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## **SOURCE WATER ASSESSMENT AND PROTECTION PROGRAMS:**

### **What's It All About?**

*What is the quality of my drinking water?  
Can I protect the quality of my drinking water?  
How can I get involved?*

version November 17, 1997

# The Assessment and Protection of Sources of Drinking Water: What's It All About?

## Description of Key Terms

Key terms are found throughout this document in ***bold italics***. Descriptions of the key terms are included on **Page 22**.

## Why Now?

The Safe Drinking Water Act (Act) was reauthorized on August 6, 1996. Prior to 1996, the Act primarily regulated the treatment and distribution of drinking water from ***public water systems***. With the 1996 reauthorization, the Act now requires States to develop a source water assessment program (assessment program) and encourages States to develop a source water protection program (protection program) that includes management measures to prevent pollution (**see Box 1**). The US Environmental Protection Agency, or EPA, has been charged with developing the guidance that will assist States as they develop their assessment program and protection program. These new programs and the guidelines produced by EPA are described in more detail below. To receive a full copy of the *State Source Water Assessment and Protection Programs Final Guidance* (Guidance), please call the Safe Drinking Water Hotline at **1-800-426-4791** or access EPA's home page at [www.epa.gov/ogwdw/swp/swappg.html](http://www.epa.gov/ogwdw/swp/swappg.html)

## Purpose of this document

This document has several objectives:

- 1) At your home, school, or work, you probably drink water that comes from a public water system. This document will help you understand the type of information that will be available to you once the assessment program is completed and how you can use the information to assist your water supplier in protecting your ***drinking water source***.
- 2) You may have been asked to serve on your State's advisory committee or you may attend a State public workshop on the assessment program. If so, this document gives you information on EPA's assessment requirements so that you can evaluate your State's assessment program. **See advisory committee on page 6**.
- 3) Finally, you may own a business or conduct an activity within the ***source water protection area*** that may be considered a ***potential source of contamination*** that could contribute ***contaminants*** to the drinking water. If so, you may be asked by the community or the public water system to reduce the chance that those contaminants will reach the drinking water source. This document will help you understand what activities could be listed as a significant potential contaminant source and provides several contacts to obtain more information on reducing the threat of contamination (**see page 13**).

### Box 1. Required vs. Encouraged

**Required** - The Safe Drinking Water Act requires every State with regulatory authority for drinking water Public Water Systems to develop an assessment program. In addition, the Safe Drinking Water Act lists elements that States must include in their assessment program submittal. For example, the Safe Drinking Water Act requires States to form advisory committees to assist in the development of the assessment program. Without these elements, the EPA cannot approve the State program.

**Encouraged** - While the Safe Drinking Water Act does not explicitly mandate that each State develop a source water protection program, the EPA believes that Congress intended for States to actively protect drinking water sources from contamination. A protection program is strongly encouraged to meet this intent. Minimally, the State must describe in the submittal if a State protection program will be developed and how the program will link with existing protection efforts.

## What is a Source Water Assessment Program?

Every State (if directly responsible for regulating public water suppliers) must develop and implement an assessment program. The purpose of the assessment program, as defined by Congress, is for "the protection and benefit of public water systems." As interpreted by EPA, this means that States, or the State's **delegated entity**, must develop an assessment program that will provide enough information about your drinking water source so that you, your community, and your public water system can take action to prevent contamination of your drinking water source.

The assessment program requires States to take an initial 'snapshot' or assessment of all **ground water** and **surface water** drinking water sources and identify activities in the source water protection area that could potentially degrade the water quality. Each State must conduct the following activities for the assessment program:

- i. Delineation of the Source Water Protection Area - Basically, defining the land area surrounding a surface or ground water drinking water source through which contaminants could move and reach the well or **intake**.
- ii. Contaminant Inventory - Locating the land uses and industries within the source water protection area that could add contaminants to the drinking water source and degrade the quality.
- iii. Susceptibility Analysis - Determining the likelihood that a contaminant will reach the intake or drinking water well in an amount that will impact the public water system's ability to deliver safe drinking water.
- iv. Public Access - Insuring that all information collected for the assessment program is available to the public. Maps must be developed (showing the delineated areas, the location of the existing and potential sources of contamination, and the results of the susceptibility analysis) and made available to the public.
- v. Public Participation - Insuring that the public has an opportunity to provide input into the assessment and protection programs as they are developed. States must form advisory committees and hold public workshops around the State to gather input on the assessment and protection programs.

