TABLE OF CONTENTS

LIST OF ABBREVIATIONS……iv

CHAPTER I - Introduction to the Source Water Assessment Program 1

A. Principles of the Source Water Assessment Program 2

B. How to Obtain Information 3

CHAPTER II - Drinking Water Program in New Jersey 4

A. Definitions 4

B. Current Monitoring Requirements for Public Water Systems 6

C. Current Monitoring Requirements for Nonpublic Water Systems 12

D. Status of Drinking Water Quality in New Jersey 12

CHAPTER III - Public Participation Process 14

A. Background 14

B. Technical/Citizens Advisory Committee 14

C. Public Meetings, Workshops and Focus Groups 17

D. Continuous Public Participation 19

CHAPTER IV - Description of the New Jersey Source Water Assessment Process 21

A. Introduction 21

B. New Jersey Source Water Assessment Process for Drinking Water Systems 21

C. Delineation and Susceptibility Analysis for all Surface Drinking Water Sources in New Jersey 28

D. Delineation and Susceptibility Analysis for all Ground Water Drinking Water Sources in New Jersey 31

CHAPTER V - The Process for Making Assessments Available To the Public 40

A. Contents of Assessments 40

B. Procedures for Making Source Water Assessments Available to the Public 41

CHAPTER VI - State Program Implementation 43

A. Timetable for Completing the Assessments 43

B. Request for Extension 44

C. Resources for the Source Water Assessment Program 45
D. Delegation of Efforts 46
E. Coordination with State Agencies and Other State Programs 46
F. Coordination With Other States 48
G. Coordination With Federal Agencies 48
H. Reporting of Program Progress 48
I. Updating the Assessments 49

CHAPTER 7 - Source Water Protection Issues 51
A. General Issues 51
B. Programs for Source Water Protection Activities 51

APPENDIX A – Public Participation for Draft Source Water Assessment Program Plan Development 53
Attachment 1: February 1998 Memo Inviting Stakeholders to Participate on the Source Water Assessment Advisory Committee 54
Attachment 2: Invited Members of the Source Water Assessment Advisory Committee 56
Attachment 3: June 1998 Source Water Assessment Program Plan Newsletter for Notifying Potential Interested Parties 65
Attachment 4: Source Water Assessment Advisory Committee and Subcommittees Meetings 67
Attachment 5: Summary of Key Issues and Questions Raised by Source Water Assessment Advisory Committee and Subcommittees 68

APPENDIX B – Public Participation for Final Source Water Assessment Program Plan Development 74
Attachment 1: Sample Notice Sent to Stakeholders to Ensure Broad Representation During Public Meeting Process 75
Attachment 2: Public Notices in Major Newspapers 77
Attachment 3: NJDEP Press Release of November 12, 1998 79
Attachment 4: Libraries that Received Copies of the Draft Source Water Assessment Program Plan 81
Attachment 5: Summary of Key Issues in Public Meetings and Written Comments 87
Attachment 6: Response to Comments 92

LIST OF FIGURES

Figure 1: Types of Public Water Systems 5
Figure 2: Safe Drinking Water Rule Compliance in 1997 – Percent of Community Water Systems in Compliance 13
Figure 3: New Jersey Source Water Assessment Process for Drinking Water Systems 38
Figure 4: Source Water Assessment Program Surface Water Intake Delineation Example: Rahway Intake 39

LIST OF TABLES:

Table 1: Sampling Requirements for Major Contaminant Categories in Public Drinking Water Systems – 1999-2001 8
Table 2: Federal and NJ Primary Drinking Water Standards 9
Table 3: Sites/Activities Which Will Be Included in the New Jersey Source Water Assessments Pollution Inventories 36
Table 4: Timetable for Completion of the Source Water Assessment Program in New Jersey 43

