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# STATE SOURCE WATER ASSESSMENT AND PROTECTION PROGRAMS GUIDANCE

DRAFT GUIDANCE

**Draft Guidance for**  
**State Source Water Assessment**  
**and Protection Programs**

**PREVENTION**

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*Chapter 1*

*Overview of Source Water Protection  
and the  
Safe Drinking Water Act*

# Overview of Source Water Protection and the Safe Drinking Water Act

## Purpose of this Document

The purpose of this document is to publish a draft of the guidance required by the Safe Drinking Water Act (SDWA) Amendments of 1996 (P.L. 104-182) for State Source Water Assessment Programs (Section 1453) and for Source Water Petition Programs (Section 1454). The SDWA Amendments require the Administrator to publish guidance for these provisions by August 6, 1997. This document also describes EPA's recommendations for what should be the elements of a State Source Water Protection Program. Finally, the document describes how other EPA and Federal programs can assist States in developing and implementing assessment and protection programs and vice versa.

## Background

Public drinking water supplies have always been key to the location and development of communities. The public water supply of a community often defines and directs its growth. Historically, the location of a good source of drinking water was a key factor in determining the location of centers of population. Indeed, safe drinking water was essential to the quality of community life because of the link between public health and the quality of the public water supply.

We can look at our own history to see how important a safe, adequate source of water has been to the development of our country. Early settlements were charted, in part, according to a ready supply of water for drinking, irrigation, and farming. Jamestown, Virginia, located on the beautiful James River, offers one example of

the importance placed on maintaining a clean source of water. Indeed, Jamestown's Governor Gage, in 1610, proclaimed:

There shall be no man or woman dare to wash any unclean linen, wash clothes, ... nor rinse or make clean any kettle, pot or pan, or any suchlike vessel within twenty feet of the old well or new pump. Nor shall anyone aforesaid within less than a quarter mile of the fort, dare to do the necessities of nature, since by these unmanly, slothful, and loathsome immodesties, the whole fort may be choked and poisoned.

Today States, municipalities and water suppliers are primarily responsible for protecting the drinking water supplies of their citizens. Most use several tools for this activity, including wellhead protection, watershed protection, and reservoir management. Actions have also been taken on the Federal level to protect water supplies. For example, the Clean Water Act ensures protection of surface waters designated, in part, for use as drinking water. Other environmental laws—the Safe Drinking Water Act (which includes the Wellhead Protection Program, the Sole Source Aquifer Program, and the Underground Injection Control Program), Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)—provide authorities, financial support, and technical assistance to protect sources of drinking water, especially ground waters.

## **EPA's Source Water Protection Goal**

As a result of the 1996 amendments to the SDWA, source water protection has become a national priority. Accordingly, a source water protection goal is included in EPA's draft "Environmental Goals for America With Milestones for 2005," which was released on January 27, 1997 for a 2-month review by all State environmental-related agencies, all tribes, and Federal agencies. It is EPA's draft goal that "by the year 2005, 60 percent of the population served by community water systems will receive their water from systems with source water protection programs in place."

How is the nation going to accomplish this goal? First, we will build on past accomplishments that resulted from the 1986 amendments, such as Wellhead Protection Programs and Sole Source Aquifer Programs, as well as successes with monitoring waivers and treatment exemptions based on the existence of source water protection efforts.

Second, we will build on other key foundations such as EPA's Watershed Approach, Comprehensive State Ground Water Protection Programs, the Toxic Release Inventory, pollution prevention and community-based initiatives as well as those of other Federal agencies like the U.S. Department of Agriculture's (USDA) Conservation Reserve Program.

Third, we will maximize the use of the new tools and resources provided under the 1996 SDWA amendments, with its emphasis on public involvement and new State Source Water Assessment Programs, which should lead to State Source Water Protection Programs. Also, the amendments provide States an unprecedented opportunity for source water assessment and protection programs to use new funds from the new Drinking Water State Revolving Fund (DWSRF) program for eligible set-aside activities.

## **Past Accomplishments**

Prior to the 1996 SDWA, EPA emphasized ground water and wellhead programs and the Watershed Approach to protect source waters. The approval of State Wellhead Protection Programs was a core component of this effort as well as the formation of multiple partnerships with agencies and associations that had an interest in source water protection, such as the States, the National Rural Water Association, the American Water Works Association, the National Association of Towns and Townships, the National Association of Counties, the League of Women Voters, and the Groundwater Foundation. From these partnerships grew public information networks and information sharing. The EPA Community Source Water Protection Mentor Project, which will provide individual mentors to facilitate the implementation of protection efforts in communities, was established, and the Clean Water Act Section 106 and 319 programs were put to new uses. The Sole Source Aquifer Program was used to protect major underground sources of drinking water, and Comprehensive State Ground Water Protection Programs have been a vehicle for focusing contaminant source control programs on the protection of drinking water sources. The Watershed Approach also has provided a means to better focus water pollution control efforts on the protection of drinking water supplies. Watershed protection tools and information have been developed and broadly disseminated to communities through such vehicles as the Internet and through two highly successful national conferences. States, such as Massachusetts and Illinois, and large systems, such as Portland, Boston, Seattle, and New York, have developed extensive watershed protection approaches to protect their drinking water supplies from potential contamination as a way to ensure the highest quality water and to reduce treatment costs.

**SDWA Amendments of 1996—New Resources and Tools for Source Water Protection**

The SDWA Amendments establish the Act as an environmental law, integrated within itself. It goes beyond a simply regulatory approach, focused on detecting and remediating existing contamination problems, to add a new “prevention” approach that seeks to prevent problems by increasing both public water systems' capacity to provide safe drinking water, and the protection of the source waters from which we draw our drinking water.

There are linkages among different parts of the law which together, create almost a tapestry of provisions, in which the prevention programs are integrated with, and are in fact essential to the success of, the new regulatory flexibilities in the amendments.

The amendments embody the concept that new, responsible regulatory flexibility (within a baseline of national protection) is appropriate, if triggered by sound information on relevant local conditions.

For instance, in monitoring, States can provide flexibility to systems, but it must be based on occurrence data and good science of each system's hydrogeology. In variances, States can let small systems achieve less than full compliance with the National Primary Drinking Water Regulations (NPDWR), but the variances must be based on consistent judgments on affordability and a full analysis of compliance alternatives.

The new prevention approach in the Amendments has two key elements:

- A clear State lead, with flexibility and resources to achieve results. This is necessary because prevention is ultimately about land use and water management, which belong at the State and local levels,

- A strong ethic of public information and involvement within the States' decision-making processes.

The SDWA requires States to establish and implement Source Water Assessment Programs (SWAP) which includes both of these elements. EPA, both in Headquarters and in the Regions, is committed to successful assessments including providing assistance to the States to:

- Ensure that, in each State, the State programs use the amount of funding from the DWSRF set-aside necessary to do a solid job on the assessments.
- Stretch the assessment dollars by working to get the strong involvement of all capable participants and contributors who can take an appropriate part in the assessments.
- Encourage networks for exchange of information about models for assessments that have worked for States, communities, and water suppliers in other areas.
- Identify and help use other applicable or useful sources of information that can plug into or serve for the assessments, as the law provides.

In the area of source water protection, the law represents a real, national commitment to try the flexible, state-driven prevention approach. There is great flexibility for States to shape their own source water protection programs, with the funding available under the DWSRF program set-aside provision, Section 1452(g)(2)(B). This provision enables States to adopt source water protection programs that fit the needs and conditions of each State.

These source water assessment and protection provisions of the Amendments create powerful incentives to do many activities, including voluntary ones—because other parts of the law,

including regulatory ones, simply won't work as well without them.

The same integrated incentive principle applies in the area of capacity. Here, the Amendments seek to improve water systems' ability to meet the challenging tasks of SDWA by requiring States to prevent the formation of new systems that lack capacity, and to develop a capacity development strategy, a plan for a State program to boost the technical, financial and managerial capability of water systems reliably to deliver safe drinking water. The law's requirements here for States, though important, are limited.

But the capabilities States can develop in their strategies are essential to make other parts of the law work. Like source water protection, achieving increased capacity through improved management of the water resources and/or physical infrastructure (including ensuring certified operators run the systems), can head off compliance problems that will cost far more to fix than the management improvements did. Also, to give small system variances and exemptions, the Amendments require States to make complex and demanding decisions on whether restructuring and water supply alternatives are affordable for the systems that apply for variances or exemptions. To make these decisions -- of great importance to many systems -- States will need an information base and analytic methodologies for water and system management, both of which they can build in framing their capacity development strategies. These are equally valuable tools for evaluating the problems of systems in non-compliance, and for targeting technical assistance to systems most in need of help.

Source water and capacity have a couple of fundamental linkages in common, too. One obvious linkage is to the DWSRF, which enables States to set aside sufficient funds for these prevention activities. The annual Intended Use Plan that must be prepared for the set-aside funds is the drinking water program's opportunity to make the public case for these prevention activities. But the Amendments only require the States to prepare the source water assessment program and capacity development strategy once, which means this will be the one time State programs are assured of getting set-aside funds for these purposes. Thus, States need to be sure that the actions they propose are the right ones to equip them to make these linkages -- and the other SDWA areas that depend on them -- work.

The second common linkage is public participation. A consistent theme in the new law is that States have both new flexibility and resources to tailor programs to State needs and conditions, especially in the prevention area, and the obligation for public information and involvement to ensure that States' choices respond to their constituents' needs and conditions.

#### **The Benefits of Public Involvement in Developing the Source Water Assessment and Protection Programs and in Other Aspects of SDWA Implementation.**

The 1996 Amendments include a number of provisions for public awareness and involvement. For example, EPA is to develop a regulation for community water suppliers to provide an annual consumer confidence report that includes information on each system's source waters. States are required to involve the public in developing SWAPs (Section 1428(b)), and the actual source water assessments for

PWSs will be made available to the public, in addition to information on contaminant occurrence and violations.

Involving the public in source water assessments and protection programs offers States and localities the opportunity to channel the energies of an increasingly informed public into efforts to protect their water supplies. It is critical to increase public involvement over the next several years in the actual development of the State SWAP programs in order to build a base of support for using the assessments once completed. Stakeholder involvement would assist States to clearly define goals for and design of the assessments; that is, the design for how the inventories and the susceptibility analyses will be accomplished, within a comprehensive approach that includes protection programs. For example, if a State will be taking set-asides from the DWSRF for source water protection, stakeholders involved in developing the assessments could also assist the State to determine the best use of those set-asides.

### *Assessment Programs*

Chapter 2 of this draft document provides guidance to States by explaining a new Section 1453 of the SDWA for State Source Water Assessment Programs. States with Public Water Supply Supervision (PWSS) primacy must submit source water assessment programs to EPA for approval. States must submit their program to EPA no later than 18 months after EPA publishes final guidance. A State program is automatically approved 9 months after submittal to EPA unless EPA disapproves the program.

A State Source Water Assessment Program (SWAP) must: (1) delineate the boundaries of the areas providing source waters for public water systems, and (2) identify, to the extent practical, the origins of regulated and certain unregulated contaminants in the delineated area

to determine the susceptibility of public water systems to such contaminants. Assessments are to be completed for all public water systems within 2 years after EPA approval of the State's program. EPA may extend this period up to 18 months taking into account funds made available to the State under the DWSRF. States must make the results of the source water assessments available to the public. To avoid duplication, assessment programs may make use of sanitary surveys, State wellhead protection programs, pesticide State management plans, State watershed approaches including efforts under the Surface Water Treatment Rule, and efforts under the Federal Water Pollution Control Act (Clean Water Act).

For a State to tailor alternative monitoring requirements for public water systems under a new permanent monitoring relief authority (Section 1418(b)), a State must have an EPA approved SWAP. Any public water system seeking alternative monitoring requirements under a State's permanent monitoring relief authority must be in a delineated Source Water Protection Area (SWPA) with a completed source water assessment.

Each assessment for a SWPA is intended to be as stated in the statute, "for the benefit and protection of the public water systems" (Section 1453(a)(1)), that is for the purpose of developing a source water protection program to protect the drinking water for that area. Indeed, an assessment is essentially the first three steps of a full prevention program: delineating the SWPA, inventorying of the significant potential sources of contamination, and understanding the susceptibility of the public water system(s) in the SWPA to contamination. The assessment, therefore, is a snapshot of the problems and/or potential problems for source waters and/or public water systems. The assessment, however, should lead to, or be done simultaneously with other actions which complete a prevention program: forming a team, an early warning system for the PWS through

monitoring for actual contamination in the source waters so significant potential sources of contamination can be monitored, implementing management measures for sources of contamination, and contingency planning. The assessments should be a strong basis for States and localities to move toward a full prevention program. Consequently, assessments are a tool for further efforts not a complete process in and of themselves. Congress explicitly recognized this in the numerous statutory references to the further application of the Section 1453 assessments.

To be effective tools, however, SWAPs do need to be measured for success. The basic measure of State performance in implementing a SWAP is whether a State completes the program as described in a State's approved program. That is, SWAP performance will be measured, in part, on a State-by-State basis given the State's approved program goals, policies, and timetable and processes during implementation. Program completion is when all local assessments are accomplished.

However, because EPA's goal is to implement full source water protection programs for 60 percent of the population served by CWSs (144 million Americans) by the year 2005, EPA will also be measuring whether States and localities are implementing prevention programs separate from our measurement regarding whether States are implementing SWAP. EPA will be tracking progress towards achieving this goal, if finalized as a part of the Agency's effort to implement the "Environmental Goals for America with Milestones for 2005." Efforts to achieve this goal will encourage the States to participate and afford their public water systems the opportunity to get State assistance with source water protection; but such participation is not required by the SDWA amendments. Progress toward achieving this goal can readily be measured without additional burden on States or localities, as States would need to describe any

protection programs when seeking protection funding under the DWSRF set-asides.

### *Source Water Protection and Petition Programs*

While these programs are voluntary, EPA believes that States should plan for protection programs simultaneously as they plan for and implement their SWAPs. This simultaneous planning provides both the efficient use of taxpayers' SWAP funds and accountability to the States' constituents regarding productive use of SWAP-generated information. In particular, States will likely use current information on the hydrology and hydrogeology of different regions of the State to determine the degrees of detail that will be appropriate in assessments to support protection program options that are being considered. Protection programs will likely be necessary to provide local flexibility on monitoring relief, ground water disinfection, regulation of Class V Underground Injection Control wells, and filtration.

Chapter 3 of this document explains that States have many options to consider in developing source water protection programs that go beyond their required assessment program including: statewide or localized Source Water Protection programs; Wellhead Protection Programs; innovative local, partnership approaches; and petition programs of various types. There are various ways States can use Federal, State, and possibly private funding sources to develop each of these different approaches. Some States may prefer to develop statewide Source Water Protection programs using one process and structure. Other States may decide to allow each locality to create approaches that include voluntary incentive-based mechanisms using State and Federal resources differently depending on the results of the assessments.

The Petition Program is an entirely voluntary incentive-based approach. States may establish the petition program specified in the statute to receive, approve, and respond to petitions from a public water system operator/owner or local government entity to assist in the development of voluntary local incentive-based partnerships to (1) reduce the presence of contaminants, (2) provide financial or technical assistance requested, and (3) develop recommendations for voluntary, long-term source water protection strategies. [Section 1454 of the SDWA]

#### *Drinking Water State Revolving Fund (DWSRF) and Other Financing*

The Drinking Water State Revolving Fund can be used to finance the variety of source water assessment and protection activities described above. This includes three possible set-asides: (1) up to 10 percent for a State to administer or provide technical assistance for source water protection programs within the State; (2) up to 15 percent for more than one of several source water protection activities (i.e., land acquisition/easements, voluntary protection and petition activities, source water assessments and wellhead protection); and (3) up to 2 percent for additional technical assistance to rural PWSs. **Of special note, DWSRF funds (i.e., part of the 15 percent set-aside) for source water assessments will not be available to States after the FY 1997 allotment.**

States must match, dollar-for-dollar, the 10 percent set-aside noted in number 1 above though they may be able to substantially apply certain existing spending to meet the match requirements. For the latter two set-asides, the 15 percent and 2 percent, there are no separate State match requirements. The States are required to provide a 20 percent match for the entire DWSRF capitalization grant to a State (see the final DWSRF Guidelines for a full description of this 20 percent match requirement).

DWSRF funds can also be used for public water system activities that may complement source water protection, such as operator certification and system capacity building. The new SDWA amendments also contain separate provisions—not funded through the DWSRF provision—with funding authorizations for Wellhead Protection Programs (WHP), Comprehensive State Ground Water Protection Programs (CSGWPPs), and the Underground Injection Control (UIC) Program. However, appropriations for the WHP and CSGWPP programs were not provided in FY 1997, and UIC funding levels will likely remain at that of previous years. Additional financial support for local source water protection activities may be available under Clean Water Act Section 319 grants to State nonpoint source programs or Section 106 or 604 (b) programs, and there may be opportunities for targeting the resources of other programs, such as Pesticide State Management Plans or USDA Farm Bill conservation programs, to support source water protection efforts. As they evaluate SWP options, States may want to formulate programs to access these funding sources.

#### **SWP and Other Public Water Supply Supervision Program Implementation Efforts**

Chapter 4 explains how we plan to continue our efforts to incorporate source water assessment and protection actions into the basic regulatory and programmatic functions of the PWSS Program. These linkages are essential to ensuring that prevention efforts lead to better quality finished water. When increasing systems' capacities, certifying operators, conducting sanitary surveys, reforming monitoring, improving small system operations, or implementing standards, public water system managers have an essential opportunity to ensure that prevention efforts are enhanced by each of these components of the overall drinking water protection program. For example, information on significant potential contamination sources and on susceptibility of

systems for delineated source water protection areas derived from the assessment process should help States target systems for additional or reduced monitoring.

### **Source Water Assessment and Protection and the Watershed Approach**

The development of State Source Water Assessment and Protection Programs offers a unique opportunity to integrate not only drinking water programs so that they operate in a coordinated fashion, but also to integrate drinking water, clean water, coastal, solid and hazardous waste, agricultural and other environmental management programs so that they work together to better protect public health and the environment while reducing duplication of effort and program costs. The watershed approach provides a framework in which to achieve better program integration, improved identification of the highest priority problems, and increased stakeholder input. The watershed approach focuses Federal, State, tribal, and local government programs and citizen efforts for environmental and public health management within hydrologically defined geographic areas, taking into consideration both ground and surface water flow. While watershed approaches may vary in terms of specific objectives and resources, they should emphasize partnerships (with the people most affected by management decisions); a geographic focus; and scientific data, tools, and techniques. Many States are developing strategies for watershed management. Source water assessment and protection programs should be an integral component of these strategies.

Operating and coordinating programs on a watershed basis makes good sense for environmental, financial, social, and administrative reasons. For example, by jointly reviewing the results of assessment efforts undertaken for source water protection, total maximum daily loads, State water quality inventories, volunteer monitoring, State nonpoint source programs, and other aquatic

resource protection programs, managers from all levels of government can better understand the cumulative impacts of various human activities and determine the most critical problems within each watershed. Using this information to set priorities for action allows public and private managers from all levels to allocate limited financial and human resources to address the most critical needs. Establishing environmental indicators helps guide activities toward solving those high-priority problems and measuring success in making real world improvements rather than simply fulfilling programmatic requirements. Besides driving results towards environmental benefits, the approach can result in cost savings by leveraging and building upon the financial resources and the willingness of the people with interests in the watershed to take action. Through improved communication and coordination, the watershed approach can reduce costly duplication of efforts and conflicting actions.

Finally, the watershed approach strengthens teamwork between the public and private sectors to achieve the greatest environmental improvements with the resources available. This emphasis gives those people who depend on the aquatic resources for their health, livelihood, or quality of life a meaningful role in the management of the resources. Through such active and broad involvement, the watershed approach can build a sense of community, reduce conflicts, increase commitment to the actions necessary to meet societal goals and, ultimately, improve the likelihood of sustaining long-term environmental improvements.

### **SWP and Other Federal/State Agency Programs**

In Chapter 5, we explain how delineating source water protection areas, inventorying significant potential sources of contamination in those areas, and doing susceptibility analyses, can provide benefits to other EPA programs (e.g., Nonpoint Source Program), and Federal programs (e.g., the Department of Agriculture's

water quality efforts, the Departments of Energy's and Defense's Federal facilities operations, and others). For example, delineating SWPAs will enable these programs to identify where the high-priority source water protection areas are located. Also, as assessments are completed, these other Federal programs (and in some cases State programs), will be able to reset priorities for prevention efforts to reduce or eliminate contaminants flowing into PWS wells or intakes. For some PWSs, this could mean significant increases in efficiency through both reduced monitoring and reduced need for new or more expensive treatment technologies. The delineated SWPAs will also certainly increase the awareness of Federal and State managers of other programs that action in these areas should be a high priority for the protection of human health.

#### **EPA Assistance to States and Localities in Implementing Source Water Assessments, Protection Programs and Petition Programs**

EPA has many resources to assist these programs. For example, a comprehensive listing of all Wellhead Protection Technical Assistance Documents and how to secure them is described in a document titled "Office of Ground Water and Drinking Water (OGWDW) Publications" (EPA 810-B-96-001). Other documents and information on source water and wellhead protection are available at OGWDW's Internet homepage found at [<http://www.epa.gov/OGWDW>]. Another compendium now available on the Internet [<http://www.epa.gov/owow/watershed/tools/>] is titled "Watershed Tools Directory: A Collection of Watershed Tools" (EPA 841-B-95-005). These documents are available by calling the Drinking Water Hotline at (800) 426-4791. There are several forthcoming documents on delineation methods such as "State Source Water Protection Area Delineation Methods For Surface Water Drinking Water Supplies," "Delineation of Source Water Protection Areas: An Integrated Approach For Ground and Surface Waters," "Case Studies For the Conjunctive Delineation of Ground-

Water/Surface-Water Source Water Protection Areas," and a "Compendium of Wellhead Protection Area Delineation Documents."

In addition, over the next 2 years, EPA will be sponsoring with other organizations, source water assessment/protection conferences/meetings. One meeting in 1997 will be a conference with the National Governors' Association and five other State Executive Branch Organizations. In addition, tentatively scheduled for the spring of 1998, there will be a conference titled, "Source Water Quality and Protection: Delineation, Monitoring and Effectiveness."

#### **Conclusions**

Source water assessment and protection programs provided for under the 1996 amendments to the SDWA offer opportunities and tools to protect drinking water at its source. The process of producing this guidance includes a wide array of stakeholders from other Federal agencies, States, local governments, water providers, businesses and environmental and citizen groups. We are fully engaging these groups in many ways and hope this is a model for how the Agency will do business in the future. (See Appendix A.)

Chapter 2

*Draft Guidance for State Source Water  
Assessment Programs*

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# Draft Guidance for State Source Water Assessment Programs

## Introduction

The Safe Drinking Water Act (SDWA) Amendments of 1996, P.L. 104-182, includes a provision adding a new Section 1453 to the Act requiring States to develop, submit to EPA, and implement, once approved, Source Water Assessment Programs (SWAPs). These required State SWAPs are to be submitted to EPA no later than 18 months after EPA publishes this guidance in final (August 6, 1997 or before). The State SWAPs are then required to complete source water area delineations and source inventory/susceptibility analyses for the public water supplies in the State within 2 years after EPA approval of the program (unless extended). Many localities have begun to delineate Source Water Protection Areas (SWPAs) (e.g., watershed areas and wellhead protection areas), but mapped source water assessments should be done as described here in Chapter 2.

States are also required to involve the public in developing their SWAPs and to make the assessments for public water supplies available to the public. In doing so, EPA hopes that such information will encourage the development and implementation of complete Source Water Protection (SWP) Programs which incorporate the SWAP steps of delineation, source inventory and susceptibility analyses, but add the establishment of local teams, source management, and contingency planning. (See Chapter 3 for descriptions and means for supporting these additional steps of a complete SWP Program.)

The core purpose of the source water assessments in any SWPA is to provide a strong basis for developing, implementing, or improving source water protection actions in

that SWPA. Considering the many other programs of the SDWA specifically and in other environmental laws (detailed in the preceding section) whose success depends upon the assessments, EPA strongly recommends that assessments should not be viewed as activities done for their own sake, but should be used to protect source waters and meet other SDWA requirements.

### A. What is an Approvable State Program Submittal—What should be included?

All States with primacy under the Public Water Supply Supervision (PWSS) Program are required to submit State SWAPs to the EPA for approval. The time frames and processes for the submittal are described in Section H of this chapter and in a schematic at Appendix B.

An approvable State program is a State submittal that meets all the requirements under Section 1453 of the Safe Drinking Water Act and includes as necessary for the State's stakeholders, other information requested as described in this chapter. States must include in their submittal the following information:

- **Required Delineations.** Describe the approaches and criteria or benchmarks for the delineation of the geographic areas (SWPAs) that constitute the source of water to each Public Water System in the State. (See Section C below for details on what must be in a submittal.) The State should also describe how maps for all delineated areas will be developed and maintained.

- **Required Contamination Source Inventories and Susceptibility Analyses for Public Water Systems.** Describe the approaches and criteria or benchmarks for completing an inventory, to the extent practical, of significant potential sources of contamination that lie within each of the delineated SWPAs. Also for each SWPA delineated, an analysis must be provided in the submittal of the relative potential for a PWS (the well or the intake) to draw source water contaminated by significant potential sources inventoried. Factors to be considered include hydrogeologic conditions, characteristics of the contaminant sources, and any mitigation practices in place. (See Section D below for details on what must be in a submittal.)
- **Required Public Involvement in Developing Assessments and Public Availability of Assessments.** Describe how the State will involve the public in the establishment and implementation of its SWAP and the process for making completed source water assessments for each public water supply available to the public (See Sections B and F for details).
- **Required Discussion of Any Linkage to Source Water Protection.** The overall program must also include a description of any plans to structure a SWAP to link to any State or local Source Water Protection Programs a State is or will be developing, and if there are no such plans for a protection program, a statement to that affect.

States may include a:

- **Description of the Overall Program for Undertaking the Above Efforts.** This should include brief descriptions of goals; priorities; targeted completion dates; resources to be committed including any set-aside funds from the State's Drinking Water State Revolving Fund; the roles and

responsibilities of State government agencies, local governments, water purveyors, citizen groups, and any other key stakeholders; and the use of other Federal, State and local programs in completing these assessments. The overall program should clearly indicate when the assessments will be completed, whether a possible extension beyond 2 years after program approval may be needed and when a State will update its assessment (including more sophisticated and complete delineations, source inventories and susceptibility analyses based on rules EPA will publish during the period after the initial assessments are completed).

(Note: When describing policies in a submittal, a State should describe what it will be doing. For example, which type of delineation method it will be using. When describing processes, the State should describe how it will implement the policy.)