These five elements are required to be part of the State's assessment program. However, States have some discretion in determining how each of these elements are 'fleshed out'. **Table 1 on page 15** lists the components that States need to include (or an equivalent alternative) in the assessment program submittal.



## The Source Water Protection Program (SWPP)

### State Source Water Protection Programs

In the State's assessment program submittal to EPA, States will need to describe whether they will be developing a protection program and if they will be undertaking protection activities such as those described below. States are also asked to describe how the information collected through the assessment program will be used to further pollution prevention efforts. While the assessment program is mandatory, States are not required to develop their own protection program. \*

A State source water protection program could provide guidelines or requirements to local communities to assist in protecting their drinking water. Local protection efforts could be promoted by having State representatives speak at board or community meetings, by providing educational materials to assist community members, and/or by providing technical assistance. Also, a State protection program could provide financial resources in the form of grants or loans to communities to assist in protection efforts. These are just a few examples.

*\* Please note. Since 1986, States are required to have a wellhead protection program to protect ground water sources of drinking water. The result is that States must have a program that protects ground water sources of drinking water but until now they have not been required to have a program that protects surface water sources of drinking water. The Source Water Protection Program will protect all sources of drinking water.*

Local Source Water Protection Programs Generally, while a State may provide guidance and assistance, the active protection of drinking water is the responsibility of the people who drink the water working in coordination with their public water supplier. Local protection efforts are the key to protecting drinking water supplies. Several examples of local efforts that local community members have undertaken to protect drinking water are described on **page 10**.

### **Don't Reinvent the Wheel**

Depending on the State, the activities required for an assessment program - delineations, contaminant inventories, susceptibility analyses - may have already been completed. If so, States may use this existing information. Data that is needed in order to conduct assessment activities, may be available from many different federal, state, and local agencies. In such cases, the assessment program can serve as an opportunity for the State to gather this existing data into one place in order to map the information and make it available to the public.

### **Advisory Committees**

The State must form at least one advisory committee to assist the State in developing its assessment program. The committee(s) must have members that can evaluate the technical and the policy portions of the assessment program as described below:

- technical members - to provide input on the State's technical feasibility and effectiveness of the assessment program and protection program.
- citizen members - to evaluate the assessment program and protection program for appropriateness and desirability.

In addition, States must try to obtain representation on the committees from a wide cross section of **stakeholders**.

If you are serving on a committee, your job is to evaluate the State's draft assessment program to determine if the program will result in "the protection and benefit of public water systems" and whether enough information will be provided for each source water protection area so that local community members and water supply utilities can develop and undertake protection efforts.

The time and financial resources available to each State to conduct the assessment program must be taken into

consideration. Short time frames and limited financing may require States to prioritize the areas that will receive more in-depth work. For example, States may require a different level of effort for the largest public water systems, serving the most people, compared to the smallest public water systems. As a committee member, you may be asked to evaluate the priorities that the State has proposed (**see Box 2**).

In the assessment program submittal to EPA, States will need to describe the committee(s) advice regarding the Key Issue Questions (**see Boxes 3 - 8, page 17**). The State will also need to include a responsiveness summary showing how public comments were used in developing the assessment program.

#### **Box 2. Factors to Consider When Prioritizing**

These factors may be considered by States when prioritizing which types of systems or areas of the State will receive more detailed assessments than others.

