiles and Core CSGWPP determinations.

EPA's commitment to pursuing these opportunities will lead to significant and fundamental change in EPA operations relating to ground water protection. EPA is committed to the CSGWPP approach and to working with the States in the long-term process for achieving Fully-Integrating CSGWPPs.

1.8 WHAT THIS GUIDANCE CONTAINS

This Guidance is divided into the following chapters and appendices:

- This Chapter, the Introduction, provides a short description of the CSGWPP approach.

- Chapter 2, Strategic Activities, describes the six activities that constitute the CSGWPP approach. In addition, this Chapter outlines the other activities that States and Tribes should consider in the development of their Comprehensive Programs.

- Chapter 3, Development and Review Process, describes the process that EPA and the States are to follow to develop each State's CSGWPP.

- Chapter 4, Linkage with Other Federal Programs, describes the linkages between the CSGWPP and the various EPA and other federal programs related to ground water.

- Appendix A describes various ground water protection goals and clarifies EPA's policy on this issue.

- Appendix B describes the Agency's policy on the definition of reasonably expected uses of ground water.

- Appendix C describes the process followed in the development of this Guidance.

- Appendix D provides a glossary of acronyms used in the Guidance.

- Part II of this document supplements Chapter 4. It provides a detailed description of each of the major EPA programs affecting ground water and the ways in which that program might interact with the CSGWPP approach. It also provides a description of the programs implemented by six other federal agencies -- Agriculture, Defense, Energy, Interior, Transportation, and the Nuclear Regulatory Commission -- and the ways in which those programs could interact with the CSGWPP approach.

2. THE STRATEGIC ACTIVITIES AND ADEQUACY CRITERIA OF A COMPREHENSIVE PROGRAM

A Comprehensive State Ground Water Protection Program consists of a set of six Strategic Activities. These six Strategic Activities foster more efficient and effective protection of ground water through more cooperative, consistent, and coordinated operation of all relevant federal, State, Tribal, and local programs within a State. Attainment of a Core CSGWPP marks the point at which all six Strategic Activities first emerge as a cohesive program which is clearly identifiable, although not identical, across States. Continuous improvement in the implementation of a State's Core CSGWPP will eventually lead to the attainment of a Fully-Integrating CSGWPP. A Fully-Integrating CSGWPP occurs when the Strategic Activities fundamentally influence and are supported by the day-to-day operations of all ground water-related programs within the State, including those of EPA, and, where relevant, other federal programs (See Figure 1-3).

2.1 BENEFITS OF THE CORE CSGWPP

EPA recognizes that fundamental changes in its own and other federal agency programs are just as much a prerequisite to achieving a Fully-Integrating CSGWPP as the Strategic Activities that a State needs to undertake. However, to initiate or accelerate these federal program changes, there needs to be both an initial tangible commitment and a catalytic mechanism. EPA believes its joint support with the States of Core CSGWPPs will meet both needs, better enabling the States to leverage increased support from numerous federal programs that involve ground water quality concerns.

The Core CSGWPP will also serve as a distinct benchmark to assist EPA and the States in communicating the aggregate achievements of States to Congress. As Congress proceeds with reauthorizations of various ground water-related statutes over the next several years, the existence of Core CSGWPPs will provide an additional basis for meaningful dialogue regarding States' capabilities and needs for both flexibility and resources. Similarly, an individual State's Core CSGWPP could serve to enhance the State legislature's understanding of current ground water protection accomplishments, ongoing efforts, and remaining challenges.

2.2 THE ADEQUACY CRITERIA: CORE AND FULLY-INTEGRATING CSGWPPs

EPA and the States, in consultation with other federal agencies, have established adequacy criteria for each of the six CSGWPP Strategic Activities. These adequacy criteria have been chosen to provide a balance between ensuring accountability for effective ground water protection and providing each State with the flexibility necessary to tailor its programs to its unique circumstances. States are, however, encouraged to work with adjacent States to achieve consistency in how adequacy criteria are met to facilitate resolution of inter-State ground water protection issues.

Adequacy criteria are presented for both the Core and Fully-Integrating levels of a CSGWPP. Each of the adequacy criteria for the Fully-Integrating CSGWPP is reflected in the Core CSGWPP. The primary differences in the adequacy criteria at these two levels relate to the scope of the activity, the degree of sophistication, and the timing and degree of influence on all relevant operating programs and activities within the State. Generally, development of an approach, initiation of efforts, or implementation within at least one program are all that is required to meet the adequacy criteria of a Core CSGWPP, whereas at the Fully-Integrating CSGWPP level approaches and activities are expected to be fully developed and influencing all ground water protection programs and efforts operating in the State. In some instances, the adequacy criteria at both levels are the same.

Although the overall level of effort necessary to achieve a Core CSGWPP is significantly less than is needed for a Fully-Integrating CSGWPP, the intended scope of a Core CSGWPP must be comprehensive and reach beyond a planning exercise. Initial implementation of the Strategic Activities must be evident by their influence on at least one ground water-related program operating within the State. Also, the State must intend that the Strategic Activities eventually will influence all ground water programs operating within the State, although such an objective may require several years of programmatic changes at the federal, State, and local levels. These specific thresholds of implementation at the Core level will be key to energizing the partnership between a State and EPA's ground water-related programs.

EPA recognizes and is encouraged that some States, given their history of effort in ground water protection, appear to have already met many of the adequacy criteria outlined in this Guidance. Indeed, EPA anticipates that the majority of States will have Core programs within the next one to two years.

2.3 OTHER GENERAL GUIDANCE

The term "sufficient" is used in a number of adequacy criteria for a Fully-Integrating CSGWPP as one of the general indicators for where specific agreements between EPA and a State must occur. What is considered "sufficient" will depend on the level of flexibility a State is seeking from EPA. (The need to develop specific agreements for flexibility may also arise with respect to adequacy criteria which do not include the term "sufficient" in the Fully-Integrating description.)

The term "sufficient" is not included in any Core adequacy criteria because the criteria as presented are intended to describe only the initial threshold of activity needed to obtain EPA's endorsement. However, after the Core CSGWPP is endorsed and the State undertakes improvements, the level of flexibility available over time will be linked to the degree to which the State is implementing the adequacy criteria.

As policy evolves in this area, EPA will take steps to ensure that negotiations (between the Agency and the States) are based on consistent policy across all ten of

EPA's Regional Offices. EPA will undertake case studies and work with the States and other federal agencies to provide examples of what should be included in a CSGWPP at both levels.

In addition to adequacy criteria, EPA has indicated additional factors to be considered in developing and implementing CSGWPPs. These factors have been developed to serve as a guide to States in developing and implementing ground water protection activities under the CSGWPP framework. These factors are not adequacy criteria, but EPA believes that these considerations are relevant in developing and implementing a CSGWPP.

A State, in order to elicit EPA's endorsement of its Core CSGWPP, will indicate in writing how it has fulfilled all of the Core adequacy criteria under each of the Strategic Activities. (For a more detailed discussion of the CSGWPP review and development process, please see Chapter 3 of this Guidance.)

2.4 THE SIX STRATEGIC ACTIVITIES AND THEIR ADEQUACY CRITERIA

The following section lists the specific adequacy criteria under each of the six Strategic Activities for both a Core CSGWPP and a Fully-Integrating CSGWPP. The language in bold print indicates the specific differences between the criteria at the Core level and the Fully-Integrating level.

The Strategic Activities and adequacy criteria are as follows:

STRATEGIC ACTIVITY 1

ESTABLISHING A GROUND WATER PROTECTION GOAL TO GUIDE ALL RELEVANT PROGRAMS IN THE STATE

FULLY-INTEGRATING ADEQUACY CRITERIA	CORE ADEQUACY CRITERIA
1. A State ground water protection goal is established through adequate public participation.[1]	1. Same.
2. The State's ground water protection goal is: – No less protective than EPA's overall ground water protection goal of preventing adverse effects to human health and the environment and protecting the environmental integrity of the nation's ground water resources[2]. – Integrated with its other water quality and environmental goals.	2. Same.
3. The State's ground water protection goal guides **all federal, State and local ground water-related programs operating within the State which address potential sources of contamination, including federally-unregulated sources.**[3]	3. The State's ground water protection goal guides **at least one key State ground water-related program.**

ADDITIONAL FACTORS TO BE CONSIDERED

1. The State is encouraged to incorporate water supply goals and objectives, including support of valuable ecological systems and other beneficial uses, into its ground water protection goal.

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[1]A ground water goal adopted by State statute or a public participation process equivalent to the objectives defined and employed by EPA in 40 CFR Part 25 will be considered to have been established with adequate public participation. (See the description of Public Process in Appendix B.)

[2]See Appendix A for a detailed discussion of EPA's policy regarding ground water protection goals.

[3]EPA is working to have the State's goal guide all ground water-related federal programs operating in the State to the extent possible under federal law.

STRATEGIC ACTIVITY 2

ESTABLISHING PRIORITIES, BASED ON CHARACTERIZATION OF THE RESOURCE, IDENTIFICATION OF SOURCES OF CONTAMINATION, AND PROGRAMMATIC NEEDS, TO DIRECT ALL RELEVANT PROGRAMS AND ACTIVITIES IN THE STATE TOWARD THE MOST EFFICIENT AND EFFECTIVE MEANS OF ACHIEVING THE STATE'S PROTECTION GOAL

FULLY-INTEGRATING ADEQUACY CRITERIA

1. The State has established basic definitions and approaches for a coherent priority-setting process and is applying them **in a consistent manner across all federal, State, and local ground water-related programs operating within the State.**

2. A State's ground water priority-setting process is based on **sufficient** consideration of varying ground water characteristics such as, but not limited to, those listed on Figure 2-1 on Page 2-18.

3. The State **has sufficient** contamination source inventories and assessments to support its process for identifying all significant potential sources of contamination (including federally-unregulated sources) and to consistently determine its ground water protection priorities based on the relative threats of these sources to the resource.

4. The State **has sufficient** technical capabilities to support its priority-setting process and determinations.

5. The State **has formally adopted** measures of ground water protection (e.g., performance standards, quality standards, reference points, etc), **which are sufficient** to support consistent program priority setting and the measurement of progress.[4]

CORE ADEQUACY CRITERIA

1. The State has established basic definitions and approaches for a coherent priority-setting process and is applying them in **at least one key ground water-related program.**

2. A State's ground water priority-setting process is based **primarily** on consideration of varying ground water characteristics such as, but not limited to, those listed on Figure 2-1 on Page 2-18.

3. The State **is systematically implementing a plan to add to its** contamination source inventories and assessments to support its process for identifying all significant potential sources of contamination (including federally-unregulated sources) and to consistently determine its ground water protection priorities based on the relative threats of these sources to the resource.

4. The State **is systematically implementing a plan to further develop its** technical capabilities to support its priority-setting process and determinations.

5. The State **is systematically implementing a plan to formally adopt** measures of ground water protection (e.g., performance standards, quality standards, reference points, etc.) to support consistent program priority setting and the measurement of progress.[4]

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[4]Such measures need to be consistently applied and must not discriminate against federally-financed remediation activities.

FULLY-INTEGRATING ADEQUACY CRITERIA	CORE ADEQUACY CRITERIA
6. Protecting public water supplies is among the State's highest priorities and controlling sources in wellhead protection and recharge areas and basins of drinking water aquifers is a priority.	6. Same.
7. The State is **sufficiently** coordinating its ground water protection priorities with its surface water quality and other environmental priorities.	7. The State is coordinating its ground water protection priorities **under its Core CSGWPP** with its surface water quality and other environmental priorities.
8. State priorities **sufficiently** incorporate and support a process of ongoing review and improvement of the six Strategic Activities of the State's CSGWPP.	8. State priorities incorporate and support a process of ongoing review and improvement of the six Strategic Activities of the State's CSGWPP.

ADDITIONAL FACTORS TO BE CONSIDERED

1. For stability, the State is encouraged to make its priorities long-term in nature and change them only in the face of compelling new information or needs.

2. The State is encouraged to include in its ground water characterization effort:

   - Detailed mapping and assessment to address the State's highest priority needs at an appropriate scale as determined by a coordinated State effort;

   - A comprehensive well inventory that includes private and municipal production wells, monitoring and test wells, and injection wells; and

   - A system for utilizing and integrating State and federal (e.g., USGS, USDA-SCS) ground water assessment and mapping programs.

3. The State is encouraged to have its formally adopted measures of ground water protection include an integrated set of direct measures such as MCLs, State water quality standards, and indirect measures such as BMPs, technology standards, siting criteria, and construction standards.

4. The State is encouraged to consider deployment of new and alternative technologies for improved pollution prevention as a priority.

STRATEGIC ACTIVITY 3

DEFINING AUTHORITIES, ROLES, RESPONSIBILITIES, RESOURCES, AND COORDINATING MECHANISMS ACROSS RELEVANT FEDERAL, STATE, TRIBAL, AND LOCAL PROGRAMS FOR ADDRESSING IDENTIFIED GROUND WATER PROTECTION PRIORITIES

FULLY-INTEGRATING ADEQUACY CRITERIA	CORE ADEQUACY CRITERIA
1. All agencies and programs responsible for addressing the State's priorities are identified and a primary point of contact (e.g., lead agency, coordinating committee, Governor's staff, etc.) with EPA is established for the development and implementation of CSGWPPs across all involved agencies.	1. Same.
2. A coordinating mechanism is operating that includes all State agencies and programs with ground water responsibilities and **all programs'** expertise is brought to bear on the State's ground water protection priorities.	2. A coordinating mechanism is operating that includes all State agencies and programs with ground water responsibilities and **more than one program's** expertise is brought to bear on the State's ground water priorities.
3. **Sufficient** legal authorities and resources are available to address the State's ground water protection needs, requirements, and priorities under its CSGWPP.	3. Legal authorities and resources are available to address the State's ground water protection needs, requirements, and priorities under its **Core** CSGWPP **and the State has identified the gaps in authorities and resources for achieving a Fully-Integrating CSGWPP.**
4. Relevant federal agencies, operating within the State, are **sufficiently consulted** in the development and implementation of the CSGWPP.	4. Relevant federal agencies, operating within the State, are **notified of and given opportunity to comment on the State's decisions** in the development and implementation of the **Core** CSGWPP.
5. Neighboring Tribal officials and States **sufficiently** consult each other in the development and implementation of their joint or independent CSGWPPs.	5. Neighboring Tribal officials and States consult each other in the development and implementation of their joint or independent CSGWPPs.
6. The State has established capabilities and mechanisms for inter-State coordination of ground water protection issues.	6. Same.

FULLY-INTEGRATING ADEQUACY CRITERIA	CORE ADEQUACY CRITERIA
7. Local governments are **sufficiently included** in the development and implementation of the CSGWPP and the State **is sufficiently implementing** coordination, guidance, or oversight mechanisms where local governments have authorization to address State ground water-related objectives and priorities.	7. Local governments **are notified of and given opportunity to comment on the State's decisions** in the development and implementation of the **Core** CSGWPP.

ADDITIONAL FACTORS TO BE CONSIDERED

1. The State is encouraged to adopt a coordinating mechanism that is capable of influencing the movement of human and financial resources to target joint efforts valuable to more than one State program.

2. The State is encouraged to provide a field management presence for ground water of priority concern either by supporting local government efforts to protect ground water or establishing special districts, boards, or other similar institutional arrangements.

3. The State is encouraged to consider assessing fees for various activities that pose potential threats to ground water to augment funds for prevention of ground water contamination as well as for remediation activities.

STRATEGIC ACTIVITY 4

IMPLEMENTING ALL NECESSARY EFFORTS TO ACCOMPLISH THE STATE'S GROUND WATER PROTECTION GOAL CONSISTENT WITH THE STATE'S PRIORITIES AND SCHEDULES

FULLY-INTEGRATING ADEQUACY CRITERIA

Prevention of Contamination

1. Programs with measurable objectives aimed at prevention and control of contamination are being implemented **to the degree sufficient for attaining the State's ground water protection goal and addressing** the priorities of the State's CSGWPP.[5]

2. For site-specific or area-specific prevention measures, characterization and assessment of the ground water resource's vulnerability and, where appropriate, the ground water's use and value, **sufficiently** supports rational decision-making.

   - Definitions and approaches for ground water characterization and vulnerability assessment are applied in a consistent manner.

   - Factors considered include intrinsic sensitivity, geologic/hydraulic parameters and local hydrogeologic settings, and potential sources of contamination.; when necessary, other ground water characteristics such as, but not limited to, those listed in Figure 2-1 on Page 2-18 are considered.

   - The State **has sufficient** technical capabilities to support its decision-making.

CORE ADEQUACY CRITERIA

Prevention of Contamination

1. Programs with measurable objectives aimed at prevention and control of contamination are being implemented **to address** the priorities of the State's **Core** CSGWPP.[5]

2. For site-specific or area-specific prevention measures, characterization and assessment of the ground water resource's vulnerability and, where appropriate, the ground water's use and value, support rational decision-making.

   - Same.

   - Same.

   - The State **is systematically implementing a plan to further develop its** technical capabilities to support its decision-making.

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[5]This includes programs aimed at reducing or eliminating potential environmental releases that may adversely impact ground water, by controlling contamination sources through permitting authorities, performance standards, enforcement and compliance activities, land use regulations, facility siting, and other regulatory and non-regulatory activities.

FULLY-INTEGRATING ADEQUACY CRITERIA	CORE ADEQUACY CRITERIA
3. The State **is sufficiently implementing** an EPA-approved Wellhead Protection Program (as called for under Section 1428 of SDWA). (Required)	3. (Optional)
4. The State is **sufficiently** carrying out **across all programs** an integrated strategy to:	4. The State is carrying out **in at least one key program** an integrated strategy to:
– Implement a variety of prevention measures in the absence of actual detection of contamination;	– Same.
– Implement additional controls necessary if contamination is detected or increasing towards a concentration considered as a reference point for the State's protection goal; and	– Same.
– Take immediate action to prevent further contamination if contamination has reached or exceeded a concentration considered as a reference point for the State's protection goal.	– Same.
Remediation and Facility Siting	Remediation and Facility Siting
5. Programs with measurable objectives aimed at remediating ground water contamination are being implemented **to the degree sufficient for attaining the State's ground water protection goal and addressing** the priorities of the State's CSGWPP.	5. Programs with measurable objectives aimed at remediating ground water contamination are being implemented **to address** the priorities of the State's **Core** CSGWPP.
6. For site-specific remediation measures and facility siting, characterization and assessment based on the use, value, and vulnerability of the ground water resource **sufficiently** support rational decision-making.	6. For site-specific remediation measures and facility siting, characterization and assessment based on the use, value, and vulnerability of the ground water resource support rational decision-making.
– Definitions and approaches for ground water characterization and assessment are applied in a consistent manner.	– Same.
– Ground water characteristics such as, but not limited to, those listed in Figure 2-1 on Page 2-18 are considered.	– Same.
– The State **has sufficient** technical capabilities to support its decision-making.	– The State is **systematically implementing a plan to further develop its** technical capabilities to support its decision-making.

FULLY-INTEGRATING ADEQUACY CRITERIA	CORE ADEQUACY CRITERIA
7. Provisions are in place and are being implemented **across all programs** to avoid cross-media contamination during remediation activities.	7. Provisions are in place and are being implemented **in at least one program** to avoid cross-media contamination during remediation activities.

ADDITIONAL FACTORS TO BE CONSIDERED

1. The State is encouraged, as part of its efforts to address potential sources of ground water contamination which are not federally regulated, to consider the following items:

   - Certification programs for drillers, pump installers, and test samplers;

   - A plan for addressing abandoned and poorly constructed wells (i.e., problem wells) that is consistent with the State priorities and objectives;

   - Legally enforceable standards for well construction, abandonment, and testing, and a compliance program that ensures that the driller community is complying (Note: For disposal wells, these standards must be consistent with the regulatory requirements under the SDWA's Underground Injection Control (UIC) Program);

   - Regulatory and non-regulatory approaches by the State to address on-site sewage disposal as a ground water contamination concern; and

   - Other efforts to control sources of ground water protection not addressed by federal statutes or regulations.

STRATEGIC ACTIVITY 5

COORDINATING INFORMATION COLLECTION AND MANAGEMENT TO MEASURE PROGRESS, RE-EVALUATE PRIORITIES, AND SUPPORT ALL GROUND WATER-RELATED PROGRAMS

FULLY-INTEGRATING ADEQUACY CRITERIA	CORE ADEQUACY CRITERIA
1. The State collects, coordinates, and manages information, including record-keeping, monitoring, and other necessary information, within and across all programs to re-evaluate priorities, measure progress toward meeting the State's ground water protection goal and priorities, and support all related program activities.	1. The State **has developed a systematic process to** collect, coordinate, and manage information, including record-keeping, monitoring, and other necessary information, within and across all programs to re-evaluate priorities, measure progress toward meeting the State's ground water protection goal and priorities, and support all related program activities and **is using it in at least one program.**
2. The State is using relevant data from local governments and other State and federal programs (i.e., Wellhead, Public Water Supply, etc.)	2. Same.
3. The State has defined a **sufficient** set of data elements to facilitate efficient data sharing and cross media analyses and provide users with consistent and comparable data, and is using it in **all ground water-related programs.**	3. The State has defined a set of data elements to facilitate efficient data sharing and cross media analyses and provide users with consistent and comparable data, and is using it in **at least one key ground water-related program.**
4. The State monitoring program scope and design reflect the State's ground water priorities and contain **sufficient** QA/QC plans for data acquisition and analysis based on sound scientific protocols.	4. The State monitoring program scope and design reflect the State's ground water priorities and contain QA/QC plans for data acquisition and analysis based on sound scientific protocols.