LIST OF ABBREVIATIONS

ASDWA	Association of State Drinking Water Administrators
BSDW	Bureau of Safe Drinking Water
BWA	Bureau of Water Allocation
CEHA	County Environmental Health Act
CWS	Community Water System
DIFF	Department Integrated Facilities File
DSR	Division of Science and Research
DWQI	Drinking Water Quality Institute
GIS	Geographic Information System
GPS	Global Positioning System
HUC	Hydrologic Unit Code
ICR	Information Collection Rule
Int	Intensity
KCSL	Known Contaminated Site List
MCL	Maximum Contaminant Level
NCWS	Noncommunity Water System
NEPPS	National Environmental Performance Partnership System
NJDEP	New Jersey Department of Environmental Protection
NJDHSS	New Jersey Department of Health and Senior Services
NJGS	New Jersey Geological Survey
NJPDES	New Jersey Pollutant Discharge Elimination System
NPS	Nonpoint source
NTNC	Nontransient Noncommunity Water System
OEP	Office of Environmental Planning
PPA	Performance Partnership Agreement
ppb	part per billion
SOCs	Synthetic Organic Compounds
Sus	Susceptibility
SWAPP	Source Water Assessment Program Plan
SWL	Solid Waste Landfill
TIC	Tentatively Identified Compound
TMDL	Total Maximum Daily Load
TNC	Transient Noncommunity Water System
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VOCs	Volatile Organic Chemicals
WHP	Well Head Protection

CHAPTER I
Introduction to the Source Water Assessment Program

The 1996 Amendments to the federal Safe Drinking Water Act (P.L. 104-182) require all states to establish and implement a Source Water Assessment Program for all public water systems. This document prepared by the New Jersey Department of Environmental Protection (NJDEP) outlines the procedures to be used for completing Source Water Assessments in New Jersey.

A Source Water Assessment Program consists of the first three steps of a full Source Water Protection Program. These three steps are:

- Delineate the source water protection area for ground water and surface water sources of public drinking water;

- Inventory the significant potential sources of contamination within the delineated source water protection area;

- Determine the public water system's susceptibility to contamination by sources inventoried within the source water protection area

In New Jersey, a complete Source Water Assessment includes not only a susceptibility assessment for each of the eight broad classifications of environmental contaminants, but also a statement regarding treatment used at each source plus an evaluation of treated water from the source to link the source water quality with treated drinking water quality.

The purpose of the Source Water Assessment Program is two-fold: to provide for the protection and benefit of public water systems and for the support of monitoring flexibility. Monitoring schedules outline the specific contaminants that have to be sampled and the frequency of sampling in public water systems. Monitoring schedules are based on a combination of federal requirements, state requirements, past chemical monitoring and past susceptibility assessment determinations made by NJDEP. The Source Water Assessments developed as part of this program will play a large role in determining the monitoring that each public water system will be required to perform.

Once a susceptibility determination of a public water system to contamination within the source water protection area has been performed, stakeholders such as state and local governments, the public, and water suppliers will have a greater understanding of the problems and concerns regarding their drinking water sources. The 1996 Amendments to the federal Safe Drinking Water Act place a strong emphasis on public involvement in Source Water Assessments and protection programs, and may provide New Jersey public officials with an opportunity to inform the public of efforts needed to protect our water supplies. Increasing public involvement in the development of the Source Water Assessment Program is necessary in order to build a base of support for using the Source Water Assessments once they are completed.

Source Water Assessments are one component of the NJDEP's regulatory and statutory responsibility to ensure safe drinking water. Other regulatory programs at State and local levels may offer additional protection. One of USEPA's National Core Performance Measures is to implement Source Water Protection Programs for at least 60% of the population served by public water systems by the year 2005. What this means for New Jersey is described in Chapter 7 entitled Source Water Protection Activities.

A. Principles of the Source Water Assessment Program

New Jersey is basing its Source Water Assessment Program on the following principles.

Principle: All sources of drinking water are important to the citizens of New Jersey.
Policy: All sources of water supplying community water systems will be treated equally, regardless of the population served and the source of the drinking water (ground or surface). Every source supplying noncommunity water systems will receive an assessment as described in Chapter IV.

Principle: Both pathogens and chemicals threaten drinking water sources.
Policy: Sources of pathogens and chemicals will be identified.