#### *1. Specific Contents of an Approvable State Source Water Assessment Program Submittal*

To be approved, a State submittal must describe the following information, not necessarily in this order:

- Description of how a State achieved public participation in developing its submittal (Adequacy Criteria described in Section B).
- Policy and processes for delineating SWPAs for systems, ground water, surface water, or both (Adequacy Criteria described in Section C).
- Policy and processes for contamination source inventories and susceptibility analyses (Adequacy Criteria described in Section D).
- Policy and processes for how the States will do assessments for SWPAs (i.e.,

delineations, inventories, and susceptibility analyses) for boundary rivers, multi-State rivers and the Great Lakes (Adequacy Criteria described in Section E).

- Policy and processes for how a State will make each assessment available to the public (Adequacy Criteria described in Section F).
- Timetable and priorities (phasing plan) for completing statewide the delineations, contamination source inventories, and susceptibility analyses for each SWPA. (See Section H.)
- In addition, a State submittal must be consistent with the State's DWSRF Intended Use Plan under Section 1452 and provide a description of whether the State plans to implement a Source Water Protection Program (SWP) or local SWPs within SWPAs, or if the State is not planning to implement such a program, a statement that it will not do so. This SWAP submittal must also include the more detailed language of its workplan for any SWP set-asides. As 1453 (a)(1) makes clear, a major purpose of the SWAP is "for the protection ...of Public Water Systems." EPA cannot properly evaluate whether a SWAP ultimately will be effective unless the State describes the linkage to future SWP efforts. Therefore, to be approvable, a SWAP must include such a discussion or a statement that the State isn't going to do a protection program.

Furthermore, EPA strongly encourages a State to include in its submittal the following information:

- Goals for the State Source Water Assessment Program.
- State and Local Roles and Responsibilities for the Source Water Assessments. If a State will delegate some of the aspects of assessments, the submittal should include a

description of how, to whom and what aspects of SWAP implementation the State will delegate, and a definition of delegation. States and delegated entities may involve any other appropriate groups under State law to do the assessments.

- Policy and processes for coordinating State environmental agencies and offices.
- Policy and processes for coordination with Tribes and other States in accomplishing assessments for surface and ground waters that flow across or under political boundaries.
- Description of future efforts to coordinate environmental programs with other Federal programs that will be asked to assist the State with the assessments, such as coordination with the DOI United States Geological Survey, U.S. Department of Agriculture Farm Bill programs, or coordination with Federal land management agencies for cross-boundary/cross jurisdictional situations. (See Chapter 5.)
- How the State will finance the Assessment Program (See Section J).
- Description of the process the State will use to report the results of the SWAP program assessments to EPA (See Section L).
- Description of the process the State will use to update the assessments to take into account final Safe Drinking Water Act rules (See Section M).

## **2. Options for Formatting a State SWAP Submittal**

States and EPA Regions should negotiate a format for the submittal. The submittal can be in any format so long as it includes the information noted in this chapter under "Specific Contents of an Approvable State

**Source Water Assessment Program Submittal.”**  
Formats can range from something similar to a Wellhead Protection Program submittal to such other options as:

- A report to the public; or
- A public report to the State legislature, Governor, or a State Commissioner/ Secretary.

Other formats are also possible. The key is that the format must supply the information that EPA needs in order to determine if the submittal is complete and adequate. The format should also be useful to the State in attaining public participation in developing the program and in implementing the program once EPA approves it.

**B. Adequate Public Participation in Developing the State Source Water Assessment Program.**

The purpose of the public participation process is to build public support and responsibility among the public for their local water supplies in each SWPA. Therefore, to achieve this goal, EPA will require the States to develop and implement a public participation process for developing and implementing a SWAP. This is consistent with the statute at Section 1428 (b) which requires, “To the maximum extent possible, each State shall establish procedures, including but not limited to the establishment of technical and citizens advisory committees, to encourage the public to participate in developing the protection program for wellhead areas and source water assessment programs under Section 1453. Such procedures shall include notice and opportunity for public hearing on the State program before it is submitted to the Administrator.”

Prior to submitting the State’s Source Water Assessment Program submittal to EPA, a State must:

- Conduct public hearings or public workshops, focus groups, or meetings around the State with prior dissemination of invitations and basic information about the issue in an understandable format to widely representative groups as well as general public notice to ensure broad and informed participation.
- Convene a technical advisory committee and a citizens advisory committee. An advisory committee would include, but not be limited to, public interest groups, public health groups (e.g., medical associations), vulnerable population groups (e.g., elderly, transplant patients, dialysis patients, chemotherapy patients, people living with HIV/AIDS), groups representing business (e.g., agricultural businesses and chemical manufacturers and small business), local governments, tribes, land conservation groups, and others. A State should provide opportunities for these groups to participate but not be inhibited from program development or implementation should any group decide not to participate. Opportunities should be provided for wide and effective advance notice of the involvement process; wide distribution/ availability of decision planning documents with adequate time to review; meaningful and substantial opportunities to provide detailed comments representative of all interested sectors; and provision of direct, genuine feedback from State program officials.

Other options a State might want to consider include:

- Internet conferences; or
- Series of conference calls for all stakeholders to comment on the draft State program submittal; or
- Other outreach actions.

Whichever options it chooses, a State should include in its submittal a responsiveness summary showing how the public's comments and opinions were used in developing the submittal. These should be full, written responses on the record to all significant comments, specifying agreement, disagreement, and substantive reasons for each.

To the extent that:

(1) a State has implemented one or both of the requirements for public participation during development of its Wellhead Protection Program and/or Watershed Approach, or when developing only the ground water or only the surface water programs; and

(2) these programs included delineations, source inventories, and susceptibility analyses similar to the adequacy criteria in this draft guidance;

the State needs to accomplish these participation requirements again only for those SWAP functions it has not previously performed with the required participation.

Once EPA has approved a State's SWAP submittal and the State begins implementation, EPA strongly encourages a State to continue to work with its technical committee and its citizens committee to provide advice to the State as the assessments are being accomplished. These committees will provide valuable linkages to the stakeholders within the State as assessments are completed and made available to the public. In addition, these committees can advise the State on how to use the assessments in implementing prevention programs and improving treatment methods.

### **C. Adequate Delineations Under Approved State Source Water Assessment Programs—Delineating Source Water Protection Areas (SWPAs)**

The statute at Section 1453 (a)(2)(A) requires that States must "delineate the boundaries of the assessment areas in such State from which one or more public water systems in the State receive supplies of drinking water, using all reasonably available hydrogeologic information on the sources of the supply of drinking water in the State and the water flow, recharge, and discharge and any other reliable information as the State deems necessary to adequately determine such areas."

An approvable State SWAP submittal must include descriptions of the policies and methods that will be pursued in delineating Source Water Protection Areas (SWPAs) for:

- **Public water systems based solely on ground water;**
- **Public water systems based solely on surface water;**
- **Public water systems using both ground and surface water, or systems using ground water that is connected to surface water, ( i.e., under the influence of surface water).**

EPA encourages States to accomplish these delineations in a cost-effective manner and to be realistic in scope to facilitate contamination source inventories and susceptibility analyses (as described below) that will lead to effective source water protection efforts. EPA realizes that the cost of doing delineations may vary significantly by the size and hydrogeologic characteristics of the area. States have the option to set different delineation policies, i.e., use different delineation methodologies for different sizes and types of Public Water

Systems. Thus, options for State phasing of delineations include, but are not limited to:

- Starting with large in-state surface water or ground water systems and gradually doing delineations for smaller systems;
- Starting with community water systems and then doing delineations for non-transient non-community systems, and then doing transient non-community systems; or
- Conducting more detailed system-specific assessments for community water systems, and less detailed assessments or a regional approach for non-community systems.

#### *1. Adequacy Criteria for Ground Water Based Public Water Systems*

EPA defines source water protection areas for ground-water based systems as synonymous with "Wellhead Protection Area" as defined in Section 1428(e).

#### *States with Approved Wellhead Protection Programs under Section 1428 of the SDWA*

Delineations of Wellhead Protection Areas in States with approved programs are adequate for ground water-based systems. States are encouraged to update their delineations to ensure that they will lead to increased protection of PWSs.

- These delineations are based on one or a combination of the delineation methodologies described in EPA's publication titled "Guidelines for Delineation of Wellhead Protection Areas" published in June 1987. EPA does not mandate any particular method, but States must follow the methods in their EPA-approved Wellhead Protection (WHP) Programs as required under Section 1428. These States should consider modifying, where necessary, the WHPA delineations to

take full advantage of regulatory flexibility to be offered by EPA in the future and to improve protection of public water supplies.

#### *States without Approved Wellhead Protection Programs Under Section 1428*

These States must also delineate the wellhead protection areas for public water systems based on ground water. Each State in its Source Water Assessment Program submittal must describe its policy for conducting these delineations. These States may adopt any policy of another EPA-approved State Wellhead Protection Program or create a new policy consistent with the methods in the EPA's "Guidelines for Delineation of Wellhead Protection Areas" which is based on Section 1428.

States should recognize that EPA is planning to promulgate, over the next several years, a number of rules that will provide regulatory flexibility based, in part, on specific delineations of SWPAs and the absence or adequacy of managing relevant sources of contamination within those areas. States should consider modifying, where necessary, the delineation approaches under their EPA-approved WHP Program to ensure increased protection of public water supplies and to take full advantage of the regulatory flexibility to be offered under these emerging rules:

- *Ground Water Disinfection Rule.* EPA is currently developing a proposed rule regarding the requirements for disinfection by public water systems using ground water sources. The Agency is considering the presence of adequate management of any potential source of pathogen within a specified distance from the drinking water well(s) as a factor in determining which systems would not have to disinfect. Regulatory specificity on this point will require further analysis. Thus, it is possible that microbial source setbacks adopted by approved State WHP Programs may not

reflect scientific understanding of the long-term viability of some viruses in ground water when the new regulation is promulgated.

- *Underground Injection Control Rule for Class V Wells.* EPA is considering a rule that will allow the States flexibility to focus their Class V (i.e., shallow injection wells that inject wastes into or above an aquifer) regulatory efforts on those injection wells located within WHPAs of community water supplies as delineated under a State's EPA-approved WHP Program.
- *Chemical Monitoring Reform Rule.* EPA plans to release in 1997 a proposed rule to replace current requirements for chemical monitoring by community water systems. Under the proposed approach, how often a system needs to take samples can depend, in part, on the size of the protection area where relevant sources are absent or adequately managed. For example, reducing the sampling frequency from once every 3 years to once every 5 years may require source water area information generated by the delineation of a 5 year time-of-travel WHPA.

## **2. Adequacy Criteria for Surface Water Based Public Water Systems**

For systems based solely on surface water, a policy to delineate topographic areas as SWPAs must be included in the State's SWAP submittal in order to be approved (except as described in Section E below). States will have the flexibility to decide the size of the geographic areas for each of these Source Water Protection Areas. EPA recognizes that States are in the best position to decide upon the most appropriate scale for each SWPA. Thus, States may use varying hydrologic, hydrogeologic, and management criteria in determining the protection area for any Public Water System. Appendix C lists possible criteria to use when developing or enhancing SWPAs for surface water-based systems. However, when setting a

delineation policy, a State should consider existing or new regulations such as the forthcoming Chemical Monitoring Reform Rule, Guidelines for Permanent Monitoring Relief, the Enhanced Surface Water Treatment Rule and the Class V UIC Rule.

### *A Topographic Boundary Delineation Method*

A State Submittal must define the types of topographic boundaries that will be used to delineate SWPAs. These boundaries should fall into one of two categories: watersheds, or watershed areas. Topographic boundaries are, irrespective of scale, defined by the elevation of the land.

A topographic boundary of a watershed (Figure 1, next page) is the perimeter of the catchment area of a stream. Analogously, a topographic boundary of a subwatershed is the perimeter of the catchment area of a tributary of a stream. The distinction between a watershed and a subwatershed is purely one of nomenclature. That is, the catchment area of a tributary is both the watershed of the tributary and a subwatershed of the main stream. Thus, the occurrence of one watershed (subwatershed) within another may be thought of as nested watersheds. (Note, however, that the catchment area of any stream that drains directly to an ocean is always considered a watershed, because, by definition, the stream is not a tributary of another stream.) The topographic boundary of the area contributing to a PWS is the perimeter of the catchment area that is upslope of the PWS intake, that is, the upslope **watershed-area**.

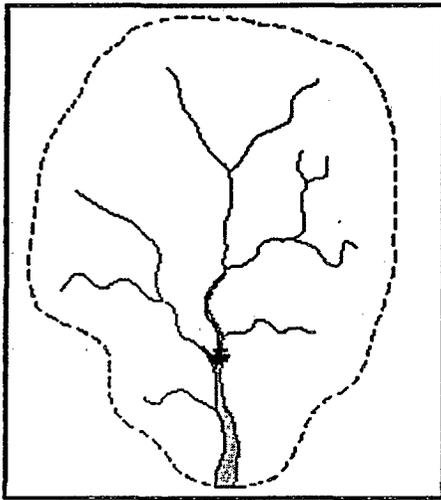


Figure 1. A Watershed

A topographic boundary of a watershed-area (Figure 2) is delineated on a topographic map by the drawing of a line connecting the highest points uphill of the intake, from which overland flow drains to the intake. This area is composed of the land and the surface water (i.e., lake, reservoir, tributaries and streams) upgradient of the drinking water intake.

### 3. Adequacy Criteria for Systems Using Both Ground Water and Surface Water

For systems using both ground water and surface water, or systems using ground water that is connected to surface water (i.e., under the influence of surface water), a State's SWAP submittal must include a policy that will ensure that WHPAs are delineated for public water wells and topographic areas are delineated for the surface water sources.

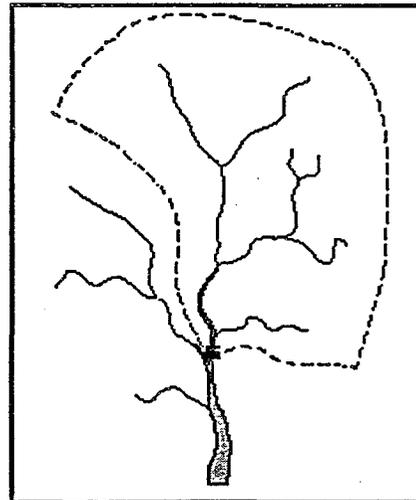


Figure 2. Watershed Area

### 4. Consideration of Ground Water Hydrogeologic Connections To Surface Water When Finalizing Delineations of Public Water Systems Based Mostly on Surface Water

EPA strongly encourages States to consider the ground water impacts on surface water when delineating SWPAs for Public Water Systems based mostly on surface water. SWPAs should include zones of surface water contribution and

zones of ground water contribution to public surface water supplies. The consideration of both surface water contribution areas and ground water contribution areas during the delineation process is termed "conjunctive delineation". Conjunctive delineation is defined as the line bounding the combined areas of surface water contribution and of ground water contribution to a water-supply intake/well or other site of interest; the process of defining this boundary requires the delineation of the zone of ground water contribution and the area of surface water contribution to the site of interest. (For further discussion of conjunctive delineation, the reader is referred to Appendix D of this document.)

Protection of public water supplies that are supplied by surface water "should recognize that ground water (via base flow to streams) is generally also a component, possibly a major one (and during some parts of the year, possibly the only component), of streamflow" (Ginsberg, 1997, in progress).

#### **D. Adequate Contamination Source Inventories and Susceptibility Analyses Under Approved State Source Water Assessment Programs**

The statute at Section 1453 (a)(2)(B) requires that States must "identify for contaminants regulated under this title for which monitoring is required under this title (or any unregulated contaminants selected by the State, in its discretion, which the State, for purposes of this subsection, has determined may present a threat to public health), to the extent practical, the origins within each delineated area of such contaminants to determine the susceptibility of the public water systems in the delineated area to such contaminants."

##### **1. General Policies**

In an approvable State SWAP submittal, a State must include a policy that ensures that once the

SWPA boundary is established for a public water system or systems, an inventory, to the extent practical, of significant potential sources of contaminants will be completed for the delineated area. In addition, a State must describe its policy for conducting susceptibility analyses to determine the susceptibility of the public water system(s) in each SWPA. A State must also list in its SWAP program submittal the contaminants for which it will be doing an inventory of significant potential sources of contamination.

The purpose of this inventory is to (1) ensure that the land uses or activities that could potentially degrade water quality are identified, and (2) evaluate, to the extent practical, the relative potential for pollution of the Public Water System(s) posed by identified contamination sources. The inventory, in other words, needs to show specifically where the significant potential sources of contamination are located relative to the well(s) or intake(s) so a susceptibility analysis can be conducted.

The purpose of the susceptibility analysis is to determine, with a clear understanding of where the significant potential sources of contamination are located, how susceptible is the Public Water System(s) in the SWPA to contamination from these sources. This analysis will assist the State in determining which potential sources of contamination are "significant." This analysis can also be used to establish a SWP program and prioritize management actions to control sources of contamination.

Indeed, an analysis of the risks from the inventoried significant potential sources of contamination is the only way for a State to make the inventory useful for reasonable decisions regarding source water protection programs and other possible uses. By including the language in section 1453(a)(2)(B) "to determine the susceptibility of the public water systems in the delineated area," to the identified

contaminants, Congress recognized that the inventory would not be useful without analyzing whether the identified sources of contaminants may, in fact, pose threats to the public water supply. The legislative history further indicates that a SWAP is intended to include an analysis of potential threats to public water systems from the inventoried sources. In describing the link between the information in the assessments and source water protection programs, the House Committee report described such programs as *“designed to protect source water from threats identified during the assessment”* (emphasis added). Simply identifying significant potential sources of contamination does not in itself determine which of them may present threats to drinking water, or, which are priorities to manage in order to protect drinking water. A scientific analysis of the hydrogeology and/or hydrology, an understanding of the contaminants, and an analysis of the effectiveness of existing prevention and mitigation measures are essential so States can credibly apply the assessment results to source water protection and monitoring and other regulatory flexibility, as Congress intended. An analysis of the risks from these sources, described as a “susceptibility” analysis in Section 1453 (a)(2)(B), is therefore a required part of each SWAP, and thereby for each assessment in a SWPA.

Appendix E is a listing of potential contamination sources found in Wellhead Protection Areas and a separate list of potential sources found in watersheds. However, for any particular Wellhead Protection Area or watershed, many of these sources, and their contaminants, may not be present.

*Which Contaminants Should be the Focus of An Inventory and for the Susceptibility Analysis ?*

The significant potential sources of contamination to be included in the inventory are those that release or could release

contaminants regulated under the SDWA for which a maximum contaminant level has been promulgated or for which monitoring is otherwise required under the SDWA. In addition, States may inventory significant potential sources which have at their location, contaminants which are Federally unregulated under the SDWA, but for which the State, in its discretion, has determined may present a threat to public health.

For the purposes of this guidance, determination of the threat to public health could be based on the extent to which unregulated contaminant(s) are known to cause, or are suspected of causing, cancer, birth defects, or any other adverse effect on human health according to nationally accepted guidelines. If a State will use non-Federally regulated contaminants in its inventory, the State should define in its program submittal the methodology used for determining that Federally unregulated contaminants are a “threat to public health.”

**(Note: EPA recognizes the possible complexity of these requirements and invites comments on ways to implement them efficiently.)**

*2. Adequate Contamination Source Inventories*

The purpose of these inventories is to ensure that each PWS and the consumers of the drinking water know what sources could be releasing contaminants that may end up at the treatment plant. In WHPAs, Federal and State program policies usually require an inventory of “all current and potential anthropogenic sources of contaminants that can effect public health”. The “Assessment” provision of Section 1453 requires that the inventory include contamination sources “to the extent practical.”

EPA defines “to the extent practical” to mean that States must inventory sources of contamination to the extent they have the

technology and resources to complete an inventory for a Source Water Protection Area delineated as described in the guidance. All information sources should be used, particularly previous Federal and State inventories of sources.

States should define in their submittal that a "contamination source inventory" is a listing of all "significant potential sources" of contamination of source waters, whether those source waters are ground waters or surface waters. Appendix F lists factors to consider when conducting a contamination source inventory.

A State should define in its submittal "significant potential" sources of contamination in the State. A State should define a "significant potential source of contamination" as a facility or activity that stores, uses, or produces chemicals or elements, and that has the potential to release contaminants identified in a State program (contaminants with MCLs plus any others a State considers a health threat) within a SWPA in an amount which could contribute significantly to the concentration of the contaminants in the source waters of the public water supply. This includes existing sources of contamination in SWPAs such as Superfund sites, National Pollutant Discharge Elimination System (NPDES) permittees, RCRA sites, and others.

A State should also describe in its submittal how assessments will explain why some potential contamination sources were not included in the inventory of contamination sources. That is, when some potential sources of contamination are determined by the State not to be "significant," and therefore not in the inventory, the State should explain why those potential sources are not a "significant potential source of contamination" so it is clear to the public why the State has made the decisions it made in establishing the inventory for each Source Water Protection Area.

We encourage States to set up community volunteer programs that can accomplish low-cost inventories using credible groups within each SWPA to do the inventories such as the elderly through RSVP programs or younger people such as the Boy Scouts or Girl Scouts. In addition, States and localities are encouraged to use all current databases to accomplish these contamination source inventories and susceptibility analyses and to seek help from EPA and other Federal agencies in locating additional existing data sources.

When making the inventory available to the public as part of the assessment, States, for "significant potential sources of contamination," should, where appropriate so that the inventory will enhance protection of sources of drinking water:

- For point sources: identify the name of the owner and the street address.
- For nonpoint sources: identify either (1) the name of the owner and street address or (2) describe the geographic area where the nonpoint sources are located.

States may show the public the sources in the inventory on a map, or in a listing. This also applies for nonpoint sources, which could be described on a map by identifying the areas or in a narrative description. See Section F for more specific information on mapping.

#### *Ground Water-Based Public Water Systems*

- *States with Approved Wellhead Protection Programs.* Source inventories completed under a State's EPA-approved Wellhead Protection Program (WHP) should be considered adequate so long as they are consistent with a State's policy for inventories in their approved Wellhead Protection Program. However, EPA encourages States to update local Wellhead Protection Program inventories that are now

incomplete and thereby hinder protection of Public Water Systems.

EPA expects that the 43 States which have Wellhead Protection Programs will continue to maintain and implement their contamination source inventory policies in their approved programs.

- *States Without Approved Wellhead Protection Programs.* These States must also do a source inventory for all delineated SWPAs under an approved Source Water Assessment Program. These States, in their Source Water Assessment Program submittal, should describe their policy for conducting these source inventories. These States may adopt any policy of another State that has an EPA-approved program or create a new policy consistent with the methods in EPA's "Guidelines for Conducting Contaminant Source Inventories For Public Drinking Water Supplies," published in December 1991 and based on Section 1428 of the SDWA. As noted above, these source inventories may need to be modified to provide the flexibility intended under existing or future public water supply regulations (e.g., Enhanced Surface Water Treatment Rule, Chemical Monitoring Reform, or the final Ground Water Disinfection Rule).

#### *Surface Water-Based Public Water Systems*

For most of these systems, a contamination source inventory must be accomplished in the entire delineated SWPA for significant potential sources of contamination. There are, however, certain source waters for which "practical" contamination source inventories may be focused on sources in "critical areas." These areas are defined as areas where there is high and reasonable potential for impacting intakes withdrawing water from a major river system (e.g. the Mississippi River, Illinois River, Ohio River, etc.) or the Great Lakes.

#### *Public Water Systems With Ground Water and Surface Water Sources*

The requirements of both of the sections above apply to these systems.

#### *3. Adequate Susceptibility Analyses*

States are required to conduct a susceptibility analysis for each delineated SWPA. States may want to accomplish these analyses for Community Water Systems (CWSs) differently than non-CWSs. System-specific data and analyses are necessary for CWSs; a more generalized level of analysis, covering multiple hydrogeologically similar systems, could be appropriate for many non-CWSs.

In an approvable State SWAP submittal, a State must include a policy that describes what is a susceptibility analysis for each delineated SWPA. The susceptibility analyses are intended, as the statute says, "to determine the susceptibility of the public water systems in the delineated area to such contaminants." The contaminants referred to are those described above in subsection D.1. Thus, these analyses measure the susceptibility of wells or intakes to contamination from inventoried sources in the SWPA.

Each State program submittal should include a description of how it will accomplish a susceptibility analysis, which is defined as determining the relative potential for the Public Water System(s) to draw water contaminated by the sources in the inventory or have the potential to contaminate the sources for a SWPA taking into account hydrogeologic factors, characteristics of the contaminant and the contaminant sources, and the existence and effectiveness of any mitigation measures.

States should take full advantage of analyses done when they delineated wellhead areas or

assessed surface waters. States may also have aquifer and other ground water-related vulnerability maps that should assist in meeting this requirement.

Thus, States may use already collected data, rather than collect new data on characterizations of ground water or surface waters. States, however, may need to do susceptibility analyses for new SWPAs or new WHPAs delineated for Non-CWSs. These areas may be somewhat large, in which case, a susceptibility analysis may only require some data manipulation from current State maps and data bases.

A susceptibility analysis does not necessarily require modeling or monitoring in the source waters to determine which potential sources of contamination are significant. While current information may be used for these analyses, EPA strongly encourages States to review the results of the analyses to determine if PWSs are being classified susceptible or not in light of the hydrogeology and hydrology of the SWPAs. However, EPA encourages States to undertake such modeling and monitoring (taking advantage of other resources for monitoring than those available through the DWSRF), where necessary to provide the basis for good source management measures.

#### **E. Adequate Assessment(s) for Boundary Rivers, Multi-State Rivers and the Great Lakes and EPA's Role in Assisting States Accomplish These Assessments**

##### ***1. Role of the States***

To be approvable, a State SWAP submittal must include a description of how they will delineate SWPAs, conduct an inventory of contamination sources, and conduct a susceptibility analysis for that portion of a boundary river, the Great Lakes, or Multi-State river that is within their State borders.

To meet this requirement, States can, for these water bodies, do these required actions in either of the following two ways.

- (1) For each intake of a community or a non-transient non-community water supply on a river, the State must designate a critical area upstream of each intake, and for each of these critical areas, conduct the delineation, inventory and susceptibility analysis and make the resulting assessment available to the customers relying on that public water supply.

{A "critical area" is an area where there exists a high and reasonable potential for significantly impacting intakes withdrawing water from a major river system (e.g. Mississippi River, Illinois River, Ohio River, etc.) or the Great Lakes.}

- (2) For the entire portion of the watershed in the State, the State delineates, inventories, and conducts a susceptibility analysis.

States may want to do a susceptibility analysis first to see which potential sources of contamination are in a critical area near the water body and whether those sources could pose a significant risk to the water system. Sources of contamination that pose a significant probability of risk would be "significant potential sources of contamination" and would thereby be in the inventory for that SWPA's critical area.

While not a delineation technique, and therefore optional, States should describe in their submittal the "contingency planning" policy they have for these water bodies in case of spills or other emergencies. In addition, States may want to describe any multi-state agreements or organizations in which they participate or which will be established to create these contingency plans. For example, the States of Pennsylvania,

Ohio, Kentucky and West Virginia could describe how they participate with each other through Ohio River Valley Water and Sanitation Commission (ORSANCO).