ADDITIONAL FACTORS TO BE CONSIDERED

1. The State is encouraged to computerize its data bases and use geographic information systems (GIS) technology to better integrate data in a manner most useful to comprehensive ground water decision-making.

2. The State is encouraged to use EPA's Minimum Set of Data Elements for Ground Water Quality, which EPA programs are required to use for new ground water information systems or when modernizing old ones.

3. The State is encouraged to use EPA's location policy to assign latitude/longitude positions of Public Water Supplies and sources of ground water contamination in its ground water-related information systems.

4. The State is encouraged to participate with EPA in the development of one or more environmental indicators that will help provide a national picture of ground water protection progress and needs. The State is encouraged to use the indicator(s), once developed, as part of its own efforts to measure progress and needs.

5. The State is encouraged to establish and track environmental indicators to measure progress in protecting its ground water resources.

STRATEGIC ACTIVITY 6

IMPROVING PUBLIC EDUCATION AND PARTICIPATION IN ALL ASPECTS OF GROUND WATER PROTECTION TO ACHIEVE SUPPORT OF THE STATE'S PROTECTION GOAL, PRIORITIES, AND PROGRAMS

FULLY-INTEGRATING ADEQUACY CRITERIA	CORE ADEQUACY CRITERIA
1. Public participation in the development and implementation of a CSGWPP is equivalent to the objectives defined and employed by EPA in 40 CFR Part 25. (See the description of Public Process in Appendix B.)	1. Same.
2. An active public education program exists that addresses the key issues in decisions on the goal, objectives, priorities, and progress of the State's CSGWPP.	2. Same.
3. The State is implementing:	3. Same.
-- A mechanism to provide information to those responsible for implementing ground water protection measures; and	
-- An outreach process for making ground water monitoring data and information available to the public.	
4. The State **is implementing** a public education program to:	4. The State **has developed** a public education program to:
-- Enable citizens to better manage common practices and activities that contribute to ground water contamination (e.g., private well construction, septic tanks, etc) that are not now regulated; and	-- Same.
-- Promote methods for protecting the ground water quality supplying individuals' private wells.	-- Same.

ADDITIONAL FACTORS TO BE CONSIDERED

1. The State is encouraged to undertake a Farm-A-Syst program in cooperation with USDA's Extension Service, the Soil Conservation Service, and EPA.

FIGURE 2-1

Ground water characteristics such as, but not limited to, the following are to be used in setting priorities, determining appropriate remediation methods, and making siting decisions:

- Intrinsic sensitivity, hydrogeologic regimes and flow patterns (recharge/discharge areas), geologic/hydraulic parameters and local hydrogeologic setting;
- Quantity and potential yield;
- Ambient and/or background ground water quality as determined by monitoring;
- Potential for remediation where contamination already exists;
- Current use;
- Reasonably expected future use based on demographics, land use, remoteness, quality, and availability of alternative water supplies;
- Values attributed to ground water resources (See Appendix B);
- The interactions and potential contamination impacts between surface and ground water and the value of ground water quality to the maintenance of ecosystem integrity; and
- Inter-jurisdictional characteristics.

Please see Attachment I for a description of how a State's definitions of current and/or reasonably expected future ground water uses and benefits will be employed by EPA's regulatory programs (e.g., RCRA, CERCLA, FIFRA and Radiation).

3. DEVELOPMENT PROCESS

This chapter describes the process that will be followed for development of each State's Core CSGWPP and Fully-Integrating CSGWPP. The CSGWPP process is flexible and allows each State to develop its program according to its unique hydrogeologic, demographic, and institutional characteristics.

Development of both CSGWPP levels should build on the often extensive ground water protection efforts already being conducted within a State. The starting point should be a State's existing ground water protection strategy and the recent profile developed by EPA and the State that describe the current ground water programs and activities within the State.[1] The development process entails the following six general steps, which may be undertaken in combination or separately:

- **Establishing a State-Specific "Vision" or "Template"**: Based on a State's ground water strategy and profile, this Guidance, and negotiations with the appropriate EPA Regional Offices, each State should establish a more specific "vision" or "template" for what its Fully-Integrating CSGWPP will ultimately comprise. This will reflect not only its unique environmental and institutional circumstances, but also what roles and responsibilities the State wants, and believes itself capable of undertaking, in ground water protection decision-making. Because this vision sets the State's long-term direction for its CSGWPP, all relevant programs within the State, as well as the public, need to be involved in its formulation.

- **Assessing**: Each State should compare its more specific CSGWPP vision to the information it collected during profiling to develop a written assessment of the activities the State must undertake to achieve, first, a Core CSGWPP and, eventually, its vision or template for a Fully-Integrating CSGWPP. A State, in working with the Region, may document in its written assessment that it already has achieved a Core CSGWPP. States should have a continuous dialogue with EPA Regional Offices so that the EPA can assist States, when possible, and provide direction for each of the Agency's ground water-related programs. The State's vision and assessment will comprise a single document. The assessment will be organized to clearly show what the State has done or needs to do to meet each of the Core adequacy criteria for all six Strategic Activities. Descriptions of how the State has met Core adequacy criteria will be included.

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[1] Because Native American Tribes have not yet developed profiles, EPA will be exploring options with Tribes and with agencies such as BIA and IHS or assisting them in describing their ground water protection programs and activities on Indian lands.

- **Achieving a Core CSGWPP**: For many States, the written assessment is likely to be the document describing their Core CSGWPP. In this case, no other documentation will be needed. If a State is unable to demonstrate a Core CSGWPP through its assessment, the State will submit an updated document to demonstrate that the remaining Core adequacy criteria have been met. There will be flexibility in how States meet each adequacy criterion; specific approaches are to be worked out in a negotiated partnership between a State and its EPA Regional office. EPA will formally endorse a State's achievement of a Core CSGWPP. Formal EPA endorsement will provide EPA, the States, other federal agencies, the Congress, and State legislatures with a foundation for understanding State capabilities and, thereby, gain further support for the movement towards a Fully-Integrating CSGWPP. Demonstration of a State's tangible commitment to comprehensive ground water protection, as evidenced by its endorsed Core program, will be key to bringing relevant federal programs and agencies to the table to negotiate a Multi-Year Program Agreement, described below.

  It is expected that each State will attain an EPA endorsed Core CSGWPP as early as possible, but no later than the end of 1995.

- **Developing A Multi-Year Program Agreement**: Following EPA endorsement of its Core CSGWPP, each State should co-develop with EPA a written multi-year program agreement that describes how the State will further implement and over time improve the Strategic Activities of its Core CSGWPP. It will also identify the specific actions EPA will take to support the State's efforts across all relevant programs, including milestones for increased program flexibility. In establishing the multi-year program agreement, EPA and the State will utilize the State's assessment, described above, and EPA's Regional program reviews and multi-program ground water regulatory agenda described in Chapter 1 of this Guidance. Other federal agencies, including federal land management agencies and federal facilities, will be encouraged to join in making commitments through the agreement to support the State's CSGWPP. Finally, through the Ground Water Subcommittee of the State/EPA Operations Committee, EPA will seek State review and feedback on EPA's efforts to support the CSGWPP approach.

  EPA and each State will negotiate the contents of the multi-year program agreement and specific milestones based on the State's unique circumstances. The program agreement will serve as the basis for yearly workplan agreements for all ground water-related activities under the Agency's various programs. The completed multi-year program agreement should guide all State and federal programs related to ground water in more fully meeting the adequacy criteria of the Strategic

Activities, and in supporting the achievement of a Fully-Integrating CSGWPP. The multi-year program agreement should include as many specific implementation milestones for ground water efforts as possible.

- **Implementing Yearly Workplans**: The annual State/EPA agreements or all program workplans relevant to ground water protection currently used by EPA and the States will be the primary vehicles for implementing the multi-year CSGWPP program agreements. Yearly workplans should include a description of the mechanism established to coordinate authorities and programs under State and federal statutes, and should include implementation activities that move a State toward meeting milestones in its multi-year program agreement. Each completed yearly workplan will outline specific activities to be accomplished in that year to move the State towards implementing comprehensive protection of the ground water resource. EPA will specify the increased flexibility being afforded to the State in any given year based on individual program requirements and progress toward achieving a Fully-Integrating CSGWPP.

- **Achieving a Fully-Integrating CSGWPP**. EPA and each State will negotiate through yearly workplans how to fill the gaps in a State's CSGWPP and how to provide additional federal program flexibility to the State. Achievement of a Fully-Integrating CSGWPP will be negotiated by EPA and each State in consultation with other federal agencies. A Fully-Integrating CSGWPP occurs when all federal, State, and local ground water protection efforts are coordinated and when all decision-making is based on a State's understanding of the ground water resource, all actual or potential contamination sources, and the State's comprehensive ground water protection goal, priorities, and approaches. EPA and each State will negotiate the milestone of achieving a Fully-Integrating CSGWPP in the yearly workplan process. While each State's Fully-Integrating CSGWPP will be different, all Fully-Integrating CSGWPPs will meet all of the Fully-Integrating adequacy criteria outlined in Chapter 2.

Figure 3-1 is a schematic outlining the processes for the development and EPA endorsement of a State's Core CSGWPP and for moving from a Core to a Fully-Integrating CSGWPP. Given the fundamental importance of individual ground water-related programs, EPA will ensure that all relevant Agency programs (e.g., solid and hazardous waste, pesticides, underground storage tanks, nonpoint sources, etc.) are involved in all plan developments, agreements, reviews and endorsements. EPA will also encourage other federal agencies to examine the State's CSGWPP to determine where they may provide flexibility or a decision-making role to the State.

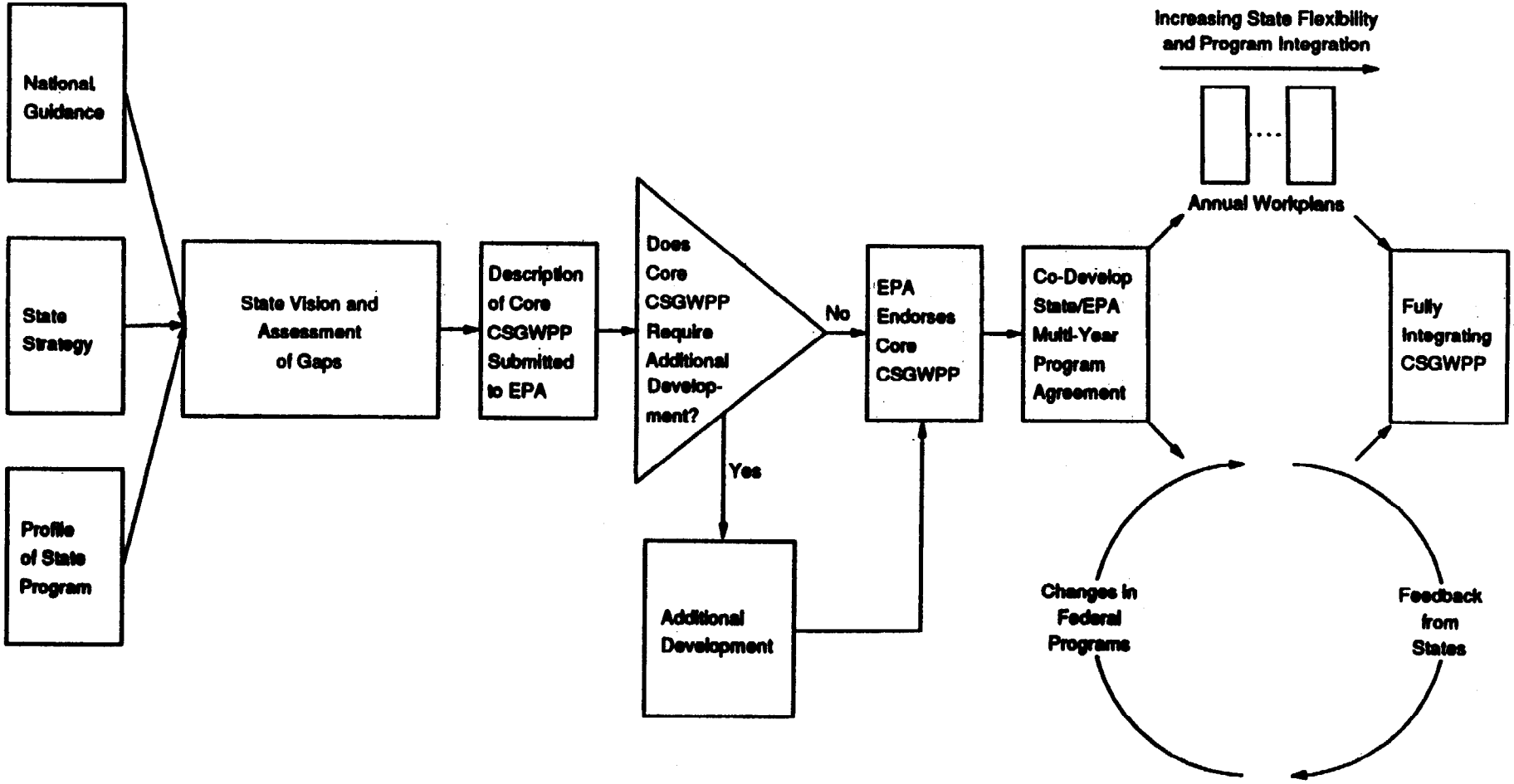

Figure 3-1. Development of Core and Fully Integrating CSGWPPs

4. LINKAGE TO EPA AND OTHER FEDERAL AGENCY PROGRAMS

The primary benefit of the CSGWPP approach will be even more effective protection of the Nation's ground water resources based on a resource-oriented decision-making process. The other principal benefit to the States of the CSGWPP approach is that it provides a significant catalyst for increased State flexibility and decision-making under numerous federal programs. This allows States to tailor protection efforts to meet their unique ground water protection needs and priorities. The CSGWPP approach will achieve these benefits by linking other federal programs into a partnership with the States by having:

- CSGWPPs provide a framework within which all ground water protection efforts and activities (federal, State and local) can be coordinated. This coordination will reduce unnecessary duplication of effort and foster synergistic use of program resources to address ground water protection needs within the State.

- CSGWPPs provide the foundation for State-directed, resource-based priorities consistently applied across all federal and State ground water-related programs within the State. This occurs when a State's knowledge of its ground water resources (e.g., vulnerability, uses, benefits) is being employed to determine the objectives, priorities, and approaches for ground water protection programs operating within the State.

Both of these linkages result in greater efficiency and effectiveness in managing ground water protection programs so that EPA's ground water protection goal will be realized. EPA will work with other federal agencies to adopt a consistent approach for federal deference to State ground water decision-making across all relevant federal programs and regulations. While this effort will lead to incremental increases in State flexibility under the various individual federal programs, it is only through pursuit of a CSGWPP that a State will achieve the full, consistent, and integrated flexibility to address its ground water protection priorities across all relevant programs. This Chapter's primary focus is to describe how CSGWPPs put States in the lead position of making resource-oriented decisions concerning ground water protection efforts.

4.1 Coordination of EPA Programs

EPA continues to implement its own intra-Agency approach to comprehensive ground water protection. To promote coordination within the Agency, EPA established the Ground Water Policy Committee. The Policy Committee works to coordinate the Agency's ground water activities and to resolve issues of overlapping or inconsistent regulation. It has established two workgroups, the State Programs Implementation Workgroup and the Ground Water Cluster. The State Programs Implementation Workgroup developed this CSGWPP Guidance and provides

implementation support to States. The Ground Water Cluster works to incorporate EPA's ground water protection principles and the CSGWPP approach into regulations, guidances, and policies.

EPA is committed to eliminating duplicative or inconsistent regulatory requirements. The Ground Water Cluster is developing a ground water regulatory agenda which will be a profile of EPA's ground water activities. Similar to the profiles that States recently completed, EPA's ground water regulatory agenda will identify overlaps and inconsistencies in existing ground water-related regulations and national guidances, and will ensure that these regulations will be reviewed and revised if necessary to reflect EPA's ground water principles and support the CSGWPP approach. Through the Ground Water Policy Committee and the Ground Water Cluster, EPA's program offices are seeking new ways to promote State resource-based decision making in their programs through increased flexibility and assistance.

EPA is working through the Ground Water Policy Committee to make the CSGWPP approach the centerpiece of rational, consistent, and meaningful priority decision-making in two ways:

- Through the CSGWPP Strategic Activities and adequacy criteria, EPA is encouraging States to establish consistent and rational priorities by focusing on the relative status and future prospects for their ground waters across geographic areas. Other factors for priority setting are also important, but it is the emphasis on State-directed resource-based decision-making that gives CSGWPPs a unique and powerful role in ground water protection. A State should not put off setting ground water protection priorities until comprehensive ground water assessments covering the whole state are completed. Most States should be in the position of using a basic understanding of their ground water to begin applying a systematic and consistent approach to setting priorities on an "as needed" basis (e.g., when there is a facility siting issue).

- By introducing the CSGWPP concept into all emerging Agency regulations and guidances relevant to ground water, EPA is providing States with the opportunity to influence fundamental operational decisions of all of EPA's ground water-related programs based on priorities derived from a State's understanding of its resources. Appendix B of this Guidance describes one important aspect of State ground water resource information -- i.e., State determinations of "reasonably expected uses of ground water" -- which will be incorporated into emerging EPA regulations. EPA is also working to provide similar opportunities for States across relevant federal programs operated by other agencies as States move toward full CSGWPP implementation.

Operationally, the benefits of the CSGWPP's State-directed, resource-based, decision-making approach are best illustrated by several examples:

- Siting of Facilities/Operations: Many facilities and operations offering social and economic benefit are potential or actual sources of ground water contamination. Even when they are subject to exacting and best available technical and engineering requirements, some risk of release to ground water remains. These risks to human health and the environment can be further minimized by the State by determining where to locate such facilities based first on prevention, and then on factors such as use, value, and vulnerability of the resource. One example is the draft RCRA Subtitle D State and Tribal Implementation Rule, which will allow a State the flexibility to adjust certain permitting criteria for municipal landfills based in part on the State's assessment of the underlying aquifer's vulnerability.

- Permitting, Monitoring, and Inspecting: Most States will not be able to pursue these activities to maximum levels at all possible sites; there are not enough resources to allow this. The prevention approach allows monitoring, permit limits, and inspection schedules to be tailored based on vulnerability first and then use and value where necessary. One example is the Public Water Supply Supervision Program, which currently allows States to work toward flexible federal monitoring requirements.

- Coordination and Targeting: Program capacity could be significantly increased through a CSGWPP's coordination and targeting of "same facility" inspections across programs. An example would be coordination of inspections of underground storage tanks and underground injection control wells at gasoline service stations.

- Remediation Efforts: For some remediation programs the use, value, or vulnerability of underlying ground waters can dictate the necessary degree of clean-up. Such flexibility allows for greater focus of funds and personnel on sites with the most critical human health and environmental risks. An example is the Superfund Program, which gives a higher score through the Hazard Ranking System to sites that are located within a Wellhead Protection Area.

- Reference Points: Ground water contamination control priorities and ground water remediation measures should be based on the level of contamination present in the ground water and on the designated uses for the ground water (referred to as "Reference Points" in the Ground Water Protection Strategy for the 1990s). Although there is considerable uncertainty in correlating contamination control or remediation measures with a particular level of contamination, the use of reference points can

help provide a State with the basis for judging one contamination problem against another and establishing priorities. Even when prevention of any release at a facility is a program objective, reference points will be useful should such measures fail and decision-makers are faced with implementing more drastic measures to prevent further contamination (e.g., immediate closure of a facility).

Other examples, specific to individual programs, appear in Part II. Generally speaking, these examples demonstrate that comprehensive protection of the ground water resource means rational, efficient, effective, priority-based management of ground water quality.

The CSGWPP approach will be implemented within the bounds set by statutory and regulatory mandates. Nevertheless, a review of relevant federal programs suggests that significant opportunities exist, within the boundaries set by federal statutes and regulations, for State flexibility to set ground water protection priorities and tailor protection measures. EPA is working to ensure that the conditions a State must meet to gain flexibility under the variety of federal programs related to ground water are consistent across those programs. In addition, when new legislation or reauthorizations are being considered, EPA will encourage Congress to provide States with the key decision-making role based on conditions consistent with the CSGWPP approach. EPA's task will be made easier to the extent that States have moved aggressively to implement the CSGWPP approach and are achieving the intended effective and efficient protection of the nation's valuable ground water resources.

Part II, Section I, provides a detailed program-by-program discussion of the linkages between the CSGWPP approach and each EPA program that potentially affects ground water. Twenty programs are described in terms of how the program would make use of CSGWPP resource-based priority setting and how CSGWPPs could promote program coordination. Finally, for programs that provide grants to States, a brief discussion addresses how those grants could be used to support the development and implementation of CSGWPPs.

4.2 Linkage to Other Federal Agency Programs

Several federal Agencies in addition to EPA are involved in activities that directly or indirectly affect the quality of ground water in the States. A central premise of the CSGWPP approach is that the activities of these other agencies also should be included within a coordinated framework. This section describes some of the linkages between other federal programs and the CSGWPP approach. Section II of Part II discusses and identifies opportunities for coordination between CSGWPPs and the activities relating to ground water of six federal agencies.