Principle: Any pollution activity within the watershed has the potential to impact water quality at a surface water intake.
Policy: The delineated area for surface water sources will extend to and include the headwaters.

Principle: There are both short term and long term strategies that can be used to protect ground water sources. Delineations of source water protection areas as part of the Source Water Assessment Program are designed to provide short-term protection to ground water sources, whereas protection of recharge areas are a long-term protection strategy involving the entire watershed.
Policy: Assessments for ground water sources will be based on the New Jersey Wellhead Protection Program Plan, adopted in 1991, as updated by the Draft Guidance for Well Head Protection Area Delineations in New Jersey. Source water protection areas represent the first twelve years of recharge to each well. Strategies for the protection and management of the complete recharge areas will be developed in the Watershed Management Program.

The undertaking laid out in these next pages is ambitious. New Jersey has a large number of public wells (approximately 8,000) and surface water intakes (48). Because New Jersey is such a densely populated state there are a large number of actual and potential contamination sources. In addition, land use has been intensive in New Jersey over the years, creating a wide range of non-point contaminant sources. Since not every contaminant in a source water protection area will reach a source, protection strategies may differ.

B. How to Obtain Information

The point of contact within NJDEP for administering of the Source Water Assessment Program is the Bureau of Safe Drinking Water, which is part of the Water Supply Administration. The Bureau of Safe Drinking Water can be reached as follows:

By phone: (609) 292-5550

In writing: Bureau of Safe Drinking Water
401 East State Street, 4th Floor
P.O. Box 426
Trenton, New Jersey 08625-0426

By fax: (609) 292-1654

By email: SAFEH20@DEP.STATE.NJ.US

In addition, much of the information on Source Water Assessments will be posted on the Source Water Assessment Program's web page at http://www.state.nj.us/dep/watersupply/swap.htm.

CHAPTER II
Drinking Water Program in New Jersey

The purpose of this chapter is to provide an understanding of how drinking water is monitored and regulated in New Jersey today.

A. Definitions

The definitions in this section are taken from New Jersey's Safe Drinking Water Act Regulations and are provided to help understand the types of water systems regulated by the State of New Jersey. A water system obtains its water either from a well drilled into the ground or from a surface water intake on a river, stream, or in a reservoir, or both.

1. "Public water system" means a system for the provision to the public of piped water for human consumption, if such system has at least 15 service connections or regularly serves at least 25 individuals daily for at least 60 days in any given calendar year. Such term includes any collection, treatment, storage and distribution facilities under control of the operator of such system and used primarily in connection with such system, and any collection or pretreatment storage facilities not under such control which are used primarily in connection with such systems. A public water system is either a "community water system" or a "noncommunity water system."

   Figure 1 provides a detailed description of the types of public water systems.

   a. Community Water Systems (CWS)

      Community water supplies generally supply a residential population.

      At the end of 1997, there were 612 active community water systems in New Jersey. Approximately 87% of New Jersey's population is served by community water systems.