**Type and extent of threats** - Some areas may be more vulnerable to contamination than others.

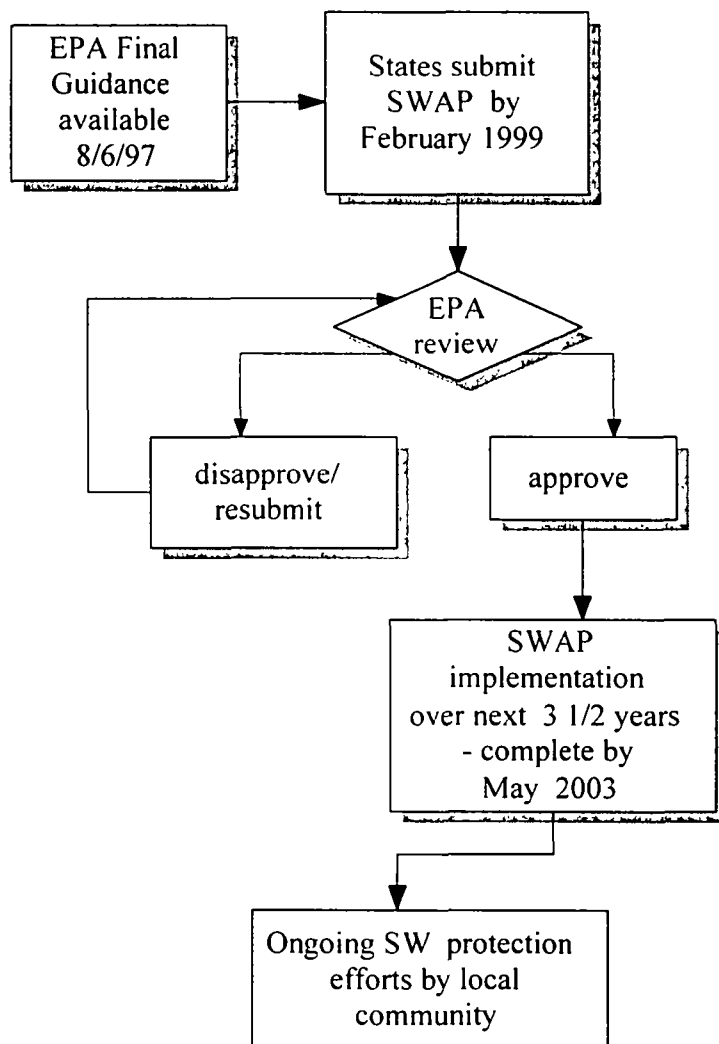
**Type and Size of PWS** - Some systems, based on type or size, may require more detailed assessments than others. For example, a State may decide that public water systems (PWSs) that serve a large number of people may need more detailed assessments, or, that smaller PWSs, with fewer resources and, potentially more risk, may need more detailed assessments.

**Objectives** - Assessments could be varied according to the program objectives. For example, areas where future protection efforts will be undertaken may require more detailed assessments.

## **Time Frame**

States have a limited amount of time to develop and implement the assessment program. (**see Figure 1**) Program submittals are due to EPA by February 1999. All assessment program activities must then be completed within 3½ years. As discussed previously, given the short time frames, States may need to vary the level of effort that will be undertaken.

**Figure 1 -- Time Frame for Source Water Protection Program**



## **State Revolving Loan Fund**

The Drinking Water State Revolving Loan Fund or SRF is an exciting addition to the SDWA. This new fund is available to each State with primary responsibility for regulating the public water systems. Federal funding is available every year between the years 1997 - 2003, as long as a 20% match is provided by the State. From this combined State and Federal fund, a State can provide low interest loans to public water systems to improve the treatment and distribution of drinking water. In addition, several 'set-asides' were added whereby a State can take a percentage of the fund for other activities, including source water assessment and protection.

Source water funding is available to States for the

- assessment program
- source water protection/source water petition program
- purchase of land or conservation easements
- wellhead protection program
- protection program administration or technical assistance

## **Benefits of SWAP and SWPP**

Two benefits immediately stand out from conducting assessment and protection programs. The first benefit is a more secure and safe drinking water supply for yourself and for future generations especially if the information collected during the assessment program is used to protect the drinking water source.

The second benefit is the opportunity to reduce some of the costs associated with treating and distributing drinking water. If the results of the assessment program indicate that the drinking water source is adequately protected from contamination, the public water supplier and the consumer may be able to save money by having to collect and analyze fewer water quality samples, in addition to obtaining other types of regulatory relief.