The States themselves strongly recommended in EPA/State Roundtables that EPA discuss the CSGWPP approach with other federal agencies. The States' interest focused on three broad points:

- Providing Technical Assistance: Many federal agencies manage programs which provide significant technical and financial assistance to State ground water protection activities. This assistance should be focused on supporting the development and implementation of CSGWPPs.

- Utilizing States' Ground Water Protection Priorities in Non-Regulatory Efforts: Non-regulatory efforts should be targeted such that geographic and programmatic priorities outlined in the CSGWPP are supported. Examples of these non-regulatory activities include demonstration projects, public education and outreach, implementation of BMPs, and other similar activities.

- Utilizing State Ground Water Protection Policies, Objectives, and Standards: Some ground water contamination concerns are assigned by law to federal agencies and cannot be delegated to the States (e.g., high-level radioactive waste disposal) or require a national perspective to balance national, State, and local interests. In other situations, federal agencies should, to the degree possible, align their ground water protection and remediation efforts with State priorities as outlined in CSGWPPs.

In order to engage the federal agencies in a discussion of these points, EPA held a Federal Agency Roundtable in the early Spring of 1992. The following federal agencies, in addition to EPA, were represented at this Roundtable discussion:

- Department of Agriculture
- Department of Defense
- Department of Energy
- Department of Interior
- Department of Commerce
- Department of Health and Human Services
- Department of Housing and Urban Development
- Department of Justice
- Department of Transportation
- Federal Emergency Management Agency
- Nuclear Regulatory Commission
- Tennessee Valley Authority
- Office of Management and Budget

The Roundtable resulted in some concrete suggestions for integrating the activities of these departments and agencies into the CSGWPP approach. Those suggestions are described in this section of the Guidance and in Part II. Because the Roundtable was mainly an introductory forum in which to acquaint the federal agencies with the CSGWPP concept, the federal agencies have not yet committed to specific actions in conjunction with the CSGWPP approach. EPA is working with each agency and department to further define and finalize their support of and involvement in the CSGWPP approach. This will result in each agency or department developing specific program guidances, guidance memos, and/or similar materials outlining its support of the CSGWPP approach; where discrepancies between this Guidance document and those specific program guidances exist, the specific guidances will prevail.

The remainder of this section focuses on the specific suggestions made by the other federal agencies. Each of the overarching topics outlined above is addressed in the paragraphs that follow.

Providing Technical Assistance

Federal agencies, other than EPA, provide a broad range of technical assistance activities that could help States develop and implement their CSGWPPs. The federal agencies have indicated a willingness to target these activities based on the geographic and programmatic priorities outlined in each State's CSGWPP. Examples of the types of activities contemplated include:

- The USDA's land grant university system, through cooperative extension services, can provide direct technical assistance to implement CSGWPP prevention activities in the field.

- Other federal agencies such as DoD and DOE provide significant funding to universities for research and development activities related to ground water, and to develop technical assistance materials; these funds could be targeted based on a State's priorities as outlined in a CSGWPP and could be coordinated with other grant- or contract-funded projects within the context of the CSGWPP framework.

- USGS's ground water assessment and mapping activities, funded by the agency's cooperative agreement program, could be coordinated with other assessment and characterization activities within the framework of the CSGWPP.

- Ground water data collected by all federal agencies could be coordinated within the CSGWPP framework.

- The Bureau of Reclamation could target its technical assistance funding devoted to ground water based on CSGWPPs.

- All federal agencies could work together to develop a common GIS database which would support resource-based decision making.

In order to elaborate on these ideas, the federal agencies agreed to work together to develop a federal clearinghouse or manual on all potential ground water-related technical assistance opportunities. This manual would help federal agencies coordinate their activities and would assist States in gaining access to available technical assistance as they develop and implement their CSGWPPs. The federal agencies also suggested that they be given some role in the review and concurrence of CSGWPPs and CSGWPP development plans.

Utilizing States' Resource-based Protection Priorities in Non-Regulatory Efforts

A CSGWPP provides a framework that is intended to ensure that all ground water protection activities occurring under State, local, and federal laws within a State are based on a consistent understanding of the characteristics of a State's ground water, priority geographic areas, priority contaminants, and other similar parameters. Some examples of non-regulatory activities that other federal agencies have underway, or may consider, that could fit into the CSGWPP framework include the following:

- DoD and DOE remediation demonstration projects could be adjusted to reflect State ground water protection priorities.

- USDA's water quality demonstration projects could be targeted and implemented based on the priorities in a State's CSGWPP.

- The Public Health Service can target educational material on contaminants or contaminating sources of concern as defined by a State's CSGWPP.

- Agencies such as the Soil Conservation Service and the Cooperative Extension Service provide direct assistance to farmers and others with best management practices implementation in the field; these services could be targeted and tailored based on CSGWPP geographic and programmatic priorities.

- DOJ could target litigation support based on State CSGWPPs.

In order for these activities to take place, EPA and the States must open up lines of communication with other federal agencies. Other federal agencies must have an early understanding of State ground water priorities so that those priorities can impact agency planning and budgeting.

Utilizing States' Ground Water Protection Policies, Objectives, and Standards

This is the most difficult and challenging arena within which to link other federal agencies to the CSGWPP approach. Just as is the case with EPA programs, other federal agencies are concerned about limiting factors such as specific statutory mandates and long-standing agency regulations. Nevertheless, there are broad areas that warrant additional study and which may ultimately allow for consistent and rational deference to States within the context of CSGWPPs. These include the following:

- Land management agencies such as DOI's Bureau of Reclamation and USDA's Forest Service could work more closely with the States to assure that policies on federal lands do not lead to contamination of aquifers designated by the States as highly valuable or vulnerable.

- Federal facilities that will be required to clean up hazardous waste sites could change their priorities for clean up and protection to make them consistent with CSGWPPs.

- Federal programs could participate in the development and implementation of CSGWPPs so that facility-specific ground water management plans become integral to overall CSGWPPs.

Priorities under the CSGWPP should be based on the resource and not on federal facility ownership. In general, federal facilities and land managers are concerned that States will apply priorities differentially based on land or facility ownership rather than based on the characteristics of the ground water. This could lead to significant discrepancies in ground water quality management policies from site to site. Federal agencies are very interested in participating with EPA and the States in the development and implementation of CSGWPPs in order to assure that this will not occur.

Part II, Section II describes the ground water-related programs of six selected federal agencies. For each of these agencies' ground water-related programs, the Section discusses how the State and the respective agency would benefit from CSGWPP resource-based priority setting and coordination of efforts through State CSGWPPs.

APPENDIX A: DEFINING GROUND WATER PROTECTION GOALS

A.1 HISTORICAL TYPES OF GROUND WATER PROTECTION GOALS

Under Strategic Activity 1, a State is asked to establish an overarching ground water protection goal. Historically, ground water protection goals have fallen into five general types:

- **Non-Degradation.** This goal is considered the most stringent of possible ground water protection goals because it defines all contamination as unacceptable. To achieve such a goal, all activities that would potentially contaminate ground water would need to be eliminated or controlled. Furthermore, all presently contaminated ground water would need to be restored. While the relative vulnerability of ground water could be a factor in determining needed prevention measures, the relative use and value of the ground water would not be factors in determining either prevention or remediation measures.

  Critics argue that from a prevention standpoint, a non-degradation goal is impossible to enforce because many basic human activities (e.g. crop production, resource extractions, septic systems, etc.) would require unrealistic prohibitions to eliminate their potential to cause some level of ground water pollution. And, from a remediation standpoint, a non-degradation goal would often be economically, if not technologically, beyond our society's reach. Critics further contend that technological advances in water quality monitoring can now reveal minute levels of substances -- the presence of which in ground water would constitute degradation but whose environmental health impact may be minimal or non-existent.

  As a practical matter, non-degradation is viewed more often as a general policy aim rather than as a day-to-day operational criterion or objective.

- **Anti-Degradation.** For the purposes of this document, this goal applies the above non-degradation objective to only the prevention side of the ground water protection issue; i.e., its intent is to avoid making ground water contamination worse. The goal does not provide a reference for remediation activities other than to avoid further degradation of ground waters that are already contaminated.

- **Prevention, Reduction or Remediation of Contamination to the Extent Possible.** This goal requires the consideration of certain pragmatic factors in determining what ground water protection measures are "possible." In determining what is "possible", technological feasibility or the availability of technology would need to be considered.

Social or economic considerations may also enter into determinations of what is "possible." For specific source controls, these other factors are often considered and balanced, either explicitly or implicitly, in a context of competing interests. Legislation at the federal or State levels or ordinances at local levels may specify explicitly that a regulatory agency must take into account certain social or economic factors in determining appropriate ground water protection measures. For example, prevention measures established by EPA under RCRA Subtitle D are to "take into account the practicable capability of a municipal solid waste landfill (MSWLF)." EPA, therefore, considers the cost impacts to MSWLFs in determining which measures to prevent ground water contamination are "possible."

Legislation at the federal and State levels and ordinances at local levels can also implicitly incorporate social and economic considerations into what protection measures are "possible". Society's preference for what is "possible" can be revealed where the processes of representative government have resulted in prescribing performance, design, operational or zoning requirements for ground water protection. For example, a local zoning ordinance allowing one residential dwelling per ten acres in order to limit ground water contamination from septic systems has implicitly incorporated social and economic development considerations in what is "possible" in protecting ground water.

Critics of this goal suggest that it is "source-specific" and, therefore, does not provide a unifying approach to protecting the ground water resource. Other critics are concerned that such a goal can often lead to ground water degradation where determination of what is "possible" in ground water protection is bounded by social and economic considerations. Furthermore, the approach raises the issues of who decides what is "possible" and of whether these decisions reflect an informed societal choice.

- **Differential Protection Based on Relative Risks to Human Health or the Environment.** This goal takes into account the relative risks to human health or the environment posed by ground water contamination. Under this goal, a decision-maker must first determine what risks to human health and the environment would result if ground water contamination takes place. The decision maker must then weigh these risks against some benchmark to determine appropriate prevention or remediation measures. Such benchmarks can be set at a particular level of risk (e.g., a one in a million chance of cancer incidence over a 70-year life-span) or vary according to other factors such as technological feasibility and social/economic impacts.

As described above in the previous goal discussion, these other social, economic, and technical factors can be incorporated, either explicitly or implicitly, in legislation or ordinances at the federal, State or local levels. For example, FIFRA requires EPA to weigh the risks against the benefits of a pesticide's use before taking regulatory measures, including those aimed at ground water protection.

Critics of this goal claim that it is often difficult to determine accurately all risks associated with ground water contamination and, therefore, the total impact of contamination will not be factored into protection decisions. Critics are concerned that such a goal can often lead to ground water degradation where decisions attempt to balance ground water protection against the social and economic impacts of such protection. Furthermore, the approach raises the issues of who decides what "risks" are acceptable and whether these decisions represent an informed societal choice.

- **Differential Protection Based on Relative Use and Value of the Ground Water.** Because it is usually difficult to ascertain actual risks, this goal relies on information about the relative use and value (See Appendix B) as well as the vulnerability of underlying ground water in determining the degree of protection to be afforded. The decision-maker is still faced with determining what benchmark will be used to determine the level of protection afforded to a particular use. Such a benchmark can be set as a particular concentration of a contaminant for a particular ground water use or value (e.g., the MCL for current or reasonably expected drinking water) or can vary according to social and economic factors as described above for previous goals.

  Critics of this goal claim that it leads to "writing-off" of ground water resources where the use and value of the resource are not clear or are not considered significant relative to the social and economic costs of remediation or prevention. Furthermore, this approach also raises the issues of who decides the beneficial use and value of ground water resources and whether these decisions reflect informed societal choice.

A.2 EPA's GROUND WATER PROTECTION GOAL

EPA's ground water goal is to prevent adverse effects to human health and the environment and protect the environmental integrity of the nation's ground water resources. Several reviewers of an early draft of this Guidance commented that this goal does not, by itself, provide sufficient operational direction. In part, this is a result of the EPA goal not fitting into any one of the five traditional goals described above. They recommended that the Agency provide clarification of its goal so States can

determine if their own protection goal is at least as stringent as EPA's -- as required by CSGWPP adequacy criteria.

EPA's goal also states 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 (see Section 1.3) 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.

  Other factors may need to be taken into account when making ground water protection decisions. The relative vulnerability[1] of the ground water should help determine the level of source control measures necessary to prevent contamination. As an additional preventive measure, the relative use, value, and vulnerability of ground waters at different locations should be considered in decisions regarding the siting of facilities or activities. Also, due to limited government personnel and financial resources, the relative use, value, and vulnerability of ground waters should be key factors in setting priorities for day-to-day operations of relevant programs (e.g. which permits to write first, which inspections to do first, which clean-ups to begin first).

  Finally, in some cases, EPA is required by statute to base regulation on consideration of the risks and the benefits of activities that may pose

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[1]EPA defines ground water vulnerability as the relative ease with which a contaminant introduced into the environment can migrate to an aquifer under a given set of management practices, contaminant characteristics, and aquifer sensitivity conditions. Ground water vulnerability assessment methods assess hydrogeologic characteristics, contaminant characteristics, and management practices related to contaminants.

health or environmental concerns. Such consideration could result in targeting prevention measures to those areas where ground waters are considered to have certain uses and values that, if not protected and conserved, would pose an unreasonable risk to human health and the environment now or for future generations. While under these federal statutes EPA and the States will need to ensure protection of ground waters with certain uses and values, States are encouraged to pursue prevention whenever possible.

- **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. EPA's goal is to remediate all aquifers to meet their designated uses. Given the expense of cleaning up ground water contamination and the need to focus more effort and resources on prevention, EPA and the States must take a realistic approach to restoration based upon the actual and reasonably expected uses of the resource as well as on social and economic values. EPA, the States, and other federal agencies must work together to ensure consistent approaches to determining clean-up objectives.

As noted above in Section A.1, certain social/economic as well as technologic factors can be considerations in determining what are "possible" measures for preventing ground water contamination. Similar factors can come into play in determining what level of remediation should be achieved for ground water considered to have a particular use or value. It is EPA's position that determinations of what factors will be employed should be explicit and done through considerable public education and participation --- often perhaps through representative governmental processes. Furthermore, such decisions should be made, to the extent possible, at the governmental level closest to the people most affected.

In general, States and local governments should play the prominent role in such decision-making. This is especially appropriate when: a) the activities of concern are numerous (e.g., 23 million septic tanks) or highly localized (e.g., vary in impact and number from State to State) and nationally present a low to medium risk potential; b) when land-use management is the principal protection approach; and c) when technologies currently exist or are easily developed to address the problem.

The federal government may need to take the primary role in these decisions when: a) there is a need to establish national regulatory consistency (e.g., to limit significant adverse impacts on interstate commerce); b) when the scope of the effort

requires national resources (e.g., research, expertise for technically complex environmental problems); c) when State-by-State efforts would create unwarranted and inefficient duplication; and d) when national security is involved (e.g., disposal of high-level radioactive waste).

A.3 EPA's POLICY TOWARD ENDORSING CSGWPP GOALS

Under Strategic Activity 1, a State's goal must be no less protective than EPA's goal. Therefore, for:

- **Prevention.** A State's goal must, at least, be based on preventing ground water contamination whenever possible. A state is encouraged to determine what is "possible" explicitly and through adequate public participation -- State legislation may often be the best vehicle for such policy determinations. Where appropriate, the State should also allow local governments, which are closest to those most affected, to make these decisions. States and local governments will, however, need to follow federal laws where they prescribe what is "possible."

  A State's goal must be just as, or more stringent than, EPA's goal for prevention. A State's goal could, therefore, be based on "non-degradation" or "anti-degradation" as well as prevention whenever possible. However, EPA recognizes the need will arise to balance the economic and social costs of prevention with the underlying ground water's use and value. Therefore, while a State is encouraged to pursue prevention whenever possible, a State or its localities may have statutes, regulations, or ordinances that operate under a less stringent standard. State and local approaches must, however, be in compliance with any applicable federal statute or regulation.

- **Remediation.** A State's goal must, at least, be based on protecting ground water currently used, or reasonably expected to be used, as a source of drinking water as well as ground waters that are closely hydrologically connected to surface waters. For drinking waters, the attainment of Maximum Contaminant Levels (MCLs) established under the Safe Drinking Water Act (SDWA) should be the remediation goal. For ground waters closely hydrologically connected to surface waters, the goal should be to reduce contamination so that its discharges to surface water does not exceed water quality standards established under the Clean Water Act (CWA).

  A State's goal can be more stringent than EPA's goal for remediation. A State's goal could, therefore, be based on "non-degradation." A State's goal could also be based on either "remediation to the extent possible" or "differential protection based on relative risks to human health and the

environment." However, the resulting State clean-up objectives need to at least as stringent, and consistently applied, as the standards described above.

APPENDIX B: DEFINING VALUES AND REASONABLY EXPECTED USES OF GROUND WATER

B.1 GROUND WATER VALUES

As described in Appendix A, a State's perception of the value of its ground water is a key factor in determining remediation objectives or in siting facilities that have a potential to contaminate. Value, as discussed in Strategic Activity 2, is a key factor in assigning priorities for ground water protection or remediation activities. The States are given the flexibility to define their own ground water values through the CSGWPP.

Recent studies indicate that people value ground water for many different reasons, each of which should be considered by States. EPA held a Ground Water Valuation Conference on October 20, 1992, to provide a common base of knowledge on the types of ground water values. Experts were invited to discuss their recent studies on this topic. The description of values described below was derived from this conference and previous EPA reports.

Ground water is valued in three ways:

- For its current uses;
- For its future or reasonably expected uses; and
- For its intrinsic values.

B.1.1 Current Use Value

Persons most commonly value ground water for its many uses, and pay a price to use it -- the **use value** of ground water. The value of the ground water depends on its use. However, not all of the uses of ground water are easily quantifiable. For example, ground water has great value for maintenance of streamflow and lake levels and their associated ecosystems, particularly during dry seasons. Also, the value of the ground water may vary depending on the availability of alternate sources and vulnerability to contamination. In locations where many competing uses are withdrawing ground water faster than it is recharged, the cost to produce, and therefore the value of ground water, may be rising as the resource becomes scarce.

B.1.2 Future or Reasonably Expected Use Value

There is also a value given to the future use of ground water, known as **option value**. Option value is the value people place on ground water that they don't currently use, but want to have the option to use in the future. Reasonably expected use is a subset of this option use value -- it is ground water that not only has the

potential for use in the future, but is expected to be used. The value will depend on the expected use.

B.1.3 Intrinsic Value

Society places an intrinsic value on ground water, separate from any thought of using the resource, called **non-use value** (value other than for its specific uses). Studies have shown that Americans are willing to pay for the knowledge that clean ground water exists. **Existence value** is the value that individuals place on simply knowing that clean ground water exists independent of any use. **Bequest value** is the value the current generation places on the ability to pass clean ground water on to future generations. These values are difficult to quantify, and require the use of survey data. EPA's draft report "Methods for Measuring Non-Use Values: A Contingent Valuation Study of Ground Water Cleanup" also indicated that individuals are willing to pay just to know that clean ground water exists. This willingness to pay becomes a significant amount when added up over the population of a city, county, or State.

B.2 DEFINING REASONABLY EXPECTED USES OF GROUND WATER

EPA recommends that States use the process described in this Appendix to define reasonably expected uses of ground water. The priority-setting and program implementation components of a CSGWPP (i.e., Strategic Activities 2 and 4) both rely on a State's resource characterization efforts. This characterization could be done through an interactive process. An important application of State resource characterizations will be to identify reasonably expected uses of ground water so that those uses which have particular value or benefit to the State can be afforded greater attention using a differential management approach. These uses may include ecological support and drinking water, as well as other purposes. States may also want to consider other principal uses and factors, such as for agriculture and industry. It is left to States to determine relative priorities among the uses.

The approach described below allows each State to tailor resource based priority-setting to its own institutions. First, a public process is described for defining the reasonably expected uses of ground water. Second, factors are identified for States to consider in defining ground waters reasonably expected to be used for ecological purposes and drinking water. Third, an EPA default definition for Federal program purposes will be applied to the extent needed to implement regulatory programs in States choosing not to define these uses.

(1) Public Process. To obtain the operational flexibility through the CSGWPP, the State's public process to determine reasonably expected uses should (a) maximize public input, and (b) have its results consistently applied across programs.

(a) The State should utilize a public participation process with objectives as defined in 40 CFR Part 25. State laws designating ground water uses are considered adequate for this purpose. States are encouraged to keep their ground water use designations current. The objectives of 40 CFR Part 25 are to:

- Ensure that the public has the opportunity to understand official programs and proposed actions;
- Ensure that the government decision defining reasonably expected uses includes consulting interested and affected segments of the public;
- Ensure that the government action is as responsive as possible to public concerns;
- Encourage public involvement in implementing environmental laws;
- Keep the public informed about significant issues and proposed project or program changes as they arise;
- Foster a spirit of openness and mutual trust among EPA, States, sub-state agencies, and the public; and
- Use all feasible means to create opportunities for public participation and to stimulate and support participation.

(b) The State should consistently apply its definitions of ground water uses across all prevention and remediation decisions over which the State has control. For example, (i) the State should use a consistent definition regardless of waste type (e.g., sewage sludge or municipal solid waste) in determining facility requirements, and (ii) a State's definition would apply similarly to State and Federally funded remediation. As another example, application of a State's definition, which would require remediation programs to create an "island of clean" within a larger region of previously contaminated ground water, could be considered an inconsistent application.