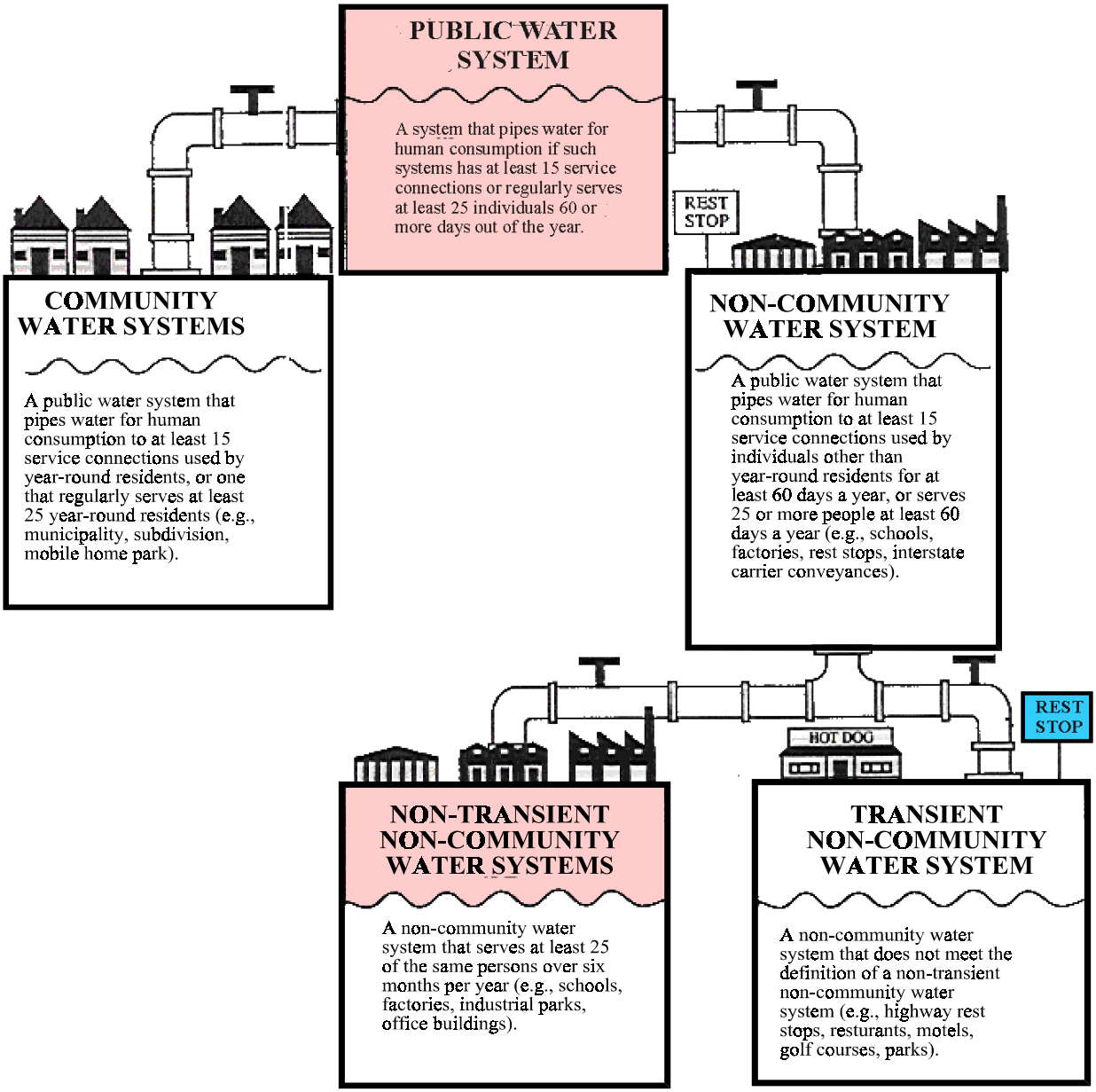
      Community water systems use forty-five surface water intakes that draw water from rivers, lakes, and reservoirs, comprising approximately 3000 square miles of drainage area in central and northern New Jersey.

      Community water systems draw water from 2,434 water supply wells.

      The twenty largest community water systems serve approximately 50% of the state's population. Of these twenty largest community water systems, thirteen deliver mainly surface water to consumers and the remaining seven deliver mainly ground water to consumers.

Types of Public Water Systems

A "public water system" has 15 or more service connections or regularly serves at least 25 people 60 or more days a year. A system that serves water 60 or more days a year is considered to "regularly serve" water. Public water systems can be publicly or privately owned. Public water systems are subdivided by regulation into two major categories: **community** or **non-community** water systems. This division is based on the type of consumer served and the frequency the consumer uses the water. Basically, a **community systems** serves water to a residential population, whereas a **non-community system** serves water to a non-residential population. The non-community category is further broken down into two categories; **non-transient non-community** water systems and **transient non-community** water systems.