## **The Protection of Drinking Water: Local Examples**

### **New Castle County, Delaware**

The Water Resources Agency for New Castle County originated with the establishment of a Water and Sewer Management Office by New Castle County in the late 1960s. In addition to this Water and Sewer Office, the City of Newark, the City of Wilmington, and New Castle County with support from the US EPA formed a Water Quality Management Program in 1974. The Agency is governed by a Policy Board which meets bimonthly and directs all program activities. There are also two committees which help in the decision making process. The Water Resources Advisory Committee is comprised of citizens of varying interests with backgrounds and expertise that offers public input to Agency's operations. The other committee is the Water Resources Technical Coordinating Committee which provides for technical coordination and cooperation. It includes representatives of water utilities and local, State, and regional organizations directly or indirectly involved in water resources management.

Because the NCC has had its share of Superfund sites and closed wells due to contamination, County leaders knew that ground water needed to be protected. When the Delaware Geological Survey (DGS) completed mapping Delaware's ground water recharge areas, NCC utilized this information to determine which sensitive areas required the greatest protection. Through negotiations with developers regarding typical land-use activities, ordinances were developed to provide WHP for the future protection of public drinking water supplies. These Water Resource Protection Area Overlay Zone Ordinances did not occur at the expense of economic growth but through land management measures that protect ground water quality and ensure compatible uses of the water supply. The result is that through WHP there is further protection of the drinking and ground water resources of about 300,000 citizens. and ground water resources of about 300,000 citizens.

### **City of Williamstown, West Virginia**

In 1991 Williamstown was selected as the first community in West Virginia to institute a WHP program. Chosen because Williamstown has overlapping jurisdiction of state regulatory agencies concerned with ground water, an EPA grant supported the WHP efforts of the Williamstown Planning Team. A WHPA map was produced and potential contamination sources were identified. Many local citizens supported the project. The Williamstown Women's Club surveyed businesses and residences within the WHPAs to determine what activities were taking place that could potentially impact the excellent ground water quality. The surveys found several underground storage tanks (USTs) and discovered that chemical lawn treatments had been applied throughout the delineated area. The West Virginia Division of Environmental Protection removed contaminated soils from a leaking UST and the West Virginia Department of Agriculture worked with chemical applicators to ensure that best management practices (BMPs) were utilized. Although a river runs through the city, Williamstown is dependent upon ground water. Local WHP ordinances that restrict activities which potentially could contaminate ground water will benefit 3,095 residents.

### **Town of Fincastle, Virginia**

The Town of Fincastle, in cooperation with the County of Botetourt, sought to protect the town's water supply by developing an inventory of possible sources of contamination and delineating a WHPA for each of the town's wells. Existing regulations on land-use were evaluated and recommendations were developed to reduce potential risks to the water supply. The potential impacts of transportation related spills on US 220, which passes through the WHPAs, were considered during the development of land-use management measures. Local involvement and public education were a part of the Town's ground water protection effort. The project was completed under budget, requiring less than the \$10,000 that had been Federally allocated. This project is an example of a "low-tech," low cost, no-nonsense approach that can be effective in getting a quality WHP program off of the ground.

### **Mars Area School District, Pennsylvania**

The idea of the Mars Project was to create a self-sustaining wellhead protection program for PA schools that have their own water supply. The Program would be student driven with both curricular and extra-curricular aspects. Water industry experts from the local community would donate their time to train and assist students in the various aspects of hydrology, water monitoring, public education, and water resource management. The initial year would consist of designing the actual wellhead protection plan. Each subsequent year would have a specific goal to further advance the overall objective of protection of the school's wells.

A group of high school student volunteers assembled and divided into 4 main groups, based on their field of interest. The 4 groups were: (1) the wellhead protection group, (2) the public relations group, (3) the elementary training group, and (4) the middle school training group. The WHPP group worked with the hydrogeologists, PA Rural Water Association and PA DEP to assess and map the various potential contamination sources around the school's wells. They also assisted in the development of the written plan and presented the plan to the school board, local officials and general public. The public relations group was responsible for press releases, developing and distributing 6,500 public information pamphlets, and developing a short video clip for the students. The elementary and middle school groups were responsible for developing and implementing lessons for all the 3rd grade classes and 7th and 8th grade science club, respectively. The purpose of this was not only to educate the younger students, but also to create a "pool" of students that would later become part of the project when they reached high school. The initial year of the project was funded in part by a grant for the EPA Region III. Callery Chemical Co. (Mine Safety Appliance) provided copies of the public information pamphlet. Moody & Associates of Meadville, PA and Acer Engineering of Lancaster, PA provided technical assistance and training on the wellhead protection plan.