(2) <u>Defining Reasonably Expected Uses for Ecological Support and Drinking Water</u>

While States are expected to consider all uses, this section focuses on support of ecological systems and drinking water, because most laws that EPA implements focus on human health and the environment.

(a) **For Ground Water Supporting Surface Water Ecosystems:** EPA's 1991 Ground Water Protection Strategy emphasizes protection of ground water closely hydrologically connected to surface waters to ensure ecosystem integrity. EPA considers the following factors important indicators of ground water hydrologically connected to surface water. A State may choose to use other factors. States should negotiate with the EPA Regions which factors are most appropriate for their respective circumstances.

- Relative ground water travel time from potential contaminant sources;
- Relative contribution of ground water to quantity and quality (chemical and physical) of surface water;
- Biota living in or dependent on ground water/surface water ecosystems;
- Climatic or seasonal variations; and
- Attainment of water quality standards to support designated use of surface water.

(b) **For A Reasonably Expected Source of Drinking Water:** EPA considers the following factors to be important in evaluating the future use of ground water. EPA expects States to consider or dismiss, with a sound rationale, from consideration these factors when determining a reasonably expected drinking water source. The State may also use other factors. States should negotiate with EPA Regions which factors are most relevant to their respective circumstances.

- Hydrologic characteristics, including water quality and quantity;
- Availability and cost of alternative water supplies;
- Demographics, including future growth and population patterns;
- Remoteness from likely areas of residential or other development;
- Land use planning;
- Remediation technology for, and practicality of, remediation;

-- Cost of prevention and remediation; and

-- Inter-jurisdictional considerations (Tribes, federal government, other States).

(3) EPA's Definition of "Reasonably Expected Uses of Ground Water."

In the absence of State definitions, EPA's definitions of "Ground Water Supporting Surface Water Ecosystems" and "A Reasonably Expected Source of Drinking Water" will apply.

(a) **Ground Water Supporting Surface Water Ecosystems:** EPA's definition for ground water closely hydrologically connected to surface water and supporting its ecosystems is ground water which, if its availability or quality are affected, would result in surface water not meeting the water quality standards required to support its designated use. (This definition reflects the current state of information on ground water - surface water interaction. This definition may change as more information becomes available.)

(b) **A Reasonably Expected Source of Drinking Water:** EPA's definition for a reasonably expected source of drinking water is ground water that is available in sufficient quantity for its intended use and contains fewer than 10,000 mg/l total dissolved solids. This definition derives from the Safe Drinking Water Act, Part C - Protection of Underground Sources of Drinking Water, Section 1421. EPA has developed this definition to be as protective as possible of future ground water uses; however, EPA recognizes that this definition may be more comprehensive than a State may wish to be.

EPA's Assistance to States. EPA realizes that a State may find it useful to have the benefit of EPA's views on how best to define ground water supporting surface water ecosystems and ground water that is a reasonably expected source of drinking water. To provide this guidance, EPA is developing a technical assistance document on resource assessment.

APPENDIX C: HOW THIS GUIDANCE WAS DEVELOPED

This Comprehensive State Ground Water Protection Program Guidance was developed using a deliberative process involving federal and State agencies as well as the public. Development began in the Summer of 1989, when EPA Administrator Reilly formed a Ground Water Task Force to review and coordinate EPA's policy on ground water protection. The Task Force, which consisted of senior Agency managers from all offices with ground water-related responsibilities, issued its final report in July 1991. The report, Protecting the Nation's Ground Water: EPA's Strategy for the 1990s, describes the Agency's policy of engaging in an aggressive and comprehensive approach to protecting the nation's ground water resources. The Strategy:

- Sets forth principles to ensure the protection of ground water resources;
- Identifies States as having primary responsibility for ground water protection; and
- Introduces methods for improving EPA's coordination of ground water-related activities.

The Strategy outlines the CSGWPP approach that is the primary vehicle through which many of the Strategy's policies and objectives will be met. During the preparation of the Strategy, the Task Force sought comment and input from States, other federal agencies, and numerous public and private organizations on all facets of the initial development of the CSGWPP approach.

Preparation of this guidance on implementation of the CSGWPP approach followed the release of the Strategy and also involved a high level of State and public input. Between December 1991 and February 1992 a series of Roundtable discussions involving EPA and State and Tribal officials from agencies with ground water responsibilities were held throughout the country. The Roundtables were organized to provide a forum for State and Tribal views on four key subjects: (1) what are the necessary elements of a successful CSGWPP; (2) what are the criteria for determining the adequacy of each CSGWPP element; (3) what can prevent successful implementation of a CSGWPP; and (4) what EPA can do to help the States and Tribes implement CSGWPPs successfully.

The Roundtable Discussion approach introduced a new and innovative dimension to program guidance development. Thirteen separate Roundtables, with a total of over 700 State and Tribal participants, were held around the country. Comments, opinions, and questions from the Roundtables have been used to inform EPA decision making and have influenced the development of the draft CSGWPP Guidance in many ways. For example, the number of CSGWPP elements was reduced and revised to six Strategic Activities to reflect views expressed in the Roundtables; specific adequacy criteria were included or excluded based on State

reduced and revised to six Strategic Activities to reflect views expressed in the Roundtables; specific adequacy criteria were included or excluded based on State and Tribal arguments; and certain procedures associated with the CSGWPP process were revised. In particular, EPA initially planned on providing a State with increased flexibility only when the State had a fully implemented, EPA-concurred-upon CSGWPP. However, Roundtable participants suggested instead that increased program-specific flexibility should occur as specific milestones are met in the progressive implementation of each State's CSGWPP. This Guidance adopts that approach.

In July 1992, EPA published the draft CSGWPP guidance and carried out a broad range of outreach activities to ensure that the draft CSGWPP guidance document was reviewed by all States' agencies involved in ground water protection, numerous federal agencies, tribes, national organizations of State and local governments, national environmental organizations, business groups, EPA Regions and other entities committed to adequately protecting ground water resources. EPA published a notice on July 7, 1992, in the Federal Register that the draft guidance was available for distribution to the public. Simultaneously, EPA distributed copies of the draft guidance, accompanied by a letter from EPA's Deputy Administrator, F. Henry Habicht II, that requested commenters to address specific questions concerning the guidance and the Comprehensive State Ground Water Protection Program (CSGWPP) approach, to a large number of State officials. EPA supplied about 4,000 copies of the draft guidance to the public.

During the 60-day comment period, EPA's Office of Ground Water and Drinking Water, Office of Pesticide Programs, Office of Radiation Programs, and Office of Solid Waste and Emergency Response met with national associations of State and local governments, environmental organizations, States, local government officials, and five federal agencies (Department of Defense, Department of Energy, Department of Interior, U.S. Department of Agriculture, and the Nuclear Regulatory Commission) to obtain additional views.

EPA Headquarters, in an effort to build a new partnership with its sister federal agencies, held a Federal Interagency Roundtable in March 1992. In addition, EPA held meetings with other involved federal agencies this summer to discuss the draft guidance and to develop plans for more active efforts at programs coordination. As a follow-up to these meetings, EPA Headquarters, at a staff level, has approached the other federal agencies with several ideas to forge ahead into this new partnership, which has resulted in the descriptions of these efforts in Part II, Section II.

As of October 15, 1992, a total of 96 comments had been received on the draft guidance, primarily from the following groups:

- State Agencies (64 from 44 States)
  - -- Environmental (30)
  - -- Health (9)
  - -- Agriculture (12)
  - -- Natural Resources (13)
- Business and Trade Groups (8)
- Environmental Groups (2)
- Local Governments (4)
- Citizen Groups (1)
- Federal Agencies (6)
- Universities (1)
- National Organizations of State and Local Governments (4)
- EPA HQ Offices (4)
- EPA Regions (13 from 8 Regions)

This guidance document represents a significant reexamination of the concepts and approaches outlined in the draft guidance based on the numerous comments received.

APPENDIX D: GLOSSARY OF ACRONYMS

ACP:	USDA Agricultural Conservation Program
ADID:	Advanced Identification (under CWA §404)
ARAR:	Applicable or relevant and appropriate requirement
ARS:	USDA Agricultural Research Service
ASCS:	Agricultural Stabilization and Conservation Act
BIA:	DOI Bureau of Indian Affairs
BLM:	DOI Bureau of Land Management
BMP:	Best management practice
CERCLA:	Comprehensive Environmental Response, Compensation, and Liability Act
CSRS:	USDA Cooperative State Research Service
CWA:	Clean Water Act
CZM:	Coastal Zone Management
CZMA:	Coastal Zone Management Act
DASD (E):	DoD Deputy Assistant Secretary of Defense
DERP:	DoD Defense Environmental Restoration Program
DNAPLs:	Dense non-aqueous phase liquids
DoD:	US Department of Defense
DOE:	US Department of Energy
DOI:	US Department of the Interior
DOT:	US Department of Transportation
DSMOA:	DoD Defense and State Memoranda of Agreement

DSMOA:	DoD Defense and State Memoranda of Agreement
ECAP:	DoD Environmental Compliance Achievement Program
EM:	DOE Office of Environmental Restoration and Waste Management
EPA:	US Environmental Protection Agency
ERS:	USDA Economic Research Service
ES:	USDA Extension Service
FIFRA:	Federal Insecticide, Fungicide and Rodenticide Act
FS:	United States Forest Service
GOA:	US General Accounting Office
GIS:	Geographic Information System
HRS:	Hazard Ranking System
HSWA:	Hazardous and Solid Waste Amendments of 1984 to RCRA
IAGs:	Interagency Agreements
IHS:	DOI Indian Health Service
IRP:	DoD Installation Restoration Program
MCL:	Maximum Contaminant Level
NAPLs:	Non-aqueous phase liquids
NASS:	USDA Agricultural Statistic Service
NEPA:	National Environmental Protection Act
NOAA:	National Oceanic and Atmospheric Administration
NPDES:	National Pollutant Discharge Elimination System
NPL:	National Priority List
NPS:	Nonpoint Source

NRC:	Nuclear Regulatory Commission
OAR:	EPA Office of Air and Radiation
OE:	EPA Office of Enforcement
OERR:	EPA Office of Emergency and Remedial Response
OHWP:	DoD Other Hazardous Waste Program
OPA:	Oil Pollution Act of 1990
OPPTS:	EPA Office Prevention, Pesticides, and Toxic Substances
OSD:	Office of the Secretary of Defense
OSM:	DOI Office of Surface Mining
OSWER:	EPA Office of Solid Waste and Emergency Response
OW:	EPA Office of Water
PA/SI:	Preliminary Assessment and Site Investigation
PCBs:	Polychlorinated biphenyls
POTW:	Publicly owned treatment works
PWS:	Public water supply
PWSS:	Public water supply system
QA/QC:	Quality assurance/quality control
RAD:	Radiation
RASA:	Regional Aquifer-System Analysis
RCRA:	Resource Conservation and Recovery Act
RCRA C:	Resource Conservation and Recovery Act Subtitle C
RCRA D:	Resource Conservation and Recovery Act Subtitle D
Reclamation:	DOI Bureau of Reclamation

RFA:	RCRA Facility Assessment
SARA:	Superfund Amendments and Reauthorization Act
SCS:	USDA Soil Conservation Service
SDWA:	Safe Drinking Water Act
SMCRA:	Surface Mining Control and Reclamation Act of 1977
SMP:	State Management Plan to prevent ground water contamination from pesticides
SRPA:	Small Reclamation Projects Act
SNC:	Significant noncompliance
SSA:	Sole Source Aquifer
TDP:	Technology Development Program
TSCA:	Toxic Substances Control Act
UIC:	Underground Injection Control
UMTRCA:	Uranium Mill Tailings Radiation Control Act
USDA:	United States Department of Agriculture
USGS:	United States Geological Survey
UST:	Underground Storage Tank
VOCs:	Volatile Organic Compounds
WHP:	Wellhead Protection
WQIP:	Water Quality Incentive Practices

NOTE TO THE READER:

This Final Comprehensive State Ground Water Protection Program Guidance is a statement of Agency policy and principles. It does not establish or affect legal rights or obligations. This guidance document does not establish a binding norm and is not finally determinative of the issues addressed. Agency decisions in any particular case will be made by applying the law and regulations to the specific facts of the case.

Part II:
LINKAGE TO EPA AND OTHER FEDERAL AGENCY PROGRAMS

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1. LINKAGE TO EPA PROGRAMS

This section provides a program-by-program discussion of the linkages between the CSGWPP approach and each EPA program that potentially affects ground water. For each program, a brief description of how CSGWPP-supported resource-based decision-making would benefit the program is provided. For most programs, this is followed by a discussion of how the CSGWPP affords greater beneficial coordination to the program. Finally, for programs that provide grants to States, a brief discussion of how those grants can be used in a coordinated fashion to support the development and implementation of CSGWPP follows. The material described below is not meant to take the place of any specific program guidance or regulation, and, where seeming discrepancies might exist, the information in the most current program-specific guidance or regulation must prevail. EPA is in an on-going process to align and update all of its programs related to ground water protection with the CSGWPP approach.

WELLHEAD PROTECTION PROGRAM

Resource-Based Priority Setting in Decision-Making

An EPA-approved State Wellhead Protection (WHP) Program will be a required and integral part of the Fully-Integrating CSGWPP. A CSGWPP will emphasize that wellhead protection areas, recharge areas, and basins of drinking water aquifers are to be afforded extra management focus across all programs within the CSGWPP framework.

In addition to being an integral part of the priority-setting portion of the CSGWPP, wellhead protection programs will benefit by other activities that make up a CSGWPP. For example, characterization and mapping will aid in delineating actual wellhead protection areas and recharge zones.

Coordination with Other Programs

Many programs use the wellhead protection areas to identify areas of priority concern. USDA's Conservation Reserve Program, for example, provides incentives to farmers not to conduct practices that may impact ground water in sensitive areas. Other programs use wellhead protection areas as a tool in program management schemes, such as the Public Water Supply (PWS) Supervision Program for vulnerability assessments and sanitary surveys. The vulnerability assessment completed under a WHP Program will meet the requirement of the PWS Program as a first step for a PWS to apply to the State to waive monitoring. The CSGWPP will become the vehicle to further demonstrate the utility of State WHP Programs and ensure that WHP-related activities are carried out consistently across programs.

Coordinating Grants

To date, grant funding under the Safe Drinking Water Act for State Wellhead Protection Programs has not been appropriated. However, State ground water assessment and characterization activities and other wellhead protection activities are supported by EPA with CWA §106 grants, and wellhead protection is referenced as a viable and valuable activity in the grant guidances of other EPA ground water-related programs (e.g., CWA §319 and RCRA). Within the CSGWPP framework, all of these grants would be coordinated so that the maximum number of wellhead protection areas are established.

PESTICIDES STATE MANAGEMENT PLAN (SMP) PROGRAM

Resource-Based Priority Setting in Decision-Making

EPA's Pesticides and Ground-Water Strategy released in October 1991 offers States the flexibility to continue the use of a pesticide that EPA would otherwise cancel due to ground water contamination concerns. States will gain this flexibility by developing and implementing State Management Plans (SMPs), which are designed to ensure that each State can sufficiently manage, control, and enforce pesticide use to protect valuable and vulnerable ground water. EPA will coordinate its efforts with USDA and with State agricultural agencies to alleviate redundancies and ensure consistent regulatory requirements.

Figure II-1 demonstrates that the specific components and adequacy criteria of a Pesticide SMP are closely aligned with those of a CSGWPP. This close alignment means that implementation of a Generic Pesticide SMP[1] will meet the general condition of many of the adequacy criteria for a Core CSGWPP that the State's intended comprehensive approach be adopted or implemented by at least one operating program within the State.[2] Obviously, however, a Pesticide SMP, even at the Generic level, will require more specificity on pesticide management measures than would be found in a CSGWPP. An SMP should be viewed as a more program-specific version of the more general, but broader scope CSGWPP.

The Pesticide SMP approach fully adopts the Agency's overall ground water protection goal and the tiered hierarchy of preferred protection objectives outlined in this CSGWPP Guidance. Under an SMP, States are encouraged to pursue prevention of ground water contamination whenever possible. However, protection of the nation's currently 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 integrity of associated ecosystems.

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[1]According to EPA's draft Pesticide SMP Guidance, a Generic SMP is the State's primary source document which provides the overarching policies and approaches from which Pesticide-Specific SMPs will be derived, if necessary, to address unique concerns for individuals pesticides.

[2]A State needs to demonstrate, however, that its comprehensive approaches are intended to eventually encompass all ground water protection programs within the State.

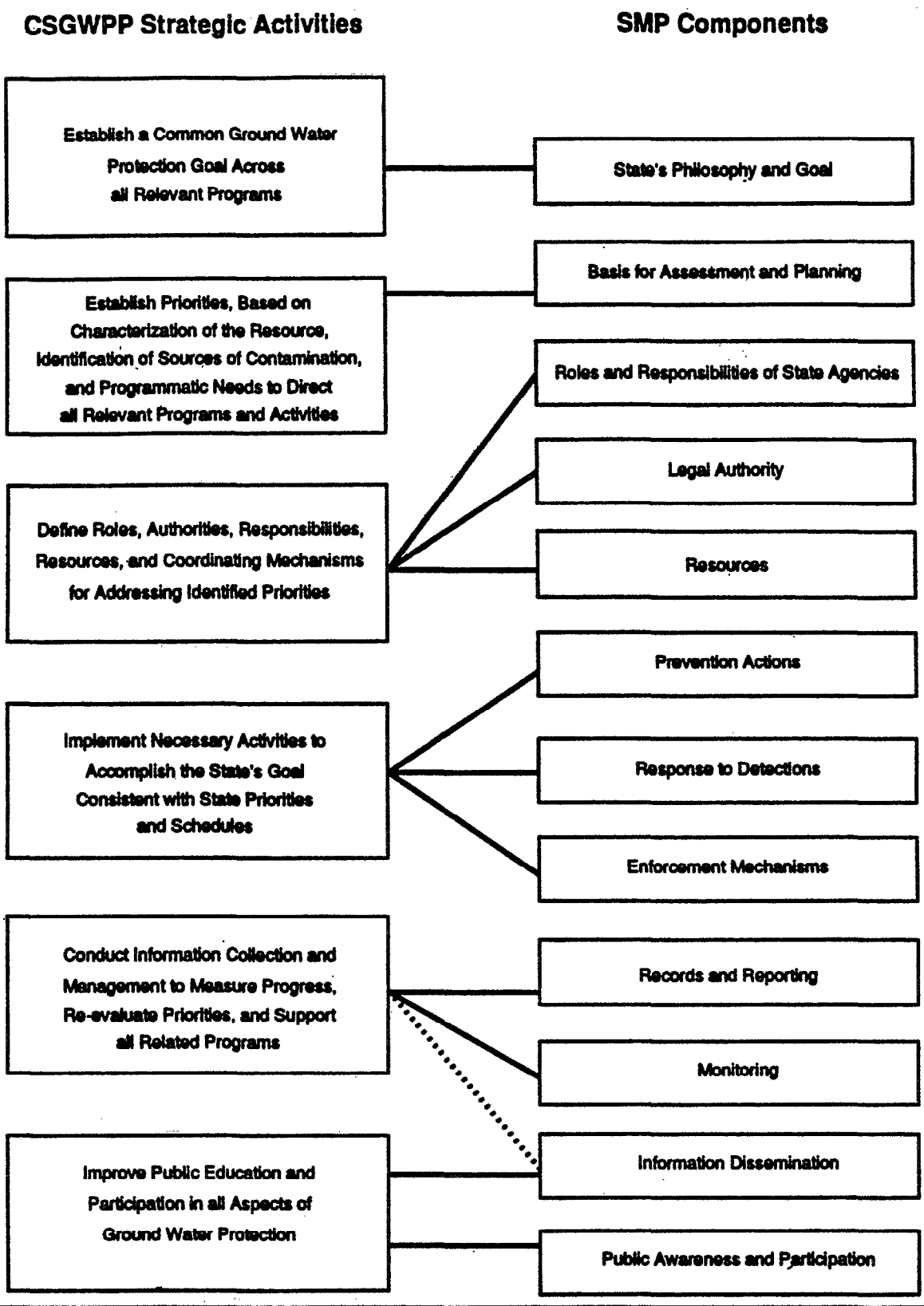

Figure II-1. Relation of the Six Strategic Activities of a CSGWPP to the 12 Components of a Pesticides State Management Plan.

PESTICIDES STATE MANAGEMENT PLAN (SMP) PROGRAM (continued)

Coordination with Other Programs

Examples of how CSGWPPs will contribute to coordinating or promoting consistency between key activities of SMPs and other ground water-related programs include:

- Coordination and priority-setting under CSGWPPs will promote better integration of the regulatory and non-regulatory prevention measures called for by an SMP, such as those available under FIFRA and the CWA's Nonpoint Source Program, as well as needed monitoring information, available from a number of programs.

- CSGWPP efforts to define roles, responsibilities, and coordinating mechanisms will further clarify and build on foundations laid under SMPs to define roles, and promote coordination between agricultural agencies with primary pesticides management responsibilities and water, environmental, or health agencies with primary ground water resource responsibilities.