States should consult closely with local stakeholders (particularly governments) to get their perspectives on the scope, focus and level of effort that would lead to the best assessments.

## **2. EPA's Role**

EPA, working through the Regions, will strongly encourage cooperation among States to accomplish compatible and complementary source water assessments in a watershed that includes numerous States or countries. Many States already participate in multi-State organizations for protecting rivers or lakes that cross State boundaries. While these efforts are voluntary on the part of the States, EPA, based on requests from the States, can facilitate discussions and provide regional assistance.

### **F. Adequate Policies for How States will Make Source Water Assessments Available to the Public—Understandable Assessments (Maps, Lists) and Other Procedures**

The statute at Section 1453(a)(7) requires that States "make the results of the source water assessments conducted under this subsection available to the public."

In an approvable SWAP submittal, a State must describe how it will ensure that assessments are made available to the public, either directly or through a delegated entity. At a minimum, States should implement a widespread notification of availability, such as water bill stuffers, and a free means to obtain a hardcopy such as postage free return mail cards or a free call-in number, plus Internet posting and download access.

### **1. Understandable Assessments—Mapping Assessment Information, Listings of Sources and Narrative Assessment Reports Made Available to the Public**

A State should present all information and analysis developed for that PWS, to the maximum extent possible, in an understandable format.

For assessments to be understandable to the public, maps should be created as part of the assessment, and those maps should include the delineated area and the sources of contamination listed in the inventory. The susceptibility analysis most usable by the public could be in a narrative, but should be presented on a map if the results of the analysis can be presented understandably in that format. If more analysis for a SWPA is accomplished (e.g., modeling), susceptibility analyses that can be presented on a map in a graphic format should be done and made available to the public in an understandable way. Maps can either be topographic or created through a Geographic Information System.

For significant potential sources of contamination listed in the inventory for a SWPA, a State should include them on the same map as the SWPA delineation in a format understandable to the public.

States that have a protection program goal (s) for their SWPAs will want to determine the appropriate scale of such maps, and therefore, the locational detail, based on that goal. For example, a map may need to identify individual underground storage tanks to help target resources for pulling tanks or taking other prevention actions. If a State has not defined a protection program goal for the SWPA or the State, it must clearly state in this part of the assessment that they do not anticipate a Source Water Protection Program. In such cases, the scale should be as detailed as possible under the resources made available to the State for the assessment, to make the assessment as useful as

possible for all potential future purposes (regulatory flexibility and possible future source water protection by the State or the PWS).

## **2. *Optional Procedures for Making Assessments Available to the Public***

The assessments should be in a form that is readily accessible and understandable by the public. To accomplish this, States, or the delegated entities, should make the assessments available in hard copy or in electronic format over the Internet. In addition, States should make every effort to make the assessments available to be displayed through the National Watershed Assessment Project (NWAP) and in the STORET database. (See NWAP description in Chapter 5.)

EPA also encourages States to have an active outreach effort to inform and involve customers in community efforts to protect their drinking water sources. While assessments do not need to be made available in any particular timeframe, EPA recommends that when a local assessment is completed, it should be made available to the public shortly thereafter. A reasonable timeframe for release of assessments to the public should be described in the State's submittal.

"Making the assessments available" to the public can be achieved in many ways. Therefore, in its program submittal, a State should describe how it will make each local assessment available to the public. For example, a State could describe the process for making the assessments available to include any of the following methods below. It could describe and use one or a combination of methods:

- Send copies of the assessment or a summary to the public through request to a hotline, either a telephone or on-line computer system. Perhaps a Statewide hotline system could be established. States could use the

hot lines or information phone numbers of community water supplies.

- Send a notice or summary report to each customer in his or her water bill advising consumers annually or in some other timeframe about how to attain a copy or view completed assessments. Such a procedure would advise all customers that the report exists and how it can be obtained.

The notice could be sent to each customer as part of a utility's consumer confidence report. These reports are required annually and may be the most efficient method to send either the assessment or a summary of the assessment, or announce the availability of the assessment. This would have to occur in compliance with the regulations that will be published under Section 1414 (c)(4) of the Safe Drinking Water Act (as added by the 1996 amendments).

- Establish an active outreach process to make sure each household in the delineated area knows about the assessment report's availability and how to access it easily. This effort could include a Public Water System newsletter, or flyer to each household. Possibly the local communities affected could advertise the availability of the assessment in a local newspaper. Communities encompassing Public Water Systems could advertise its availability on radio or on local cable televisions as well as on local government Internet home pages.
- Develop a Statewide database of assessments and have them accessible through a homepage with possible links to other ground water and watershed databases. Such a database could become part of EPA's National Watershed Assessment Project and thereby become accessible through the "Surf Your Watershed" Internet system.

- Briefly summarize the assessments from a statewide perspective and note their availability of the assessments in the State Clean Water Act Section 305 (b) reports. These reports are available to the public, and the availability of the assessments and how to obtain them could be easily described in one of the sections of the State report.

### **G. Linking Assessments to Protection Programs**

As 1453 (a)(1) makes clear, a major purpose of the SWAP is “for the protection of Public water Systems.” The State itself cannot assess, and EPA cannot properly evaluate whether a SWAP ultimately will be effective, unless the State describes the linkage to future SWP efforts. Thus, an approvable State SWAP submittal must include a description regarding whether it plans to implement a Source Water Protection Program (SWP) or local SWPs within SWPAs, or if the State is not planning to implement such a program, a statement that it will not do so. This requirement for State submittals will prevent the waste or inefficient use of funding on the DWSRF set-asides for assessments by ensuring their utility for future purposes as intended by Congress and will ensure that clear goals for the use of those assessments will be stated to the public for review during a State’s process for SWAP development. This description should also be consistent with—and should assist in clarifying—plans for the DWSRF set-asides described in the State’s Intended Use Plan (IUP), and any work plan based on the IUP, as required under Section 1452. (See Chapter 3 for EPA’s descriptions of Source Water Protection Programs.)

### **H. Process for Submitting the State Source Water Assessment Program Submittal and for Program Implementation**

Under P.L. 104-182, the States must submit to EPA and implement the Source Water Assessment Program (see Appendix B for the

process described). The statutory process to follow, as envisioned for EPA Headquarters, Regions and States, is discussed below.

The statute at Section 1453(a)(3) requires that “a State source water assessment program under this subsection shall be submitted to the Administrator within 18 months after the Administrator’s guidance is issued under this subsection and shall be deemed approved 9 months after the date of such submittal unless the Administrator disapproves the program as provided in section 1428(c). States shall begin implementation of the program immediately after its approval. The Administrator’s approval of a State program under this subsection shall include a timetable, established in consultation with the State, allowing not more than 2 years for completion after approval of the program.”

The statute at Section 1453 (a) (4) states that the timetable referred to in paragraph (a)(3) must “take into consideration the availability to the State of funds under section 1452 (relating to State loan funds) for assessments and other relevant factors. The Administrator may extend any timetable included in a State program approved under paragraph (3) to extend the period for completion by an additional 18 months.”

#### ***1. Outline of the Process For Submitting and Implementing a Program***

There are four separate and distinct phases for establishing State Source Water Assessment Programs:

- **Publishing the Guidance.** EPA must publish final Guidance by August 6, 1997.
- **Submitting the Program.** States must submit SWPAs to the appropriate EPA Regional Administrator by February 1999. The States must develop programs with public participation, as defined in Section B.

- **Approving or Disapproving the Program.** EPA must approve or disapprove a State program within 9-months after submittal. If there is no EPA action in the 9-month period, a State program will be deemed approved. If EPA disapproves the program in the 9 month period, EPA will negotiate with the State in an expeditious manner to ensure that the State has an opportunity to develop an approvable program. When approving a program, the Regional Administrator must include a timetable, established in consultation with each State, for completion of the program.

- **Implementing an Approved Program.** States must begin implementation immediately upon approval. A State must complete program implementation within 2 years of approval unless an extension is granted. The Administrator may extend the implementation timetable for an approved State program up to an additional 18 months, based on certain conditions noted below.

- **Completion of the State Source Water Assessment Program.** States must do assessments for all SWPAs delineated in the State and should report the results to EPA (as described in Section L). EPA also is encouraging States to include in their submittals a brief description regarding how the State will update the assessments to take into account new rules published by EPA under other sections of the SDWA amendments of 1996. (See Section M.)

**2. Timetables For State Submittal Development and Post Approval Implementation and Policy for Gaining An Extension of a Timetable For Implementing an Approved SWAP**

In an approvable submittal, a State must describe a timetable for implementing and completing assessments within the State. A

“complete State assessment” and a “complete local assessment” are defined in Section K.

The timetable in the submittal must be no more than 2 years after EPA approves a State program. However, a State may request, and EPA may approve, an extension of the time for completion of assessments up to 18 months after the original 2-year period. Thus, statewide completion of the assessments could be a maximum of 3 ½ years from initial EPA approval of a State’s program. States that are continuing to implement Wellhead Protection Programs, and have been accomplishing assessment-type work in their local watershed efforts, will, in essence, be implementing assessments over a 6 ¾ year period from the date of enactment which was August 6, 1996.

To be approvable, extension requests, to complete the State’s Source Water Assessment Program, must be made based on:

- Consideration of the availability to the State of funds under the DWSRF under Section 1452 of the Act. For this reason, EPA encourages States to determine how much it would cost to do complete assessments for their source water protection areas, and then take up to the full 10 percent allowed from the FY 1997 funds.

That is, based on its approved program, a State must show that additional time is needed to complete the assessments based on an analysis of how much DWSRF funding it is spending to do the assessments.

- Consideration of other relevant factors such as statewide or sub-state emergencies such as natural disasters.

But, in no case, can the State be provided any more than 18 months more than the completion date negotiated in the State’s EPA approved Source Water Assessment Program.

For EPA to grant an extension of time to complete an assessment program, the State must provide to EPA, no later than 18 months into program implementation, an extension request that describes:

- The rationale for requesting an extension based on one or both of the criteria described above.
- A description or estimate of the number of delineations, source inventories, and susceptibility analyses completed, by SWPA, by the end of the 18th month.
- Information on the nature of the delineations, source inventories, and susceptibility analyses accomplished.
- A description of how and when the State will complete the program within the requested extension period.

### **3. *EPA's Approval and Disapproval Process for State Submittal***

- EPA must make a decision on whether to approve or disapprove a State's program submittal within the first 9 months after the submittal.
- If the Regional Administrator determines a program should be disapproved, EPA must disapprove a program within 9 months of receipt of the program or the program is "deemed" approved.
- If the Regional Administrator disapproves a program, EPA must send a written statement of the reasons for such disapproval to the Governor of the State.
- Within 6 months of EPA's written statement to the Governor, the Governor or Governor's designee must submit a modified program to EPA. These State modifications to the

program submittal should, in part, be based upon the recommendations of the EPA.

- EPA must then make a decision on whether to approve or disapprove a State's re-submittal.

### **4. *State Delegation of Source Water Assessment Responsibilities***

To be approvable, the State must include a definition of what "delegation" means if it will delegate any aspect of the assessments. A State can implement all assessments or aspects of the assessments, delegate the assessments, or delegate only aspects of the assessments. If a State delegates the assessments or aspects of the assessments, the State may delegate implementation consistent with State law. Delegations could be to:

- Local governments, separate or regionally based.
- Public Water Systems.
- Entities that operate local wellhead and watershed programs/approaches.

If a State submittal describes that the State will "delegate" any part of implementing its Source Water Assessment Program, the State's submittal should not only define what delegation means in the State, but also include a description of what will be delegated and to what entity or entities such delegation will be made.

States must ensure that the program is completed under whatever delegation authority and procedures it uses.

### **5. *The State's Submittal to EPA***

To be approvable, the State must submit to EPA its SWAP Program with an official transmittal

letter from any official in the State. For example, States could submit the program from:

- The Governor.
- The State Environmental Commissioner/Secretary or Health Commissioner/Secretary, or jointly by several departmental directors.
- Whoever the Governor designates, but the designee must be identified in writing to EPA.

#### **L. Tribal Organizations Are Encouraged to Develop and Implement Source Water Assessment Programs**

While the statute does not explicitly require the Tribes to implement Source Water Assessment Programs, EPA recommends that each Tribe implement a Source Water Assessment Program to the extent appropriate resources are available to do so. Tribes can benefit from ensuring that the public water systems on Tribal lands implement an assessment program. Some Tribes have implemented wellhead protection activities and watershed approaches. If so, a Tribe has already begun to delineate its source water protection areas and likely has begun a contamination source inventory. These Tribes should continue to implement these programs.

If a Tribe decides to establish and implement a program, it should submit it to EPA for approval. The process and timetable for tribal programs, once submitted to EPA, will be the same as described here in Chapter 2 for States. We fully expect a Tribe will be able to negotiate a timetable for implementation based on its resources for the program.

Because the water bodies which Tribes rely upon for their drinking water may flow through State lands prior to entering Indian country, Tribes may want to consider participation in a cooperating capacity on state technical and

citizens advisory committees as described in Section B of this chapter.

Tribes can finance development and implementation of a Source Water Assessment Program in various ways. One possibility is to receive funding from the States. Tribes can also apply for EPA to fund part of their programs using EPA's discretionary funds, or Tribes can use Clean Water Act funding available to the Tribes.

#### **J. The Drinking Water State Revolving Fund (DWSRF) and other Financing For Source Water Assessments**

For complete discussion of the Agency's Drinking Water State Revolving fund policies, the reader should refer to EPA's National Guidelines for the DWSRF released on February 28, 1997, which is available by calling the Drinking Water Hotline.

A State may set aside up to 10 percent of its Drinking Water State Revolving Fund (SRF) capitalization grant to do assessments for public water systems in accordance with Section 1453 of the 1996 SDWA amendments. Unlike other source water protection activities eligible for DWSRF assistance, funds for delineations and assessments under Section 1453 programs is only available from the FY 1997 capitalization grant. For this reason, EPA encourages States to determine how much it would cost to do complete assessments for their source water protection areas, and then take the amount necessary up to the full 10 percent allowed from the FY 1997 funds. Funds set-aside for this purpose must be obligated within four fiscal years after a State receives its grant.

#### ***The Intended Use Plan: The Key Funding Vehicle***

Consistent with EPA's Guidelines for implementing the Drinking Water SRF, the central component of the capitalization grant

application is the Intended Use Plan (IUP). The IUP describes how a State intends to use available Drinking Water SRF funds to meet the objectives of the SDWA and further the goal of protecting public health. A State must prepare the IUP, after providing for public review and comment, and submit it to the Regional Administrator as part of its capitalization grant application. The IUP must include specific details on how a State will use all funds in its capitalization grant, including funds it will allocate for the set-asides.

States have the option of developing the IUP in two parts, one part that identifies the distribution and uses of the funds among the various set-asides and the DWSRF Fund, and the other part dealing only with project funding in the DWSRF Fund. In other words, a State may submit a capitalization grant application for only the funds it intends to allocate among the set-asides. This option provides States with a great opportunity for expediting the process for receiving those funds. As with all grant applications, the State would have to include a detailed description (workplan) of the assessment activities to be funded.

#### ***The Importance of Funding the Source Water Assessments***

EPA will ask States that indicate in their IUP that they do not intend to set aside the full 10 percent for assessments if they have considered their source water assessment needs in the light of the limited time frame for the availability of funds for that purpose. Assessments are particularly important as the foundation of effective source water protection programs; without them, further progress in protecting source waters from contamination in an efficient and effective way is very difficult. Assessments are necessary components of Wellhead Protection Programs and pesticide State Management Plans and will play key roles in providing regulatory flexibility under a number of existing and future Federal drinking water

protection rules. In addition, the information obtained through assessments will be critical in targeting source water areas for protection under numerous programs, including UIC Class V programs, USDA's Farm Bill programs, nonpoint source programs, and watershed protection programs. States should, therefore, set aside funds for source water assessments as soon as possible and not count on funds becoming available in future reauthorizations of the SDWA.

#### ***Other Financing Options***

Aside from the DWSRF, other potential sources of financial support for source water assessments exist. A limited portion of the Section 319 grants of the Clean Water Act (CWA) may potentially provide support to States for protection of source waters from nonpoint sources of pollution. The most recent 319 grants and program guidance specifies that 319 grants can be used to support source water protection activities, including assessments. States will continue to be eligible to use CWA Section 106 funds for wellhead protection activities, which may include source water assessments. In addition, States may want to explore the viability of using the Clean Water Act SRF for aspects of the assessments.

#### ***TMDL Policy***

The primary purpose of a source water assessment is to determine the susceptibility of sources of drinking water supplies to sources of contamination so that appropriate preventative actions can be planned and implemented to protect those drinking water sources and insure protection of public health and compliance with National Primary Drinking Water Regulations. Recognizing the associated costs, Congress provided States with flexibility to use a portion of the Drinking Water State Revolving Fund (DWSRF) for these required delineations and assessments. In the same light, Congress also encouraged the use of existing programs and

efforts that provide information that could be used for source water assessments, as indicated in Section 1453(a)(6)(E) of the Amendments: "to avoid duplication and to encourage efficiency, the (Source Water Assessment) program ... may make use of ... delineations or assessments of surface or ground water sources under programs or plans pursuant to the Federal Water Pollution Control Act". This intent is also reflected clearly on page 64 of the Senate Committee report on the 1996 amendments: "States are strongly encouraged to use existing assessment data gathered under other State and Federal programs and guidance developed by EPA under other Federal laws."

One example of an existing program that can provide useful information for source water assessments is the total maximum daily load (TMDL) program under the Clean Water Act. A TMDL is designed to show how much pollution needs to be reduced by individual sources in a watershed. A TMDL is a quantitative assessment of water quality problems and contributing pollutant sources and provides the information needed to specify the amount of a pollutant that needs to be reduced by individual sources so that lakes, rivers, streams, or estuaries meet State water quality standards and designated water uses. A TMDL quantifies the pollution to be controlled from permitted point source discharges as well as nonpoint sources such as storm water runoff. EPA encourages States to use relevant information from existing TMDL programs to help complete source water delineations and assessments.

A question that arises is whether States can use a portion of the DWSRF allocation for source water assessments to develop a TMDL. These assessments, as described here in Chapter 2, include delineations, contamination source inventories and susceptibility analyses. In some cases, use of a TMDL or other water quality monitoring as part of a source water assessment may be a useful method to identify the

susceptibility of a drinking water source and could constitute a necessary part of the State's effort to accomplish these three assessment activities for a source water protection area. The February, 1997 "DWSRF Program Guidelines" state that:

"States may use funds from this set-aside (note: the 10 percent set-aside for source water assessments in accordance with Section 1453 of the Safe Drinking Water Act) for the development of TMDL's in limited circumstances. The State must establish a policy of allowing use of the set-aside funds to develop TMDL's only if a clear cause and effect relationship can demonstrate that development of the TMDL is essential to public health protection and continuing compliance with national primary drinking water regulations. Funding TMDL's through source water set-asides is only eligible if it will prevent or reduce source water contamination or enhance the efficiency of the drinking water treatment process. In this context, TMDL activity should be weighed against other source water assessment and delineation priority activities. State source water assessment programs submitted to EPA that propose to include TMDL activity must ensure that the development of TMDLs does not delay the completion of the source water assessments."

Despite these constraints, there are numerous scenarios under which TMDL development would be eligible to be funded under the 10 percent set-aside for Fiscal Year 1997 DWSRF appropriations. To promote the continued integration of public health goals into Clean Water Act programs, and to encourage efficiency as envisioned by Congress, EPA encourages States to use up to 10 percent of the 10 percent set-aside to develop TMDLs for source water areas as long as the TMDL assessment satisfies the following criteria: (1) there is a direct linkage between contaminant(s) and/or sources in the TMDL assessment and

public health; (2) a Maximum Contaminant Level has been established for the contaminant(s) in the TMDL assessment; (3) the TMDL assessment will assist a public water system(s) achieve or maintain compliance with a National Primary Drinking Water Regulation; and (4) the TMDL meets one of the three functions required of a State source water assessment program discussed here in Chapter 2 (i.e., delineation, source inventory and/or susceptibility analysis).

In a limited number of cases, States may find that a greater portion than 10 percent of the 10 percent set-aside should be used for TMDL development to improve either the quality and/or efficiency of their source water assessment programs. States have this discretion, although they must demonstrate reasons consistent with the above criteria for allocations greater than the 10 percent threshold recommended by this guidance in their bi-annual reports to EPA on the DWSRF program. Again, any funding for TMDLs should be linked to their intended use as platforms for source water protection activities directly related to public health protection and compliance with drinking water regulations.

#### **K. "Complete" State Source Water Assessment Programs and a "Complete" Local Source Water Assessment**

A State program is "complete" when a State has completed all the actions in its approved Source Water Assessment Program and met all the requirements under Section 1453 of the Safe Drinking Water Act, including the completion of source water assessments for each locality that includes a Public Water System.

A "complete" assessment for a locality means that a delineation of a SWPA has been completed, an adequate contamination source inventory has been completed for that SWPA, and a determination has been made of each public water system's susceptibility to

contamination by sources inventoried within each SWPA. (See Appendix G for the components of a complete local assessment.)

A complete assessment for a locality can be accomplished regardless of whether State employees actually do the assessment or whether a local entity, either delegated by the State or in cooperation with the State, accomplishes the assessment.

#### **L. Reporting Requirements for State Programs**

In order for EPA to know whether a State has completed the SWAP, a State must report on whether the program has been completed if a State has used the DWSRF set-aside for source water assessments. (See Final DWSRF guidelines for reporting requirements. Essentially, States are required to describe how funds have been expended using the set-aside funds for assessments in the required biennial reports.)

For EPA to determine whether a State has completed its SWAP program, States should, upon completion of the program, report to EPA:

- The number of delineations, source inventories, and susceptibility analyses completed, by SWPA area.
- Assurance that each completed local assessment has been made available to the public.

States can use current reports or a separate report to EPA as the mechanism for providing information to EPA on SWAPs. For example, States can use their Wellhead Protection Program biennial reports to report on completed programs. That is, a State can wait until the next biennial report is due and report on the completion of its Source Water Assessment Program in its biennial report.

## **M. Updating the Assessments**

In an approvable submittal, a State should include a brief description of the process it plans to use to update assessments to incorporate the following rules promulgated by EPA during the time period when the State is completing the assessments under its approved SWAP program:

- Ground Water Disinfection Rule
- Chemical Monitoring Reform Rule
- Underground Injection Class V Rule
- Enhanced Surface Water Treatment Rule

States may want to update these assessments for other reasons, such as location of new potential contamination sources in any SWPA.

## **N. Conclusions**

States should begin developing their SWAPs now based on this draft guidance, with particular emphasis in planning and implementing a process for ensuring extensive public participation in program development. States with Wellhead Protection Programs and/or Watershed Approaches should continue to implement them, and thereby get a good jump on completing their assessment programs once approved by EPA. However, the State may desire to modify these programs or approaches to better address drinking water concerns including better alignment with the anticipated flexibilities in future regulations.

As noted before, while the SDWA requires States to develop and implement complete SWAPs, the Agency is not requiring that States develop or implement Source Water Protection Programs. However, EPA strongly encourages States to do so. In Chapter 3, we describe some models and functions for potential State and local actions to develop and implement the SWPs. States with approved Wellhead

Protection Programs which are being fully implemented throughout their States are, in fact, implementing what EPA is recommending for ground water sources of drinking water. For surface waters, States which are implementing Source Water Protection Programs and/or Watershed Approaches are also beginning to accomplish what EPA is recommending for Source Water Protection Programs. We applaud these States and want to assist them so their systems and people can achieve the substantial benefits of source water protection and pollution prevention. This will also advance the nation to meet EPA's draft national goal that by the year 2005, 60 percent of the population served by community water systems will receive their water from systems with Source Water Protection programs in place.

*Chapter 3*

*State Source Water Protection Programs  
Including Petition Programs  
and the Drinking Water State Revolving Fund*

# **State Source Water Protection Programs Including Petition Programs and the Drinking Water State Revolving Fund**

## **A. Introduction**

As described in Chapter 2, the SDWA Amendments of 1996 require States to develop and submit to EPA for approval Source Water Assessment Programs (SWAP) and, upon EPA approval, to implement these programs. States are required to conduct assessments for PWSs within two years after approval. This chapter addresses the question of what should be done with these assessments once they are completed.

It is EPA's desire that these assessments will lead to the implementation of efforts to manage the sources of contamination identified by the assessments in a manner that will prevent contamination of the sources of drinking water supplies. This objective is furthered by the requirement that these assessments be made available to the public and, along with other required consumer awareness activities, will motivate citizens and communities to put in place Source Water Protection (SWP) Programs.

The purpose of this chapter is to lay out what a State should do to facilitate the establishment of local SWP efforts. For ground water-based drinking water supplies, wellhead protection programs are the key to protection. For surface water-based systems (as well as mixed systems), a drinking watershed or source water protection area approach is appropriate. For either ground water or surface water systems, source water protection is becoming an integral part of existing and new requirements and flexibilities under SDWA. Chapter 4 will describe how these SWP efforts can be coordinated with other programs to be of mutual benefit.

Local SWP efforts hinge on three key elements: forming a team of local SWP advocates; reviewing, evaluating, and selecting appropriate management measures to control or eliminate potential sources of contamination; and putting both long and short-range emergency water supply replacement strategies in place in the form of contingency planning. Getting local citizens involved in SWP efforts heightens a sense of ownership in protecting the resource. As information generated from Consumer Confidence reports becomes available to the public, SWP efforts will become highly visible, and support for these efforts will grow. At the same time, interest and involvement in exploring SWP financing options for local activities through the DWSRF will also grow. There are many financing options available under the 1996 SDWA amendments in SWP for States and local communities to take advantage of, but citizens need to familiarize themselves with the mechanisms that are in place and the processes by which this assistance can be secured.

## **B. Local Source Water Protection Program Efforts**

The essential elements of Source Water Protection are the same regardless of whether the activities are conducted at the State or local level. Source Water protection area delineations, contaminant source inventories, and susceptibility analyses are required by law under SDWA 1996, but these steps basically only "set the stage" for actual source water protection efforts. In the strictest sense, Source Water Assessment Programs are mandatory under the law, while Source Water Protection Programs are at the discretion of States and

local entities. Rather than simply "shelve" the results of source water assessments, it is Congress' and EPA's intent that States and local communities use these tools in formulating drinking water source protection plans.

Once source water assessments have been completed, the follow-up measures that galvanize a true local source water protection effort start by bringing people in the community together. These activities consist of forming teams, selecting management measures, and doing contingency planning. The manner in which they are accomplished does not matter as much as making sure that they are completed using sound information at hand. One of the basic concepts of EPA's approach to source water protection is to give States and local communities maximum flexibility in structuring and implementing their activities. Recognizing that what is best for one locale may not be at all suitable for another, EPA encourages innovative and creative structuring of local efforts based on availability of resources, level of technical sophistication, and economic feasibility.