From: Public Notification Handbook for Public Water Systems, USEPA Office of Water, USEPA Publication 570/9-89-002 September 1989

b. Noncommunity water systems

Noncommunity water systems supply people other than year-round residents. There are two types of noncommunity water systems:

- Nontransient noncommunity water systems (NTNC)

  There were an estimated 1,034 non-transient noncommunity water systems in New Jersey in 1997.

  These nontransient noncommunity water systems draw water from approximately 1,500 water supply wells and three surface water intakes.

- Transient noncommunity (TNC)

  There were an estimated 3,066 transient noncommunity water systems in New Jersey in 1997.

  These transient noncommunity water systems draw water from approximately 4,000 water supply wells.

2. "Nonpublic water system" means a water system that is not a public water system. A nonpublic water systems includes any water system providing potable water to individual dwellings and any water system regularly serving fewer than 15 service connections or 25 individuals.

   A water system is a nonpublic water system if it serves many individuals less than 60 days per year, or fewer than 15 service connections, or fewer than 25 individuals a day.

   It is estimated there are 400,000 nonpublic water systems in New Jersey. The majority of these systems are individual wells serving one household.

B. Current Monitoring Requirements for Public Water Systems

In order to determine the quality of the public drinking water being consumed in New Jersey, USEPA and NJDEP require mandatory monitoring of the treated water delivered by public water systems. Test results are compared to standards for drinking water quality called "Maximum Contaminant Levels" (MCLs), the maximum permissible level of a contaminant in public drinking water. Prior to the 1986 Amendments to the federal Safe Drinking Water Act, only twenty-three contaminants were required to be monitored at fewer locations and at a lesser frequency than is required to be monitored today.

There are approximately 90 MCLs in effect today in New Jersey. These MCLs were adopted from a combination of federal and state regulations. The 1983 Amendments to the New Jersey

Safe Drinking Water Act (commonly referred to as Assembly Bill 280, or A-280) required New Jersey to develop drinking water standards for a list of organic compounds. This state legislation was passed because of the occurrence of these contaminants in New Jersey's drinking waters and the lack of USEPA drinking water standards. As a result of A-280, there are five organic compounds regulated as primary contaminants by New Jersey that are not federally regulated and twelve regulated volatile organic compounds that have New Jersey MCLs more stringent than federal MCLs. By law, New Jersey drinking water standards must be equal to or more stringent than federal standards

For some contaminants, USEPA established treatment techniques in lieu of an MCL to control unacceptable levels of contaminants in water. For example, treatment techniques have been established for viruses, bacteria, and turbidity.

Drinking water monitoring in New Jersey is the responsibility of the public water system and not NJDEP. The sampled water must be analyzed by a New Jersey State certified drinking water laboratory. Each contaminant or contaminant group has a monitoring frequency specified in federal and/or state regulation depending on whether the system is a community water system (CWS), nontransient noncommunity water system (NTNC), or transient noncommunity water system (TNC). Monitoring data are stored in a database managed by the Bureau of Safe Drinking Water. Table 1 outlines the sampling requirements for major contaminant categories in public drinking water for 1999-2001. Table 2 contains the individual parameters and the MCL developed for each parameter either by USEPA or NJDEP. Public water systems are also required to sample for secondary drinking water standards, which provide an optimum range or upper limit for any contaminants in drinking water that may adversely affect the taste, odor or appearance of the drinking water. In addition to the regulated contaminant monitoring results, NJDEP collects data for some unregulated parameters.

Community water systems and nontransient noncommunity water systems are required to sample for a wide range of contaminants. However, as can be seen from Table 1, transient noncommunity systems are required to sample only for nitrate and microbiological contaminants. Monitoring for these contaminants in transient noncommunity systems is required because an exceedence of the standards for nitrate and coliform bacteria would most likely have an adverse effect on people drinking the water on a short-term basis.