- Efforts under CSGWPPs to promote State legal authorities and to form coordinated enforcement strategies for ground water protection will also strengthen legal and enforcement capacity to protect ground water from pesticides.

- Coordination mechanisms developed under CSGWPPs should establish links at the State level to other federal agencies with ground water protection responsibilities. These links should facilitate the targeting of non-EPA federal water quality projects to address a State's SMP priorities.

Coordinating Grants

CSGWPPs will help coordinate CWA, SDWA, CERCLA, and RCRA, as well as FIFRA funding for activities that will help meet the adequacy criteria of both CSGWPPs and SMPs. For example, money from §106 of the CWA could support State efforts to assess and identify the areas most vulnerable to ground water contamination by pesticides as a basis for establishing priorities for protection. FIFRA funding would be available for tailoring pesticides management practices to certain critical areas and for

PESTICIDES STATE MANAGEMENT PLAN (SMP) PROGRAM (continued)

outreach to the agricultural community. State agriculture agencies would work with State water quality agencies to utilize their expertise and facilities for monitoring, assessments of aquifer sensitivity, data management, and other activities necessary for SMP development. Under the CSGWPP approach, SDWA funding of PWSS monitoring, enforcement, and vulnerability assessments could also be coordinated to provide significant information to a State for developing and improving its SMP. Finally, the coordination mechanisms developed under CSGWPPs also have the potential to facilitate the targeting of grants from other federal agencies, such as USDA, to support SMP activities or to get the State agencies involved in SMP implementation in the selection of federally-funded water quality projects.

SOLE SOURCE AQUIFER PROTECTION PROGRAM

Resource-Based Priority Setting in Decision-Making

The Sole Source Aquifer (SSA) Protection Program is a resource-oriented ground water contamination prevention program. It is one of many tools that should be utilized in a CSGWPP to increase public awareness of the value of ground water as a resource and to prevent contamination from federal financially-assisted projects.

The SSA Protection Program's objectives and activities correspond to the Strategic Activities of a Comprehensive Program. Common management measures in both programs include resource assessment, identification of important resources for setting priorities, development of management options, and involvement of State and local governments.

The CSGWPP approach should provide the framework for increased State participation and improved EPA decision-making in determining priority SSA designations and project reviews. State and local prevention, control, and remediation efforts within SSA designated areas should be prioritized and managed through a CSGWPP.

Coordination with Other Programs

Under coordination efforts of a CSGWPP, SSA protection activities should significantly support the development and implementation of other ground water-related programs in the following ways:

- Contributes valuable aquifer characterization and assessment information to assist States in setting priorities;
- Assists States in establishing priority ground water protection areas based on use and value of the resource;
- Implements a pollution prevention program for reducing or eliminating pollution in SSA areas;
- Uses a broad range of education, voluntary, and regulatory techniques to protect the resource; and
- Provides opportunities for monitoring, data collection and data analysis of the nature and quality of ground water.

RCRA SUBTITLE C PROGRAM

Resource-Based Priority Setting in Decision Making

The FY 1992 RCRA Implementation Plan indicates that the RCRA program is implementing a cooperative strategic framework with the States which is designed to: (1) identify regional and State-wide environmental priorities among all facilities in the RCRA universe, and (2) use these priorities to select the most appropriate allocation of resources for RCRA permitting and cleanup activities. One factor in setting these priorities will be the use, value, and vulnerability of the ground water. Since CSGWPPs encourage States to develop systems that allow resource-based priority setting, the CSGWPP approach should serve as an integral part of the efforts the States and RCRA are undertaking to implement this strategy for setting RCRA priorities.

An adequate characterization of a State's ground water resources developed as part of the implementation of a CSGWPP could supply much useful information that may be useful in implementing current and future RCRA-related activities. RCRA corrective actions to cleanup releases of hazardous waste and constituents are conducted on a site-specific basis, and take into account ground water protection as a major factor in selecting cleanup remedies. The information generated as part of a CSGWPP will help to ensure that site-specific decision making will be conducted in the context of the regional ground water resources. In addition, future regulation on location standards for RCRA facilities is likely to be integrated with regional ground water resources identified and characterized as part of a State's CSGWPP.

Coordination with Other Programs

Subtitle C permits should be coordinated with UIC, NPDES, and Wetlands (§404) permits. When these and other ground water-related programs are all implemented within the CSGWPP framework, consistency among priorities and pollution prevention measures will be significantly enhanced. Overall implementation will be more efficient and effective.

Some commentators noted that RCRA's requirements on the handling of pesticide wastes were burdensome. The Office of Solid Waste will explore this problem with the Office of Pesticide Programs.

Coordinating Grants

RCRA implementation grants can be used, in part, to support general assessment and infrastructure building, as long as the activities funded demonstrably aid in implementing RCRA. Because of RCRA's emphasis on State-led, priority-based decision making, activities such as assessment, mapping, and characterization of ground water resources would fit this criterion. These activities are also key in other programs and are essential to developing and implementing a CSGWPP. As such,

RCRA SUBTITLE C PROGRAM (continued)

the RCRA grants should be coordinated with funds from a variety of programs. The CSGWPP supplies the coordinating framework which ensures that no unnecessary duplication of effort exists across programs, thus assuring that grants from RCRA and all other programs provide maximum overall benefit.

RCRA SUBTITLE D PROGRAM

Resource-Based Priority Setting in Decision Making

Under the Subtitle D program regulations on municipal landfill criteria, States have the opportunity to adjust certain aspects of the EPA-promulgated standards concerning landfill design, monitoring, siting and corrective action. To gain this flexibility, States must have EPA-approved municipal solid waste landfill permitting programs. When an approved State makes a site-specific permit decision on landfill design or monitoring requirements, it may do so based, in part, on the relative vulnerability of the ground water. For corrective action requirements, decisions can be based, in part, on the underlying ground water's use, value, and vulnerability. Assessment and characterization carried out under the strategic activities of the CSGWPP can be used to help demonstrate to the EPA Regional Administrator that their Municipal Waste Programs adequately incorporate Subtitle D federal guidelines.

Other Subtitle D programs for solid waste (e.g., mining, oil and gas, and industrial wastes) are just beginning to be developed at this time. EPA expects these Subtitle D industrial programs to incorporate the CSGWPP approach and allow States to make decisions on aspects of landfill design, monitoring requirements, or corrective action requirements based, in part, on the use, value, and vulnerability of the ground water.

Coordination with Other Programs

The RCRA Subtitle D program already has developed ground water monitoring requirements for municipal solid waste landfills. These requirements allow the use of a sampling and analysis program that accurately represents the ground water quality at a particular site. A CSGWPP could ensure the development of a consistent monitoring program applicable to both Subtitle D facilities and to other programs such as the UST program that may affect ground water.

A number of industrial facilities and operations likely to be covered under future RCRA Subtitle D regulations for industrial solid waste also will require NPDES permits for surface water discharges, for sewage sludge facilities, or for industrial pretreatment permits from POTWs and also may be subject to the SDWA Underground Injection Control Program, particularly Class V regulations. The CSGWPP will provide a framework for better coordination of these programs to avoid cross-purposes in objectives and approaches. EPA will also work to coordinate these regulatory activities through the Agency's Ground Water Cluster.

RCRA SUBTITLE D PROGRAM (continued)

Coordinating Grants

Grants given to States to develop an understanding of the characteristics of their ground water will be coordinated with grants from other programs so that duplication is avoided when a State implements certain functions such as monitoring. (See also the discussion under RCRA Subtitle C.)

UNDERGROUND STORAGE TANK PROGRAM

Resource-Based Priority Setting in Decision-Making

Under EPA's UST Program, minimum federal standards are set and a State is allowed to be more stringent or different if the State's program is no less stringent and provides for adequate enforcement of compliance. Because the program's size often overwhelms the ability of the States to staff the program, EPA encourages States to implement UST programs and achieve compliance through a variety of State-specific management measures and mechanisms.

The UST program offers States flexibility in the following ways:

- The UST program encourages States to set enforcement priorities and do multimedia enforcement.

- The federal UST program defines minimum standards and allows States to set more stringent or different (but no less stringent) standards for prevention and detection of releases from USTs, for site characterizations, soil and ground water cleanup investigations, and remedial action for releases from USTs.

Maximum flexibility is realized when a State is authorized to implement its UST in lieu of the federal program. To be approved, the State must demonstrate that it has additional funding sources, adequate staff, authorities that are no less stringent than the federal UST program in scope and regulation, and capacity and willingness to enforce the program.

The ground water assessment and characterization efforts carried out under the priority setting Strategic Activity of a CSGWPP will help a State better determine its UST program priorities in regard to inspection and enforcement actions and program resource allocations. Information provided by the CSGWPP approach on the relative use and value of ground water resources also will assist in UST program decision-making regarding cleanup investigations and corrective actions.

Coordination with Other Programs

Because the UST program seeks to regulate potential sources of ground water contamination (i.e., underground storage tanks), there are several specific links between a State's UST program and its CSGWPP. For example, the UST program requires all UST owners to notify the State of existing underground storage tanks. This inventory will assist the States in cataloging and assessing one potential source of contamination.

UNDERGROUND STORAGE TANK PROGRAM (continued)

A number of facilities and operations with underground storage tanks may also be subject to requirements by other ground water-related programs, such as SDWA underground injection controls or RCRA hazardous waste or solid waste management. The CSGWPP will provide a management focal point for a State to establish more coordinated inspections and enforcement schemes across ground water-related programs. Presently many States' UST programs barely have enough personnel to meet their enforcement needs. Through the integration provided by the CSGWPP, State personnel from other programs may be trained to look for UST violations or to take enforcement actions.

Facilities with underground storage tanks often are located in an area where ground water remediation efforts are being considered. Knowledge of the presence of underground storage tanks in such areas may be crucial information in determining the source and responsibility for an area's contamination and means for successful remediation. Under the UST program, owners are required to notify the State of existing underground storage tanks. Inclusion of such information in the CSGWPP strategic activity of coordinated ground water data bases within the State could greatly assist other programs' field personnel in determining appropriate actions.

Coordinating Grants

The federal UST program provides grants to States to prevent, detect, and correct leaks from underground storage tanks containing petroleum and other hazardous substances. As a result, UST grant funding, which supports the development and implementation of an UST regulatory program, also can support the following corresponding CSGWPP activities: identifying sources of contamination; establishing a comprehensive remediation program that sets priorities according to risk; defining federal, State, and local enforcement authorities; conducting monitoring, data collection, and data analysis; and improving public participation.

SUPERFUND PROGRAM

Resource-Based Priority Setting in Decision Making

The Superfund program was created by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. The Superfund program is designed to respond to contamination at sites with uncontrolled hazardous substances. Sites that are candidates for Superfund response action first undergo a Preliminary Assessment and Site Investigation (PA/SI) in order to quantify the human health and environmental risk posed by the site. Sites are then evaluated under a number of risk related and other factors set out in the Hazard Ranking System (HRS) to determine if the site is a priority for possible remedial action and inclusion on the National Priority List (NPL). A CSGWPP may influence this process in the following areas.

Priorities for conducting HRS assessments and for taking short-term removal actions are determined by the threat that potential contamination may pose. A State's ability to demonstrate, through a CSGWPP, that it understands the use, value, and vulnerability of its ground water could be an important factor in setting priorities for PA/SI and HRS listing evaluations or other actions. By helping to establish high priority candidate sites, the State can influence which of its sites ultimately get on the NPL, and become eligible for longer term remedial action.

Once on the NPL, the Superfund policy is to address the worst sites and worst problems at sites first, based on an assessment of risk to human health and the environment. Thus, a CSGWPP can assist in determining which studies and sites will receive priority Superfund attention.

EPA's goal for long-term cleanup of NPL sites includes returning usable ground waters to their beneficial uses within a reasonable period of time, wherever practicable. When selecting a remedy and determining remediation requirements for long-term cleanup at a site, EPA considers both the anticipated uses of ground water and established State standards. A clear understanding of ground water resources in the State, demonstrated through consistent application of a CSGWPP, can help inform these site-specific decisions.

The Superfund Program is currently working to develop a more integrated approach for its site remediation program, and to identify opportunities for adopting innovative approaches to restoration and management of hazardous waste sites. Superfund will also be looking for ways to increase State participation in the remedial decision process, where allowed by statute.

SUPERFUND PROGRAM (continued)

Coordination with Other Programs

Superfund remedial actions are required to comply with (or justify a waiver of) applicable or relevant and appropriate requirements (ARARs) of State environmental laws that are promulgated, timely identified, and consistently applied in similar situations. ARARs pertinent to ground water remedial actions include standards established by various State and Federal environmental statutes. Ground water cleanup levels are determined for each Superfund site based on ARARs and/or on acceptable human health and environmental risk levels for all potential exposure pathways. ARARs and risk levels are determined for both current and reasonably expected future use of the ground water. Other EPA programs, such as RCRA Corrective Action, use a similar approach for setting cleanup levels for contaminated ground water. Under the CSGWPP approach, current and reasonably expected uses would be determined by a State and would be consistently applied to all State and Federal programs. Where a CSGWPP is in place, the Superfund program may provide flexibility to focus more intensive long-term remedial efforts at sites where ground water is more highly valued by the State and less intensive efforts (i.e. longer restoration time periods) in other areas.

Coordinating Grants

A State or Indian Tribe may enter into a Core Program Cooperative Agreement to build and enhance its capabilities to respond to uncontrolled hazardous substance sites and to promote more effective State participation in the Superfund program. The Core Program focuses on assisting a State to develop its ability to support or implement emergency and long-term response under the Superfund program. The Core Program Cooperative Agreement may enable EPA Regional Offices to fund appropriate ground water tasks that contribute to the recipients ability to implement Superfund and also are useful to comprehensive ground water management in a State. Examples might include development of ground water sampling protocols or design of risk assessment criteria and procedures, and other similar components that also could support a framework for a CSGWPP.

OIL POLLUTION ACT

Resource-Based Priority Setting in Decision Making

The Oil Pollution Act of 1990 (OPA) provides EPA (and the Coast Guard) with expanded authorities to address discharges of oil that pose substantial threats to public health or welfare and natural resources. Section 311 of the Clean Water Act, which is implemented through the National Contingency Plan like CERCLA, empowers EPA to arrange for the removal of oil discharges or to mitigate or prevent the substantial threat of the discharge that threatens public health or welfare.

A comprehensive assessment of a State's ground water resource carried out as part of a CSGWPP will support speedy and effective actions under Section 311 by better identifying the ground waters, and surface waters closely hydrogeologically connected to ground waters, that could be affected by a discharge of oil, and by identifying reasonably expected sources of drinking water that could be threatened. This will help to determine when removal actions are necessary.

Coordination with Other Programs

The ARARs pertinent to removal actions involving oil discharges into ground water that threaten surface waters will, under the CSGWPP approach, be based on an understanding of the ground water resource and its use, value, and vulnerability that is common to all programs in the State.

UNDERGROUND INJECTION CONTROL PROGRAM

Resource-Based Priority Setting in Decision Making

CSGWPP resource-based priority setting will help make permitting, inspection, and enforcement actions for all classes of underground injection wells more effective and efficient. The overall CSGWPP framework will supply the States with an important understanding of the use, value and vulnerability of their ground water resources that will be useful in UIC programs involving all classes of wells.

UIC Class I hazardous waste injection wells (deep industrial disposal wells), for example, are permitted under the SDWA and by rule under RCRA Subtitle C. Before operation such wells must be determined not to endanger human health or the environment. Comprehensive assessment of the ground water resource will expedite the identification of all potentially threatened ground waters and confining layers, and will help to ensure complete and accurate monitoring and identification of potential migration in the subsurface. The requirements currently being developed for UIC Class V wells (shallow drainage and miscellaneous wells) also demonstrate how CSGWPPs will support resource-based decision making. Under the regulations and guidance being developed by the UIC program, the most environmentally harmful Class V wells (e.g., service station drains, industrial waste disposal wells, etc.) will be controlled by permits; other Class V wells will be controlled by general rules supplemented by guidance or proper practices to comply with those rules. Although the controls placed on these wells will be tied to the level of contamination being injected, the use and value of the underlying ground water resources could be a key consideration in the setting of priorities under this approach.

Coordination with Other Programs

The UIC program, and particularly the Class V component, will benefit from being linked to other ground water programs within the CSGWPP. Other programs, such as the WHP program, will assist in identifying Class V wells that have not been inventoried. Under the WHP program, sources of contamination within WHP areas must be identified. Any Class V wells identified during the WHPP inventory can be added to the Class V inventory. Similarly, any Class V wells identified during RCRA Facility Assessments (RFAs) or CERCLA Preliminary Assessments and Site Investigations (PA/SIs) could be added to the Class V inventory.

Efficiencies involving the UIC program and other programs will also be created through the CSGWPP. The UST program, for example, will be able to benefit from joint inspections at gasoline stations that address both Class V wells and underground storage tanks. Pesticide SMPs can include UIC Class V measures to avoid ground water contamination caused by disposal of residues from mixing or washing in shallow drainage wells. UIC Class V inventories will be useful sources of information in RFAs and PA/SIs.

UNDERGROUND INJECTION CONTROL PROGRAM (continued)

Coordinating Grants

States can use UIC grants for activities such as mapping, inventorying, and data management. For these activities, grant guidances among all programs allowing funds to be used for these purposes could be coordinated to insure synergies and to reduce unnecessary duplication among programs.

PUBLIC WATER SUPPLY SUPERVISION PROGRAM

Resource-Based Priority Setting in Decision-Making

The protection of public water supplies (PWS) is a high priority for Comprehensive Programs. This is evident by the CSGWPP adequacy criteria requiring implementation of an EPA-approved State Wellhead Protection Program (WHP) for a Fully-Integrating CSGWPP. A State's WHP, coupled with other CSGWPP efforts, will provide information on the "vulnerability" or susceptibility of source waters of individual PWS systems to contamination. Under the Public Water Supply System Program, States have the flexibility within the Program to:

(1) Work toward flexible federal monitoring requirements for individual water supply systems with less burdensome PWS monitoring requirements;

(2) Offer water suppliers opportunities for obtaining waivers from monitoring requirements for certain contaminants, if their systems are not vulnerable to contamination;

(3) Use PWSS enforcement actions to support development and implementation of local wellhead protection programs. CSGWPPs can provide data and information upon which to initiate enforcement actions, (i.e., SDWA §1431 emergency orders);

(4) Allow more flexibility in the application of the "timely and appropriate" enforcement criteria for violations of the SDWA, particularly PWSs that are in significant noncompliance SNC, if a State can demonstrate that an enforcement action, based on data from a wellhead protection program or other ground water activities, can appropriately address and mitigate the violations;

(5) Set the phase in schedule (beginning in 1993) for monitoring under the new "standardized monitoring framework," implementing a three year compliance period. Setting priorities for targeting when systems would be phased in may be based in part on the use, value, vulnerability of ground waters and extent of data available. Making determinations using these factors would be greatly enhanced by the coordination achieved and data developed under a CSGWPP; and

(6) Enhance Sanitary surveys where use of wellhead protection area delineations and contaminant source surveys, pesticide application information and a pesticide management plan, and other information could be used.

PUBLIC WATER SUPPLY SUPERVISION PROGRAM (continued)

Coordination with Other Programs

Given the high priority of protecting PWS under a CSGWPP, a State's PWSS Program will benefit significantly from the CSGWPP's objective of coordinating and targeting the numerous ground water protection efforts of federal, State, and local programs. Coupled with Wellhead Protection Programs, the source inventory and characterization efforts of numerous source-specific programs (e.g., UIC, UST, Pesticides SMPs, NPS, etc.) should assist the PWSS Program in determining the "vulnerability" or susceptibility of water supply systems to different potential contaminants. Furthermore, these programs should significantly assist the PWSS Program in achieving permanent solutions to contamination by focusing on preventing or mitigating source water contamination rather than often costly treatment by individual PWS systems.

In addition to receiving benefits from the CSGWPP approach, the PWSS Program has much to add. For example, the ability of the PWSS Program to take civil action on an emergency basis to address contamination of underground sources of drinking water (Section 1431 of SDWA) should be integrated under the Comprehensive Program approach with other programs' regulatory and non-regulatory efforts to provide a broader array of tools to address ground water concerns.

Also, under a CSGWPP coordination objective, the monitoring data collected by PWS systems should be integrated with other programs' information (e.g., source inventory and characterization data) to derive better understanding of the environmental fate and movement of contaminants. Greater accessibility of environmental data across programs also would allow vulnerability assessments to be done by automated processes rather than solely by expensive field investigations, facilitating the issuance of monitoring waivers. In addition, some States would not be able to support a waiver program without a coordinated information program mechanism in place to increase confidence in waivers.

Finally, the PWSS laboratory certification programs should be better coordinated, under the CSGWPP approach, with other programs' monitoring efforts to help ensure more accurate information across all ground water-related programs.

NONPOINT SOURCE PROGRAM

Resource-Based Priority Setting in Decision Making

Authorized under §319 of the CWA, the Nonpoint Source (NPS) Program provides grant funds for implementing control activities and institution-building activities based on a State's federally-approved NPS Assessment and Management Program. The program focuses on both ground water and surface water, with a minimum of 10 percent of the grants going for ground water-related activities. On average, the States devote more than 10 percent, with 30 percent going towards ground water-related funding in FY 91.