### *1. Forming a Team*

Before any meaningful approach to SWP can be developed, a team of responsible individuals needs to be assembled to guide the process in a cohesive, efficient manner. They need to be focussed on the primary objective of protection of drinking water sources, but they must also recognize the constraints of their particular locations. Investigating "success stories" from similar programs adopted elsewhere to meet similar goals (c.g., case studies) are particularly effective and efficient in deciding what options make sense. A variety of factors, including availability of alternative sources of drinking water, public awareness and commitment to the program and legal and institutional tools available will largely dictate the objectives of the effort; either a total and complete SWP approach to all drinking water sources, or a threat-specific management strategy that deals

with potential contaminants (e.g., USTs) on a case-by-case basis. Although these management endpoints can be relatively clearly defined with more or less obvious solutions, care should be taken to stay focussed on the protection of the resource. As these efforts come to fruition, the local team can consider expanding the initial management program into a broader, more comprehensive one.

Local team planning staff need to have some knowledge about their drinking water sources, and at least some degree of expertise in selecting the appropriate regulatory or non-regulatory management tools they are considering putting in place to protect them. Team members need to understand why certain source water areas may be in jeopardy and need specific levels of protection, and how to rank or prioritize the results of source water assessments and contaminant sources identified during the assessment inventory process discussed in Chapter 2. The team also needs to know the extent of existing management measures that are already in place, and how they may be brought to bear on the problems encountered in the local SWP effort. As the program matures, they need to know how and be able to gauge whether or not their efforts are producing results. Team members having experience with management tools or regulatory controls and enforcement will have a better idea of which management and administrative techniques are best suited for their local program, and for local needs.

Because the "science" of SWP is relatively new, few team members are likely to have extensive experience in implementation, but new SDWA resources may allow staff with such experience to be engaged in an appropriate capacity. EPA urges that other team members seek to improve their skills through formal courses at local colleges or universities, or informal opportunities. (EPA has produced many Technical Assistance Documents, or TADs, dealing with drinking water protection and

related science and issues that are available from EPA's ten Regional Offices throughout the country). Some of the more important subject areas are hydrogeology, environmental law, and land-use planning. There is also great utility and benefit to be had from sharing expertise in the person of a "roving" employee, or "circuit rider" approach to borrowing resources from selected State agencies or local colleges or universities. These often highly-trained personnel are invaluable in researching specific technical information, references, case studies, and comparative program analysis for efficiency and effectiveness in SWP and other environmental programs. Teams should also not overlook the possibility that a neighboring municipality or jurisdiction may have developed or may be simultaneously developing SWP activities and may be willing to share its expertise and experiences.

Internal communication between and among team members is crucial to the success of the local effort. Transfer of knowledge and experience is important for maintaining program continuity and momentum, and avoids wasting resources rediscovering what has already been learned in the past. Developing and organizing information sources, such as source water area delineations and contaminant source inventory lists generated during SWP assessments (as discussed in Chapter 2) provide quick reference materials for team members. Checklists and worksheets can be developed from these materials for use in ranking and selecting management strategies for use in dealing with threats to drinking water supplies, and these types of standardized tools can be maintained for use in documenting the decision-making process as the program matures. This approach has particular benefit in the event team members resign, move on, or are reassigned to other areas. In addition, documentation of this type is particularly useful in formulating strategies for land acquisitions such as conservation easements and land grants, where purchase or granting may be contingent on verification of

past uses, net worth, and cost to remediate or replenish (as in the case of wetlands or contaminated sites). Documented resources of this type are also very useful in training new team members as they come on board.

Various types of information to support the efforts of the team may be secured from a variety of outside sources, such as Departments of Health, water control boards or districts, local colleges, land-grant and private universities, environmental agencies, soil and water conservation districts, departments of agriculture, departments of housing, community development and planning, National Association of Counties, National Association of Towns and Townships, the League of Women Voters, regional planning agencies, regional and district offices of the U.S. Geological Survey), the U.S. Soil Conservation Service, and the U.S. EPA's Regional offices throughout the county.

All it takes to get started is a basic understanding of local hydrogeologic conditions, a familiarity with appropriate SWP management tools, and the motivation to protect your sources of drinking water drawn from within your SWPA.

## *2. Selecting Management Measures*

Once potential contaminant sources have been identified and inventoried under SWAP assessments as outlined in Chapter 2, local teams need to explore options available to them for managing these sources. The basic goal is to reduce or eliminate the potential threat to drinking water supplies within SWP areas either through existing regulatory or statutory controls, or by using non-regulatory (and often voluntary) measures centered around an involved public. While land-use controls, regulatory and source controls, and other methods have traditionally been used for a variety of purposes in controlling land use and municipal growth, only recently have these tools been employed to

protect drinking water supplies on a large scale nationwide.

Local teams need to review examples of how these tools have been used in the past to protect drinking water supplies, how to best apply them to their local situation, and be aware of some of the considerations they may need to confront in adapting and implementing them. Some of the more effective and cost-efficient management tools used in SWP are outlined below.

- *Zoning Ordinances.* These are typically comprehensive land-use requirements designed to direct the development of a specific area. Local governments have used zoning to restrict or regulate certain land uses within SWPAs, such as intensive agriculture requiring heavy pesticide use, and high-unit confined livestock feeding operations.
- *Subdivision Ordinances.* Subdivision ordinances apply to land that is divided into two or more subunits for sale, resale, or development. This tool is especially useful in SWPAs where ongoing development is causing contamination or there is inadequate surface or ground water recharge, such as in coastal areas, many of which have already outgrown their current water supplies and can no longer rely on shallow coastal aquifers.
- *Site Plan Review.* These are regulations requiring developers to submit for approval plans for development occurring within a specified area. The review ensures compliance with regulations or other requirements made within the SWPAs.
- *Design Standards.* Design standards typically are regulations that apply to the design and construction of buildings or other structures. Use of design standards ensures that new construction, including buildings and impervious surfaces placed within a SWP area are designed so as not to pose a threat to nearby drinking water supplies.
- *Operating Standards.* These regulations apply to ongoing land-use activities to promote safety or environmental protection. These standards can minimize the threat to SWPAs from ongoing activities such as agricultural pesticide or fertilizer application by prescribing maximum application rates and frequencies, and by restricting the location, storage, and use of hazardous substances within the SWPA.
- *Voluntary Management Measures.* These measures include efforts to secure cooperation of organizations that are potential sources of pollution of source waters in efforts to ensure that polluting activities are minimized and reduced. Such activities can include a variety of the management measures described above, such as public education, but could also include use of various government efforts. For example, for nonpoint sources of pollution, the 1996 Farm Bill includes many conservation related programs that could be utilized to enhance or initiate local voluntary, incentive-base approaches to managing sources of contamination. These efforts could include such programs as the Conservation Reserve Program, the Environmental Quality Incentives Program, the Wetlands Reserve Program and/or the Farmland Protection Program. In addition, a newer effort under the State Conservation and Technical Committees could also lead to increased voluntary efforts.
- *Source Prohibitions.* Source prohibitions are regulations that prohibit the presence or use of chemicals or hazardous activities within a specific area. For example, restricting the storage, handling, and use of large quantities of hazardous chemicals within SWPAs can reduce or eliminate the threat of a contamination incident.
- *Purchase of Property or Development Rights.* Outright purchase of property or the rights to develop a property can be used by local municipalities to ensure complete control of the

use of specified land areas in and around SWP areas. The use of loans under the DWSRF set-aside [1452(k)(1)(A)] for acquiring lands from willing sellers or conservation easements can be most cost-effective in providing long-term community drinking water supply protection, especially in cases where regulatory restrictions on land use are not politically feasible and the purchase price of the property is affordable.

- **Public Education.** In order for citizens to appreciate the benefits of Source Water Protection, they must first understand what the problems are in providing safe drinking water, and how they can become involved in the process. Public education most often consists of brochures, pamphlets, field days, mall displays, town meetings, and other mass-exposure opportunities to present SWPA problems and protection efforts to the public in a straightforward, understandable fashion. Under SDWA 1996, a Consumer Awareness component of the Source Water Protection Program will extend the scope of this information to include the results of source water assessments through a State Drinking Water Hotline and access to the State's Clean Water Act Section 305(b) Report. The use of these tools greatly enhance public buy-in to a locally-developed, locally-applied SWP plan. Properly "spun", public education is the greatest promoter of voluntary action and public support for a community's SWP program.

- **Ground Water Monitoring.** Monitoring efforts generally consist of placing test wells within SWPAs, sampling on a periodic basis, and use of the test results to adjust or implement other management controls in the program to reduce or eliminate detected elevations in undesirable substances in the drinking water. Water supply quality assurance and quantifying movement of contaminant plumes within the SWPA are two of the most useful aspects of this tool.

### 3. Contingency Planning

Contingency planning is simply the development and implementation of both long and short-term drinking water supply replacement strategies for supplying safe drinking water to the consumer in the event of contamination or physical disruption. The State's role in contingency planning is primarily to delegate contingency planning responsibility to local governments within a framework established by the State, and to provide back-up support to local responders in drinking water supply disruptions. With most States now having EPA-approved Wellhead Protection Programs already in place, the contingency planning process will have already been established as part of that program. Expansion from the ground water-based planning process to the source water-based process, encompassing surface water supplies as well, will complete the protective coverage intended for all drinking water supply sources under SDWA 1996. These efforts should be derived from, or closely coordinated with, existing State contingency planning under Section 311 of the Clean Water Act and EPCRA Section 303.

As the State assigns responsibility for source water contingency planning to one or more agencies or individuals, and establishes a lead agency to coordinate the effort, the importance of teams will become apparent, as discussed above in Section 1, *Forming A Team*.

Well-crafted, pre-existing local plans, such as those in place under EPA-approved State Wellhead Protection Programs, can help State planners get a sense of how water supply disruption response actions are actually managed at the local level. Local plans will also give State team members a feel for local hydrogeology, contamination threats, and response capabilities. These local plans should be examined in the context of adequacy and practicality (e.g., have they ever been used in a real contamination or disruption incident and, if so, were they efficient and effective?).

State water planners should begin their efforts by evaluating the current status of water supplies in the State. Under SDWA 1996, source water assessments are required, and part of the assessment process involves identifying potential threats to the drinking water supplies within delineated source water protection areas. Once these threats are identified, existing capabilities for responding and dealing with them will be much simpler to evaluate. New monies available under the DWSRF can be targeted for source water contingency planning measures, and can greatly facilitate the refinement and application of existing source water information data bases. (Most States should already have on hand an emergency plan for water supplies that was prepared in support of their State primacy program under Section 1413 of SDWA). State planners should also explore the new financial opportunities available from the DWSRF set asides for technology assistance under Section 1452(g)(2)(B).

Some of the factors States will need to consider in developing effective source water contingency plans for local water supply systems are the number of systems in the State and whether they are ground or surface water dependent (or both), their locations, size of population served, capacity, interdependency on common aquifers or distribution systems, and how many have locally available alternative sources of supply. State planners may wish to create a hierarchy of systems based on local response capabilities, which will help planners determine what type and level of support the State will need to provide in the event of an emergency, focussing financial support on systems with the least capacity to respond.

In the event the local response capability is exceeded or requires specialized expertise, the State may be called upon to supplement the local effort. State planners must therefore assess the adequacy of State resources prior to such an emergency. Factors that should be examined are

the support functions that the State will need to provide; the conditions or circumstances under which State support will be rendered, identifying areas of sufficiency or deficiency in the State's support capability, and correcting any such deficiencies. In striking a balance between the goal of meeting all local public water supply system needs and the limitations imposed by its budget, the State should examine opportunities for supplementary funding from the DWSRF for personnel, equipment, laboratory and treatment facilities, and other technology assistance-oriented requirements in implementing source water protection at the State and local level.

For States with EPA-approved Wellhead Protection Programs, contingency plans will already be in place for most ground water-based systems. State emergency response plans developed under Section 1413 of SDWA can also be used. Data generated by previous water supply emergencies and existing data bases of land use and water resources can also be incorporated into the contingency plans. Monitoring and vulnerability assessments required of PWSSs for detecting contamination by volatile organic compounds can also be useful. Thus, much of the information required for contaminant source inventories required as part of State source water assessments may already be collected and available.

State contingency planners can benefit from a concentrated effort to build support for a contingency plan through a variety of methods. These typically include expert review (industry, academia, etc.); review by local officials for "reality checking" the process; soliciting input from local communities (workshops, public notice and comment, advisory councils, etc.); and Federal agency review.

**C. Opportunities for State Support of New Approaches to Source Water Protection Under the Safe Drinking Water Act (SDWA) Amendments of 1996**

The SDWA amendments of 1986 relied primarily on voluntary compliance with programs such as wellhead protection, principally due to a lack of adequate funding. Provisions under SDWA 1996, however, put heavy emphasis on drinking water pollution prevention using the concept of source water protection, which combines both ground and surface water management measures. Thus, SDWA 1996 provides a preventive approach to drinking water protection, rather than the previous "end of the pipe" regulatory enforcement-type approach taken under SDWA 1986. Under the new law, much greater flexibility for funding exists for States, ensuring that PWSs have adequate technical, managerial, and financial resources to maintain compliance and deliver safe water to the consumer. Appendix H provides a timetable for actions under the SDWA 1996 amendments.

**1. New Sources of Revenue for Prevention - The Drinking Water State Revolving Fund**

The Drinking Water State Revolving Fund (DWSRF) and other programs was authorized under 1452 by Congress to assist public water systems to finance the costs of infrastructure needed to achieve or maintain compliance with SDWA requirements and protect public health. In addition, States may use a portion of their capitalization grants to fund source water protection and enhance water systems management programs and projects. States may elect to use up to 31 percent of the funds available to them under 1452 for eligible set-aside activities.

As part of this, a State may use up to 10 percent of its allotment (with a 1:1 dollar State match) to support its State drinking water program, and

develop and implement a source water protection program, a capacity development program and operator certification program. Examples of how these funds could be used for source water protection include: development of contaminant source management and preventive best management practices, development and refinement of contingency planning programs, and in designing and implementing public information and education programs. Of particular note, these funds can be used for activities under EPA's Underground Injection Control Program to manage Class V shallow injection wells which can often be found in wellhead protection areas of public water supplies.

With few exceptions, most States now have EPA-approved WHP programs in place, which provide the cornerstone of a "head start" in the source water assessments required under the 1996 SDWA reauthorization. Funds from the DWSRF may be used to enhance the implementation of these existing WHP programs or to develop such programs for submittal to EPA for approval.

Up to 2 percent of the allotment may be set aside to provide technical assistance to small communities under 10,000, and up to 4 percent of the allotment may be set aside for costs associated with administering the DWSRF program.

Up to 15 percent of the capitalization grant (limited to 10 percent of the grant for any one activity) is available for local assistance and other eligible activities as described in the law, which are aimed at on-the-ground implementation of source water protection, wellhead protection, capacity development and operator certification activities. Examples of activities under this set-aside include: delineation and assessment, land acquisition or conservations easements (loans only) for source water protection, and voluntary source water projects (loans only).

Amounts that can be set aside for the delineation and assessment of SWPAs, must be taken from the amount of the FY1997 appropriation available to the State under 1452. EPA is encouraging States to determine their needs with regard to delineation and assessments and then take advantage of this one-time funding opportunity in their FY 1997 capitalization grant applications to the extent the State needs to use these funds, up to the full 10 percent. (See Chapter 2 - Section I).

Funds for land acquisition and conservation easement may only be provided as loans and may only be used to acquire lands from persons willing to sell the land, or in the case of easements, the grantors of the easements, when the land will protect drinking water sources from contamination. A State may also make a loan to any community water system in support of the implementation of voluntary efforts to protect source water in SWPAs. Both of these loan options are intended to foster compliance with national primary drinking water regulations applicable under Section 1412, and to significantly enhance the protection of public health. A State may also make loans to any community water system to provide funding for activities under a Source Water Petition Program in accordance with Section 1454 of the SDWA as described in Section 3 below.

## ***2. Approaches for State Source Water Protection Activities under SDWA 1996***

The following discussions are intended to outline some major approaches or models that States considering undertaking Source Water Protection programs may wish to consider. Because the choice to undertake source water protection under the 1996 SDWA Amendments is voluntary for States, these approaches are suggestive of internally coherent means by which States can pursue source water protection at various levels of resource commitment and policy focus, and are not meant as limiting prescriptions in this important area. EPA does,

however, strongly endorse Congress' view as reflected in the Amendments that the source water assessments were intended to be used "for the protection... of public water systems," that is, in actual protection programs. Thus, EPA invites commenters on this draft to offer suggestions for any additional approaches or models for source water protection, particularly ones that have actually been applied successfully at the State or local level, and believes that States should closely consider undertaking an approach that is appropriate for their situation. Additional detail will be provided on these areas in the final guidance and thereafter, as may be useful to States. In the areas of the Source Water Petition Program, EPA is required by the Amendments to publish final guidance by August 6, 1997, so the language in this draft represents a proposal in preparation for the final guidance.

EPA further points out that, even for States that may be hesitant on this subject, there are very workable starting points that can achieve several important objectives. Approaches of "Protection Through Existing Programs," for example, can be done with modest additional effort, are a good way of making drinking water a positive means of coordinating and focusing existing State and Federal programs, and can be of real benefit to water systems that likely would not otherwise be able to participate in these programs.

### ***(a). Source Water Protection Through Existing Programs -- Proactive or Reactive Approaches***

States using this approach will create a networking-clearinghouse function to coordinate whatever range of existing Federal, State and local programs, authorities and efforts the State believes will contribute to achieving source water protection objectives. This function would be intended to give a focal point and be an assistance facilitator for local governments, water systems or others in

communities on these source water protection-related programs. Those contacting this State clearinghouse may want help from these programs to protect their local source water, but may lack the resources, expertise or both to identify the types of program help (which may be regulatory and/or non-regulatory) that is available and useful for their situation, and to pursue the variety of appropriate programmatic aid effectively through the time-consuming complexities of different application processes and levels of government.

States would establish this clearinghouse function in a State office which would be responsible for responding to requests for aid of the type described above, or in the case of a proactive approach, to use the source water assessments to work with local communities to set priorities for source water protection areas where the clearinghouse would focus on seeing that appropriate programmatic aid was provided. In a reactive approach or where States enabled communities to seek clearinghouse help, in which communities were informed about their situation by using the results of the source water assessments, the State office would respond to these requests in its discretion. In any case, the clearinghouse would help to identify programs that might be able to address a specific local source water problem, to formulate and then present the relevant program aid applications to the appropriate agencies, and to work with the communities to advance these applications with those agencies. The State clearinghouse would also help in an ongoing way to improve coordination among the relevant agencies and programs in general, and on drinking water and source water protection objectives in particular.

**(b) *Source Water Protection Through Local Partnerships***

Under this approach, the State would focus its protection efforts on educating, equipping and funding local communities to lead directly in

undertaking source water protection initiatives. States could ensure that localities interested in getting help in source water protection from State or Federal programs would be provided with a full list of potentially applicable State and Federal programs and resources and be sent information regarding these as options to assist with local efforts.

In addition, the SDWA Amendments provide for various ways to finance some of these efforts. One option is for States to provide loans to local water suppliers to acquire land or partial interests in land to support source water protection priorities, which may be most effectively supported by the identification of threats to drinking water sources in the source water assessments. Such loans may also be provided to support whatever type of voluntary, incentive-based efforts the community considers useful to address its particular problems. A third option in SDWA is the authority to provide technical assistance funding through a State source water protection program.

This approach could be an alternative or an effective complement to the "Reactive" version of the Existing Programs approach described above. If used by itself, this approach would not fully substitute for an "Existing Programs" approach, discussed above, because it would not provide for ongoing State help or facilitation in gaining access to State or Federal programs or resources. Often, this help is likely to be the critical factor, especially for smaller systems which, as noted above, may lack the expertise or resources to do this effectively on their own. But this approach may be a useful initial starting point, however, at least for some States that may not have experience in coordinating program efforts for watershed protection, source water protection, or other similar, overarching objectives. It would be most desirable for States choosing this approach to adopt it in the near term with the expectation and plan to build up to an Existing Programs approach soon thereafter

as a more responsive means to help the water systems which most need the effort.

**(c). *Source Water Protection Through a Comprehensive Approach***

Existing laws at the Federal level have tended to focus on specific sources, pollutants, or water-related activities, and have not addressed the need for an integrated multi-disciplinary approach to environmental management. In fact, historically, successes in controlling waterborne pollution have centered around controlling point sources and, in the case of ground water, preventing contamination from hazardous waste sites.

States implementing a Comprehensive approach would develop a Watershed Approach through a State structure that would integrate surface water protection programs with comprehensive ground water protection efforts focusing Federal, State and local resources on source water protection as a whole. This approach should use the source water assessments as a starting point to identify which data developed by other programs for use in the assessments and what those programs' characteristics are to incorporate them into the comprehensive approach. The assessment results will then present a verified statewide priority-setting structure to guide implementation of the comprehensive approach. It would closely coordinate water-related programs with State point and nonpoint source control programs so as to integrate administration of Federal programs and related State programs, such as through the Farm bill and remedial efforts through Superfund, UST and RCRA. Significant gaps that now exist in our efforts to protect drinking water source waters would be filled. Thus, the key programs of air, waste, toxic substances and pesticide management, and water pollution control and prevention are in place, but interested States would integrate them into a cohesive State-based resource-oriented framework to maximize their effectiveness.

This comprehensive approach to source water protection would create an effective "toolbox" of existing management options, both voluntary and regulatory, for use in framing approaches to complete source water protection.

States are in a unique position to foster comprehensive source water protection using these tools because they implement most existing water and natural resource protection programs. Further, this approach would provide a unique structure to support and lead State and local governmental stakeholders and the private sector to implement source water protection.

**3. *Guidance for State Source Water Quality Protection Partnership Petition Programs***

*Description and Purpose*

Section 1454 of the SDWA (Section 133 of P.L. 104-741) establishes a new authority for a Source Water Petition Program. This State-administered program is voluntary for States, and is intended to support locally-driven efforts designed to address a limited number of sources of contamination identified in local source water protection assessments. Petitions may address only either: (1) pathogenic organisms which are regulated (or for which regulation is required) by EPA drinking water standards, or, (2) contaminants detected in source water that are not at levels "reliably and consistently" below the MCL. Under the State program, an owner or operator of a community water system, or a municipal or local government or political subdivision within the State may submit a source water quality protection partnership petition to the State, requesting assistance in support of a local, voluntary, incentive-based partnership among interested parties to protect their drinking water supply. The central focus of the petition program is to reduce or eliminate contaminants in the water supply by addressing their origin; obtain financial or technical assistance to facilitate efforts to protect source water in order

to meet national primary drinking water regulations and standards; and help develop voluntary and incentive-based strategies for the long-term protection of source water supplying a community water system.

**(a) State/Local Program Procedures**

*Substance of Petitions and Process for Submission of Petitions To the State*

A Petition must: facilitate the local development of voluntary, incentive-based partnerships among owners and operators of community water systems, governments, and other persons in source water protection areas; and obtain assistance from the State in identifying resources which are available to implement the recommendations of the partnerships to manage the origins of the contaminants affecting the drinking water supplies of a community.

Contaminants addressed under a petition are limited to pathogenic organisms for which a national primary drinking water regulation has been established (or is required under Section 1412), or for which a regulation under Section 1412 has been promulgated or proposed, and that are detected by adequate monitoring methods at the source water intake structure or in collection, treatment, storage, or distribution facilities in the community water system when they occur above the MCL; or are not at levels reliably and consistently below the MCL.

Petitions submitted under this program must at a minimum contain the following information: (1) a delineation of the source water area that is the area of consideration of the petition; (2) the identity of the origins of the drinking water contaminants that are to be addressed by the petition that are found within the delineated source water protection area (including descriptions of specific activities contributing to the presence of the contaminants); (3) the identity of information gaps that would hinder the implementation of recommendations made

by the voluntary local partnership for addressing drinking water contaminants that are to be addressed by the petition; (4) documentation of efforts made to establish the voluntary local partnership, including solicitation of private individuals living within the delineated source water protection area who are likely to be affected by decisions made by the partnership and whose participation is essential to the success of the partnership, and members of municipal or other local governments or political subdivisions of the State with jurisdiction over the delineated source water area; (5) a description of how the voluntary local partnership has or will identify, recognize, and take into account any voluntary or other activities already underway under Federal or State law in the delineated source water protection area that are aimed at reducing or eliminating the likelihood that contaminants will occur in drinking water at levels of public health concern, and (6) a description of technical, financial, or other assistance that the voluntary local partnership requests of the State to help develop the partnership, or to implement the recommendations of the local participants in the partnership.

*Recommended State Procedures for Approval/Disapproval of Petitions Submitted by Local Voluntary Partnerships*

The State may approve a petition if it meets the requirements of Section 1454 (a).

States must provide a notice and an opportunity for public comment on petitions submitted under Section 1454, and States must approve or disapprove the petition in whole or in part within 120 days after submission.

If the State approves a petition, a notice of approval must be provided, giving the following information: (1) an identification of technical, financial, or other assistance the State will provide to help address drinking water contaminants identified in the petition based on

public health concerns relative to other water quality needs identified by the State; coordination with any other States' programs implemented or planned under Section 1454; and funds available (including DWSRF monies accessed through CWA or SDWA State Revolving Funds), and (2) a description of technical or financial assistance available from State or Federal programs to assist in implementing the recommendations of the local voluntary partnership in the petition.

Disapproved petitioners may resubmit at any time if new information becomes available, if conditions affecting the source water that is the subject of the petition change, or if modifications are made in the type of assistance being requested.

#### *Technical and Financial Assistance Available to Localities with Approved Petitions*

Assistance is available to assist in the implementation of recommendations made by the partnership in the petition, including any program established under the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.); programs established under Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990 (16 U.S.C. 1455b); agricultural water quality protection program established under Chapter 2 of subtitle D of title XII of the Food Security Act of 1985 (16 U.S.C. 3838 et seq.) and the Farm Bill of 1996 (P.L. 104-333); the Sole Source Aquifer Program established under Section 1427; the Community Wellhead Protection Program established under Section 1428; any pesticide or ground water management plan; any voluntary agricultural resource management plan or voluntary whole farm or whole ranch management plan developed and implemented under a process established by the Secretary of Agriculture; and any abandoned well closure program.

Full use of available technical and financial assistance will depend upon the extent to which States encourage and assist municipalities, local

governments, and community water systems to understand and take advantage of existing programs at the State level that are available to help them address sources of contamination in Source Water Protection Areas. These include programs for the management of solid waste, underground storage tanks, fertilizer and pesticide use, recycling and reclamation, underground injection disposal wells, State Superfund programs, and others. A large part of the public participation component of any source water quality protection partnership petition program should be focussed on making sure that the partnership members know and understand about these existing State programs and their corresponding funding mechanisms and opportunities for integration into a comprehensive source water protection partnership. This helps conserve resources, maximizes both regulatory and non-regulatory management mechanisms, and assures equal representation of the various members of the partnership in helping to bring about consensus at various stages of decision making as the partnership matures and begins to implement its recommendations.