Table 1: Sampling Requirements for Major Contaminant Categories in Public Drinking Water Systems -- 1999-2001

Contaminant	Sampling Frequency	Types of System Required to Sample
Microbiological	Monthly Quarterly	CWS[1] NTNC, TNC
Turbidity[2]	Daily	CWS, NTNC
Surface Water		
Inorganic Chemicals	Annual	CWS, NTNC
Nitrate	Annual	CWS, NTNC
Ground Water		
Inorganic Chemicals	Once every 3 years	CWS, NTNC
Nitrate	Annual	CWS, NTNC, TNC
Lead and Copper	Every 6 months[3]	CWS, NTNC
Volatile Organic Chemicals	4 quarterly samples every 3 years[4]	CWS, NTNC
Synthetic Organic Chemicals	4 quarterly samples every 3 years[5]	CWS, NTNC
Radionuclides	Once every 4 years	CWS
Total Trihalomethanes[6] (disinfection byproducts)	Quarterly	CWS

[1] The number of samples each month varies depending on population served. A NTNC using surface water, ground water under the direct influence (GWUDI) of surface water, or supplying a population >1,000 must monitor at the same frequency as a CWS.
[2] Turbidity is only measured at water systems using surface water sources and ground water under the direct influence (GWUDI) of surface water.
[3] The initial monitoring periods are at 6-month intervals, a frequency that continues after installation of corrosion control. A monitoring reduction may be granted if two consecutive 6 month monitoring cycles meet the action levels for lead and copper.
[4] Four consecutive quarterly samples every three years, reduced to 1 sample annually if no detection. A sampling waiver based on the vulnerability assessment can be issued to further reduce monitoring to once every three years.
[5] Four consecutive quarterly samples every three years, reduced to 2/year every three years or 1/3 years. A sampling waiver based on susceptibility and use can be issued to further reduce monitoring.
[6] Only CWS serving a population greater than 10,000 are currently required to monitor for total trihalomethanes. A CWS using only ground water sources may have the sampling frequency reduced from quarterly to annually. See "Key to Table 2" on page 12 for additional information.

Table 2:
Federal and NJ Primary Drinking Water Standards

Categories of Contaminants	*Maximum Contaminant Levels (MCL)*
Microbiological	**Microbiological MCL described below**
Total coliforms	<5% positive samples in systems taking >40 samples/month; no more than one positive sample per month in systems taking <40 samples/month
Turbidity	At no time can turbidity (cloudiness of water) go above 1 nephelolometric turbidity units (NTU); 95% of daily samples in any month must be no higher than 0.3 NTU
Inorganics	**Inorganic MCLs are expressed in µg/l or ppb**
Antimony	6
Arsenic	50
Asbestos	7 X 10E6 fibers/liter greater than 10 microns in length
Barium	2,000
Beryllium	4
Cadmium	5
Chromium	100
Copper	1,300**
Cyanide	200
Fluoride	4,000
Lead	15**
Mercury	2
Nitrate (as nitrogen)	10,000
Nitrite	1,000
(combined nitrate and nitrite	10,000)
Nickel	*
Selenium	50
Thallium	2
Radionuclides	**Radionuclide MCL expressed in picocuries/l or pCi/l**
Radium-226 and Radium-228	5
Gross alpha particle activity	15 (includes Radium-226 but excludes Radon and Uranium)

Table 2:
Federal and NJ Primary Drinking Water Standards (continued)

Categories of Contaminants	*Maximum Contaminant Levels (MCL)*
Volatile Organic Compounds	**Volatile Organic Compound MCLs expressed as µg/l or ppb**
Benzene	1+
Carbon Tetrachloride	2+
meta-Dichlorobenzene	600+
ortho-Dichlorobenzene	600
para-Dichlorobenzene	75
1,1-Dichloroethane	50+
1,2-Dichloroethane	2+
1,1-Dichloroethylene	2+
cis-1,2-Dichloroethylene	70
trans-1,2-Dichloroethylene	100
1,2-Dichloropropane	5
Ethylbenzene	700
Methyl tertiary Butyl Ether	70+
Methylene Chloride	3+
Monochlorobenzene	50+
Naphthalene	300+
Styrene	100
1,1,2,2-Tetrachloroethane	1+
Tetrachloroethylene	1+
Toluene	1,000
1,2,4-Trichlorobenzene	9+
1,1,1-Trichloroethane	30+
1,1,2-Trichloroethane	3+
Trichloroethylene	1+
Vinyl Chloride	2
Xylenes (total)	1,000+
Disinfectants and Disinfectant Byproducts[1]	**MCLs expressed at ug/l or ppb**
Total Trihalomethanes: Total of Dichlorobromomethane, Chlorodibromomethane, Bromoform and Chloroform	100 as an annual average