## **For More Information**

### **USEPA Source Water Contacts**

Drinking Water Branch (3WP22)  
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**Contacts**

Teresa Halverson	215-566-5823
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**State Source Water Contacts****Delaware**

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### **For Written Information**

The following is a brief list of sources from which more information can be obtained.

Office of Ground Water and Drinking Water Publications, EPA 810-B-96-001, June 1996, Call NCEPI @ 513-891-6561

Pollution Prevention Directory,  
for a copy call 202-260-1023

USEPA Small Business Assistance  
1-800-368-5888

National Resource, Conservation and Recovery Act Hotline  
1-800-424-9346

National Agriculture Compliance Assistance Center  
913-551-7207

### **Table 1. Brief Summary of the Requirements to States on the SWAP**

To obtain a free copy of the entire USEPA State Source Water Assessment and Protection Programs Guidance, please call the Safe Drinking Water Hotline @ 1-800-426-4791.

<b>Each State <u>is statutorily required</u> to:</b>	<b>Each State <u>needs</u> to:</b>
<b>Public Participation</b>	
<ul style="list-style-type: none"><li>• Convene a technical advisory committee and a citizens advisory committee (or one committee)</li></ul>	<ul style="list-style-type: none"><li>• Ensure broad representation on its advisory group(s)</li><li>• Provide adequate opportunity to various groups to participate on the advisory committee(s)</li><li>• Describe the committee's advice regarding program development questions</li></ul>
<ul style="list-style-type: none"><li>• Conduct public hearings workshops, or focus groups, etc.</li></ul>	<ul style="list-style-type: none"><li>• Provide opportunities for general public involvement, by various means</li><li>• Provide a summary of how the State responded to all substantive public comments</li></ul>
<b>SWAP Approach</b>	
<ul style="list-style-type: none"><li>• Conduct assessment programs for the "protection and benefit of PWSs"</li><li>• Submit assessment programs to the appropriate Regional Administrator by February 1999 (within 18 months after EPA publishes final guidance)</li></ul>	<ul style="list-style-type: none"><li>• Describe the approach the State will take to implement a assessment program</li><li>• Describe whether the State plans to implement a protection program</li><li>• Describe how a assessment program will link with existing protection program</li></ul>

<ul style="list-style-type: none"> <li>• Delineate boundaries of the assessment areas using all reasonably available hydrogeologic and other information</li> </ul>	<ul style="list-style-type: none"> <li>• For ground water systems, use delineation methods in accordance with EPA accepted guidelines for WHP</li> <li>• Include recharge areas that are not adjacent to or surrounding the well</li> <li>• For surface water, delineate the entire watershed area upstream of any intakes or diversion structures, up to the State's borders</li> </ul>
<ul style="list-style-type: none"> <li>• Conduct a contamination source inventory</li> <li>• Conduct an inventory for raw water contaminants regulated under SDWA, and <i>Cryptosporidium</i></li> </ul>	<ul style="list-style-type: none"> <li>• Indicate what "contaminants of concern" its assessment program will address</li> <li>• Include a clear description of the sources of contamination (or categories of sources)</li> <li>• Choose an approach for determining which types of potential sources are significant</li> <li>• Indicate what types of potential sources of the contaminants of concern will be considered "significant"</li> </ul>
<ul style="list-style-type: none"> <li>• Conduct a susceptibility determination</li> </ul>	<ul style="list-style-type: none"> <li>• Define "susceptibility determination"</li> <li>• Describe how the results of susceptibility determination will contribute to the protection and benefit of the PWSs</li> </ul>
<ul style="list-style-type: none"> <li>• Conduct assessment programs for the "protection and benefit of PWSs"</li> </ul>	<ul style="list-style-type: none"> <li>• Describe how it will delineate source water protection areas, conduct and inventory of contamination sources, and conduct a susceptibility determination for that part of a boundary river, the Great Lakes, or multi-State rivers that are within the State's borders</li> <li>• Exert the maximum practical effort to ensure interstate coordination for assessments</li> </ul>
<b>Making the Results of Assessments Available to the Public</b>	