#### *Additional Funding for Local Source Water Petition Programs*

- *Drinking Water State Revolving Fund.* A State may make a loan to assist a community water system implement voluntary, incentive-based source water protection measures resulting from the implementation of recommendations specified by a local partnership petition submitted to the State. Only community (not non-community) water systems are eligible for this assistance, and only pathogenic organisms, and chemicals exceeding MCLs or chemicals not reliably and consistently below established MCLs can be identified as contaminants in the petition. If a State elects to use the Drinking Water State Revolving Fund set-aside, the State must develop a list of systems that will receive loans, giving priority to projects that

promote compliance and protect public health, and subsequently seek public review and comment on this list. States are encouraged to review EPA's recently released final guidelines on the Drinking Water State Revolving Fund for use in prioritizing projects eligible for loans under the set-aside.

**(b) Sense of the Congress**

- *Sense of the Congress and EPA Regarding the Clean Water Act State Revolving Fund.* It is the sense of the Congress that each State in establishing priorities under Section 606(c)(1) of the Clean Water Act should give special consideration to projects that are eligible for funding under that Act, and that have been recommended pursuant to a petition submitted under Section 1454 of SDWA. EPA recognizes that petitions submitted to a State program developed under Section 1454 of SDWA only address either (not both) regulated or required-to-be regulated pathogens or contaminants detected that are not found reliably and consistently below the MCL. While the petition program may prove a valuable adjunct to total source water protection, the required consensus-building at various levels of local and State government necessary to make the process work may delay the resolution of public health issues from contaminated drinking water in a timely manner. Similarly, petition programs that go beyond the basic requirements (e.g., looking for other pathogens/ contaminants) may enhance the detection of additional pathogens/substances over the basic required ones, but the additional incremental costs necessary to achieve this level of detection need to be weighed against the net benefit to the consumer in terms of increased public health protection. For these reasons, States and local communities need to carefully consider the net benefit of the petition program in comparison to a total source water protection program in terms of cost

and efficacy in protecting the public health, and evaluate the advantages and trade-offs inherent in both programs before deciding what is right for them.

**c) EPA/State Procedures for Grants**

*Procedures and Substance of a Submittal of a State Source Water Quality Protection Partnership Petition Program for EPA and Approval of Such Programs*

- *Substance of a State Program Submittal.* The design of the State Source Water Quality Protection Partnership Petition Program should be to.... "assist in the local development of a voluntary, incentive-based partnership, among the owner, operator, or government and other persons likely to be affected by the recommendations of the partnership.....". Beyond this statutory definition, the State should consider how well the structure of its Source Water Quality Protection Partnership Petition Program satisfies the following underlying goals: meeting the spirit and intent of SDWA 1996 (e.g., affording locals the opportunity to develop their own drinking water protection program through the use of the petition process); recognizing the diversity of hydrogeologic settings and sources of contamination that may be encountered on the local level; allowing local entities maximum creativity and flexibility in designing and implementing the recommendations of the petitioners; recognizing State and local primacy in matters of land use and water allocation, and assisting local entities in achieving comprehensive source water protection by offering the petition process as a valuable tool in an overall array of State-administered drinking water protection programs such as the State's Wellhead Protection, Sole-Source Aquifer, and watershed protection programs.

- *Procedures for Submitting a State Program for Grant Assistance and for EPA Approving a Program.* State programs developed for Source Water Quality Protection Partnership Petition Programs may be submitted to EPA at any time subsequent to EPA's approval of the State's Source Water Assessment Program (SWAP) as prescribed under Section 1453 (a) of SDWA. If, after a period of 120 days after the date of submission of the program, unless EPA determines that the program does not meet the statutory requirements as specified under Section 1454(a) of SDWA, the program shall be deemed approved. If EPA disapproves a petition program (in whole or in part) during the 120-day period after submission of the program, EPA will immediately notify the State, and will work with the State to assist in the modification or redevelopment of the program to meet the statutory requirements necessary for approval. Once EPA approval has been obtained, States should immediately begin implementing the receipt, review, and approval process for petitions received from local, voluntary, incentive-based partnerships for source water protection at the community level.
- *Adequacy Criteria for EPA Approval of State Program Submittal.* EPA approval of State Source Water Quality Protection Partnership Petition Programs will be based upon how adequately the State's program process considers and evaluates the objectives of the local entity filing the petition. These objectives include how well the State's program process facilitates the development of local, voluntary, incentive-based partnerships through coordination of local governments, persons living within source water protection areas affected by the decisions or recommendations of the partnership, and owners and operators of community water systems, and how well the State program process provides for assistance from the State in identifying

resources available to the implement the recommendations of the partnership in addressing the origins of drinking water contaminants specified in the petition. (This includes the specific activities contributing to the presence of the contaminants affecting the drinking water supplies of the community). The contaminants for which petitions may be submitted are specified under Section 1454 (a) (3).

- *Grants to States.* Grants may be made to each State that establishes an EPA-approved petition program in an amount not exceeding 50 percent of the cost of administering the program for the year in which the grant is made available. In order to receive this grant assistance, States must have approved programs that meet the criteria and objectives of Section 1454, as described in this guidance. (NOTE: No funds were appropriated for grants under Section 1454 (c) in Fiscal Year 1997.)

(These grant program procedures and submittal are only required if appropriations are provided for Section 1454 of the SDWA and a State chooses to submit a Petition Program which applies for a grant).

## Chapter 4

# *Relationship Between Source Water Assessments and the Public Water Supply Supervision Program*

# Relationship Between Source Water Assessments and the Public Water Supply Supervision Program

## Introduction

Preventing the contamination of, and maintaining good quality drinking water supplies is the primary goal of source water protection efforts under the Safe Drinking Water Act. Reducing or preventing chemical and microbiological contamination of source waters could ideally allow public water systems to avoid costly treatment and minimize monitoring requirements. States could also save resources that would otherwise have to be devoted to compliance assistance, oversight, and enforcement. The purpose of this chapter is to identify those programs either already established or under development in the Public Water Supply Supervision (PWSS) Program that could benefit from source water protection efforts, and in turn, discuss how some PWSS activities can help States and systems achieve objectives of the source water assessment and protection programs.

## Interim Monitoring Relief

### *How Can Local Source Water Assessments Assist an Interim Monitoring Relief Program?*

Under Section 1418(a), States may reduce monitoring requirements for most contaminants for an interim period for a system(s) serving under 10,000 people if: 1) the initial sample fails to detect, at the time of greatest vulnerability, the presence of the contaminant; and 2) "the State, considering the hydrogeology of the area and other relevant factors, determines in writing that the contaminant is unlikely to be detected by further monitoring during such period."

The interim monitoring relief period would end either when permanent monitoring relief is adopted and approved for the State, or August 1999, whichever comes first. Interim, or permanent (see below) monitoring relief would not apply to microbiological contaminants, DBPs, or corrosion byproducts, but would apply to all other chemical contaminants. To serve as the basis for interim relief, monitoring conducted at the beginning of the period must occur at the time determined by the State to be the time of the source water's greatest vulnerability to the contaminant, "taking into account in the case of pesticides the time of application of the pesticide for the source water area and the travel time for the pesticide to reach such waters and taking into account, in the case of other contaminants, seasonality of precipitation and contaminant travel time." States could use any timely and relevant information gleaned from source water assessments to help determine whether interim monitoring relief for given systems and contaminants would meet those requirements. At a minimum, assessments would help the State identify those systems likely to be eligible or ineligible for monitoring relief. However, it must be recognized that, due to the different timing of the interim relief and source water assessment provisions, few new assessments (as opposed to data from existing assessments) are likely to be available in time to be useful for interim monitoring decisions.

## **Permanent Monitoring Relief**

### ***How Can Local Source Water Assessments Assist States Implement a Permanent Monitoring Relief Program?***

Under Section 1418 (b), States with an approved source water assessment program may adopt "tailored alternative monitoring requirements": where the State "concludes that (based on data available at the time of adoption concerning susceptibility, use, occurrence, or wellhead protection, or from the State's drinking water source water assessment program) such alternative monitoring would provide assurance that it complies with the Administrator's guidelines." (emphasis added). EPA will publish these guidelines under separate cover, after notice and opportunity for comment, by August 6, 1997. Permanent monitoring relief does not apply to microbiological contaminants, DBPs, or corrosion byproducts - it would apply to all other chemical contaminants. It applies to *all* public water systems, including non-community water systems, for which a source water assessment has been completed.

Many States have already reviewed chemical monitoring waiver applications under the Phase II/V rules. For those cases where waivers have not already been considered, permanent monitoring relief provides one of the clearest potential benefits for States and systems to conduct source water assessments. Primacy States that do not have an EPA-approved source water assessment program will not be eligible to offer permanent monitoring relief to their public water systems. Public water systems that do not have a complete source water assessment are not eligible for permanent monitoring relief. Unlike the limited time frame for granting interim monitoring relief, there is no time constraint for granting permanent monitoring relief by the State, nor for the duration of such relief. This should encourage States to not only conduct source water assessments so as to

gather information needed to make permanent monitoring relief determinations, but to maintain an active and comprehensive assessment program. States that do so will be at an advantage in responding to system requests for monitoring relief, and in responding to the public regarding justifications for such decisions.

## **Chemical Monitoring Reform (CMR)**

### ***How Can CMR Assist States Implement Local Source Water Protection Assessments?***

Depending on timing of the chemical monitoring reform (CMR) regulations, States could incorporate data from assessments conducted under CMR into their source water assessment programs. The CMR is scheduled to be proposed in 1997 and promulgated by August 6, 1998. EPA is planning to require States to identify systems at risk of contamination and establish sampling schedules during the period(s) of greatest vulnerability. Development of system specific sampling schedules will typically involve identifying potential contamination source(s) and assessing the probable timing of contamination based on the management of those sources and intervening hydrogeologic or climatic features. These analyses would both support and be supported by activities that States undertake in implementing a source water assessment program. The process of targeting at-risk systems may help States establish priorities for conducting more thorough assessments. For many States, the information collected through the source water assessments could provide a necessary component for meeting the requirements of CMR. CMR is also expected to include provisions for systems with source waters at low risk of chemical contamination to reduce the frequency of monitoring and possibly the number of sampling points, based on local vulnerability. It may also allow groups of systems to consolidate their sampling points

within an aquifer or watershed based on a comprehensive assessment of the area.

Reduced sampling would be permitted in States that have established criteria that meet CMR requirements for conducting source water assessments. These requirements for States will be established in the rule and will include several components of a source water assessment program discussed in this guidance, such as delineations, and identification of contamination sources and management practices in the area.

#### *How Can Source Water Assessment Programs Assist Development and Implementation of CMR?*

A State source water assessment program could serve, at least in part, as a technical basis under the CMR for 1) targeting at risk systems for increased monitoring; 2) reduced monitoring through waivers; or 3) establishing "intra-system surrogate sampling" (selected points that represent all sampling locations within a system) by determining which sampling points are the most vulnerable. Time-of-travel assumptions used by a State for its SWAP would have to be consistent with CMR criteria in order to take advantage of reduced monitoring options.

States that meet the CMR criteria may also allow the use of "inter-system surrogate sampling points" (*i.e.*, geographically targeted sampling points), which would serve for all the sampling points among two or more systems, by determining where the most vulnerable sampling points should be located. Source water assessments will be critical to States in implementing inter-surrogate sampling programs under CMR since information will be generated on the susceptibility of source waters to contamination and the vulnerability of public water systems to the contaminants found. Several issues would arise if source water assessment programs were to be used to support

inter-system surrogate sampling. For example, as a condition of approval for inter-system surrogate sampling, States would also be required to have GIS mapping of ground water supplies, delineations of surface water supplies, and an inventory of all sources of contamination for affected systems within the watershed or recharge zone that may contribute to any of the source water withdrawal points.

#### **Surface Water Treatment Rule**

##### *How Can Implementation of the Surface Water Treatment Rule Assist States with Local Source Water Protection Assessments?*

Under the Surface Water Treatment Rule (SWTR), a system is eligible for a waiver from filtering their surface water supply only if a series of water quality and disinfection criteria are met, and the system maintains a watershed control program satisfactory to the State that minimizes the potential for microbial contamination. Most systems that have received such waivers have source water delineations and some inventory of potential contamination from coliform bacteria, Giardia, and other microbials in their watersheds. In some cases, systems have worked with local communities and State and county agencies to institute additional control measures and monitoring programs in the watershed to prevent source water contamination. In these cases, States should use information already available in conducting assessments of these systems. For systems with approved filtration waivers where sources of regulated microbial contaminants have been assessed, States or delegated entities should conduct assessments for potential chemical contamination as well if they have not been previously inventoried.

***How Can Local Source Water Assessments Assist Implementation of the Surface Water Treatment Rule?***

In overseeing approved filtration avoidance waivers, States may benefit from additional information that would otherwise not be available in the absence of source water assessments. The SWTR is designed to minimize risks from only a subset of microbial contaminants (*Giardia*, coliform bacteria, viruses, *Legionella*) and filtration avoidance determinations could have missed potential sources of contamination from *Cryptosporidium*, as well as other indices such as phosphorous loadings or chemical contamination. In addition, assessments could provide information on activities in the watershed with potential for contamination of source water, and on water quality in waterbodies upstream from drinking water reservoirs (e.g., tributaries) that could signal potential threats. This type of information could provide States and systems with important tools to identify problems and prevent contamination that could ultimately trigger filtration requirements. Further, this information could prove invaluable in efforts by States and systems (both filtered and unfiltered) to prepare for future regulatory requirements for Enhanced Surface Water Treatment and Disinfection Byproducts.

The Agency encourages States to review available information on their unfiltered surface water systems in cases where watershed land is not protected, to determine whether or not system vulnerability to microbial contamination has increased since a filtration avoidance determination was made. Where States determine that microbial vulnerability has significantly increased, States should adjust or institute additional source water protection measures as needed, or conduct additional assessments.

For surface water systems that have filtration in place, the SWTR does not require any source water protection measures. Filtration systems require proper operation and maintenance and are subject to sub-optimal performance. Assessments in conjunction with other watershed protection measures could identify potential threats and help such systems maintain multiple barriers against microbial contamination and good source water quality and thereby avoid the need for additional treatment. It could assist States to prioritize oversight, technical assistance efforts, or DWSRF funding considerations for those systems that are at increased risk of source water contamination. As noted above, if properly designed, operated and maintained, filtration removes most turbidity, and the SWTR only covers a subset of microbiological contaminants; even systems with successful filtration treatment, or States, may not be aware of potential sources of contamination from *Cryptosporidium* or chemical contaminants in the watershed. States could use information already available from assessments conducted under wellhead protection programs (for ground water systems with filtration) or other programs under the Clean Water Act (e.g., Section 303, TMDL assessments, non-point source monitoring).

**Underground Injection Control: Class V Wells**

***How Can Implementation of the UIC Class V Program Assist States with Local Source Water Protection Assessments?***

Class V program staff can identify Class V wells that are potential sources of contamination in wellhead and source water protection areas, particularly those that may pose an endangerment to a community's water supply. Class V program staff have targeted shallow underground disposal wells in source water protection areas to ensure that the wells comply with the Safe Drinking Water Act by having

owners and operators close the well or having other management measures applied to avoid endangerment.

Class V wells are one of the most important sources of contamination to public water supplies and should always be a high priority for identification when assessments are conducted. Unfortunately, these wells are not easily found since they may consist of a septic system that a commercial facility misused to dispose of its wastewater, or floor drains at industrial/hazardous material-handling facilities. Further some Class V wells, such as appropriately operated septic systems, may pose relatively low risks to an aquifer compared to other contamination sources in the same wellhead protection area. Class V program staff may have an inventory of the Class V wells that are located in a source water protection area and may assist with the search for high risk facilities.

#### *How Can Local Source Water Assessments Assist Implementation of the Class V Program?*

State source water protection programs can support Class V programs by addressing Class V wells in source water protection areas. EPA will propose regulations by June 18, 1998 with respect to high risk Class V injection wells, such as large capacity cesspools and industrial waste wells in source water protection areas. Once the new Class V rules become effective, it will be important that source water areas are delineated if the final rule targets high risk wells in source water protection areas. Source water assessments will help State UIC program managers save considerable resources by allowing these regulations to be targeted to delineated source water protection areas in lieu of statewide application.

For Class V well categories other than cesspools and industrial disposal wells, such as agricultural drainage wells, risk and impact

information is limited and the wells will not be regulated until sufficient information is gathered. A source water assessment program can assist the Class V program in the national study of Class V wells where EPA will be collecting information on those Class V wells that have been identified in source water protection areas. This information, in turn, can be used to support the Class V rulemaking and determine whether additional regulation is needed.

#### **Sanitary Surveys**

##### *How Can Sanitary Surveys Assist States Implement Local Source Water Protection Assessments?*

The purpose of a sanitary survey is to evaluate and document the capabilities of a public water system to continually provide safe drinking water and identify any deficiencies. A system's treatment, storage, distribution network, operation and maintenance, as well as the system's source(s) are evaluated as part of a survey. Sanitary surveys could provide the opportunity for State drinking water officials (or approved third party inspectors) to conduct the formal source water delineations and assessments.

If States choose to rely on the sanitary survey schedule to conduct all of their source water assessments, one concern would be whether the assessments could be completed within the timeframe specified in the Act. Under 40 CFR 142.10, States must establish a systematic program for conducting sanitary surveys, with priority given to public water systems not in compliance with drinking water regulations. The 1995 EPA/State Joint Guidance on Sanitary Surveys recommends numerous factors for States to consider in establishing a survey plan. These plans will be negotiated with EPA Regional Offices. In many cases, the sanitary survey plans and the source water assessment programs could be integrated by the State to

insure completion of source water assessments so that the two can be done concurrently. Sanitary surveys could provide one means of providing updates to the source water assessment program and follow-up on development of source water protection activities.

***How Can Local Source Water Assessments Assist States to Conduct Sanitary Surveys?***

States could use information collected in source water assessments, whether done separately or concurrently, to enhance sanitary survey information and to identify systems of concern that should receive priority for surveys.

**Ground Water Disinfection Rule (GWDR)**

***How can the GWDR Assist States Implement Local Source Water Protection Assessments?***

Section 1412(b)(8) of the SDWA directs EPA to issue a regulation after August 1998 requiring disinfection for ground water systems, as necessary, after publishing criteria for States to determine if ground water systems need disinfection. In developing the GWDR, EPA is considering strategies to control risk from microbial contamination as an alternative to disinfection. When developing their source water assessment programs, States may want to consider the strategies being considered for the GWDR. EPA encourages States to review the components of their wellhead protection programs to insure that the best available scientific information is fully reflected in the States program.

***How Can Source Water Assessment Programs Assist Development and Implementation of the GWDR?***

It is possible that the GWDR, once enacted, may recognize the implementation of specific source water protection criteria (e.g., delineation of microbial set back areas, identification and

effective management of potential sources of microbial contamination) in conjunction with additional criteria as an alternative to disinfection. States should recognize that meeting these criteria through wellhead protection activities may necessitate an enhanced focus in the wellhead program on microbial risks or possibly require modifications of established setback distances.

*Chapter 5*

*Coordination of SWP and  
Other EPA and Federal Programs*

# Coordination of SWP and Other EPA and Federal Programs

## A. Linkages to Other EPA Programs

### *Integrating Source Water Protection into the Watershed Approach*

#### 1. *What is the Watershed Approach?*

EPA and other agencies are encouraging a watershed approach which is a coordinating framework for environmental management that focuses public and private sector efforts to address the highest priority problems within hydrologically defined geographic areas, taking into consideration both ground and surface water flow. Watershed approaches aim to prevent pollution, achieve and sustain environmental improvements and meet other goals important to the community. Although watershed approaches may vary in terms of specific objectives, priorities, elements, timing, and resources, EPA recommends the following guiding principles.

**Partnerships.** Those people most affected by management decisions are involved throughout and shape key decisions. This ensures that the people who depend upon the natural resources within the watersheds are well informed of, and participate in planning and implementation activities. Watershed stakeholders comprise a wide variety of interests, including: Federal, State, and local environment, public health, agricultural and natural resource agencies, concerned citizen groups, Indian tribes, industry and agricultural sector representatives, and the academic community.

**Geographic Focus.** Activities are directed within specific geographic areas, typically the areas that drain to surface water bodies or that recharge or overlay ground waters or a combination of both.

*Sound Management Techniques based on Strong Science and Data.* Collectively, watershed stakeholders employ sound scientific data, tools, and techniques in an iterative decision making process. This includes:

- Assessment and characterization of the natural resources and the communities that depend upon them;
- Goal setting and identification of environmental objectives based on the condition or vulnerability of resources and the needs of the aquatic ecosystem and the people within the community;
- Identification of priority problems;
- Development of specific management options and action plans;
- Implementation; and
- Evaluation of effectiveness and revision of plans, as needed.

The iterative nature of the watershed approach encourages partners to set goals and targets and to make maximum progress based on available information while continuing analysis and verification in areas where information is incomplete.

#### 2. *How Can a Watershed Approach Assist States and Localities in Conducting Local Source Water Protection Assessments?*

Source Water Protection Assessments undertaken by States and localities can benefit from integrating their assessments into ongoing or new watershed efforts, including integrating various State and local assessment efforts, establishing joint priorities for assessments, and

coordinating actions among programs. Whether a jurisdiction starts with a Source Water Protection Program, a National Estuary Program, a Clean Lakes Project, a total maximum daily load assessment, a National Pollutant Discharge Elimination System watershed strategy or other place-based strategy, moving to a more comprehensive approach will foster a more efficient and effective collaboration of efforts. By integrating these efforts, managers of Source Water Assessment programs as well as other program managers will better understand the pollutant sources causing the most critical problems within each watershed. Using this information to set priorities allows public and private managers from all levels to allocate limited financial and human resources to address the most critical needs.

*3. How Can a Watershed Approach Assist States and Localities in Implementing Local Source Water Protection Programs?*

Integrating Source Water Protection Programs into watershed projects will bring to the attention of the various stakeholders in the watershed the importance of targeting source waters as high priority areas for protection by various Federal, State, local and volunteer programs. Watershed projects will strengthen teamwork between the public and private sectors at the Federal, State, tribal and local levels. This emphasis gives people who depend on the aquatic resources a meaningful role in their management, and can build a sense of community, reduce conflicts, increase commitment to the actions necessary to meet societal goals and, ultimately, improve the likelihood of sustaining long-term improvements. Building on or initiating new local watershed projects can result in cost savings by leveraging and building upon the financial resources and the willingness of the people with interests in the watershed to take action. Through improved communication and coordination integrating these efforts can reduce

costly duplication of efforts and conflicting actions.

*4. How can Finished Local Source Water Assessments Assist State/Local Watershed Protection Programs?*

Watershed protection programs will benefit from having finished Source Water Assessments which identify source water priorities to be integrated into other watershed efforts like point and nonpoint source pollution control, wetlands protection, waste management, air pollution, pesticide management and other programs such as agriculture (in any given jurisdiction, these might be several different agencies). This integration of efforts will allow various watershed stakeholders to jointly compare their lists of high priority areas, meet with each other, and look for opportunities to leverage their limited resources to meet common goals.

*5. Who are the Key Watershed Protection Decision Makers at the State and Local Levels?*

Various stakeholders including State and local public health, environment, and natural resources agencies, industry and agricultural sector representatives, citizens groups, and tribes all contribute to collaborative decision making. For more information on watershed efforts visit EPA's homepage [<http://www.epa.gov/owow/watershed/>].

*National Watershed Assessment Project*

*1. What is the National Watershed Assessment Project (NWAP)?*

NWAP is EPA's first attempt at a nationwide watershed characterization and has four objectives: characterize the condition of the nation's 2,149 watersheds and identify watersheds at particular risk; stimulate and empower citizens to participate in watershed assessment, protection, and restoration efforts;

inform the dialogue about priorities among water resource managers; and establish a baseline for measuring progress towards achieving healthy watersheds.

*2. How can NWAP Assist States and Localities in Conducting Local Source Water Assessments?*

State and Tribal water quality managers will use the NWAP characterization of watershed condition and vulnerability as a starting point for discussing where the most serious water quality problems are located and where further assessment and monitoring, education, and protection programs needs to be focused.

NWAP can also be considered a backbone to which additional data layers and information can be added to meet the needs of specific program areas such as the Source Water Assessment program. For example, a group of EPA, State, and interest group representatives are working to both refine the NWAP source water data layer, which currently provides a partial characterization of the overall condition of source waters used by public water systems. This effort may produce a separate, but associated and more detailed characterization of the condition for source water quality in watersheds.

*3. How can NWAP Assist States and Localities in implementing Local Source Water Protection Programs?*

NWAP has already helped by stimulating improvements to the data EPA maintains related to source water quality. In particular, for NWAP, data in the Safe Drinking Water Information System (SDWIS) were geo-located into 8-digit watersheds. This geographic assignment is now being reviewed and refined by States. Because these data are now geo-referenced, Source Water Protection Programs will be better able to get an initial idea of how

well the protection measures put in place are affecting the quality of the watershed.

*4. How can Finished Source Water Assessments Assist NWAP?*

Better and more complete information about source water quality (both surface and ground water) will improve the NWAP characterization of watershed condition in subsequent portrayals. The source water assessment program is an essential means to generate the comprehensive information necessary to accurately reflect drinking water sources as a national priority for protection in watersheds.

*5. Who are the Key Decision Makers for NWAP at the State and Local Levels?*

EPA Regions, State water quality agencies and Tribes are reviewing NWAP and will be making key decisions.

*Monitoring and Data Management*

*1. What are EPA's Clean Water Act Monitoring and Data Management Programs?*

The core of EPA's monitoring program is the 305(b) report of the Clean Water Act which requires States to report to EPA on the condition of their ground and surface waters. States conduct ambient water monitoring to determine the quality of their waters, changes in water quality over time, the causes of water quality problems, and if pollution control programs are working. Water monitoring data are compared to State standards to determine the extent to which waters meet designated uses, including drinking water supply. States use their 305(b) water quality reports to communicate findings to the public and to better manage their water programs. The national summary of these State reports is presented in a report to Congress. This is one of the few national-level water quality reports; its overall conclusions about

sources and causes of pollution are used in determining where to focus national water pollution control efforts and resources. The report also includes information on State and Tribal water pollution programs and special human health and aquatic life issues.

EPA produces a variety of monitoring tools such as technical methods and protocols, as well as guidance recommending baseline State monitoring program components to be implemented. Monitoring is also conducted under the nonpoint source program (Section 319), the National Estuary Program (Section 320), the Clean Lakes Program (Section 314), and through various special studies and programs.