Table 2:
Federal and NJ Primary Drinking Water Standards (continued)

Categories of Contaminants	*Maximum Contaminant Levels (MCL)*
Synthetic Organic Compounds	**Synthetic Organic Compound MCLs expressed in µg/l or ppb**
Alachlor	2
Aldicarb	*
Aldicarb Sulfone	*
Aldicarb Sulfoxide	*
Atrazine	3
Benzo(a)pyrene	0.2
Carbofuran	40
Chlordane	0.5
Dalapon	200
Dibromochloropropane (DBCP)	0.2
Di(2-ethylhexyl)adipate	400
Di(2-ethylhexyl)phthalate	6
Dinoseb	7
Diquat	20
Endothall	100
Endrin	2
Ethylene dibromide (EDB)	0.05
Glyphosate	700
Heptachlor	0.4
Heptachlor Epoxide	0.2
Hexachlorobenzene	1
Hexachlorocyclopentadiene	50
Lindane	0.2
Methoxychlor	40
Oxamyl	200
PCBs	0.5
Pentachlorophenol	1
Picloram	500
Simazine	4
Toxaphene	3
2,3,7,8-TCDD (Dioxin)	3 X 10E-5
2,4-D	70
2,4,5-TO (Silvex)	50

Key to Table 2: Federal and NJ Primary Drinking Water Standards

+ New Jersey MCL based on Assembly Bill 280 signed into law January 9, 1984.
* Contaminant for which no MCL has been established but monitoring is still required.
* * Action level. An action level is not an MCL, but a trigger point at which remedial action is to take place.

[1]In December 1998, USEPA finalized the Stage I Disinfectants and Disinfection By-products Rule, which lowers the standard for total trihalomethanes (TTHMs) from 100 ppb to 80 ppb. Community water systems (CWSs) and nontransient noncommunity (NTNC) water systems serving at least 10,000 and using surface water or ground water under direct influence of surface water will have to be in compliance with this new standard by December 2001. All other CWSs and NTNC water systems will have to comply with this standard by December 2003. In addition, a new MCL for total haloacetic acids (HAA5) of 60 ppb will take effect at the same time. HAA5 is the sum of the measured concentrations of mono-, di-, and trichloroacetic acids and mono- and dibromoacetic acids.

One milligram per liter (mg/l) = one part per million = one cent in $10,000 or one second in 12 days.
One microgram per liter (µg/l) = one part per billion = one cent in $10,000,000 or one second in 32 years.