<ul style="list-style-type: none"> <li>• Ensure the results of the assessments are made available to the public in an understandable manner</li> </ul>	<ul style="list-style-type: none"> <li>• Make the results of the assessments available in an expeditious manner</li> <li>• Make available all the information collected during each assessment, when requested</li> <li>• Create maps which include the delineated area and sources of contamination described in the inventory</li> </ul>
<b>Implementing the Chosen SWAP</b>	
<ul style="list-style-type: none"> <li>• Complete the assessments in the approved timetable</li> </ul>	<ul style="list-style-type: none"> <li>• Describe the timetable for implementing and completing the assessments within the State</li> <li>• Indicate whether the State wants an extension (of up to 18 months)</li> </ul>

### Key Issue Questions for Advisory Committees

These questions, taken from the Guidance, have been included to assist the advisory committee members in evaluating the State's proposed assessment program. States must describe in their submittal to EPA the committee's advice developed from the key issue questions.

**Box 3**  
**Public Participation:**  
**Key Issues for Advisory Committee(s)**

1. Should the State do more to provide adequate opportunity for stakeholder groups to participate in development of the program? If so, how?
2. Should the State do more to receive recommendations from both technical and citizen's perspectives?
3. What should the State do for ongoing public participation in implementing assessments once the State's assessment program is approved?

**Box 4**  
**State's Strategic Approach:**  
**Key Issues for Advisory Committee(s)**

1. Has the State done an initial review of all data sources available and determined the scope of the need for additional information?
2. What level of exactness/detail should be achieved by each assessment to be considered "complete?"
3. Should the level of assessment provide for the protection and/or benefit of the public water supply(s)?
4. What should be the basis for differential levels of assessments to be completed for different public water supplies or categories of public water supplies? System type or size? Preliminary information about the existence of threats? Other?
5. How will the State assessment program be coordinated among various environmental and other State programs (e.g., PWSS, water quality, water resources, agriculture, land use, information management, geologic)?
6. How would the State's assessment program lead to State watershed approaches and link to wellhead and other protection programs?

**Box 5**

**Delineation, Source Inventory, and Susceptibility: Key Questions for the Advisory Committee(s)**

1. What delineation method and criteria will be used for systems using ground waters? Where shall recharge areas not be included and why?
2. What contaminants that are not currently regulated by EPA should be part of the State's assessment program program?
3. Should the State segment source water protection areas for more focused source inventories? What should be the basis for such segmentation?
4. How should the State define and identify significant potential contamination sources and how should the State undertake their inventory within source water protection areas?
5. How will the results of the susceptibility analysis be characterized?

**Box 6**

**Boundary Waters, Multi-State Rivers, and the Great Lakes: Key Issues for Advisory Committee(s)**

1. What agreement should the State maintain or initiate with other States, tribes, or nations to gain more complete and consistent source water assessments?
2. What contingency plans should be pursued?
3. What coordination/facilitation activities should the State request of EPA?
4. Are compatible and complimentary assessments being done in watersheds shared with other States and countries?



**Box 7**

**Making the Results of Assessments Available to the Public: Key Issues for Advisory Committee(s)**

1. What should be included in the results of the assessments, what should be the format of an understandable report on results, and when should the results be made available?
2. How and when should the State make available all the information collected during each assessment when someone requests it?
3. What type of maps should be developed to display the results of the assessments?
4. How and when should the State make public all information collected during each assessment for a PWS(s)?
5. How should the State or delegated entities provide wide notification of the availability of the results and other information collected?

**Box 8**

**State Program Implementation:  
Key Issues for Advisory Committee(s)**

1. What should be the timetable for State assessment program implementation?
2. How much should the State spend on assessment program development and implementation, and should the resources come from the DWSRF and/or other resources?
3. Should the State delegate aspects of the assessments? If so, to whom? Should funding be provided to delegated entities?
4. How should State agencies coordinate with each other and with other State, federal, and local stakeholders when implementing assessment programs?
5. How and what should the State report to EPA regarding assessment program implementation?
6. When and how should the State update assessments?