A State must have an EPA-approved NPS Management Program to be eligible to receive NPS grants. Section 319 requires State NPS Management Programs to identify, among other things, best management practices and measures to be implemented to reduce NPS pollutant loadings, to set up a schedule for implementing the measures, and to define authorities. Only priority ground water protection activities identified in an approved management plan are eligible for §319 grant funding, either by direct identification in the NPS Management Plan or by reference to the CSGWPP. Therefore, the ground water protection priorities established by a CSGWPP should have a direct link to the priorities of the State's NPS Program. This link should focus §319 NPS efforts on the most valuable and vulnerable ground waters.

Coordination with Other Programs

Because CSGWPPs require that States define roles and coordination points between and among ground water-related programs, the CSGWPP will provide a means by which the NPS program will have information about all of the other ground water-related programs. This should decrease unnecessary duplication and increase efficiency in the §319 program. For example, coordination afforded by a CSGWPP should promote better integration of NPS prevention activities and prevention measures under EPA's Pesticide State Management Plan (SMP) approach for protecting ground water from pesticides contamination. Integration between the NPS Management Program's requirements and those of upcoming Underground Injection Control (UIC) Class V regulations and guidance, particularly for agricultural drainage wells, can also be facilitated by the CSGWPP approach. At a minimum, a CSGWPP should ensure that these major national programs are not working at cross-purposes within the State.

Coordinating Grants

The bulk of §319 grants must be used for implementing NPS control activities for either surface water or ground water quality concerns. Considerable and wide-ranging ground water protection efforts have been undertaken through these NPS

NONPOINT SOURCE PROGRAM (continued)

grants, including abandoned well plugging, agricultural drainage well siting and closure, installment of best management practices in the field, and improved septic tank maintenance. Many of these activities would meet the objectives of other EPA programs (e.g., Coastal Nonpoint Programs, UIC, UST, Pesticides, RCRA). CSGWPP coordination of the NPS efforts with the control efforts supported by other programs will provide a vehicle for establishing and focusing joint efforts on highest ground water priority concerns.

EPA's Section 319 grant guidance requires that at least 10% of a State's work program be devoted to addressing priority ground water nonpoint source activities. However, where the requisite information to establish State implementation priorities is lacking, the State is encouraged to use Section 319 grants to further its assessment and characterization of ground water resources and to establish a basis for identifying priority protection needs prior to undertaking any site-specific measures.

NPDES AND INDUSTRIAL PRETREATMENT PROGRAM

Resource-Based Priority Setting in Decision Making

Under the Clean Water Act, EPA and the States regulate facilities that either discharge wastewaters directly to surface waters or discharge to municipal wastewater treatment systems. Direct discharges are covered under the National Pollutant Discharge Elimination System (NPDES), whereas industrial discharges to municipal treatment systems are covered by pretreatment requirements. The primary objective of these regulatory programs is to ensure the attainment of the "designated uses" (e.g., fishable, swimable) of receiving surface waters.

While a number of States have incorporated ground water discharges into their NPDES permits and pretreatment requirements, there is no national requirement to do so. States might consider surface water recharge to valuable ground waters as a designated use for surface water and issue specific NPDES permit requirements designed to assure attainment of that designated use and, thereby, indirectly protect inter-connected high priority ground waters. States could use the resource assessment, source evaluation and priority setting mechanism of CSGWPPs to identify high-priority ground waters that are subject to contamination from closely hydrologically connected surface waters.

Coordination with Other Programs

CSGWPPs can provide a central coordination point for surface water regulators to coordinate with ground water officials from a wide variety of ground water-related programs. For example, a number of facilities with required NPDES or pretreatment permits for surface water protection are also likely to be subject to future RCRA D and SDWA Underground Injection Control Class V Well requirements. The CSGWPP can help a State make integrated environmental management decisions across both ground and surface waters. In other words, States can use their ground water protection authorities in conjunction with the NPDES permitting process to ensure that specific requirements in NPDES permits do not result in unintended contamination of sensitive ground water from practices such as the use of surface impoundments.

STORM WATER PROGRAM

Resource-Based Priority Setting in Decision Making

Industiral storm water discharges to surface waters and discharges from municipal separate storm sewer systems serving populations greater than 250,000, are regulated through National Pollutant Discharge Elimination System (NPDES) permits. Storm water management can affect ground water in a number of ways -- some storm water management practices may be designed to recharge ground water in urban areas as an important means for water supply storage; other storm water controls focus on pollution prevention controls which reduce risks to both surface and ground water; and in some industrial and agricultural situations, storm water collection devices or best management practices (BMPs) may transfer contaminants to underlying ground waters. In any of these cases, this water may eventually re-enter the surface water again as ground water discharges to streams and lakes.

Given the possible inter-connection between storm water management and ground water, it is important to consider potential ground water impacts, particularly where this underlying resource is highly valuable or closely hydrogeologically linked to surface water quality. To address the potential for ground water contamination, storm water BMPs should be developed to reflect States' CSGWPP resource protection objectives and priorities.

Coordination with Other Programs

Coordination within the CSGWPP framework among the NPDES program, UIC Class V program, the NPS program, and the Wellhead Protection Program will help focus efforts to manage cross-media impacts and avoid having major national programs working at cross-purposes within the State.

SEWAGE SLUDGE PROGRAM

Resource-Based Priority Setting in Decision Making

Requirements to protect public health and the environment from the adverse effects of pollutants that may be contained in sewage sludge are authorized by Section 405 of the Clean Water Act. The CWA Sewage Sludge Program has proposed regulations for the final use and disposal of sewage sludge. Requirements already exist under RCRA for sewage sludge that is determined to be hazardous. Sludge determined to be hazardous under RCRA must be managed in RCRA Subtitle C facilities. Sludge disposed in municipal solid waste landfills, which frequently receive sludge from POTWs, must be managed in facilities that satisfy the RCRA Subtitle D regulatory requirements. Both the Subtitle C and D requirements include location standards and ground water monitoring and remediation, if necessary. Some commentators were concerned about possible duplicative regulation. The Sewage Sludge Program and the RCRA Program will coordinate their efforts to alleviate excessive duplication.

Proposed rules on management of sludge under the CWA Sewage Sludge Program in landfills limited to sewage sludge monofills are expected to set limits on concentrations of certain pollutants in sludge placed in monofills so as not to exceed ground water MCLs or contaminate an aquifer with nitrogen. Proposed rules on land application of sludge are expected to include both management practices and national pollutant limits, including pathogen requirements and limitations on the concentrations of certain metals. Sludge application rates also should minimize the amount of nitrogen that passes below the root zone to the ground water. A comprehensive ground water assessment carried out under a CSGWPP will assist the implementation of these requirements by ensuring accurate and timely information about the condition of the ground water resources.

Coordination with Other Programs

The development of priorities through the CSGWPP process will help to coordinate the sewage sludge program with other programs in the State in several ways. Decisions about capacity and siting of RCRA Subtitle D facilities, for example, will affect how sludge is managed. Similarly, decisions concerning discharges into POTWs may affect whether sludge can be used in land application or must be managed in RCRA Subtitle C facilities.

COASTAL ZONE MANAGEMENT PROGRAM

Resource-Based Priority Setting in Decision Making

The Costal Zone Management Act (CZMA) authorizes and supports State programs for protecting the Nation's coastal waters. Amendments to the CZMA in 1990 established a significant initiative to control non-point source pollution to coastal areas. Each State with a federally approved Coastal Zone Management Program must submit a Coastal Nonpoint Program containing the following: 1) provisions for implementing management measures to protect coastal waters; 2) identification of land uses which may cause or contribute significantly to coastal waters degradation; 3) identification of critical coastal areas adjacent to coastal waters which are impaired or threatened by NPS pollution; 4) provisions for implementing additional management measures for land uses or critical coastal areas as necessary to achieve and maintain water quality standards; 5) programs to provide technical assistance to local governments and the public; 6) public participation opportunities in all aspects of the program; 7) modification of coastal zone boundaries as necessary to implement NOAA's recommendations; and 8) enforceable policies and mechanisms to implement the management measures. EPA plays a critical role in this initiative by having the responsibility to develop guidance specifying management measures for controlling the various nonpoint sources in coastal areas. In addition, both EPA and the National Oceanic and Atmospheric Administration (NOAA) must approve State Coastal Nonpoint Programs.

CSGWPPs have a primary function of identifying ground waters of high use, value, and vulnerability, which would include those ground waters that are closely hydrogeologically linked to coastal waters and which are capable of carrying contaminants to sensitive coastal waters. The Comprehensive Program can assist State Coastal Nonpoint Programs by identifying where ground waters play a significant role in coastal waters protection.

Coordination with Other Programs

Strong potential linkage exists between State Coastal Nonpoint Programs and CSGWPPs. For example, in many coastal areas, which include estuaries, ground water nutrient contribution (especially nitrogen) is contributing significantly to eutrophication problems of coastal waters. Sources of this ground water contamination can include septic tanks from coastal developments or fertilizer use in agricultural areas adjacent to coastal land.

The CSGWPP can also assist in coordinating a number of other EPA programs (e.g., RCRA, CERCLA, Pesticides) to reduce coastal water impacts from toxic chemicals by protecting, as a priority, ground water closely linked to coastal waters.

TOXIC SUBSTANCES CONTROL PROGRAM

Resource-Based Priority Setting in Decision Making

EPA is interested in applying its capabilities and authorities under the Toxic Substances Control Act to address local environmental needs and problems. CSGWPP priorities provide an immediate context in which EPA and States can test the geographically-specific applications of certain TSCA authorities. Presently, a number of TSCA authorities can support the Strategic Activities of a CSGWPP, including:

- EPA toxicity determinations, exposure determinations, and risk assessment capabilities under TSCA could support CSGWPP priority-setting. For example, various EPA capabilities, such as testing authorities, Graphic Exposure Modeling Systems, and others, could provide information to assist States in identifying risk-based geographic priorities for ground water protection and in establishing ground water protection priorities across contamination sources.

- EPA risk reduction decision-making capabilities could support the pollution prevention components of a CSGWPP. EPA could perform Substitute Analyses, Cost/Benefit Analyses, and Pollution Prevention Technical assessments to assist with States' efforts to reduce or eliminate potential environmental releases that may adversely affect ground water quality. These EPA capabilities could be directed towards differential management of ground water under a State's CSGWPP by focusing on activities that are located in geographic proximity to the State's most valuable and vulnerable ground waters. These capabilities could also be used to assist a State in implementing pollution prevention priorities across sources.

- EPA risk management capabilities could also be used to support CSGWPP contaminant control efforts. TSCA Section 6(a) provides EPA with the authority to regulate chemicals that present an unreasonable risk of injury to human health or the environment. EPA could use this authority to address chemicals of concern in targeted geographic areas which encompass a State's high priority ground waters. TSCA Section 6(a) offers a wide range of possible actions to prevent pollution from prohibiting the manufacture, sale, or use of a chemical to recordkeeping and labeling requirements which could be selectively applied in specific geographic areas to protect high priority ground waters.

At this time, EPA's efforts to apply TSCA capabilities to local problems will take the form of pilot projects. States need to work with EPA Regional Offices to identify opportunities within the CSGWPP framework which would test the TSCA approach.

RADIATION PROGRAM

Resource-Based Priority Setting in Decision Making

EPA is responsible for development of federal guidance on radiation protection and promulgates standards and regulations for exposure to radionuclides. In particular, EPA provides support to States in radiation monitoring, research, training, and other forms of technical assistance; develops standards for cleanup, management, and disposal of uranium and thorium mill tailings and high-level, low-level, and transuranic radioactive wastes; and assists in the promulgation of standards for the control of radionuclides in drinking waters and in all types of wastes. EPA's standards cover activities of other federal agencies, including DOE and DoD, and activities regulated by NRC.

Resource assessment, source evaluation, and priority setting mechanisms developed through CSGWPPs should be used by States and other federal agencies to implement the ground water protection and remediation standards contained in EPA regulations involving radionuclides. For example, EPA regulations in 40 CFR Part 192 on uranium tailings management at active uranium processing facilities call for evaluation of the hydrogeology of the site, including determination of background ground water quality, rate and direction of migration of contaminated ground water, and extent of the contamination. The regulation calls for remedial action decisions to be made on a case-by-case basis, taking into account, among other things, present and future use of the aquifer and the degree to which human exposure is likely to occur. NRC implements requirements for active uranium processing sites that incorporate ground water protection standards that are comparable to requirements developed under RCRA Subtitle C. A comprehensive characterization and assessment of the resource will facilitate decision-making affecting ground water for such sites.

Coordination with Other Programs

Regulatory authority over some possession and use of radionuclides, with some exceptions, such as commercial nuclear power reactors and high level radioactive waste disposal facilities, has been relinquished by agreement between the Nuclear Regulatory Commission and the States to over half the States (Agreement States). In such States, siting of facilities involving radionuclides and design and operational requirements established by facility licenses are controlled and directed by the States. In States where NRC retains primacy, regulatory limits for some types of licensed nuclear facilities (e.g., uranium mill tailings impoundments) set specific design and operational criteria for licensed facilities to protect ground water and maximum limits are established for ground water contamination. Facilities in Agreement and non-Agreement States are subject to standards issued by EPA under the Uranium Mill Tailings Radiation Control Act and the Atomic Energy Act and implemented by Agreement States or by NRC in non-Agreement States. Implementation of a CSGWPP will enable States to begin to coordinate implementation of such standards and

RADIATION PROGRAM (continued)

requirements more completely and efficiently by ensuring that they address a consistent ground water goal and priorities and share a common assessment of the

WETLANDS PROGRAM

Resource-Based Priority Setting in Decision Making

Because wetlands act as natural pollutant filters and as a source of aquifer recharge, they often are closely linked to the quality and quantity of ground water resources. Wetlands occurring along rivers and streams probably are the most important types of wetlands for ground water recharge. This recharge occurs most often in the wet portions of the year during overbank flooding. Ground water, in turn, may be discharged back to the wetlands and river bed during dry years. The Everglades are a good example of the linkage between a river and a wetlands system and its underlying ground water, the Biscayne aquifer. Florida is acquiring approximately 41,000 acres of partially drained wetlands in the Everglades and restoring them to regain their water quality and recharge benefits.

Several EPA programs are aimed at protecting and restoring wetlands. In some cases, ground water resources are considered when establishing wetland program priorities. For example, EPA is assisting States with the development of water quality standards for wetlands which include methods for designating wetlands uses based on function and value. Currently the State of Michigan is considering designating wetlands as Outstanding Natural Resource Waters if the wetlands are connected to a municipal ground water supply.

Knowledge of State ground water resource priorities would be useful to the wetlands program in administering its responsibilities under CWA §404. For example, under §404, EPA has regulatory responsibility for reviewing permits for the discharge of dredge or fill materials into waters of the United States, including wetlands. The presence of high-priority ground water resources could be a consideration in review of these permits. Also under §404, EPA participates in Advance Identification (ADID) studies to identify waters as possible disposal sites and to identify areas that are likely to be unsuitable for disposal. The results of these studies provide the public and regulated community with an indication of whether a §404 permit will likely be received. Recently, in Bucks County, Pennsylvania, ground water withdrawal and its impact on local water quality was identified as one of the key factors that prompted an ADID.

Ground water protection also can be enhanced by identification and protection of wetlands that recharge and protect ground water. For example, if such wetlands are identified as part of the CSGWPP, their characteristics will be known for wellhead protection programs.

WATERSHED PROTECTION APPROACH

Resource-Based Priority Setting in Decision Making

The Watershed Protection Approach is a resource-oriented framework supported by EPA for focusing and integrating current efforts and for exploring innovative methods to achieve maximum efficiency and effectiveness in water quality protection. The term watershed refers to a geographic area in which water, sediments, and dissolved materials drain to a common outlet -- a point on a larger stream, a lake, an underlying aquifer, an estuary, or an ocean. An aquifer or part of an aquifer, such as a wellhead protection area, can be a watershed. The Watershed Protection Approach is not a new "program," but an effort to target appropriate tools and resources from existing programs to the needs within a particular watershed. The Watershed Protection Approach is built on three main principles: risk-based geographic targeting, stakeholder involvement, and integrated solutions. Presently a number of state projects and programs using the Watershed Protection Approach have been implemented.

The ground water assessment and characterization efforts carried out under the priority setting Strategic Activity of a CSGWPP provide a framework for States to target aquifers or portions of aquifers for the Watershed Protection Approach. In addition, watershed efforts aimed at surface water protection can benefit from information developed under a CSGWPP on those ground waters that are closely hydrogeologically linked to the targeted surface waters. Such information will assist in determining the influence of ground waters on these watershed protection areas.

Coordination with Other Programs

Both the Watershed Protection Approach and CSGWPP are intended to focus the efforts of several programs on protection of high-priority water bodies. CSGWPPs should be considered as an important tool in the Watershed Protection Approach. CSGWPPs will focus those programs with primary ground water protection responsibilities on protection of important watershed areas, whether they are aquifers, portions of aquifers, or surface water bodies that are closely hydrologically linked to ground waters.

The 1992 Agency Operating Guidance states that EPA will focus actual protection and restoration activities in specific watersheds, and several programs have recognized the importance of a watershed approach in their guidance documents. This emphasis will be compatible with and supportive of CSGWPP implementation efforts. For example, in the Region 3 Mill Creek Pequea Creek Watershed, nonpoint source resources have been made available to farmers to implement BMPs to reduce nutrient, bacteria, and pesticide contamination of surface waters and ground water.

POLLUTION PREVENTION PROGRAM

Resource-Based Priority Setting in Decision-Making

Priority setting within the CSGWPP will provide a means for targeting specific geographic environments for the implementation of pollution prevention techniques, technologies and work practices. Focusing pollution prevention efforts in high risk, high value areas will yield the greatest benefits to States as they work to protect their ground water resources.

Coordination with Other Programs

The Ground Water Protection Strategy and the CSGWPP focus on protecting ground water from contamination. One of the most effective means of protecting ground water supplies is through pollution prevention. EPA's Pollution Prevention program has an vital role to play in the CSGWPP as States establish priorities and begin to integrate various ground water protection efforts.

Pollution Prevention programs focus primarily on preventing risks rather than addressing pollutants after they have been created and emitted to the environment. While some large industries have been quick to seize upon the pollution prevention concept, many small, local businesses are still relatively unaware of how pollution prevention practices can benefit them. The CSGWPP will encourage broader industry and public participation in pollution prevention activities through State priorities that emphasize the role of pollution prevention in protecting ground water quality.

The CSGWPP will foster greater emphasis on pollution prevention at the State and local levels and will also help Pollution Prevention programs and activities to be coordinated with other ground water protection programs. As States establish priorities and goals, they will work to coordinate the efforts of ground water protection programs and build the pollution prevention concept into them. This process will also be driven by the on-going interest in promoting pollution prevention in media-specific grant guidance.

Coordinating Grants

The federal Pollution Prevention grants program "Pollution Prevention Incentives for States" provides grants to States to support State, Tribal, and local pollution prevention programs that address the reduction of pollutants across all environmental media: air, land, surface water, ground water and wetlands. This grant funding could be used to support the following CSGWPP activities: defining roles and responsibilities of key participants of proposed projects and promoting coordination with pollution prevention activities already underway in the State; developing and implementing prevention programs for reducing or eliminating pollution; collecting and analyzing data; developing mechanisms to measure progress in pollution prevention; and

POLLUTION PREVENTION PROGRAM (continued)

conducting public education and outreach. Grants may also be used to initiate demonstration projects that test and support innovative pollution prevention approaches and methodologies which may eventually be integrated into prevention programs.

2. LINKAGE TO OTHER FEDERAL AGENCY PROGRAMS

This section provides an agency-by-agency discussion of the linkages between the CSGWPP approach and the ground water-related programs of six federal agencies. For each agency, a brief description of the agency's program is followed by a discussion of ways in which that agency could support or make use of the CSGWPP approach.

This section discusses the programs of selected agencies that work either to protect or to restore ground water quality, but does not include all agencies with ground water-related activities. There are no descriptions yet for the other federal agencies involved in ground water. These agencies include:

- United States Department of Agriculture;
- United States Department of Defense;
- United States Department of Energy;
- United States Department of the Interior;
- United States Department of Transportation; and
- United States Nuclear Regulatory Commission.

The descriptions are arranged alphabetically.

U.S. DEPARTMENT OF AGRICULTURE

Programs Related to Ground Water Protection

The United States Department of Agriculture (USDA) is actively involved in a coordinated, government-wide initiative addressing water quality. This initiative focuses on nonpoint source pollution concerns identified by States under requirements of Section 319 of the Water Quality Act (See Discussion on EPA's Nonpoint Source Program). One of the main objectives of the Water Quality Initiative is to provide farmers, ranchers, and other land managers with information necessary to voluntarily adopt improved, environmentally-sound management practices which do not sacrifice profitability. This initiative is under the leadership of the USDA and includes EPA, USGS, and the National Oceanographic and Atmospheric Administration (NOAA). The central objectives of the Initiative include the following:

- Protecting the Nation's ground water resources from contamination by fertilizers and pesticides without jeopardizing the economic vitality of U.S. agriculture;

- Developing technically and economically effective agrichemical and agricultural production strategies that enhance or protect the quality of our water resources; and

- Inducing the adoption of enhancement or protection strategies at significant levels in problem areas.

Of the 36 operating entities within the USDA, ten share responsibilities for implementing the President's Water Quality Initiative. Of these entities, eight USDA agencies are particularly relevant for CSGWPPs and are discussed below.