EPA's data management program for ambient water quality is centered on EPA's STorage and RETreival system (STORET). This database contains decades of raw surface and ground water data. Much of the raw data analyzed for the 305(b) water quality reporting process is stored in STORET. STORET is currently being modernized to more effectively handle the complex needs of the nation's evolving monitoring programs. EPA is the co-chair of the National Water Quality Monitoring Council, a consortium of public and private monitoring agencies that facilitates implementation of the nationwide monitoring strategy designed by the Council's predecessor, the Intergovernmental Task Force on Monitoring Water Quality.

EPA's information on water discharges permitted by NPDES is included in its Permit Compliance System (PCS) database.

*2. How can EPA Monitoring and Data Management Programs Assist States and Localities in Conducting Local Source Water Protection Assessments?*

Monitoring data collected under the various programs cited above, using a broad variety of technical monitoring tools, may provide

valuable existing data to source water assessments which can result in reduced costs and efforts. For those source waters that need additional pollutant occurrence data, EPA's technical monitoring tools (e.g., monitoring protocols and guidance documents) should be useful.

In 1994, States were asked to work with EPA to prepare multi-year State monitoring strategies addressing core program elements, including integration with program-specific monitoring such as source water or the National Pollutant Discharge Elimination System. These multi-year monitoring strategies can be used as a base for SWAP programs, and at minimum should be closely linked with monitoring and assessment of specific source waters.

The modernized STORET data management system will be able to handle information generated by source water assessments. A vast array of information on data owners, project and survey types, field activities, sampling stations, types of samples, and sampling results will be storable and accessible in the modernized STORET, along with quality assurance checks to ensure the reliability of the information.

EPA's Water Body System allows States to submit and store their CWA 305(b) data in electronic form. One of the water uses States assess under 305(b) is source water for drinking water.

EPA is also working to strengthen State georeferencing capabilities to better track monitoring information for mapping and GIS applications. GIS tools, including the Reach File 3 system that assigns unique locational identifiers to the waters of the U.S., will be valuable in source water assessments.

Source water protection programs should work cooperatively with State ambient monitoring staff, including the 305(b) and performance partnership staff, to ensure that existing data are

recognized and used. Source water assessments are not intended to involve substantial amounts of new, ambient monitoring. Any monitoring undertaken for assessments must be economical and effective; cooperative work with State monitoring will ensure that duplication of monitoring effort is not occurring, and that any new data that are collected are appropriate and credible. Coordination with the EPA data management staff will ensure that all needed data storage capabilities for source water protection efforts are accounted for in the modernized STORET system, as appropriate.

### *3. How Can Monitoring and Data Management Programs Assist States and Localities in Implementing Local Source Water Protection Programs?*

Monitoring data collected under the various programs cited above, using a broad variety of technical monitoring tools, will allow source water protection program managers to 1) characterize waters; 2) identify problems; 3) design programs; 4) measure the effectiveness of their efforts; 5) identify resulting trends; and 6) direct resources to areas of greatest need. Similarly, EPA's data management systems will allow analysts and decision makers easy access to monitoring information, are flexible to varying data requirements, and ensure that the data stored are of documented quality. This should help implement the most effective controls and management practices in source water protection areas.

### *4. How Can Source Water Protection Assessments Assist Monitoring and Data Management Programs?*

Information about source water quality is a valuable data layer to be added to monitoring data collected by State and Federal agencies, and thereby improve State and national assessments of water quality. The water environmental indicators reporting project at the national level and at the watershed level

(through the National Watershed Assessment Project) includes source water protection data, and the source water assessments will make that data more robust.

### *5. Who are the Key Decision Makers for Monitoring and Data Management at the State and Local Levels?*

State 305(b) water quality assessment coordinators, monitoring program managers and computer information services providers at the State and local levels are key decision makers. Staff who design performance partnerships are also critical, since it is monitoring that provides the information to assess results. For more information visit EPA's homepage [<http://www.epa.gov/owow/monitoring/>].

### *Nonpoint Source Program (CWA)*

#### *1. What is the Nonpoint Source (NPS) Program?*

The national nonpoint source program was established by Congress when it enacted the Clean Water Act amendments in 1987 and included a new section addressing nonpoint source pollution. Section 319 established a three-stage process whereby States could receive grant funding to address nonpoint source pollution. States were: (1) required to conduct statewide assessments of their waters to identify those that were either impaired (did not fully support State water quality standards) or threatened (presently meet water quality standards but are likely not to continue to meet water quality standards fully) because of nonpoint sources; (2) required to develop nonpoint source management programs to address the impaired or threatened waters identified in their nonpoint assessments; and (3) entitled to receive annual grants from EPA to assist them in implementing their nonpoint source management programs once the assessments and programs had been approved by EPA.

EPA has now approved the assessments and management programs for all States and Territories. Many States are in the process of revising their management programs. Through FY 1997, a total of nearly \$571.5 million has been awarded to the States and Territories under Section 319. A small portion of the annual Section 319 appropriation is set aside for Indian Tribes. The Tribal allocation is limited by statute to one third of one percent of the national appropriation. To date, 10 tribes have obtained approval of their nonpoint source assessments and management programs and are receiving 319 funding to help implement their NPS programs. The current national guidance for this program was released in May, 1996.

In 1990, as part of the Coastal Zone Act Reauthorization Amendments, Congress required all States (29) with Federally approved Coastal Zone Management Act programs to develop coastal nonpoint source programs. These programs, currently being jointly approved by EPA and NOAA (the National Oceanic and Atmospheric Administration), provide for implementation within coastal watersheds of management measures specified by EPA and incorporate policies and mechanisms, enforceable at the State level, to ensure implementation of the specified measures.

### *2. How Can the Nonpoint Source Program Assist States and Localities in Conducting Local Source Water Protection Assessments?*

Some assessment activities may be eligible for Section 319 funding. In addition, the assessments developed for the NPS programs should serve as valuable sources of information and data about land-based pollution sources which may now or in the future contribute to the contamination of drinking water intakes and wells, as well as identify both surface waters known or suspected of being contaminated by NPS pollution. In most States, the NPS assessments have been incorporated into the

National Water Quality Inventory (305(b) Report) and are consequently updated periodically as part of each State's overall water quality assessment effort.

### *3. How Can the Nonpoint Source Program Assist States and Localities in Implementing Local Source Water Protection Programs?*

The technical guidance document, *Guidance Specifying Management Measures For Sources of Nonpoint Pollution in Coastal Waters* (EPA, Office of Water, 840-B-92-002, January 1993) developed by EPA for the coastal nonpoint source program, constitutes the most comprehensive and up-to-date national summary of management measures for preventing and reducing NPS impacts on surface and ground waters, and is applicable to inland as well as coastal nonpoint sources (agriculture, forestry, urban runoff, marinas, hydromodification, wetlands protection). The guidance should prove valuable to States and localities in developing programs and strategies to protect drinking water sources from land-based contaminants. Furthermore, the Section 319 funds awarded to States to assist them in implementing their NPS management programs can be used, and have been used, to implement measures to protect drinking water sources where such activities are described or referenced in the State's NPS management program. Roughly half of each State's 319 grant award is passed through to local groups and organizations for on-the-ground implementation activities. Additionally, the enforceable policies and mechanisms incorporated in State coastal NPS programs might well be utilized as an additional tool to achieve implementation of Source Water Protection Programs in coastal areas.

**4. *How Can Finished Local Source Water Assessments Assist State and Local Nonpoint Source Programs?***

As mentioned above in section (2), NPS assessments are periodically updated as part of the National Water Quality Inventory. Federal, State and local assessment resources are typically insufficient to address all waters. Consequently, these updates must make use of information and data from many different organizations and agencies. Information and data from finished source water assessments would be very helpful for most States in improving and expanding coverage of State water quality assessments. Better and more comprehensive assessment information and data would then make possible more effective and efficient use of Federal, State and local resources to improve and protect both surface and ground water for all uses.

**5. *Who Are the Key Decision Makers for Nonpoint Source Programs at the State and Local Levels?***

Each EPA Region has a NPS Coordinator who is familiar with the NPS programs for each of the States, Territories and Tribes in that Region and the 319 funding process for those States, Territories and Tribes. In each State, the lead agency for nonpoint source pollution is designated by the Governor. There is a nonpoint source coordinator in each State lead NPS agency responsible for managing the State's NPS program. In most States, this Coordinator is located in the State's water quality agency. In several States the NPS Coordinator is located in the State's conservation agency and in one State (TN) the NPS Coordinator is located in the State agricultural agency. Increasingly, decisions about funding and program priorities are made by a broad-based NPS Task Force representing State agencies as well as other stakeholders at the State and local levels. For more information

visit EPA's homepage  
[<http://www.epa.gov/owow/nps/>].

**Total Maximum Daily Load (TMDL) Program**

**1. *What is the Total Maximum Daily Load (TMDL) Program?***

The Total Maximum Daily Load (TMDL) Program under section 303(d) of the Clean Water Act is the technical backbone of the watershed protection approach. Under section 303(d), States are required to identify waters that do not meet water quality standards, even after the implementation of nationally required levels of pollution control technology, and to develop TMDLs for those waters, with oversight from EPA. The law also requires States to establish a priority ranking for their waters needing TMDLs. TMDLs allocate pollutant loadings to pollution sources in a watershed, and provide a basis for identifying and establishing controls to reduce both point and nonpoint source pollutant loadings.

**2. *How Can the TMDL Program Assist States and Localities in Conducting Local Source Water Assessments?***

State lists that identify waters needing TMDLs, and TMDLs developed for specific water bodies, are a useful source of information for the development of source water assessments. Section 303(d) lists identify waters not meeting water quality standards due to a particular pollutant or stressor; this type of information will be helpful for identifying contaminants of concern for source waters. TMDLs for particular water bodies generally provide more detailed information about the sources of the pollution and actually can be used to develop allocation scenarios for pollutant loadings among pollution sources in a watershed.

### ***3. How Can the TMDL Program Assist States and Localities in Implementing Local Source Water Protection Programs?***

The TMDL Program is a planning program that identifies waters still needing attention to meet water quality standards. The TMDLs provide a basis for allocating pollutant loadings among pollution sources in a watershed. For a source water serving as a public water supply, the data developed as part of the TMDL assessment for that water provides a basis for implementing local Source Water Protection Programs and other programs.

### ***4. How Can Finished Local Source Water Assessments Assist State TMDL Programs?***

State TMDL Programs are required to use all "existing and readily available" information in developing section 303(d) lists and Source water assessments may provide additional data upon which to base listing decisions and also to develop TMDLs for a particular water body. For example, since TMDLs are developed for specific pollutants or stressors, identification in source water assessments of contaminants of concern in a particular SWPA would be helpful to State TMDL Programs.

### ***5. Who are the Key Decision Makers in the TMDL Program at the State and Local Levels?***

State TMDL Programs are generally managed by State water quality agencies. At the local level, a variety of stakeholders may be involved including local and regional governing agencies, point sources, farmers, foresters, land developers, city and State planners, and local environmental organizations. For more information visit EPA's homepage [<http://www.epa.gov/owow/tmdl/index.html>].

## ***National Estuary Program***

### ***1. What is the National Estuary Program?***

In 1987, Congress established the National Estuary Program (NEP) as part of the Clean Water Act. The NEP's mission is to protect and restore the health of estuaries while supporting economic and recreational activities. To achieve this, EPA helps create local estuary programs (referred to as "NEPs") by developing partnerships between government agencies that oversee estuarine resources and the people who depend on the estuaries for their livelihood and quality of life. These groups plan and implement programs according to the needs of their own areas. To date, 28 local programs are demonstrating practical and innovative ways to revitalize and protect their estuaries.

A major benefit of the NEP is that it brings communities together to decide the future of their local estuaries. The NEP combines the work of many groups. Each local program consists of representatives from government agencies responsible for the estuary's health and productivity, and from the community-citizens, business leaders, educators, and researchers. The multi-interest working committees and an overall management conference address characterization (biological, geophysical, chemical, and social parameters) of the estuary and its watershed, the priority problems for the estuary, actions to correct the priority problems, and ways to finance the actions. As a result of this work, detailed comprehensive management plans are produced by all programs. The newest source water concerns of many of the 28 NEPs fall into four categories:

- Community sustainability including adequate source water supply and supply expansion capacity - growth in many coastal communities has already exceeded existing supplies, and many others are near capacity. Traditional dependence on shallow aquifer sources in many coastal areas is ending

because of naturally poor water quality, saltwater intrusion, or contamination from onsite disposal. The economic and environmental impacts associated with managing shortages and funding new sources are significant. Local and regional assessments must be conducted to assist coastal communities with planning their future growth.

- Impacts of over-pumping - in addition to water quality degradation which can result from over pumping, wetlands and other vital wet habitats can be adversely affected (e.g. the Florida Everglades) by lowering of the water table.
- Activities in recharge areas - coastal communities most often do not control the water quality of the deep supply aquifers. With assessments in hand, local and State officials can plan together to protect recharge areas.
- Upstream withdrawals and discharges - when coastal communities use surface water for supply or to supplement ground sources, they must depend upon users throughout the watershed to ensure adequate quantity and quality.

## *2. How Can the NEPs Assist States and Localities in Conducting Source Water Protection Assessments?*

The NEPs have local government representatives on the various committees which may have identified source water assessment and protection as a priority issue. Each NEP has engaged multiple stakeholders interested in source water including, governmental agencies, citizens, land owners and scientists. During development of their comprehensive conservation and management plans, most NEPs have identified priority problems threatening the estuary. Many of these problems may threaten local source water. States and localities can get a head start on their own source water

assessments by using the information compiled by the NEP.

## *3. How Can the NEPs Assist States and Localities in Implementing Local Source Water Protection Programs?*

Most NEPs currently include partners such as the National Oceanic and Atmospheric Administration (NOAA). NOAA's programs associated with the Coastal Zone Management and Marine Protected Areas Act include protection efforts for surface waters. The various State and local committees working on these programs are existing venues which should welcome additional source water protection efforts and partners.

Integrating Source Water Protection Programs together with NEPs will bring to the attention of the various stakeholders in the estuary's watershed the importance of targeting source waters as high priority areas for protection. This will strengthen teamwork between the public and private sectors at the Federal, State, tribal and local levels to achieve the greatest environmental improvements with the resources available. This integration can result in cost savings by leveraging and building upon the financial resources and the willingness of the people with interests in the estuary's watershed to take action. Through improved communication and coordination, State and local Source Water Protection Programs can reduce costly duplication of efforts and conflicting actions.

## *4. How Can Finished Source Water Assessments Assist Individual NEPs?*

Most of NEPs are concerned about source water protection. The inherent vulnerability of drinking water sources in coastal areas to over use and contamination has been amplified by the rapid growth seen in these areas. The finished source water assessments will provide valuable information to the NEPs and their

stakeholders, enabling the evaluation of efforts undertaken by the local programs to reduce threats to source waters.

*5. Who are the Key Decision Makers for the NEP at State and Local Levels ?*

Each NEP establishes a management conference which includes a policy committee, management committee, scientific/technical advisory committee, and a citizens advisory committee. Committee representatives include individuals from EPA and other Federal agencies, State, regional, and local government agencies, environmental groups, educational institutions, local industries, and the general public. To locate contacts for a specific program, consult the National Estuary Program Homepage [<http://www.epa.gov/owow/estuaries/nep.html>], or call the State coastal or marine affairs agency, or call the main National Estuary Program office at 202/260-1952.

*Clean Lakes Program*

*1. What is the Clean Lakes Program?*

The Clean Lakes Program is one of the earliest programs to use the watershed protection approach in monitoring and restoration activities to control a wide range of pollution sources. The program has provided more than \$145 million over 20 years under Clean Water Act section 314 to support grants and cooperative agreements for priority lake monitoring, assessment, and protection projects in all areas of the country. This support has included statewide assessments of lake conditions, Phase I projects for initial identification of water quality problems and solutions for specific lakes, Phase II projects for implementation of lake restoration and protection activities, and Phase III post-restoration monitoring projects. EPA has been encouraging States to use section 319 nonpoint source funds to support lakes-related work that was previously done under the

Clean Lakes Program, as there has been no appropriation for the program since 1994. For more information on the Clean Lakes Program and other lakes information, visit its Internet homepage at: [<http://www.epa.gov/OWOW/lakes/lakes.html>].

*2. How Can the Clean Lakes Program Assist States and Localities in Conducting Local Source Water Assessments?*

Many lake assessment and restoration activities have been conducted under the Clean Lakes Program and information from these studies could be useful in developing source water assessments for specific lakes used as source waters. Clean Lakes Program statewide lake assessments and Phase I studies for particular lakes may be of greatest help in assessing lake conditions. Phase II projects support implementation efforts and are sometimes followed by Phase III post-restoration monitoring projects. A particular lake may have only a Phase I project completed or in some cases may have all three phases completed.

*3. How Can the Clean Lakes Program Assist States and Localities in Implementing Local Source Water Assessment Programs?*

The information developed in Clean Lake Program projects may assist States and localities in implementing source water assessment programs. As indicated above, EPA has been encouraging States to use section 319 nonpoint source funds to support lakes-related work that was previously done under the Clean Lakes Program.

*4. How Can Finished Local Source Water Assessments Assist State Clean Lakes Programs?*

New analyses conducted for lakes under the Source Water Assessment Program could better characterize the vulnerability of important lakes, and thereby reinforce the need for additional

lake restoration and protection activities. The identification and documentation of these vulnerabilities will hopefully spur action at the local and State level. Some of these needs can be addressed through section 319, CWASate Revolving Funds, State-funded lake programs and other sources of funding.

*5. Who are Key Decision Makers in the Clean Lakes Program at the State and Local levels?*

State lake programs are generally managed by State water quality agencies. At the local level, a variety of stakeholders may be involved including local and regional government agencies, lake associations and lakeshore residents, local environmental and other organizations, and many others. For more information visit EPA's homepage [<http://www.epa.gov/owow/lakes/>].

**Wetlands Program**

*1. What is the Wetlands Program?*

The U.S. EPA, in partnership with other Federal agencies, and State, local, and tribal governments is responsible for restoring and maintaining the chemical, physical, and biological integrity of the nation's waters, which include wetlands. Section 404 of the Clean Water Act, which is jointly administered by the U.S. Army Corps of Engineers and EPA, establishes a program to regulate the discharge of dredged or fill material into waters of the U.S. While the Section 404 program commonly regulates the discharge of dredged or fill material on a case-by-case basis, provisions found within this authority can allow for the regulation of aquatic resources in a more comprehensive manner. Some examples include watershed planning, special area management planning and advanced identification.

EPA's Wetlands Program has made efforts to integrate wetlands protection into existing EPA programs (e.g., Section 401 certification, Section 305(b)). In addition, some States have developed or are developing State Wetlands Conservation Plans (SWCPs) which provide a framework for integrating wetland programs across many State programs. The EPA Wetlands Program has experience in providing assistance for the development of comprehensive wetlands plans, participating in efforts to develop such plans, and reviewing plans for other State and local programs.

*2. How can wetlands protection assist States and localities in conducting local Source Water Assessments?*

Wetland protection programs often need to assess the overall health of watershed/ecosystems in order to estimate the impacts of proposed man-made changes to wetlands and other waters. Assessments undertaken by Federal, State, and local governments for the purpose of protecting wetlands can provide information that may be useful for source water assessments.

*3. How can wetlands protection assist States and localities in implementing local Source Water Protection Programs?*

Wetlands can provide a wide range of different functions and benefits to local communities including the interception and filtration of pollutants thereby improving source water quality. Integrating wetlands protection into Source Water Protection Programs can bring to the attention of stakeholders the importance of targeting wetlands and source waters as high priority areas for protection. Through improved communication and coordination, State and local Source Water and Wetland Protection programs can reduce costly duplication efforts and conflicting actions.

**4. How can finished Source Water Assessments assist Wetlands Protection?**

Finished source water assessments can provide valuable information as to the need for wetlands protection and/or restoration activities. These assessments can identify areas where wetlands are valuable and should be protected as well as areas where the enhancement or restoration of wetlands can provide important functions in the watershed (e.g., improve water quality). Wetlands may be lower cost alternatives to water treatment. Protection or restoration of wetlands will likely reduce impacts to source water. Restoring wetlands often reduces the potential for impacts to source waters.

**5. Who are the key decision makers for Wetlands Protection at the State and local levels?**

Key decision makers include EPA Regions, State/Tribal and local natural resources/water agencies. For more information visit EPA's homepage [<http://www.epa.gov/owow/wetlands/>].

**The NPDES Program and Source Water Protection**

**1. What is the National Pollutant Discharge Elimination System (NPDES) Program?**

Under the authority of the Clean Water Act, the NPDES program regulates point source discharges to surface waters such as wetlands, lakes, rivers, estuaries, bays, and oceans. Point source discharges include wastewater from industrial processes, effluent from municipal wastewater treatment plants, industrial and municipal stormwater, combined sewer overflows, and sanitary sewer overflows. The NPDES program also regulates biosolids (the semi-solid residue from wastewater treatment processes) to ensure that they are handled properly and manages the national pretreatment program to reduce the level of pollutants

discharged by industrial facilities into municipal sewage systems.

Permits regulate discharges with the goal of ensuring protection of human health and aquatic life. If regulated facilities fail to comply with the provisions of their permits, they may be subject to enforcement actions. EPA and the States use a variety of techniques to monitor permittees' compliance status, including on-site inspections and review of data submitted by permittees.

**2. How can the NPDES program assist States and localities in conducting local Source Water Assessments?**

A State Source Water Assessment Program is required to delineate the boundaries of the areas providing source waters for public water systems, to identify sources of contaminants that could threaten public water systems, and assess the susceptibility of the systems to such contamination. The NPDES program could assist States and localities in a number of ways to conduct source water assessments.

In 1994, the Office of Wastewater Management developed the "NPDES Watershed Strategy" as a first step toward fully integrating the NPDES program into a broader watershed management approach. This strategy promotes establishment of statewide watershed management frameworks that delineate watersheds and sub-watersheds (including both surface water drainage areas and connections to aquifers) and coordinate water management program activities around these watersheds. Approximately 25 States have developed or are developing statewide watershed management frameworks. To the extent that a SWPA would include an entire watershed or sub-watershed, the State Source Water Protection Program would benefit from participating in the framework development and delineation processes.

Recently, the NPDES program has initiated discussions on development of a single mechanism (a "watershed permit") that could address multiple pollutant sources within a watershed. A framework for "watershed permitting" is the next logical step in fully integrating the NPDES program within an overall watershed approach. Implementation of a watershed permit would necessarily involve a process of local watershed monitoring, assessment, and planning to determine appropriate, enforceable, local control actions (including nonpoint source controls). Source water assessments can and should be a part of such an overall watershed assessment and planning effort. Also, the NPDES program has convened a Federal Advisory Committee to advise EPA on strategies to control urban wet weather point sources (i.e., stormwater, combined sewer overflows, sanitary sewer overflows). EPA, in cooperation with the Urban Wet Weather Flows Federal Advisory Committee, is developing a document providing guidance on local watershed assessment and planning that may be useful for source water assessments.

Finally, monitoring requirements associated with the NPDES program provide a number of opportunities for obtaining data useful for source water assessments. Permits may contain effluent, ambient, and biosolids monitoring requirements that would be critical in identifying the presence and origin of contaminants in a delineated SWPA. EPA and the Urban Wet Weather Federal Advisory Committee are developing recommendations and guidance on coordinating watershed monitoring data within the framework of a watershed plan. The final document can and should consider source water assessment needs when providing guidance on monitoring for watershed planning and assessment and recommendations for monitoring requirements for NPDES permits.

3. *How can the NPDES Program assist States and localities in implementing local Source Water Protection Programs?*

As noted in the response to question 2, the NPDES program, particularly as it operates within the context of a watershed management framework, can provide valuable information for conducting the delineation and assessment portions of a Source Water Protection Program. NPDES also can partner with a Source Water Protection Program to create a forum for watershed delineation and assessment.

As States and localities move beyond the assessment phase to implementation of source water protection measures, NPDES permits will be key measures for ensuring control of contaminants that could threaten PWSs. The NPDES program provides enforceable regulatory requirements that can be designed to meet the goals of a Source Water Protection Program. Regulation of individual wastewater discharges and of the use and disposal of biosolids are critical means of ensuring attainment of water quality standards applicable to public water supplies and other source water protection goals. In addition, the concept of a "watershed permit" may provide the means for aggregating contaminant assessments and requirements for point and nonpoint source control measures on a watershed basis in order to achieve these goals.

4. *How can finished local Source Water Assessments assist the NPDES program?*

Permit writers often must determine where water quality-based permit limits are needed and then develop limits based upon sparse data. Finished source water assessments can provide a means to collect information from other existing data sources on ambient levels of contaminants, and significant potential sources of contaminants developed in the assessment itself, that could be used to assess the need for permit limits for individual contaminants and to

calculate such limits. Also, the conditions in a "watershed permit" would be based, in part, on the information gathered in a source water assessment and goals identified as a result of the source water assessment.

*5. Who are the key decision-makers for the NPDES program at the State and local levels?*

There are 43 States and territories authorized to implement the NPDES program. In these States, the program generally is implemented by the State water quality agency. Typically, this agency also is responsible for water quality planning, setting water quality standards, and enforcement, all programs with critical links to the NPDES program. In States and territories that are not authorized to implement the NPDES program, EPA is the permit-issuing authority. In these States, EPA works closely with State agencies that implement related programs.

In addition to State authority, cities with municipal wastewater treatment plants covered by the pretreatment program are authorized to establish pretreatment requirements to deal with local pollution problems. These requirements reduce the level of pollutants discharged by industry into municipal sewage systems.

**Sole Source Aquifer Protection Program**

*1. What is the Sole Source Aquifer Protection Program?*

The Sole Source Aquifer Protection Program is authorized under Section 1424(e) of the Safe Drinking Water Act. The provision allows EPA to declare that an aquifer is a "sole or principal drinking water source" for an area if contamination of the aquifer could create a significant hazard to public health. A sole source aquifer designation can be initiated by a petition submitted to EPA from any interested party, such as a public water purveyor, local

health department, or an environmental group. Following a designation, federal financially assisted projects proposed over the aquifer are subject to EPA review. EPA can negotiate modifications to improve a project or even deny funds to a project which poses a significant risk to public health by contamination of the sole source aquifer.

*2. How can the Sole Source Aquifer Protection Program assist States and localities in conducting Source Water Assessments?*

The hydrogeologic and water usage information assembled by EPA during the designation process can aid in defining protection areas and determining the susceptibility of water supplies. Project reviews can be a source of information on potential contaminant sources within SWPAs.

*3. How can the Sole Source Aquifer Protection Program assist States and localities in implementing local Source Water Protection Programs?*

A designation can increase community awareness on the use, value, and vulnerability of aquifers which helps build support for developing and implementing various ground water protection efforts. Project reviews can often lead to direct technical assistance by identifying specific activities or practices that may lead to ground water contamination. In addition, technical assistance usually involves site-specific coordination of ground water protection activities between State and local environmental and public health protection agencies. Since the program focuses specifically on ground water and can cover many types of activities that may impact ground water quality, it offers an added level of protection for projects which might not be fully addressed through normal federal environmental/public health impact evaluations.