## **Description of Key Terms**

**Contaminants** - Listed in the Guidance as "contaminants of concern" they include all the raw water (before treatment) contaminants regulated under the Safe Drinking Water Act and the protozoa *Cryptosporidium*.

**Contaminant sources** - These are the human activities that have contaminants that could degrade water quality associated with them such as waste water treatment plants, urban runoff, dry cleaners, underground storage tanks, agriculture, etc.

**Delegated entity** - States may require or allow other entities -- public water systems, local agencies, etc. -- to perform some or all of the assessment activities, as State law allows.

**Drinking water source** - The ground water or surface water that is used for drinking water by a public water system. Note: The assessment program does not address individual or private wells.

**Ground water** - Generally, water found under the land surface.

**Intake** - The point at which a public water system withdraws water from a surface water body. After water is withdrawn, it is typically treated then enters the distribution system where it goes to homes, etc for consumption.

**Significant potential contaminant source** - From the long list of contaminant sources, States need to decide which are potentially significant and could degrade the quality of the source water. If significant, it should be inventoried. To help decide if significant or not, two methods are allowed: (1) consider all land uses and businesses, which store, use, or produce a contaminant of concern, as significant; or (2) for large source water areas, segment the area. Some contaminants may be of greater concern in the segments closest to where the water is withdrawn (prior to treatment) then those segments located farther away. For example, a septic system (nitrates, bacteria) may be important close to a well; however, located farther away, it may not affect the quality of the water withdrawn from the well and may not need to be inventoried.

**Public water system** - A system, publicly or privately owned, that supplies drinking water to at least 25 individuals or has 15 service connections.

**Source water protection area** - The land area surrounding a surface or ground water drinking water source through which contaminants could move and reach the well or intake. The contaminant source inventory, the susceptibility analysis, and any protection activities are focused on the source water protection area.

**Stakeholders** - Anyone that may be affected by this assessment program or drinks water supplied by a public water system. Included are the general public, industry, health agencies, vulnerable populations (very old, very young, people with HIV/AIDS), agriculture, water utilities, and environmental groups among others.

**Surface water** - Generally, the water found on the surface of the land - reservoirs, lakes, rivers, streams (and the water associated with them).

**Watershed** - The land or surface area from which water drains to a lake, river, stream, or ocean. A line can be drawn around this area within which the assessment activities would be conducted. For the assessment program, States must delineate the entire watershed, upstream from the intake, to the State boundary. See Figure 2.

**Wellhead Protection Area** - The land area around a well, through which water, and contaminants, may move to the drinking water well. A line can be drawn around this area, within which the contaminant source inventory, susceptibility analysis, and protection activities would be conducted. See Figure 3.

**Figure 2--Watershed Protection Area**

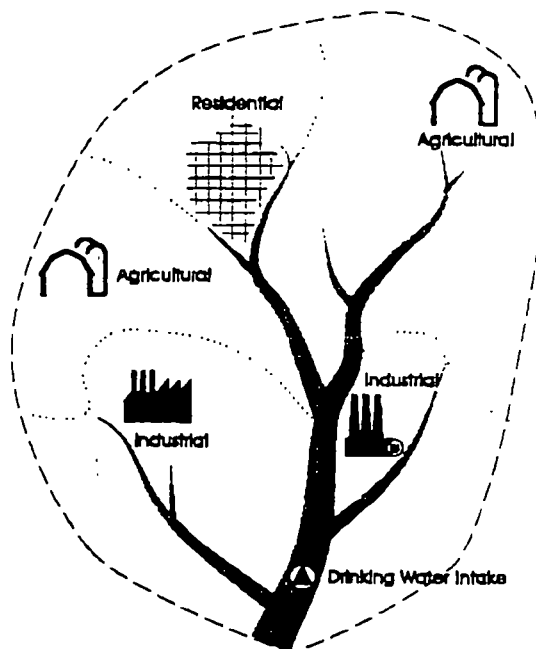


Figure 3--Wellhead Protection Area