The Agricultural Stabilization and Conservation Service (ASCS) plays a central role in transfer of payments for USDA commodity support programs. Starting with the 1985 Food Security Act, cross-compliance provisions require recipients of certain USDA assistance programs to prepare and implement conservation plans, whose water quality protection features have become steadily more important. The ASCS also administers the Water Quality Incentive Projects (WQIP) authorized by the 1990 Farm Bill. The WQIP provides both technical and financial assistance for producers to implement management systems to reduce nonpoint source agricultural problems.

The Agricultural Research Service (ARS) administers fundamental and applied research that addresses a wide range of agriculture-related issues, including the conservation of soil, water, and air. For example, ARS has developed a number of fate and transport models that focus on pesticides in ground water.

U.S. DEPARTMENT OF AGRICULTURE (continued)

The Cooperative State Research Service (CSRS) funds research through the State Agricultural Experiment Stations for the advancement of science and technology in support of agriculture. CSRS funds a number of special research programs, including a ground water research program, a low-input agricultural program, and a competitive grant program in natural resources, water quality, ecosystems, and wetlands. CSRS also is responsible for developing a forum for coordination between the State Agricultural Experiment Stations, the USDA, and other federal agency scientists.

The Extension Service (ES) is the education bureau of the USDA and serves as the federal partner in the Cooperative Extension System. More specifically, the ES coordinates its activities with State land grant universities and local county extension offices to conduct educational and outreach programs.

The National Agricultural Library (NAL), through its Water Quality Information Center, identifies, acquires, and organizes information related to agriculture and ground water quality. The center facilitates access to this information through various outreach mechanisms, such as the Water Information Network (WIN), an electronic bulletin board system.

The Soil Conservation Service (SCS) provides leadership and administers programs to help people conserve natural resources and the environment. SCS is expanding and improving technical assistance for water quality utilizing local soil and water conservation districts. As part of USDA's Water Quality Initiative, SCS is providing increased technical assistance for selected agricultural water sheds or aquifer-recharge areas called "Nonpoint Source Hydrologic Units Areas" (HUA's). These address agricultural nonpoint pollution concerns identified by states under Section 319 of the Water Quality Act of 1987. SCS is also increasing technical assistance to ongoing interagency regional Water Quality programs and designated estuaries of national significance. SCS provides assistance to State agencies in developing both surface and ground water practices, programs, and policies.

The Economic Research Service (ERS) and the National Agricultural Statistics Service (NASS) work with State departments of agriculture to gather estimates on production characteristics for major farm commodities. Currently, the ERS and NASS are carrying out a new program to gather data on the use of pesticides and other agricultural chemicals. As this program expands, it should provide a more direct means of estimating agricultural pesticides use patterns in a State.

The United States Forest Service (FS) is the national leader in forestry through its management of the National Forest System. A key objective of the FS is to promote natural resource conservation through cooperative efforts with other federal, State, and local agencies. The FS also provides technical assistance to State forestry programs in order to protect and improve the quality of air, water, and soil resources.

U.S. DEPARTMENT OF AGRICULTURE (continued)

Potential for Coordination of USDA Programs with Comprehensive State Ground Water Protection Programs

The ASCS's ongoing Agricultural Conservation Program (ACP) provides cost-share assistance for implementing a variety of water-quality oriented best management practices (BMPs). These cost-share funds can be used by States or local agencies to address priorities established in CSGWPPs. In addition, coordination of projects funded by USDA through a State's CSGWPP can result in the most effective and efficient use of these funds. Other relevant ASCS programs include the Wetland Reserve, Water Bank, Conservation Reserve, and Forestry Incentives programs.

ASCS's cost sharing programs also seek to provide financial assistance to producers in the hydrologic unit and demonstration project areas. This financial assistance is tied to education and technical assistance to encourage adoption of environmentally sound practices and the improvement and protection of water quality within a targeted area. For example, the Water Quality Incentives Projects provides technical and financial assistance for farm level planning to reduce the use of fertilizer, other crop nutrients, and pesticides in order to achieve water quality objectives, such as ground water protection. In addition, testing of rural domestic wells and record-keeping on tillage, pesticide use, and nutrient use are eligible for WQIP funding. CSGWPPs could help USDA by providing ground water priority areas for targeting and by helping to facilitate transfer of data on agricultural practices from ASCS to State agencies that implement SMPs, NPS, WHP, and PWS programs. Farmers participating in this effort receive incentive payments from USDA to compensate them for additional production costs and/or the value of foregone production.

The 1990 Farm Bill authorizes USDA to provide financial incentives to farmers for enrolling land that includes vulnerable ground and surface waters into the Conservation Reserve Program. To the extent that funds are available, the program will be used to enroll areas such as wellhead protection areas, and other areas that would contribute to water quality in permanent cover (grass or trees). States may be able to work with USDA to include geographic priorities identified in their CSGWPPs under the Conservation Reserve Program's water quality related criteria. Farmers then could address ground water contamination through the removal of lands from production in exchange for financial incentives.

ARS and CSRS could support research that focuses on the reduction of pesticides and nitrates in ground water and other agricultural-related ground water protection projects. All States' CSGWPPs could benefit from such fundamental ground water protection research. Efforts in this areas could also be coordinated with the Pesticide State Management Plan approach. In addition, CSRS's efforts to coordinate related research could be used to ensure that unnecessarily duplicative research projects are not being funded and that research is disseminated to other interested groups and State ground water managers.

U.S. DEPARTMENT OF AGRICULTURE (continued)

Through the ES and the State cooperative extension offices, USDA could work to disseminate the new methods, techniques, and practices designed to reduce the potential for agriculture-related contamination of water resources (i.e., biological controls, integrated pest management, and improved methods of pesticides application). A State's CSGWPP could assist ES and State offices in setting priorities for the education of farmers, ranchers, and other land managers based on the use, value, or vulnerability of the resource.

Like the ES, the SCS could work to disseminate information and best management practices to ensure adequate protection of ground water resources from agricultural contamination based on priorities established under a State's CSGWPP. The SCS also develops standards and specifications for proper pesticide use practices. This information could be of considerable benefit in developing CSGWPPs and in educating farmers and other land use managers. SCS could geographically target technical assistance efforts in certain areas in coordination with a States CSGWPP.

NAL-produced bibliographies, covering various aspects of ground water and agriculture, could be used by state CSGWPPs to locate information from throughout the country (and world) that may be useful in guiding the direction of state programs. State CSGWPPs could help strengthen NAL's ground water quality collection and bibliographic database by providing copies of state documents that address agriculture and ground water quality issues.

ERS's and NASS's data collection and analysis efforts focus on identifying the economic consequences of changes in the use of pesticides and fertilizers and the implementation of alternative farming practices. Such research efforts could assist a State in identifying, developing and implementing the most cost effective protection and preventive measures associated with pesticides and agricultural chemicals possible in its CSGWPP.

Through its outreach efforts, the FS could contribute to forestry education and technical assistance aimed at protecting ground water resources from pesticides and silvicultural practices. These efforts could be coordinated and targeted using the priorities established under a State's CSGWPP. FS also conducts a number of activities that must be managed carefully to avoid adversely impacting the ground water resources in a State. For example, clear cutting in National Forests by the FS could result in increased runoff and siltation of nearby surface water bodies that can be linked to ground water. Proper and timely reforestation of these lands can significantly reduce run off and the potential for contamination of water resources. When such activities are planned, FS could coordinate activities through a State's CSGWPP to address priorities for protection of water resources within the State. The FS could also use the priorities established in a State's CSGWPP to make land use decisions in National Forests.

U.S. DEPARTMENT OF AGRICULTURE (continued)

Currently, successful coordination between USDA and EPA and several States is beginning to occur with the development and implementation of Pesticides State Management Plans to limit pesticide contamination of ground water (See Discussion on EPA's Pesticides State Management Plan Program). Coordination efforts to protect ground water under the SMP program include conducting basic research, coordinating of data collection and analysis, transferring appropriate technologies, and providing financial assistance.

U.S. DEPARTMENT OF DEFENSE

Programs Related to Ground Water Protection

The Department of Defense (DoD) has its environmental goal to plan, initiate, and execute all actions and programs to minimize adverse effects on the quality of the environment without impairing the defense mission. Several components of the DoD are currently responsible for guiding and promoting these activities.

The Deputy Assistant Secretary of Defense (Environment) (DASD(E)), Office of the Secretary of Defense (OSD), sets the overall direction for environmental activities by developing policy guidance on environmental protection and regulatory compliance. The May 1992 Report on Environmental Requirements and Priorities prepared by DASD(E) summarizes DoD's principal policy thrusts, which include the following: compliance with existing laws and regulations; remediation of formerly and presently used DoD sites; increased efforts devoted to pollution prevention; development of an inventory of, and conservation and protection plans for, natural and cultural resources; development of outreach efforts; augmentation of the frequency and scope of self-policing activities to ensure timely and effective compliance and protection of human health and the environment; development of an enhanced environmental ethic across all DoD activities; development of ways to increase DoD's role as a model for environmental compliance and protection; and development of productive cooperative partnerships both domestically and internationally.

Implementation of environmental activities is largely carried out by the four military services -- the Army, Navy, Air Force, and Marines -- as well as by the defense agencies, particularly the Defense Logistics Agency. Two centrally funded environmental programs are the Defense Environmental Restoration Program (DERP), involving the assessment and cleanup of contamination at DoD installations and formerly used defense sites, and the Legacy Program, involving improved management of natural resources on DoD lands.

The Defense Environmental Restoration Program (DERP) has two principle components -- the Installation Restoration Program (IRP) and the Other Hazardous Waste Program (OHWP). The IRP investigates and, as necessary, performs site cleanup at DoD installations and at properties formerly owned or used by DoD. The IRP conforms to the requirements of the CERCLA National Oil and Hazardous Substances Pollution Contingency Plan. Under IRP, activity is occurring at 94 DoD installations with sites on the National Priorities List (NPL). Water-related activity at these sites includes ground water treatment (63 activities), long-term monitoring (52 activities), and provision of alternate water supplies/treatment (33 activities). The OHWP addresses waste-related issues that do not involve CERCLA cleanups.

Current DoD programs that address threats to ground water include the development of unique water treatment processes for uniquely military materials; and developing new methods of treating explosives-contaminated soils, improving

U.S. DEPARTMENT OF DEFENSE (continued)

wastewater treatment plants, upgrading storage areas for materials that could leach to ground water, updating plans to deal with spills, replacing or retrofitting underground storage tanks, and closing and removing abandoned tanks. A current focus of DoD is on pollution prevention.

Each of the services has implemented programs to address environmental issues. The Army, for example, through its Environmental Compliance Achievement Program (ECAP), seeks to identify and eliminate obstacles to environmental compliance, institute programs to determine compliance problems, and ensure that corrective actions are implemented. The Army ECAP will address compliance through environmental assessments at Army facilities, a profile and mechanism to measure progress toward compliance, and integrated management of all environmental programs.

Each service, in its environmental activities, carries out programs involving, among others, water quality management, drinking water, and underground storage tanks, but none of the services has singled out ground water protection as a separate program area. The Army's current program for water quality management, however, does call for control or elimination of all sources of surface and ground water pollution. Approximately 85 Army installations within the U.S. obtain some or all of their water supply from ground water wells, and 51% of the Army's drinking water comes from ground water sources. The Army therefore maintains a Water Resources Management Program to sample and analyze water supplies and ground water monitoring programs and to evaluate aquifer quality and identify potential drinking water quality problems. The Army also participates in the Wellhead Protection Program. The Navy's Drinking Water Management Program likewise seeks to protect ground water resources, especially those with the potential to be used as a potable water supply, at on shore Naval installations. Similarly, the Air Force and Marines address ground water in the context of drinking water sources.

Potential for Coordination of DoD Programs with Comprehensive State Ground Water Protection Programs

DoD's May 1992 Report to Congress on Environmental Planning and Priorities notes that an important future goal will be development of a common understanding across DoD about how to measure requirements and determine overall priorities. DoD plans to work with EPA and other agencies "to define risk-based priority setting methods to supplement the current judgmental approaches and provide a more analytic foundation to assist in environmental decision making." (p. 1-19) As States develop priorities for ground water protection and remediation in CSGWPPs, DoD could begin to take these priorities and priority-setting mechanisms into account.

Development of CSGWPPs could enable DoD components such as the Defense Logistics Agency, which is responsible for environmental compliance and restoration

U.S. DEPARTMENT OF DEFENSE (continued)

at a number of major and tertiary level logistics installations, to control its costs by working with State and local jurisdictions. Because DLA is also responsible for disposal of hazardous materials through its Defense Reutilization and Marketing Service, siting of certain facilities, and similar duties, DLA has been particularly concerned by what it has seen as a "trend toward more regulation by State or local jurisdictions." (p. 6-4) Coordination and integration of State and local programs through locally-based priority setting in CSGWPPs may provide a more focused and consistent set of environmental requirements pertinent to DoD components.

In an effort to identify ways of improving federal-State coordination of environmental response actions and streamlining cleanup at bases to be closed or realigned, the Defense Environmental Task Force recommended eliminating overlapping regulatory requirements and adoption of measures for improving coordination among federal and State decision makers. These recommendations parallel the CSGWPP approach. In addition, as each service addresses issues of environmental compliance at its facilities, the existence of a CSGWPP in the host State could enable the service and the facility to address a more consistent and coherent set of State requirements for ground water protection.

CSGWPPs also could provide a source of coordinated input on the part of the States into the Interagency Agreements (IAGs) with other federal and State agencies that DoD must negotiate under SARA §120. These IAGs establish comprehensive installation-specific arrangements for proceeding with DoD's waste cleanup activities under the Installation Restoration Program. IAGs, which are subject to public review and comment, provide a strong management tool for resolving issues arising from overlapping or conflicting jurisdictions. The IAG negotiation process involves personnel from the applicable DoD Component, the EPA Regional Office, and State environmental authorities. IAG negotiation could be an appropriate forum for negotiating the implementation of CSGWPP as it relates to cleanup of DoD installations. DoD emphasizes the involvement of State agencies in the IRP process. As of June 1992, DoD had entered into Defense and State Memoranda of Agreement (DSMOA) with 40 States. Through the DSMOA, almost $18 million was provided to State agencies in FY92 to allow States to participate in the evaluation and oversight of IRP activities, including those related to water resource management. In the future, CSGWPPs could help provide a focus and set priorities for State input into the IRP process.

Finally, DoD is in the process of creating regional environmental coordination offices that could serve as points of contact for the State CSGWPP primary points of contact. These offices are intended to serve a number of coordinating functions among the military services and DoD installations. The areas served by these offices will correspond to the EPA Regional Offices. Such offices could provide a focus for DoD involvement in State CSGWPPs.

U.S. DEPARTMENT OF ENERGY

Programs Related to Ground Water Protection

Department of Energy (DOE) Orders, DOE's internal system of regulation, require compliance with all applicable environmental requirements at all DOE sites and facilities, and set forth overall DOE policy for ensuring and enhancing such compliance. Regarding ground water protection, Order DOE 5400.1, entitled "General Environmental Protection Program," requires that each DOE site have a Ground Water Protection Management Program (GWPMP) in place. The GWPMP is a management tool for ensuring effective compliance with Federal and State ground water protection requirements, sitewide coordination of all ground water protection and remediation activities, and long-term ground water protection planning to prevent future contamination. Order DOE 5400.1 also requires that a sitewide Ground Water Monitoring Plan be developed to ensure that monitoring programs are designed to meet regulatory requirements and to provide a system of environmental surveillance to prevent future contamination threats.

Order DOE 5400.5, "Radiation Protection of the Public and the Environment," addresses DOE operations involving radioactive materials that may not be addressed by RCRA, CERCLA, TSCA, or other EPA-administered regulatory programs. DOE 5400.5 requires use of a Best Available Technology treatment evaluation process to ensure that liquid wastes containing radionuclides are treated to "As Low As Reasonably Achievable" (ALARA) levels to prevent ground water contamination. The Order also contains numerical concentration guides for a wide range of radionuclides. These guides may be used to assess potential doses from exposure through various routes including ingestion of drinking water.

In addition to the Order requirements, DOE is currently developing a Ground Water Protection Policy to provide a framework within which technical and regulatory compliance issues can be addressed throughout the Department in a coordinated and consistent manner to enhance ground water protection. The Policy, when finalized, will apply to all DOE and DOE contractor activities, and will provide direction for implementing the ground water protection requirements of existing DOE Orders.

Programs Related to Environmental Restoration

DOE's Office of Environmental Restoration and Waste Management (EM) was created to address environmental problems through corrective activities, waste management, pollution prevention, environmental restoration, and technology development. The overall EM strategy focuses on three approaches:

- First, where risk assessment shows an actual or potential threat to human health and safety -- do immediately whatever is possible to reduce, mitigate, stabilize, and confine the threat;

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- Second, where no one knows how to solve a problem -- act decisively to develop technology and methods to correct the problem; and

- Third, where compliance and cleanup must proceed with or without next-generation technologies -- plan, with affected parties and within the provisions of Interagency Agreements, the work to be accomplished and its schedule.

EM's corrective activities are aimed at bringing all DOE facilities and sites into compliance and operating them in accordance with applicable laws and regulations designed to protect public health and the environment. Corrective activities range from instituting programs to reduce or eliminate polychlorinated biphenyls (PCBs) to the removal of leaking underground storage tanks. The efforts to bring all facilities into compliance are driven by a number of federal and State statutes, regulations, and DOE orders. In order to comply with the multiple environmental statutes and regulations governing DOE environmental activities, DOE often enters into negotiation with federal and State regulators with the intent of reaching agreement on activities for achieving and maintaining compliance with applicable regulations.

EM's waste management objective is to "treat, store, and dispose of hazardous, radioactive, and mixed waste in an environmentally sound and effective manner." The Waste Operations Program is now focusing on ensuring adequate, permitted storage capacity for existing waste and on developing new storage, treatment, and disposal facilities. In addition, EM is constructing and testing new facilities for treatment and disposal of wastes.

DOE is also moving forward with its pollution prevention program. A variety of programmatic and technical activities are occurring throughout DOE facilities and sites. In addition, DOE is working to minimize the generation of new waste. Currently, DOE is working to establish reasonable quantitative waste minimization goals, improve field office reporting, and issue guidance to promote waste minimization throughout its operations.

The objective of DOE's Environmental Restoration Program is to "contain known contamination at inactive sites and vigorously assess the uncertain nature and extent of contamination at other sites to enable realistic planning, scheduling, and budgeting for cleanup." The goal of each environmental restoration activity is to ensure that the risks to the environment and to human health and safety posed by inactive and surplus facilities are either eliminated or reduce to prescribed, safe levels. Currently, EM is emphasizing the assessment of the extent and nature of contamination. Closures and interim remedial actions will also be undertaken in the short term. Following these assessment activities, full remediation will occur with site monitoring continuing after cleanup.

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DOE recognizes that a significant impediment to achieving its environmental management goal is created by the constraints and limitations associated with available technology. As a result, EM is focusing on the development and implementation of "innovative, cost-effective technologies to facilitate compliance with applicable laws, regulations, and agreements and to minimize the generation of waste." The Technology Development Program (TDP) is designed to ensure that new technologies are available to the Environmental Restoration and Waste Operation Programs. In the restoration area, the TDP focuses in the near term on providing technologies for site investigation and the study of remediation alternatives.

Potential for Coordination of DOE Programs with Comprehensive State Ground Water Protection Programs

DOE's environmental management strategy recognizes the importance of managing environmental resources based on unique regional considerations and emphasizing activities that prevent future contamination. For each facility, DOE develops a ground water plan that assesses and characterizes the ground water resource in and around the facility. These ground water plans, in addition to risk assessments, assist DOE facilities in developing and setting priorities to reduce, mitigate, stabilize, and confine the threat associated with the treatment, storage, and disposal of hazardous or radioactive materials and the clean-up of contaminated sites. Such an approach to setting priorities is consistent with the overall CSGWPP approach, although DOE's priorities address only those sites within a DOE installation.

DOE is currently in the process of bringing all operating facilities into compliance with applicable laws and regulations and completing the cleanup of the 1989 inventory of contaminated inactive sites and facilities by the year 2019. This process involves coordination with EPA, other federal agencies, and several States, and includes addressing the requirements of several federal and State laws, regulations, and programs (including RCRA Subtitles C and D, CERCLA, SDWA UIC, SDWA WHP, CWA, UMTRCA, FIFRA, TSCA, NEPA, and others). For DOE sites on the CERCLA National Priorities List, DOE coordinates CERCLA and RCRA cleanup activities through site-specific Interagency Agreements (IAGs) with EPA and the affected State. A State's CSGWPP could outline and document coordination across State and EPA programs. Such an understanding of the relationship between these authorities could allow DOE, a State, and EPA to more efficiently and effectively negotiate IAGs and meet all applicable environmental regulations.

DOE collects and manages a significant amount of ground water data that could be useful to a State in developing and implementing its CSGWPP. For example, DOE undertakes an assessment and characterization of ground water resources for each facility. Following remedial or corrective actions, DOE monitors the ground water to determine contaminant levels. Each DOE site prepares an Annual Site Environmental Report containing ground water monitoring data and descriptions of the

U.S. DEPARTMENT OF ENERGY (continued)

monitoring network design, which DOE provides to State and federal agencies. DOE could coordinate its ground water data with other State and federal agencies. Even though DOE's information will relate to a limited geographic area of a State, the State could use the maps to infer hydrogeologic settings for nearby areas that may have few or no data points.