**4. How can finished local Source Water Assessments assist Sole Source Aquifer Protection Programs?**

The information from source water assessments can be used to help evaluate whether an area meets SSA designation criteria, and can provide useful information for project reviews, such as the location of delineated SWPAs, potential or existing sources of contamination, and local variations in aquifer susceptibility.

**5. Who are the key decision makers in the Sole Source Aquifer Protection Program at the State and local levels?**

Although project review authority cannot be delegated, EPA collaborates with state and local entities, such as health, environmental and planning agencies, to help evaluate whether proposed federally-assisted projects may endanger drinking water supplies and to develop appropriate and cost-effective mitigation measures. In most cases, the key decision makers are the state and local agencies or organizations that petition EPA for an SSA designation.

**Other EPA Programs That Will Be Described Here in Chapter 5.**

- Pesticide State Management Plan (SMP) Program
- Pollution Prevention Program
- Radiation Program
- RCRA Subtitle C Program
- RCRA Subtitle D Program
- Superfund Program
- Toxic Substances Control Program
- Underground Storage Tank Program
- Emergency Planning and Community Right-To-Know Act (EPCRA)

**B. Linkages to Other Federal Programs**

Most resource based Federal programs have some involvement in water protection issues. The key to a successful State and local effort is to build partnerships which direct available resources towards the specific task of protecting drinking water sources. Some of the Agencies with the program level involvement include:

- U.S. Department of Agriculture;
- U.S. Department of the Interior;
- U.S. Department of Defense;
- U.S. Department of Energy;
- U.S. Department of Transportation;

A detailed description of the various program level activities and contact information will be available through OGWDW homepage. ([Http://www.epa.gov/OGWDW/swp.html](http://www.epa.gov/OGWDW/swp.html).) OGWDW's homepage also provides links to available Internet information about Federal programs which may be relevant to State program development and implementation.

The U.S. Department of Agriculture has several programs and significant resources that can be used to advance State and local source water efforts. For example, the Farm Service Agency (FSA) administers the Conservation Reserve Program which provides for protection of environmental sensitive acreage. States can use this program to enroll land that impacts drinking water supplies. Further, FSA can help States identify already enrolled land which falls within delineated areas. Designated wellhead protection areas already receive special consideration. In addition, by designating certain geographic areas as Conservation Priority Areas (CPA), States can ensure that all cropland within that area is eligible for enrollment in the CRP. Another provision of the CRP, the Conservation Reserve Enrollment Program (CREP), allows States to target CRP enrollments to address high priority resources such as delineated source water protection areas.

The primary contacts for program information are available through State and County Farm Service Agency Offices.  
(<http://www.waix.fsa.usda.gov/areamap.html>)

The Department of the Interior has several organizational units which directly or indirectly influence the management of surface and ground water. Activities range from investigative research to program planning and data management. Particularly relevant to the assessment process is the U.S. Geological Survey's mission to collect, evaluate and disseminate water availability, quantity and use information. U.S.G.S. has offices in every State and has interdisciplinary teams of scientists and technicians who can assist States with source water assessments. Federal matching funds are usually available to match funding from State and local governments, including State revolving funds. Several studies involving source water area delineation and susceptibility analysis have been completed and fact sheets are available on request. The list of USGS State Representatives is on the Internet at [[Http://water.usgs.gov/public/staterep.html](http://water.usgs.gov/public/staterep.html)]. The U.S. Fish and Wildlife Service has a national wetlands inventory project and can provide maps and digital wetlands data. Over 20,000 maps have been digitized and are available to the public through the Internet from the National Wetlands Inventory's web site [<http://www.nwi.fws.gov>]. The National Wetlands Inventory Regional Wetland Coordinators located in the Fish and Wildlife Service Regional Offices are the contacts for wetland mapping or digitizing activities. Other relevant agencies within DOI include Bureau of Land Management (BLM), the National Park Service (NPS), the Regional Aquifer System Analysis (RASA) program, Bureau of Reclamation, and Office of Surface Mining OSM). For example, many Park Service Units have extensive surface and ground water data and operate GIS systems that can facilitate the interpretation and availability of such data.

Implementation of Department of Defense environmental activities is largely carried out by the four military services -- Army, Navy, Air Force and Marines. States can coordinate their source water activities through DOD's Environmental Quality Centers. The services have extensive data on existing sources of contamination associated with defense activities and bases and can work with the States to identify potential sources. Many bases have their own water supplies and have already implemented extensive wellhead protection activities.

The Department of Transportation (DOT) plans for and implements projects to mitigate any adverse effects on public health and the environment as a result of air, highway or rail travel and infrastructure. The Federal Aviation Administration has efforts underway to encourage airports to use best management practices when using aircraft and de-icing agents. Also within DOT, The Federal Highway Administration has erosion control guidelines and is developing joint FHWA/EPA training in erosion control and non-point source pollution.

The Department of Energy regulates all national defense -related uses of radioactive materials at its sites. DOE sites prepare Annual Site Environmental Reports and annual environmental monitoring reports which contain detailed environmental information. Each DOE site has a program in place for ground water and surface water protection from radiological contamination. State agencies seeking information on source water at DOE sites can contact the DOE Operations Office or the DOE area Office with responsibility for a given site. Names and phone numbers are available through the DOE Homepage at <http://www.doe.gov>.

EPA has asked its other Federal partners to assist States as they implement the new provisions of the Safe Drinking Water Act. EPA is also encouraging Federal agencies to use

the information developed through SWAPs to target and prioritize their efforts and available funding to these areas.

EPA is collating information provided by other Federal Programs for use by States as they develop and implement their source water programs. Specifically, agencies have been asked to identify:

- The activities and programs that have the strongest bearing on source water assessments and protection;
- How the agency can assist States implement source water assessment and protection programs?
- How source water assessments can be useful to the Agency's efforts and priority setting efforts;
- Who should States contact within the agency to coordinate source water activities;
- Who are other Stakeholder's with a primary interest in the agency's activities?

This information will be made available to States on the OGWDW homepage with links to other Internet resources. Examples of the kind of information available are provided for the National Wetlands Inventory and the U.S. Geological Service, and the Forest Service.

***Resources Available From The U.S. Geological Survey For Assisting States With Source Water Assessments***

The U.S. Geological Survey (USGS) has offices in every State and has interdisciplinary teams of scientists and technicians who can assist States with source-water assessments. Federal matching funds are usually available from the USGS to match funding from State and local governments, including the State Revolving Funds. Several studies involving source area

delineation and susceptibility analysis have been completed, and fact sheets are available on request.

***1. Activities of USGS With Strongest Bearing on Source-Water Assessment:***

The following USGS programs can provide useful information for source water assessments:

- Federal-State Cooperative Program—Administered locally, this is a broad-based Federal-State partnership, with matched funding, that addresses needs for data and water studies of interest at both the State and the Federal level.
- USGS Drinking Water Initiative—Coordinated at Headquarters, this program seeks to apply USGS data and expertise to drinking-water related issues.
- National Water Quality Assessment (NAWQA)—Federally funded comprehensive water-quality studies of 55 major watersheds nationwide.
- National Stream-Quality Accounting Network (NASQAN)—Collects water quality data at fixed sites on major rivers nationwide.
- National Water Quality Laboratory—Provides analyses of a full range of contaminants, with extremely low detection limits, for detection of trends invisible when normal detection limits are used.
- Toxic Substances Program—Specific studies on fate and transport of toxic materials.
- Data collection, storage, and retrieval—The USGS routinely collects and stores a vast amount of data on streamflow, aquifers, and water quality.

- **Geographic Information Systems (GIS)**—Most spatial data at USGS are stored in digital form, and can be used in a GIS.
- 2. How the USGS Can Assist States in Designing and Implementing Source-Water Assessment and Protection Programs:**
- **Delineation**—USGS can delineate drainage areas for surface water and contributing areas for wells. For larger drainage basins, delineations are already available in USGS hydrologic unit maps.
  - **Identification of significant potential sources of contamination**—Some USGS GIS layers are available showing certain types of potential sources of contamination. USGS can also work with States to produce the required maps.
  - **Susceptibility analysis**—USGS can use existing and new studies of watersheds, aquifers, land use, and contaminant fate and transport to determine susceptibility of drinking water sources to contamination. The USGS can also sample streams and wells to determine occurrence patterns and trends in contaminant concentrations. Such studies in Washington and New Jersey have resulted in savings, in the form of monitoring waivers, that more than covered the cost of the studies.
  - **Implementation and protective measures**—USGS can participate in scientific review of source-water protection plans.
- 3. How State Assessments can be useful to USGS:**

Assessments can help to identify priority areas with specific water-quality problems that require additional study.

**4. USGS contacts:**

For National inquiries related to drinking water, contact

Glenn Patterson, USGS  
 Drinking Water Coordinator  
 412 National Center  
 Reston, VA 20192  
 Phone 703-648-6876  
 Fax 703-648-5722  
 E-mail gpatter@usgs.gov

For inquiries related to a particular State, use these contacts, which are kept in an updated list at <http://water.usgs.gov/public/staterep.html>

**5. USGS primary partners at the State and local level:**

- State and local government agencies dealing with water issues
- State Geologists
- Water Resources Research Institutes
- Other Federal agencies (State and local offices)
- Indian Tribes
- Universities
- Intergovernmental and public partnerships on water and environmental issues

**6. Other stakeholders with an interest in USGS activities:**

- The public
- Environmental and Industry groups
- Consulting firms
- Congress
- Professional organizations

**National Wetlands Inventory**

**U.S. Fish and Wildlife, DOI**

Information on how to order wetland maps and digital data would be useful to the States

because wetlands are important in maintaining and protecting surface water quality.

- 1) How can the National Wetlands Inventory assist States implement source water assessment and protection programs?

**Answer:** The National Wetlands Inventory Project provides maps and digital wetland data that provides the site specific classification and locational information communities need to protect the wetlands that are protecting, maintaining, and improving their surface water quality. Wetland maps are a prerequisite for watershed planning. Draft or final maps are available for 88 percent of the conterminous United States, 30 percent of Alaska and all of Hawaii. Ordering information for paper maps is available by calling 1-800-USA-Maps.

- 2) How can State Assessments be useful to the National Wetlands Inventory?

**Answer:** Assessments would identify key areas where there is a need to complete or update wetland mapping or digitizing of existing maps so they can be made available over the Internet.

- 3) Who should States contact at the National Wetlands Inventory with which to coordinate source water assessments?

**Answer:** The National Wetlands Inventory has Regional Wetland Coordinators located in the Fish and Wildlife Service Regional Offices.

- 4) Who are your primary partners at the local level?

**Answer:** The National Wetlands Inventory's primary funding support has been at

the Federal and State levels. Some funding has been provided by water boards such as Denver, cities such as Portland and New York, counties in Virginia and North Carolina, universities, utility companies, and Indian Tribes.

#### *State Contacts*

Arizona Game & Fish  
Colorado Division of Wildlife  
Delaware Dept. of Natural Resources and Environmental Control  
Florida Dept. of Environmental Regulation  
Florida Dept. of Natural Resources  
Georgia Dept. of Natural Resources  
Hawaii Office of Environmental Quality  
Illinois Natural History Survey  
Indiana Dept. of Natural Resources  
Maine Office of GIS  
Maryland Dept. of Natural Resources  
Michigan Dept. of Natural Resources  
Minnesota Dept. of Natural Resources  
Nebraska Conservation Survey Division  
New Jersey  
New York Wildlife Resources Center  
North Carolina Center for Geographic

#### *Information & Analysis*

North Carolina Dept. of Natural Resources  
Ohio Dept. of Natural Resources  
Oregon Dept. of Energy  
South Carolina Land Resources Commission  
South Carolina Water Resources Commission  
South Dakota Game, Fish & Parks  
Tennessee Wildlife Resources Agency  
Utah  
Virginia Dept. of Conservation & Recreation  
Virginia Dept. of Game & Inland Fisheries  
Washington Dept. of Ecology  
Washington Dept. of Natural Resources  
Washington Dept. of Wildlife  
West Virginia Dept. of Water Resources  
Wyoming Game & Fish  
Wyoming Dept. of Environmental Quality

*5) Who are other Stakeholder's with a primary interest in your Agency's activities?*

**Answer:**

- U.S. Air Force
- U.S. Air National Guard
- U.S. Army
- U.S. Army Corps of Engineers
- U.S. Coast Guard
- U.S. Navy
- U.S. Dept. of Agriculture-Forest Service
- U.S. Dept. of Agriculture-Soil Conservation Service
- U.S. Dept. of Commerce-National Oceanic and Atmospheric Administration
- U.S. Dept. of Energy
- U.S. Dept. of Interior-Bureau of Land Management
- U.S. Dept. of Interior-Bureau of Reclamation
- U.S. Dept. of Interior-Fish and Wildlife Service
- U.S. Dept. of Interior-National Biological Service
- U.S. Dept. of Interior-National Park Service
- U.S. Environmental Protection Agency
- U.S. Dept. of Transportation

# Appendix A

## *Outreach Process for Notice and Comment by Stakeholders*

- Final Guidance for State Source Water Assessment and Protection Programs (including Source Water Petition Programs) will be published on or before August 6, 1997.
- Stakeholder Meetings To Assist EPA With the Draft and Final Guidance:
  - Prior to Publishing the Draft Guidance in 1997
    - National Stakeholders Meeting — National Organizations of States, Water Suppliers and Environmentalists, Others (January 7/8, 1997)
    - 2 Large System Seminars - (systems serving over 50,000 people) ( December, 1996 in Tempe, Arizona, and January, 1997 in Portland, Oregon )
    - March 13/14 meeting of the National Drinking Water Advisory Council's Working Group on Source Water Protection.
  - Between Publishing the Draft and Final Guidance in 1997
    - 15-20 EPA Regional Stakeholder Meetings (April and May, 1997)
    - 1 large systems seminar (April, 1997)
    - Early June meeting of the National Drinking Water Advisory Council's Working Group on Source Water Protection.
    - Late June meeting of the NGA, ASIWPCA, GWPC, ASDWA, ECOS, NASDA on source water assessment and protection program issues.

We will post availability of the Draft guidance and announce the meetings on EPA's Internet homepage cited in the introduction to this guidance. Below is our tentative schedule for producing the required source water assessment and protection guidance.

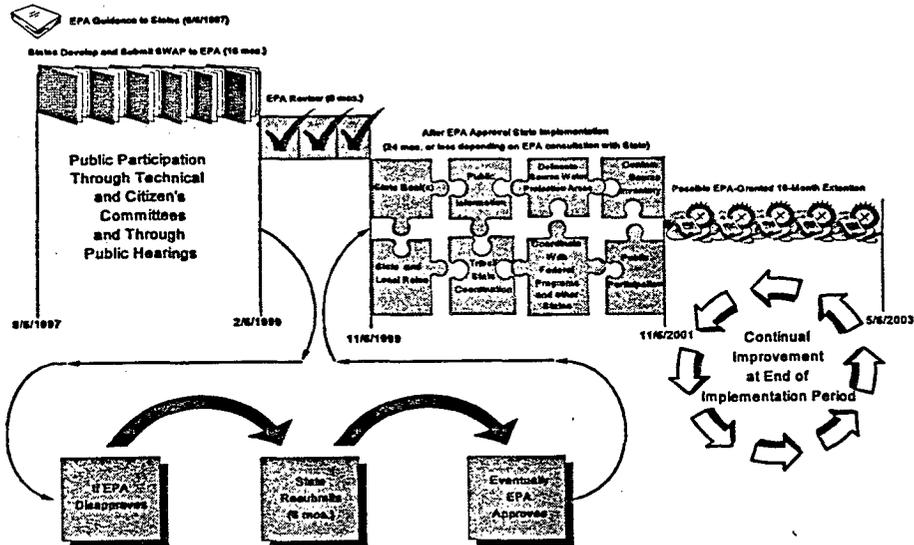
# SDWA Assessment and Protection Guidance

## Tentative Schedule for Production in 1996 and 1997

<i>DATE</i>	<i>EPA ACTION</i>
OCTOBER 11	Send Draft Discussion Guide to ASDWA, ASIWPCA and GWPC Lead Committee Chairs Asking For Comments by November 15
OCTOBER 14 - 16	ASDWA Meeting Discussion
NOVEMBER 6	Regional Branch Chiefs Meeting
NOVEMBER 15	State Comments Back
DECEMBER 1	Comments by other Reviewers
DECEMBER 28	Send Discussion Guide to All Stakeholders for the January 7/8, 1997 National Stakeholders Meeting
JANUARY 7 / 8	National Stakeholders Meeting
JANUARY 17	Deadline for any Additional Written Comments from the Stakeholders Meeting
April 4, 1997	Draft Guidance Released
APRIL - MAY, 1997	Regional Stakeholders Meetings
JUNE 13, 1997	Final Comments from Everyone - Including Regional Summaries of Stakeholder's Meetings (1 Summary Per Region)
AUGUST 6, 1997 OR BEFORE	Final Version Mailed to Stakeholders

## Appendix B

### Process for State Submittal and Implementation of Source Water Assessment Programs



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## Appendix C

# *Enhancing Topographic Delineations for Source Water Protection Areas*

As States delineate SWPAs for surface-water based sources of drinking water, they may want to consider using buffer/setback zones, time-of-travel zones and/or use modeling techniques. While these are not delineation techniques, they can assist States in defining "critical areas" for management actions. Below is information that can assist States in using these techniques.

### **Buffers/Setbacks**

A typical buffer/setback zone for source water protection is a strip of vegetated land generally 50 to 400 feet in width along the shore of a stream or reservoir that is upstream of a public water supply intake. Analogously a buffer/setback can be delineated for a reservoir. Determination of the width of buffer zones is often based on consideration of such factors as: the topography of the land, the local land uses, the political and legal feasibility of setting aside such buffers, slope, size of the stream and land ownership rights.

Surface water buffer zones and setbacks are often used as a means of reducing the adverse impacts of runoff on drinking water sources. The primary purpose of buffers/setbacks is to filter sheetflow and, to a lesser extent, encourage increased ground water infiltration. Buffer zones ("green areas") may be intended to serve several functions such as: wildlife habitat, stream bank integrity, protection of hyporheic zone for aquatic life, residential or commercial exclusion or source water protection.

### **Time-of-Travel**

States may delineate SWPAs for spill and other emergency response activities. The following describes the use of time-of-travel studies for defining SWPAs for emergency planning. In this method, the time of travel (TOT) of flow in a stream is calculated between the drinking water intake and a point(s) upstream. This method does not actually result in a SWPA delineation; rather, the method is based on the length and velocity of a stream between the point of interest and an upstream monitoring location. It is the stream-flow travel time between those two points that provides the opportunity for managers to respond to a contamination event. Use of this method would be of greatest importance for drinking water utilities tapping rivers or reservoirs designated for commercial transport or other industrial and municipal wastewater discharges. Water quality flow models have been used to estimate the travel time for a potential spill in a river to reach a drinking water intake and to estimate the level of contamination at the intake. These models provide a means through which specific hydrologic, geographic, and water quality parameters can be factored into a determination of the necessary size of a SWPA upstream from a drinking water intake.

## Modeling

Ground water discharge and surface runoff models may also be used to assess the potential impact of individual contaminant sources, and to identify watershed areas with the greatest potential impact on source water quality. Modeling can be used in conjunction with source water assessments to enhance source water quality protection efforts.

A variety of models have been developed to assess the impact of changing land use on surface water quality. Simpler models require less detailed, site-specific hydrologic information and provide more generalized and descriptive output. More complex models require more extensive input data and provide output with greater predictive capability and site specificity. Site specific output can provide locations of contamination sources and yield relatively accurate predictions of variable flows and water quality at any point in a watershed.

Contaminant source loading models estimate chemical loading rates to surface water. These methods are most useful for estimating variation in loading rates as a function of changing land uses within the watershed. For example, as shown in Figure C-1, land may be divided into residential, commercial-, industrial-, and agricultural-use parcels. If agricultural land is subdivided by soil type, crop type, and land management practice, the nonpoint source loading rates for runoff, sediment yield, and ground-water discharge may be estimated for each parcel type. These parcel estimates are summed to obtain the total loading rate for the watershed or watershed areas.

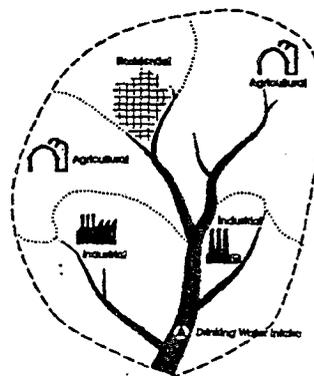


Figure C-1. Land Use Parcels

Several States, local governments, water suppliers, and watershed management authorities have begun modeling to identify those land uses that have the greatest potential impact on source water quality. Modeling can identify areas within the watershed that should be incorporated into the SWPA. Modeling can also be used to assess the impact of differing land management strategies within the SWPA to foster more effective source water protection.

## **Appendix D**

# ***Conjunctive Delineation of the Zone of Ground Water Contribution and the Area of Surface Water Contribution to Public Water Systems***

There are numerous hydrogeologic settings where there is a significant hydraulic connection between a stream or lake and an underlying aquifer. Alluvial sand and gravel deposits within the floodplains and terraces of river valleys typically function as high yield aquifers and are commonly used to produce municipal supplies. Ground water in these deposits typically exhibits a strong degree of hydraulic connection with the stream. Along many reaches, stream water routinely moves between the aquifer and the stream.

Ground water that occurs in fractured rocks in mountainous areas is also typically strongly connected to streams. Most of the flow in a mountain stream results from ground water discharge. Most of the water that infiltrates into fractured rocks above the stream valley will eventually discharge to the stream. To establish a Source Water Protection Area (SWPA) to protect public water supplies (PWSs) from all significant potential sources of contamination, it is important to determine if the PWS is providing water from both ground water and surface water sources.

Conjunctive delineation of (SWPAs) is the integrated delineation of the zone of ground-water contribution and the area of surface-water contribution to a public water supply. States that choose to consider the hydraulic connection

between ground water and surface water when delineating a SWPA, will afford themselves the opportunity to reduce contamination from ground-water and from surface-water sources.

### **1. Considerations for Conjunctive Delineation for Systems Primarily Supplied By Surface Water**

- Contaminants in ground water may ultimately be discharged into surface water. As ground water flows towards discharge points, the water is exposed to processes that provide some degree of in-situ remediation for many contaminants. Thus, the longer the ground-water travel time between the site of contaminant entry to an aquifer and the site of potential discharge to surface-water, the more likely that such contaminants will be remediated before discharge.
- The water supplied by a surface-water intake may have a significant ground-water component. In some locations, during part of the year, a major component of (and possibly all) surface water is ground water base flow. The USGS has estimated that about 40 percent of stream baseflow in the United States is ground water.
- The region (in the absence of engineered surface-water diversions) of surface-water

contribution to a drinking-water intake is the total watershed area uphill of the surface-water intake. The region contributing ground water is the entire portion of the ground-water basin upgradient of the surface-water intake. Complete protection of the intake should encompass these two regions. However, sources of contamination entering the ground water at a significant distance from an intake, may undergo in-situ remediation that is sufficient for the ground water to meet drinking-water standards at the intake.

- Although the geographic location of a surface-water divide may approximately coincide with that of a ground-water divide in an underlying water-table aquifer, colocation frequently does not occur. Absence of colocation results naturally, reflecting the hydraulic properties of the aquifer, distribution of recharge, etc. Divides may also fail to coincide as the result of discharge from large-capacity wells, or the artificial recharge of large volumes of water to the aquifer. Additionally, seasonal changes in the position of ground-water divides is not unusual. States making the initial assumption that ground-water and surface-water divides approximately coincide, may want to consider further hydrogeologic investigation to determine if this assumption is correct. This is particularly important where wells are located near enough to ground-water divides to cause displacement of the divide (the divide will be moved away from a pumping well.)

For further discussion of conjunctive delineation of SWPAs, the reader is referred to the document "Delineation of Source Water Protection Areas for Critical Use Sites In Or Near Surface Water; A Conjunctive Approach for Ground Water and Surface Water: A Guide for Managers" (in progress, 1997).

## 2. Considerations for Conjunctive Delineation for Systems Primarily Supplied By Ground Water

- The water supplied by a PWS well often includes a surface water component.
- During periods of high streamflow, surface water will migrate into ground water, the higher the stream stage, the further the potential migration of stream water. Streams that are "perched" (streams above the saturated zone) may leak water and contaminants through the unsaturated zone to an underlying unconfined aquifer.
- The pumping of wells in the vicinity of surface water may induce infiltration of the surface water into the ground-water and subsequently into the pumping well.
- A component of the water discharged by a well whose wellhead protection area (WHPA) intersects a stream in good hydraulic connection with the aquifer, will usually have a shorter travel time than the time-of-travel designated in the State/local wellhead protection program.
- A conjunctively delineated SWPA for a PWS well could include, 1) the WHPA plus the entire watershed area upstream of the intersection of the WHPA and the stream, or 2) the WHPA plus the entire watershed area upstream of the intersection of the WHPA and the area where there is significant surface water discharge to ground water.

## Appendix E

# *Potential Sources of Contamination Found in Wellhead Protection Areas and in Watersheds*

### *Wellhead Protection Areas*

Airports  
Animal burial areas and feedlots  
Asphalt plants  
Auto repair shops  
Boat yards  
Car washes  
Cemeteries  
Chemical manufacture, storage, and application  
(pesticides, fungicides, fertilizers, etc.)  
Construction areas  
Dry cleaning establishments  
Educational institutions (labs, lawns, and  
chemical storage areas)  
Electrical and electronic products and  
manufacturing  
Fire training facilities  
Foundries  
Fuel storage systems  
Furniture and wood strippers and refinishers  
Gasoline stations  
Ground water and surface water interactions  
Hazardous waste management units  
Household hazardous products  
Irrigation  
Jewelry and metal plating  
Laundromats  
Machine and metalworking shops  
Manufacturing and distribution sites for  
cleaning supplies  
Manure spreading and pits  
Medical institutions  
Mining and mine drainage  
Municipal incinerators

Municipal wastewater and sewer lines  
Municipal landfills  
Natural leaching (uranium and radon gas)  
Paint shops  
Petroleum products production, storage, and  
distribution centers  
Photography establishments and printers  
Pipelines (oil, gas, and coal slurry)  
Railroad tracks and yard maintenance  
Recycling reduction facilities  
Research laboratories  
Road de-icing activities (road salt)  
Road maintenance depots  
Salt-water intrusion and brackish water  
upconing  
Scrap and junkyards  
Septic systems, cesspools, and water softeners  
Septic lagoons and sludge  
Sewer lines  
Stormwater drains and retention facilities  
Swimming pools (chlorine)  
Toxic and hazardous spills  
Transfer stations  
Wells (operating and abandoned)  
Wood preserving facilities

### *Watersheds*

Airports  
Agricultural crop land use/pesticide/herbicide  
use  
Concentrated animal facilities of  
chemicals/toxic materials  
De-icers (applications on roadways and parking  
lot

***Watersheds (cont.)***

Disposal of municipal/industrial refuse in conveyance channel  
Dumping  
Erodible soils  
Fires  
Geologic hazards such as earthquakes, floods, landslides, etc.  
Grazing  
Ground water which influences surface water quality  
Hazardous waste disposal facilities  
Industrial area runoff  
Logging  
Military Installations  
Mine runoff  
Pipelines (petroleum and chemical)  
Reclaimed water for irrigation  
Recreational use  
Seawater intrusion  
Septic tanks, systems  
Solid waste disposal facilities  
Steep slopes  
Storage Facilities (Petroleum and chemical)  
Superfund Sites  
Traffic and Transportation accidents/spills  
Urban runoff  
Wastewater treatment plants  
Wastewater collection systems  
Wildlife (e.g. concentrations of geese)

## Appendix F

# *Factors to Consider When Doing An Adequate Contamination Source Inventory and Adequate Susceptibility Analysis*

States, or their entities delegated to do assessments or portions of assessments, will be accomplishing contamination source inventories and susceptibility analyses for each delineated SWPA. States will have to consider many factors when considering a class of land uses or a site. Below is a listing of factors that States should consider.

### **For Ground Water and Surface Water Sources of Drinking Water**

- Land-use zoning
- Existing best management practices or controls
- Surface water/ground water interaction
- Has any on-site landfilling, land treating, or surface impounding of waste, other than landscape waste or construction and demolition debris taken place, and will such circumstances continue?
- Are there any sand and gravel excavations which expose the water table and are used for illicit dumping?
- Are there major transportation corridors (roads, railroads, airports) where potential spills of hazardous substances or petroleum products might contaminate the drinking water source?
- Sludge disposal areas
- Are there utilities right-of-ways using pesticides?
- Are there permitted wastewater discharges (NPDES) which are of concern?
- Are there agricultural, landscaping, or golf course activities which might lead to releases of nutrients (fertilizers, manure) or pesticides to ground water or stormwater runoff?
- Are there concentrated releases of nitrogen to ground water from agricultural practices, landscaping practices, or dense developments relying on cesspools or septic systems?
- Are there portions of the SWPA with high percentages of impervious surfaces which might lead to increased stormwater runoff and decreased ground water recharge?
- Location of stormwater discharges? Are there any discharges directly into a surface water supply or near a well?
- Are there road salt storage areas?
- Are there activities which involve the use, handling, or disposal of hazardous substances or petroleum products?
- Are there any on-site piles of special or hazardous waste present, will such circumstance continue, and is there piling of other wastes which could cause contamination of ground water?
- Are there any underground storage tanks present at the site, and will such circumstances continue?
- Is the use and management of above ground tanks consistent with best management practices?

- Has any on-site release of any hazardous substance or petroleum taken place which was of sufficient magnitude to contaminate ground waters (known Federal or State hazardous waste sites)?
- Has any situation(s) occurred at this site which resulted in a “release” of any hazardous substances or petroleum?
- Have any hazardous substances or petroleum, which were released, come into direct contact with the ground surface at this site? (Note—do not automatically exclude paved or otherwise covered areas that may still have allowed chemical substances to penetrate into the ground).
- Have any of the following actions/events been associated with the release(s) referred to above?
  - Hiring of a cleanup contractor to remove obviously contaminated materials including subsoils
  - Replacement or major repair of damaged facilities
  - Assignment of in-house maintenance staff to remove obviously contaminated materials including subsoils
  - Designation of the release as “significant”
  - Reordering or other replenishment of inventory due to the amount of substance lost
  - Temporary or more long-term monitoring of ground water at or near the site
  - Stopped the use on an on-site or nearby water well because of offensive characteristics of the water
  - Coping with fumes from subsurface storm drains or inside basements, etc.
  - Signs of substances leaching out of the ground along the base of slopes at other low points on or adjacent to the site
  - On-site release(s) that may have been of sufficient magnitude to contaminate ground waters.
- Water quality monitoring and use assessments (305(b) Report)

- Hydrogeologic sensitivity
- Probable sources and causes of use impairments (305(b) Report)
- Well integrity
- Natural sources of contamination

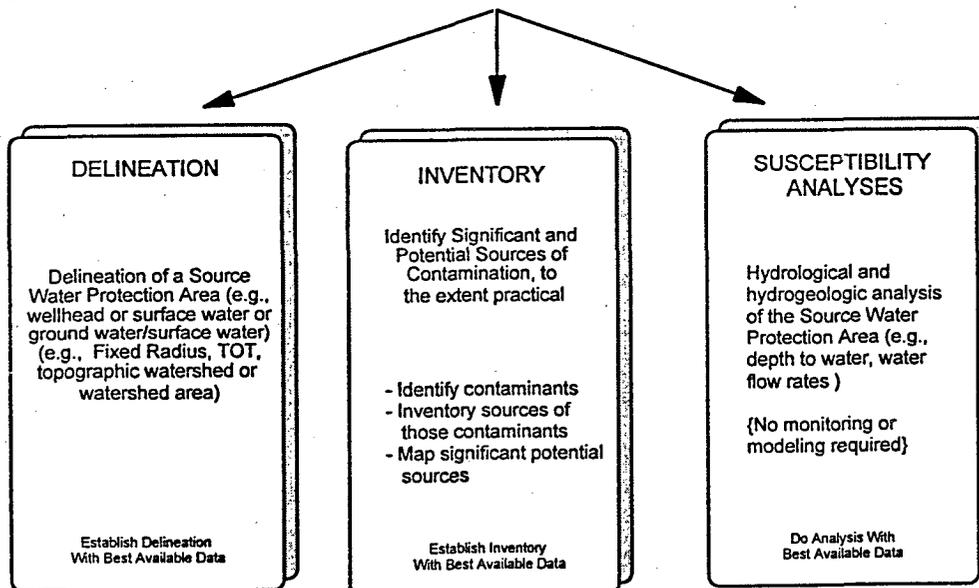
**Additional Factors For Surface Water Sources of Drinking Water**

- Steep slopes
- Clay content of soils or soils that are highly erodible (critical areas)
- Endangered ecosystems
- Recreational areas (campgrounds/trailer parks or greenway trails nearby a reservoir or tributaries)
- Tributaries or areas of a reservoir with high bacterial readings
- Land uses (that may not have zoning)
- Biological stream or lake assessments (305(b) Report)
- Modeling
- Upstream NPDES discharges
- Has any on-site landfilling, land treating, or surface impounding of waste, other than landscape waste or construction and demolition debris taken place, and will such circumstances continue?
- Is the use and management of containers and above ground tanks consistent with best management practices?

# Appendix G

## What Actions Are Needed to Complete a Local Source Water Assessment?

Required Assessments To Be Made Available To the Public



## Appendix H

# ***TIMETABLE FOR CERTAIN ACTIONS UNDER THE 1996 SDWA AMENDMENTS***

EPA ACTION ITEM	DATE DUE	CITE
<b>Drinking Water State Revolving Fund</b>		
Guidelines for State Revolving Fund	unspecified -- EPA released final guidelines 2/28/97	1452(g)(3)
Approve Grant Agreements with States	unspecified	1452(a)(1)(A)
Report to Congress -- Needs Survey	February, 1997, and every 4 years thereafter	1452(h)
Conduct a needs survey for Indian Tribes, and evaluate the public water systems on Tribal lands that pose the greatest threat to public health	February, 1997 and every 4 years thereafter	1452(i)(4)
Develop allotment formula for States based on Needs Survey	For FY'98 and annually	1452(a)(1)(D)(ii)
Publish guidelines for small system water conservation programs	August, 1998	1455(a)
Determine if States have met capacity development requirements for the purpose of withholding SRF funds	Start in FY'99	1452(a)(1)(G)
Report to Congress -- Transfer of Funds	August, 2000	302(b)
Determine State compliance with Operator Certification requirements for SRF withholding determinations	February, 2001	1419(b)
Report to Congress -- Evaluation of effectiveness of State loan funds	Submit with FY'2003 budget	1452(r)
Audit all State loan funds	"Periodically"	1452(g)(4)

EPA ACTION ITEM	DATE DUE	CITE
<b>Contaminant Selection and Standard Setting Authority</b>		
Publish a list of contaminants not subject to any proposed or final national primary drinking water regulation (must include sulfate)	February, 1998, and every 5 years thereafter	1412(b)(1)(B)(i)
Make determinations of whether or not to regulate at least 5 contaminants from above list	August, 2001, and every 5 years thereafter	1412(b)(1)(B)(ii)(I)
Propose MCLG and national primary drinking water regulation for any contaminant selected from above	August, 2003	1412(b)(1)(E)
Final MCLG and rule	February, 2005	1412(b)(1)(E)
Publish remaining MCLGs and promulgate national primary drinking water regulations for contaminants listed in the 1986 SDWA: aldicarb, atrazine, nickel, radionuclides	unspecified	1412(b)(2)
Review and revise national primary drinking water standards, as appropriate	Every 6 years	1412(b)(9)
Review and concur with State determinations on the use of alternatives to filtration for systems with undeveloped, uninhabited watersheds	unspecified	1412(b)(7)
Promulgate a regulation for filter backwash recycling within the treatment process of a PWSS, unless addressed in SWTR	August, 2000	1412(b)(14)
<b>Arsenic, Sulfate, Radon, Disinfection Byproducts</b>		
Develop plan for additional research on cancer risks from exposure to low levels of arsenic (consult with NAS, other stakeholders)	February, 1997	1412(b)(12)(A)(ii)
Propose standard for arsenic	January 1, 2000	1412(b)(12)(A)(iv)
Promulgate final standard for arsenic	January 1, 2001	1412(b)(12)(A)(v)
Complete sulfate study with CDC to establish a reliable dose-response relationship	February, 1999	1412(b)(12)(B)
Contract with NAS to conduct peer-reviewed risk assessment on radon	unspecified, but timely completion to allow for following item	1412(b)(13)(B)

EPA ACTION ITEM	DATE DUE	CITE
Publish health risk reduction benefits and cost analysis for potential radon standards	February, 1999	1412(b)(13)(C)
Propose radon standard	August, 1999	1412(b)(13)(D)
Promulgate final radon standard	August, 2000	1412(b)(13)(E)
Promulgate with final an alternative MCL and publish guidelines for multi-media mitigation measures if MCL for radon "is more stringent than necessary to reduce the contribution to inside air"	August, 2000	1412(b)(13)(F)
Approve/disapprove radon mitigation programs	Within 180 days of receipt.	1412(b)(13)(G)
Review State radon mitigation programs	Every 5 years	1412(b)(13)(G)
Promulgate Interim Enhanced Surface Water Treatment Rule	November, 1998	1412(b)
Promulgate Stage I Disinfectants and Disinfection Byproducts Rule	November, 1998	1412(b)
<b>PROMULGATE FINAL ENHANCED SURFACE WATER TREATMENT RULE</b>	November, 2000	1412(b)
Promulgate Stage II Disinfection Byproducts Rule	May, 2002	1412(b)
<b>GROUND WATER DISINFECTION RULE: ISSUE REGULATIONS REQUIRING DISINFECTION FOR ALL PUBLIC WATER SUPPLY SYSTEMS, INCLUDING SURFACE WATER SYSTEMS AND "AS NECESSARY" GROUND WATER SYSTEMS, AND PROMULGATE CRITERIA FOR DETERMINING WHETHER TO REQUIRE IN GROUND WATER SYSTEMS</b>	"After August, 1999" By May, 2002	1412(b)(8)

EPA ACTION ITEM	DATE DUE	CITE
<b>Public Notification/Consumer Awareness</b>		
Regulation for Public Notification	Unspecified	1414(c)(2)(A)
Annual Report on summarizing and evaluating State compliance reports	July 1, 1998--first annual	1414(c)(3)(B)
Regulation on Consumer Confidence Reporting	August, 1998	1414(c)(4)(A)
<b>Monitoring</b>		
Review and revision of existing requirements for not fewer than 12 contaminants -- CMR	August, 1998	1445(a)(1)(D)
Issue guidelines for alternative monitoring requirements -- PERMANENT (PMR)	August, 1997	1418(b)(2)(A)
Review and may approve alternative monitoring requirements for a State not exercising primary enforcement authority	First every 3 years, then every 5 years	1418(b)(4)
Issue a list of no more than 30 contaminants to be monitored by PWSs and to be included in national occurrence data base	August, 1999, then every 5 years	1445(a)(2)(B)
Establish National Occurrence Database. Periodically solicit recommendations for inclusion of additional contaminants	August, 1999	1445(g)
Issue regulations establishing criteria for a monitoring program for unregulated contaminants	unspecified	1445(a)(2)(A)
Review new analytic methods and may approve more accurate, cost-effective methods	unspecified	1445(i)
<b>Drinking Water Studies and Research</b>		
Develop study plan to support development of the DBPs/microbial pathogen rules (in consultation with the Secretaries of HHS and Agriculture)	February, 1997	1458(c)
Implement M/DBP research consistent with plan	unspecified	1458
Conduct waterborne disease occurrence studies for at least 5 major U.S. communities or PWSs	August, 1998	1458(d)(1)(A)
Conduct studies to identify subpopulations at greater risk and report to Congress	August, 2000, and periodically	1458(a)(2)
Prepare a report with CDC on findings of waterborne disease occurrence studies	August, 2001	1458(d)(1)

EPA ACTION ITEM	DATE DUE	CITE
Conduct research on the mechanisms by which chemicals cause adverse effects and on new approaches for studying the adverse effects on complex mixtures in drinking water	unspecified	1458(b)
Establish a national training and public education campaign to educate professional health care providers and the general public about waterborne disease and symptoms (with CDC)	unspecified	1458(d)
Develop a strategic plan for drinking water research and transmit this plan to Congress	unspecified	Sec. 202 of Title 2
<b>Capacity Development and Operator Certification</b>		
Complete review of existing State capacity development efforts and publish information to assist States and PWSs with capacity development efforts	February, 1997	1420(d)(2)(A)(i)
Publish guidance describing legal authorities and other means to ensure new CWSs and NTNCWSs demonstrate capacity (developed in consultation with the States)	August, 1998	1420(d)(4)
Provide initial funding for "1 or more" university-based environmental finance centers for activities that provide technical assistance to State and local officials in developing PWS capacity	unspecified	1420(g)(1)
Establish a national PWS capacity development clearinghouse	unspecified	1420(g)(2)
Initiate partnership with States, PWSs, and the public to develop information for States on recommended operator certification requirements	February, 1997	1420(d)(2)(A)(ii)
Publish information on recommended operator certification requirements, resulting from partnership with States, public water systems, and the public	February, 1998	1420(d)(2)(B)
Publish guidelines specifying minimum standards for certification and recertification of operators (in cooperation with States)	February, 1999	1419(a)
Provide Operator Certification reimbursement grants to States	unspecified	1419(d)(1)

EPA ACTION ITEM	DATE DUE	CITE
<b>Source Water Protection</b>		
Guidance to States for developing source water assessment programs	August, 1997	1453(a)
Guidance to States to assist in developing source water petition programs	August, 1997	1454(d)
Approval of State programs for source water assessments	February, 1999	1453(b)
Conduct a demonstration project on the most effective and protective means of assessing and protecting source waters serving large metropolitan areas and located on Federal lands	unspecified	1453(a)(5)
<b>Small System Technology and Technical Assistance</b>		
Publish list of technologies that meet the SWTR for systems serving 10,000-3,300 persons, 3,300-500 persons, and 500-25 persons	August, 1997	1412(b)(4)(E)(v)
Publish information to assist States in developing affordability criteria. Information to be developed in consultation with States and Rural Utilities Service of USDA	February, 1998	1415(e)(7)(B)
Publish list of technologies that achieve compliance for existing rules (except SWTR) for systems serving 10,000-3,300, 3,300-500, 500-25	August, 1998	1412(b)(4)(E)(iii)
Publish guidance on variance technologies for existing regulations for systems serving 10,000-3,300 persons, 3,300-500 persons, and 500-25 persons	August, 1998	1412(b)(15)
Promulgate regulations for variances (in consultation with States)	August, 1998	1415(e)(7)(A)
Review and approve State variances for systems 3,300 to 10,000	unspecified	1415(e)(9)
Review State variance programs to determine if the variances granted by the State comply with the requirements of SDWA	"periodically"	1415(e)(8)(A)
Make grants to universities to establish and operate small public water system technology assistance centers	unspecified	1420(f)(1)

EPA ACTION ITEM	DATE DUE	CITE
<b>Miscellaneous</b>		
Guidance establishing procedures for State application for ground water protection grants	August, 1997	1429(b)
Evaluate State ground water protection programs. Report to Congress	August, 1999	1429(e)
Award Wastewater Grants to Colonias	unspecified	307(b)
Consult on and Award Rural Alaska and Alaska Native Grants	unspecified	303(d)
Grants to States for water supply systems and source water quality protection programs for navigable waters	unspecified	401(a)

# Appendix I

## *Glossary Of Terms*

**Community Water System.** A public water system that serves at least 15 service connections used by year-round residents of the area served by the system or regularly serves at least 25 year-round residents.

**Class V UIC Rule.** A rule under development covering wells not included in Class I, II, III or IV in which nonhazardous fluids are injected into or above underground sources of drinking water.

**Non-Community Water System.** A public water system that is not a community water system. There are two types of NCWSs : transient and non-transient

**Comprehensive State Ground Water Protection Program.** The program consists of a set of six strategic activities which foster more efficient and effective ground water protection through more cooperative, consistent, and coordinated operation of all relevant Federal, State and local programs within a State. The activities include establishing goals, setting priorities, defining authorities, implementing programs, coordinating information collection and management, and operating public education and participation activities.

**Conservation Easements.** Easements are an interest in land that entitles a person to use the land possessed by another (affirmative easement), or to restrict uses of the land subject to the easement (negative easement). A conservation easement restricts the owner to uses that are compatible with conservation environmental values. Easements are governed by State laws and thus there are variations among the States in how they are administered.

**Contamination Source Inventory.** The process of identifying and inventorying contaminant sources within delineated SWPAs through recording existing data, describing sources within the SWPA, targeting likely sources for further investigation, collecting and interpreting new information on existing or potential sources through surveys, and verifying accuracy and reliability of the information gathered.

**Drinking Water State Revolving Fund.** The Fund provides capitalization grants to States to develop drinking water revolving loan funds to help finance drinking water system infrastructure improvements, source water protection, to enhance operations and management of drinking water systems, and other activities to encourage public water system compliance and protection of public health.

**Ground Water Disinfection Rule.** Under Section 107 of the SDWA Amendments of 1996, the statute reads, "... the Administrator shall also promulgate national primary drinking water regulations requiring disinfection as a treatment technique for all public water systems, including surface water systems, and, as necessary, ground water systems."

**Maximum Contaminant Level (MCL).** In the SDWA, an MCL is defined as "the maximum permissible level of a contaminant in water which is delivered to any user of a public water system."

**Operator Certification.** Certification of operators of community and nontransient, noncommunity water systems as required by a

**State implementing an EPA approved Water Operator Certification Program.**

**Primacy State.** State that has the responsibility for ensuring a law is implemented, and has the authority to enforce the law and related regulations.

**Regional Stakeholder Meetings for Source Water Protection.** EPA's Regional office's meetings with stakeholders interested and involved in source water protection.

**Sole Source Aquifer Designation.** The surface area above a sole source aquifer and its recharge area.

**Source Water Protection Area.** The area delineated by the State for a PWS or including numerous PWSs, whether the source is ground water or surface water or both, as part of the State Source Water Assessment Program approved by EPA under Section 1453 of the SDWA.

**Subwatershed.** A topographic boundary that is the perimeter of the catchment area of a tributary of a stream.

**State Source Water Petition Program.** A State program implemented in accordance with the statutory language at Section 1454 of the SDWA to establish local voluntary incentive-based partnerships for source water protection and remediation.

**State Management Plan (SMP) Program.** A State management plan under FIFRA required by EPA to allow States (e.g. States, tribes and U.S. territories) the flexibility to design and implement approaches to manage the use of certain pesticides to protect ground water.

**Surface Water Treatment Rule.** The rule specified maximum contaminant level goals for *Giardia lamblia*, viruses and *Legionella*, and promulgated filtration and disinfection requirements for public water systems using

surface water sources or by ground water sources under the direct influence of surface water. The regulations also specified water quality, treatment, and watershed protection criteria under which filtration may be avoided.

**Transient/Non-Transient Non-Community Water Systems.** Water systems that are non-community systems: transient systems serve 25 of the same nonresident persons per day for more than 6 months per year; nontransient systems regularly serve at least 25 nonresident persons per day for more than 6 months per year. Transient non-community systems typically are restaurants, hotels, large stores, etc. Non-transient non-community systems typically are schools, offices, churches, factories, etc.

**Underground Injection Control Program.** The program is designed to prevent underground injection which endangers drinking water sources. The program applies to injection well owners and operators on Federal facilities, Native American lands, and on all U.S. land and territories.

**Watershed.** A topographic boundary area that is the perimeter of the catchment area of a stream.

**Watershed Approach.** A watershed approach is a coordinating framework for environmental management that focuses public and private sector efforts to address the highest priority problems within hydrologically-defined geographic areas, taking into consideration both ground and surface water flow.

**Watershed Area.** A topographic area that is within a line drawn connecting the highest points uphill of a drinking water intake, from which overland flow drains to the intake.

**Wellhead Protection Area.** The surface and subsurface area surrounding a well or well field, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or well field.

## Appendix J

# *Requirements and EPA Guidance for Implementing Section 1453 of the Act for State Source Water Assessment Programs*

The statute says the States must:

1. "Submit ( a Source Water Assessment Program) to the Administrator within 18 months after the Administrator's guidance is issued..."

Each State must include in their Submittal the following:

- Description of public participation in development of program plan
- Delineation Policy and Processes
- Inventory and Susceptibility Analysis Policy and Processes
- Big Water Bodies -- Delineation, Inventory and Susceptibility
- How assessments will be made available to the public
- Timetable and Phasing plan for assessments to be completed.
- Descriptions of programs for State and local prevention program efforts, i.e., whether and to what extent prevention programs will be developed and implemented

Each State should include:

- State Program Goal (s)
- State and Local Roles/responsibilities
  - Delegation or No Delegation
  - If Delegation, to whom?
  - What is delegated ?
- Policy and processes for coordination of State programs with each other
- Description of how Program will be financed.
- Process for reporting final assessments to EPA
- Process for updating assessments
- Policy/processes planned for coordination with Tribes, other States, Federal agencies, and other countries (if applicable)

2. "Delineate the boundaries of the assessment areas in such State from which one or more public water systems in the State receive supplies of drinking water, using all reasonably available hydrogeologic information on the source of the supply of drinking water in the State and the water flow, recharge, and discharge and any other reliable information as the State deems necessary to adequately determine such areas.."

Each State should:

- Use approved State Wellhead Program for Ground water systems
  - If without an approved Wellhead Program, establish delineation policies for Ground Water systems
  - Establish topographic delineation policy for all surface water based systems and for surface water/ground water combination systems.
3. "Identify for contaminants regulated under this title for which monitoring is required under this title (or any unregulated contaminants selected by the State, in its discretion, which the State, for purposes of this subsection, has determined may present a threat to public health), to the extent practical, the origins within each delineated area of such contaminants to determine the susceptibility of the public water systems in the delineated area to such contaminants..."

Each State must:

- Establish policy for these actions in SWPAs
  - Define which contaminants will be the focus of inventories and susceptibility analyses
  - Define what are "significant potential sources" of contaminants
  - Use approved State Wellhead Protection Program for Ground water systems
  - If without an approved Wellhead Protection Program, establish inventory and susceptibility analysis policies and processes for Ground Water systems
  - Establish policies and processes for surface water based systems of all sizes
  - Define Susceptibility analysis: definitions must include hydrogeology and/or hydrology and be for the purpose of determining the susceptibility of the State's PWSs to contamination from inventoried sources
4. ( a State's program) " be deemed approved 9 months after the date of such submittal unless the Administrator disapproves the program as provided for in Section 1428 (c)."
  5. "Begin implementation of the program immediately after its approval."

6. "Make the results of the source water assessments conducted under this subsection available to the public."

Each State must:

- Describe policy and processes for making the assessments available.

Each State should:

- Describe how they will create understandable assessments.
  - Map delineations
  - Map or list significant potential sources of contamination that are inventoried
- Describe the susceptibility analysis in a form understandable to the public

7. "To the maximum extent feasible, ... establish procedures, including but not limited to the establishment of technical and citizens advisory committees, to encourage the public to participate in developing the ... source water assessment programs under Section 1453. Such procedures shall include notice and opportunity for public hearing on the State program before it is submitted to the Administrator."

Each State must:

- Conduct adequate public participation including establishing a technical committee, a citizens committee and a set of public hearings.

Each State should:

- Consider other methods to increase public participation.
- Get consideration in the approval process for having accomplished these actions when developing or implementing its Wellhead Protection Program and/or Watershed Approach..

8. "States shall begin implementation of the program immediately after its approval. the Administrator's approval of a State program under this subsection shall include a timetable, established in consultation with the State, allowing not more than 2 years for completion after approval of the program."

Each State must:

- Complete the assessments in the timetable that is in an approved State Program.

# Appendix K

## *List of Acronyms*

ASDWA	Association of State Drinking Water Administrators
ASIWPCA	Association of State and Interstate Water Pollution Control Administrators
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CMR	Chemical Monitoring Reform
CSGWPP	Comprehensive State Ground Water Protection Program
CWS	Community Water System
CWA	Clean Water Act
DBP	Disinfection By-Products
DWSRF	Drinking Water State Revolving Fund
ECOS	Environmental Council of the States
EPCRA	Emergency Planning and Community Right-To-Know Act
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
GIS	Geographic Information System
GWDR	Ground Water Disinfection Rule
GWPC	Ground Water Protection Council
IUP	Intended Use Plan
MCL	Maximum Contaminant Level
NASDA	National Association of State Departments of Agriculture
NGA	National Governors' Association
NEP	National Estuary Program
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint Source Program
NWAP	National Watershed Assessment Project
ORSANCO	Ohio River Valley Water and Sanitation Commission
PWS	Public Water System
PWSS	Public Water Supply Supervision Program
RCRA	Resource Conservation and Recovery Act
SDWA	Safe Drinking Water Act
SDWIS	Safe Drinking Water Information System
SRF	State Revolving Fund
SWAP	Source Water Assessment Program
SWPA	Source Water Protection Area
SWP	Source Water Protection
SWQPPP	Source Water Quality Protection Partnership Petitions
SWTR	Surface Water Treatment Rule
TAD	Technical Assistance Document
TMDL	Total Maximum Daily Loading
TOT	Time-of-Travel
UIC	Underground Injection Control
USDA	U.S. Department of Agriculture
UST	Underground Storage Tank
WHP	Wellhead Protection Program
WHPA	Wellhead Protection Area