DOE is actively investigating new technologies for waste management, waste minimization, and environmental restoration. DOE will develop these improved technologies at facilities around the country. These new technologies will benefit ground water protection and CSGWPPs as they become available for other protection and remediation activities. DOE could work with a State to demonstrate the application of these new technologies to ground water management. For example, DOE's Savannah River Facility has successfully installed and is operating an integrated demonstration for remediation of volatile organic compounds (VOCs) in the vadose zone. This technology works through a combination of airstripping and directional drilling technologies and makes VOC removal faster and cheaper. DOE expects savings in the millions of dollars from this particular technology. All States and the CSGWPP approach will eventually benefit from the development of such improved technologies.

While DOE supports the general ground water protection principles outlined in EPA's Ground Water Strategy for the 1990s, the Department believes that States should base ground-water protection priorities on the characteristics of the ground water, rather than on facility ownership. Such an approach would ensure consistent ground water quality management policies from site to site. DOE expects that the CSGWPP approach will provide a coherent and consistent approach to ground water protection, based on the resource value, and can provide a mechanism by which DOE can incorporate State ground water priorities into sitewide ground water protection activities.

U.S. DEPARTMENT OF THE INTERIOR

Programs Related to Ground Water Protection

The Department of the Interior (DOI) is charged with conserving and managing nationally owned public lands and natural and cultural resources, including water resources. DOI directly sets policy and management priorities for these resources. As the manager of water resources on public lands, as well as through its responsibilities for conservation and development of water and mineral resources, DOI implements reclamation of arid lands in the West through irrigation, and trust responsibilities for Indian and other lands. Also, DOI influences how States and other federal agencies set resource-based priorities through direct example and cooperative decision making.

Several organizational units within DOI directly or indirectly influence the management and use of ground and surface water resources. The organizational units within DOI are involved with a wide array of activities that influence how other federal agencies and States manage water resources. These activities range from investigative research to program planning and data management.

The U.S. Geological Survey (USGS) collects, evaluates, and disseminates information on the availability, quantity, quality, and use of the Nation's surface and ground water resources and conducts water-resources investigations and research. Much of the work of the USGS is conducted in cooperation with over 1,000 State and local cooperating agencies through more than 200 field offices. The USGS routinely gathers information on ground water levels from more than 35,000 wells, and ground water quality information from more than 9,000 wells each year through its Hydrologic Data Collection program. This information is used to meet the needs of federal, State, and local governments, the private sector, academia, and the general public. Studies include characterizing aquifers, modeling their behavior under different patterns of stress, mapping recharge areas, studying the interactions between surface water and ground water, and estimating ground water use.

In addition to its intensive State-oriented hydrologic investigations, the USGS also has several nationwide investigative programs that seek to provide a national perspective on water-resource conditions. The National Water Quality Assessment (NAWQA) program, which began in 1986, seeks to describe the status and trends in the quality of the Nation's ground water and surface water, and to provide a sound understanding of the natural and human factors affecting the quality of these resources. Investigations of regional stream-aquifer systems covering thousands to several tens of thousands of square miles are being conducted on a rotational basis for 60 key areas located throughout the United States. A wide array of water-quality information that will benefit ground water protection efforts will be provided by the NAWQA program. This includes the regional and national extent and severity of contamination of the Nation's ground water quality, and a determination of the relative

U.S. DEPARTMENT OF THE INTERIOR (continued)

contribution of point and nonpoint sources to regional ground water contamination in different land use and hydrogeologic settings.

The Regional Aquifer Systems Analysis (RASA) program is a systematic study of the Nation's major aquifers. The program has assembled large amounts of information about 25 regional aquifers and developed models to stimulate their behavior under historic conditions and forecast future pumping patterns. Much of the information collected by the RASA program is being summarized in a new ground water atlas of the United States. The atlas is extensively illustrated with maps showing the location and extent of major aquifers, their thickness, water levels, water quality, and water use. The Toxic Substances Hydrology program develops methods for study and basic understanding of the movement and fate of hazardous substances from point and nonpoint sources of contamination.

The USGS has compiled information on ground water in its National Water Summary reports -- ground water quantity (1984), ground water quality (1986), and water use (1987). These reports, which provide State-by-State and national water information, assist policy makers to better understand the condition of water resources as they formulate water policies, legislation and management strategies.

The U.S. Bureau of Mines overall mission is to help ensure that the United States has an adequate and dependable supply of minerals to meet its defense and economic needs at acceptable social, environmental and economic costs. By developing new mineral technologies and providing reliable information as a basis for sound minerals policies, the Bureau works to solve the country's mineral problems. The Bureau conducts hydrological research on constructed or engineered wetlands and on acid mine drainage, it evaluates the impacts of mining on both ground and surface water, conducts studies on the impact of coal mining on municipal water well production, and studies the hydrologic impacts associated with in-situ leaching.

The Office of Surface Mining (OSM) implements the Surface Mining Control and Reclamation Act of 1977 (SMCRA), particularly with respect to surface coal mining. As a regulatory program implemented through the States, OSM activities involve ensuring that society and the environment are protected from the adverse effects of surface coal mining while ensuring that surface coal mining can be done without permanent damage to land and water resources. OSM oversees mining and reclamation in States with primary responsibility and regulates mining and reclamation in States that have chosen not to assume primary responsibility.

The Bureau of Reclamation (Reclamation) is responsible for providing the arid and semiarid lands of the 17 contiguous Western States with a secure, year-round water supply for irrigation. Reclamation has a planning program that examines the potential for water resource development in the western United States. Planning studies address both surface and ground water quality and quantity issues, including

U.S. DEPARTMENT OF THE INTERIOR (continued)

conservation, system management, and institutional changes. Reclamation emphasizes coordination of planning activities with State and other federal agencies, local entities, and the public to avoid duplicating efforts and to ensure that the most needed and beneficial projects will be developed. Reclamation has implemented programs for cooperative research and development for water conservation technologies. Reclamation also provides technical assistance and data to other government and private entities on ground water hydrology and water quality.

The Bureau of Land Management (BLM) is responsible for the management of more than 270 million acres of public lands. BLM also is responsible for subsurface resource management of an additional 300 million acres where mineral rights are owned by the federal government. BLM manages such resources as timber, oil and gas, minerals, rangeland, land use, watersheds, and recreation.

The National Park Service (NPS) seeks to perpetuate surface and ground waters as integral components of park aquatic and terrestrial ecosystems by managing the consumptive use of water, and by protecting or restoring the quality and availability of surface and ground waters in accordance with all applicable Federal, State, and local laws and regulations. In addition, NPS manages its own programs and park uses to avoid impairment of aquatic, wetland, and floodplain resources and values.

The U.S. Fish and Wildlife Service is responsible for the conservation and management of biologically productive wetland areas. Wetlands form the backbone of the Service's 90-million-acre National Wildlife Refuge System, which was established primarily for the enhancement of migratory waterfowl. Wetlands also help control flooding and improve water quality. Of the 215 million acres of wetlands that once existed in the U.S., more than half have been drained or filled and converted to agricultural or other forms of development. The Service attempts to stem this loss by acquiring wetlands for the national Wildlife Refuge System. Under federal law, the Service also advises other federal agencies involved in water development projects as to how impacts on wildlife might be lessened. In addition, the Service is responsible for restoring inland and anadromous fisheries.

The mission of the Bureau of Indian Affairs (BIA) is to encourage and assist Indian and Alaska Native people in managing their own affairs and in utilizing the skill and capabilities of Indian and Alaska Native people in the management of programs for their benefit. BIA can work to coordinate educational and planning opportunities to Native Americans on ground water protection activities. DOI also maintains liaison and coordination between the Department and other federal agencies that provide funding or services to Indians.

U.S. DEPARTMENT OF THE INTERIOR (continued)

Potential for Coordination of DOI Programs with Comprehensive State Ground Water Protection Plans

Data and information from USGS programs could be useful to federal, State, and local agencies in the development of comprehensive ground water protection programs. Collectively, these data represent a substantial pool of information that need not be "reinvented" by other federal and State agencies. The data will assist States in the characterization of their ground water resources and provide support for resource-based priority setting. In addition, programs that support research into water-related issues also could assist the resource characterization effort under CSGWPPs. The Federal-State Cooperative program is a partnership involving the 50-50 cost sharing of water resources investigations between USGS and over 1,000 State and local agencies. The program is unique in that cooperating agencies must contribute at least half of the cost of investigations but the USGS does most of the work. Areas of technical assistance include comprehensive aquifer system assessment, aquifer mapping, monitoring, data collection and data analysis to determine the extent of contamination, and water use inventories. The State Water Resources Research Institutes program supports 54 Water Research Institutes at land-grant educational institutions. Data obtained from all of these programs could be utilized by States in CSGWPP activities.

OSM has recently been involved in a series of rulemakings designed to allow States and operators greater flexibility in the means by which they comply with the SMCRA. These regulations are related to a number of water resource issues, including wetlands management and ground water research. SMCRA is a State-implemented act. Recognizing that there are many factors that a State must consider when considering the possibility of assuming a regulatory program, OSM endeavors to provide all States with the assistance and flexibility they require to implement the provisions of the act. OSM could consider extending flexibility to States, based on priorities established under CSGWPPs, in development of ground water monitoring requirements, and might vary reclamation and restoration requirements in particular situations based on State prioritization.

OSM provides research funding to universities in support of many initiatives. Recently included among these initiatives was an investigation and assessment of aquifer response to mining activity, methods for improving the quality of constructed wetlands, and leachate generation from overburden. Coordination of these grant activities with those of other federal and State agencies will facilitate the efficient development of ground water protection programs.

The Small Reclamation Projects Act (SRPA), administered by Reclamation, gives direct responsibility to local organizations for developing water and land resource projects. Examples of cooperative use of SRPA funds related to the CSGWPP include

U.S. DEPARTMENT OF THE INTERIOR (continued)

ground water recharge projects (e.g., High Plains States Groundwater Demonstration Program) and wastewater reclamation (e.g., Monterey County).

Many individual units of the National Park System have surface and ground water data that will be useful to those responsible for developing or managing comprehensive ground water protection programs in a region containing such units. GIS systems are operating in many of these units that will facilitate the interpretation and availability or transfer of such data. Also, the Water Resources Division (WRD), located in Fort Collins, Colorado, assists parks and Regions in water resource data collection, interpretation, and management, and in resource management decisions, such as locating and testing surface and ground water sources, designing inventory and monitoring studies, quantifying and acquiring park water rights, conducting floodplain and flood hazards delineation, and preparing park-specific surface and ground water resource management plans.

BLM has emphasized coordinating its activity with States in the preparation of water quality management plans prepared pursuant to Section 319 of the Clean Water Act. This coordination allows BLM to utilize a part of Section 319 resources to promote implementation of State CSGWPPs.

Finally, activities of the BIA in support of actions by Native American organizations could assist in the development of Tribal comprehensive ground water protection plans.

U.S. DEPARTMENT OF TRANSPORTATION

Programs Related to Ground Water Protection

The Department of Transportation (DOT) is responsible for critical programs to ensure safe, efficient, and accessible transportation. The duties of several DOT programs directly or indirectly involve protecting ground water.

The Federal Aviation Administration (FAA) provides for a national airspace and air traffic control system, promotes a national airport system, conducts research and regulates aviation safety, while complying with federal environmental regulations. FAA administers a program of federal grants to airports for airport development and reviews airport layout plans for public airports to ensure that airport development meets safety standards. Airports, through runway and aircraft maintenance and deicing operations, fuel storage and other airport operations, have the potential to cause ground water contamination.

The Federal Highway Administration (FHWA) manages the Federal-Aid Highway Program to assist States in development of transportation infrastructure, in compliance with federal environmental requirements. Federal surface transportation legislation establishes federal assistance for a national highway system of roads that are most important to interstate travel, national defense, and intermodal connections. It also establishes a surface transportation program for other federal-aid roads and transit capital projects. The FHWA research program develops and provides technical guidance to States on highway construction and maintenance, and funds State research. The National Highway Institute provides training to federal, State, and local transportation personnel. Highway construction, maintenance, and operation activities can contribute to ground water contamination. Deicing compounds, pesticides, and spilled hazardous materials are potential contaminants.

The Research and Special Programs Administration (RSPA) coordinates cross-modal research throughout DOT. RSPA's Office of Pipeline Safety (OPS) is responsible for the safe transportation of hazardous liquids (petroleum) by pipeline. Spills of hazardous materials from pipelines may contaminate ground water.

RSPA's Office of Hazardous Materials Transportation (OHMT) directs programs to ensure that hazardous materials are transported safely to protect human health and environment. OHMT promulgates regulations implementing the federal legislation relating to hazardous materials transportation, including the packaging, documentation, and State routing of hazardous materials. OHMT also provides technical guidance and assistance programs to States on response planning, training of response personnel, and enforcement activities. FAA regulates the transportation of hazardous materials by aircraft. The Federal Railroad Administration is responsible for regulating the safe operation of railroads. It promulgates regulations for safe rail transportation of hazardous materials. RSPA, FAA, FRA, and the FHWA Office of Motor Carrier Safety are responsible for enforcement of various hazardous materials regulations.

U.S. DEPARTMENT OF TRANSPORTATION (continued)

The Coast Guard's responsibilities include preparing for and responding to marine pollution incidents and coordinating public and private response efforts. Included in this responsibility is regulation of onshore marine transportation facilities.

Potential for Coordination of DOT Programs with CSGWPPs

The FAA has the potential to assist in coordination of CSGWPPs for ground water contamination prevention, evaluation, and remediation efforts with airport operators. Such coordination could aid FAA in considering ground water protection when developing standards and technical guidance for airport master planning, development, and operation. Through the NEPA process, ground water issues can be considered in connection with proposed airport development. FAA directives make recommendations for controlling pollutants associated with aircraft and airfield maintenance. Airports are treated as sources of industrial stormwater, and airport operators are developing plans for compliance with industrial stormwater permit requirements.

The FHWA/FTA could assist in coordination of ground water protection efforts with State departments of transportation and other transportation agencies. Through the NEPA process, ground water issues are considered in connection with proposed highway and transit projects. When warranted, mitigation of adverse impacts to aquifers can be funded. The Intermodal Surface Transportation Assistance Act provides that ten percent of allocated Surface Transportation Program funds for each State must only be used for transportation enhancement activities. Eligible activities include mitigation of water pollution due to highway stormwater runoff. Another provision of ISTEA allows States to use federal-aid funding for participation in State-wide and regional wetland conservation and mitigation planning efforts. The FHWA research and training programs could benefit from interagency coordination to further consideration of ground water protection in those programs.

The RSPA OPS could work with States and other federal agencies to improve ground water protection through improved procedures for responding to spills. Regulations are being developed to require facility response plans, under the Oil Pollution Act. The OPS could promote knowledge of information linked to ground water protection through its pipeline accident and operator data program, and through its training program for industry personnel, federal and State inspectors.

OHMT's activities seek to ensure that hazardous materials are transported to avoid spill incidents and subsequent ground water contamination. OHMT could cooperate with implementing a State's CSGWPP. For instance, the ground water protection priorities established in a State's CSGWPP could be considered in

U.S. DEPARTMENT OF TRANSPORTATION (continued)

programming technical assistance efforts within that State. In addition, OHMT and States could work to coordinate information and efforts on emergency response activities through CSGWPPs. The Coast Guard could provide information on response plans of onshore marine transportation facilities.

U.S. NUCLEAR REGULATORY COMMISSION

Programs Related to Ground Water Protection

The Nuclear Regulatory Commission (NRC) ensures adequate protection of public health and safety, the national security, and the environment in the civilian use of nuclear materials. NRC's scope of responsibility includes regulation of nuclear power plants, fuel cycle plants, and the medical, industrial, and research uses of radioactive materials. Ground water protection activities in the NRC occur within four primary program areas: the Office of Nuclear Material Safety and Standards (NMSS), which is responsible for the licensing, inspection, and regulation of facilities and materials associated with the use, processing, transport, and handling of nuclear materials, the disposal of nuclear waste, and uranium recovery facilities; the Office of Nuclear Reactor Regulation (NRR), which carries out the licensing and inspection of nuclear power reactors, test reactors, and research reactors; and the Office of Nuclear Regulatory Research (RES), which plans and conducts the Commission's research and technical and regulations development program; and the Office of State Programs, which administers the State Agreements Program and maintains liaison with States, local governments, other Federal agencies, and Indian Tribal organizations. Regional Offices implement regulatory programs originating in the Headquarters Office.

Ground water issues may arise in many different NRC program areas, including NRC licensing and regulatory oversight of nuclear materials and waste management, licensing and regulatory oversight of nuclear reactor operations, research and standards development, and inspection and enforcement, under the jurisdiction of the Offices described above. Certain of these responsibilities may be assumed by States through the NRC Agreement State programs; other programs and responsibilities are assigned to the Federal government by statute (e.g., NRC licensing of commercial nuclear power reactors and repositories for the disposal of high-level radioactive waste) and may not be assumed by States. Twenty-nine States (Agreement States) have formal agreements with the NRC by which the State assumes regulatory authority over byproduct and source materials and small quantities of special nuclear material. Under the Atomic Energy Act, as amended, the programs of Agreement States must be "compatible" with those of the Commission. NRC designates particular regulatory requirements as matters of strict compatibility. The Commission is currently evaluating generic implications of compatibility issues.

NRC generally provides for ground water protection through regulations and licensing actions that require detection, correction, and prevention of ground water contamination. NRC programs emphasize prevention through requirements of design, siting, operation, and inspection of nuclear facilities, encouragement of processes that reduce or eliminate potential sources of contamination, and through recovery and recycling. Monitoring and corrective action are also sometimes required. Although NRC emphasizes protection of ground water from radiological contaminants, the

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effects of NRC's protective measures address nonradiological impacts on ground water to the extent that the radiological impacts are controlled.

NRC's protection of ground water is frequently implemented through site-specific license conditions, such as upper control limits for concentrations of contaminants in ground water, monitoring requirements, and, if necessary, corrective action and restoration requirements. In some cases, EPA standards have been applied on a site-specific basis to the remediation of contaminated sites to ensure adequate protection of ground and surface water resources.

Potential for Coordination of NRC Programs with Comprehensive State Ground Water Protection Programs

NRC program offices, particularly NMSS and Research, and the Office of State Programs may be able to make use of enhanced State capabilities for resource-based decision making and coordination of State programs under CSGWPPs in a number of ways. In the development and implementation of requirements for handling and disposal of mixed waste, for example, additional flexibility in the siting and licensing of mixed waste facilities might be considered in States that have evaluated the status of their ground water resources and established priorities affecting facility siting, resource protection, and remediation. In decommissioning facilities that have been licensed to possess nuclear materials, State priority-setting under a CSGWPP could be considered in the assessment of whether a site has been decommissioned to levels of radioactivity that allow release for unrestricted use. Pending codification of radiological criteria for decommissioning, NRC applies a variety of guidance and criteria to determine whether sites have been sufficiently remediated so that they may be released for unrestricted use. These criteria are applied on a site-specific basis, with emphasis, as appropriate, to ensure that residual contamination levels are "as low as is reasonably achievable" (ALARA). State groundwater priorities under CSGWPPs could be considered by NRC in its ALARA determinations. NRC also could assess how CSGWPPs might enhance the ability of Low Level Radioactive Waste Compacts to site low level radioactive waste disposal facilities by creating consistent systems of prioritization of ground water resources in States. CSGWPPs also could affect ground water monitoring requirements and procedures for uranium milling facilities and requirements for reclamation activities at such facilities.

NRC, and particularly NMSS, also could provide for flexibility and resource-based decision making in the development of license conditions, particularly where NRC references EPA standards or methodologies for ground water protection and where EPA is building such flexibility into its regulatory requirements. For example, NRC could adopt differential ground water management approaches tied to a State's adoption of a CSGWPP for ground water monitoring requirements and schedules at licensed facilities. Increased levels of monitoring could be required at facilities located in areas that the State's CSGWPP had identified as high priority ground water areas;

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lower levels of monitoring could be required at areas of lower priority according to the State's own priority setting.

For Agreement States, NRC could consider the extent to which Agreement State compatibility can allow for flexible approaches to ground water-related issues under a CSGWPP. In the future, as States develop CSGWPPs, NRC and the States could seek to reflect the State's capacity for resource-based decision making in the agreement between NRC and the State. In addition, the Commission has begun a process to ensure early and substantial involvement of the Agreement States in rulemakings and other regulatory efforts. A CSGWPP could provide a focus for State/NRC interaction on ground water issues.

As States develop priorities for resource-based management through Core or Fully Integrating CSGWPPs, NRC could utilize such priorities directly in developing site-specific license conditions. Finally, the NRC Five Year Plan calls for NRC to take a more active role in fostering better cooperation and communication between NRC and State and local governments and Indian Tribes. The existing communication links between State Liaison Officers and NRC Regional State Liaison Officers could serve as a means of information transfer concerning the implementation of CSGWPPs in those programs in which States may assume regulatory priority.

NOTE TO THE READER:

This Final Comprehensive State Ground Water Protection Program Guidance is a statement of Agency policy and principles. It does not establish or affect legal rights or obligations. This guidance document does not establish a binding norm and is not finally determinative of the issues addressed. Agency decisions in any particular case will be made by applying the law and regulations to the specific facts of the case.