C. Current Monitoring Requirements for Nonpublic Water Systems

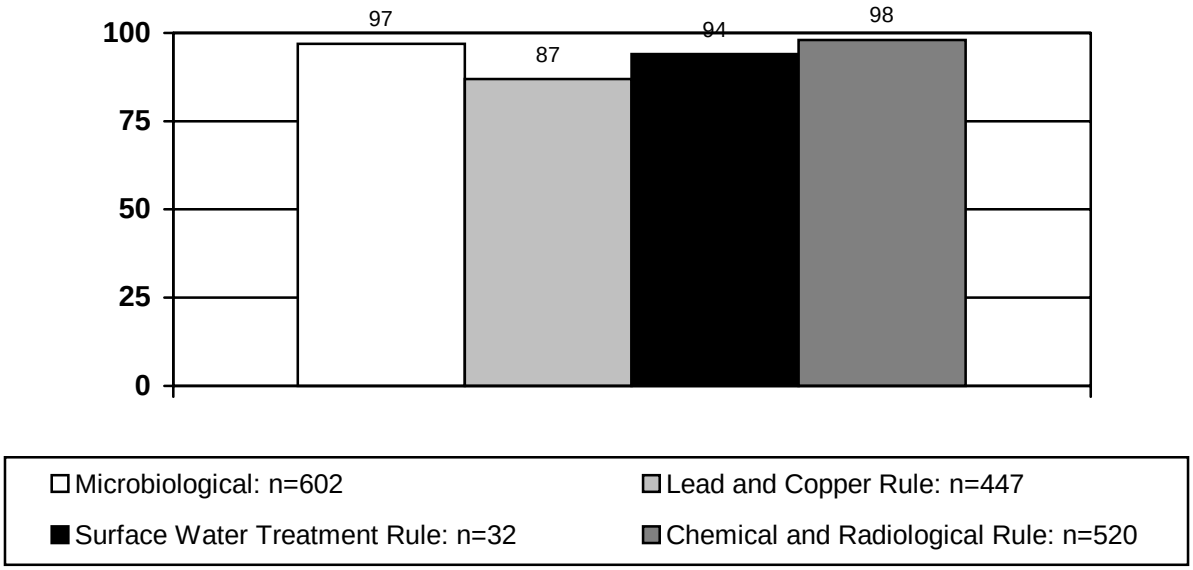
NJDEP requires nonpublic water systems to perform limited sampling after construction. The New Jersey Safe Drinking Water Act requires that upon completion of construction of a nonpublic water system, the owner of the nonpublic water system sample and analyze the microbiological quality of the raw (untreated) water from the system and submit a copy of the results of the analysis to the administrative authority. "Administrative authority" means the County Environmental Health Act (CEHA) certified agency or the local board of health having jurisdiction. The owner of a nonpublic water system must also sample and analyze the raw (untreated) water from the system for nitrates, iron, manganese, and pH. The administrative authority may require sampling and analysis for volatile organic compounds and/or radon as appropriate based on the region and the aquifer in which the water source is located.

D. Status of Drinking Water Quality in New Jersey

In 1995, NJDEP began a comprehensive evaluation of the status and trends of drinking water quality statewide. One of the general environmental indicators for drinking water quality is Maximum Contaminant Level (MCL) violation data. This indicator is used to measure the microbiological, chemical and radiological safety of drinking water. A violation is issued when the average of several samples exceeds the Maximum Contaminant Level.

Microbiological water quality in New Jersey is excellent based on total coliform monitoring in 1997. As seen in Figure 2, 97% of the community water systems in New Jersey met the microbiological standards throughout the year. When the remainder of the chemicals monitored throughout the year were combined, 87% of community water systems met all chemical standards throughout the year. Most of the violations in community water systems were for the lead and copper rule. The lead and copper rule violations are generated when more than 10% of the required samples exceed the action level. Lead and copper samples are taken after the water sits in the pipes for at least six hours to maximize the lead concentrations detected. Not all water systems are required to sample for all chemical parameters each year. The combined microbiological and chemical drinking water quality indicator is based on those systems that submitted results.

Figure 2
Safe Drinking Water Rule Compliance in 1997
Percent of Community Water Systems in Compliance



CHAPTER III
Public Participation Process

This chapter describes the public participation components of NJDEP's Source Water Assessment Program.

A. Background

The 1996 Amendments to the federal Safe Drinking Water Act (PL 104-182) requires each State to place a strong emphasis on public awareness and involvement in the development of its Source Water Assessment Program. Specifically, the amendments to the Act mandate the following for Source Water Assessment Program public participation:

1. Convene a technical advisory committee and a citizens advisory committee (or one committee), with requirements for the State to:
    - Ensure broad representation on these advisory groups
    - Provide adequate opportunity to various groups to participate on the advisory committees
    - Describe the Committee's advice regarding program development questions

2. Conduct public hearings, workshops, or focus groups, with requirements for the State to:
    - Provide opportunities for general public participation, by various means
    - Provide a summary of how the State responded to all substantive public comments

B. Technical/Citizens Advisory Committee

NJDEP first announced the intention of New Jersey to develop a Source Water Assessment Program through an article that was placed in the November 1997 "Watershed Focus," a publication of NJDEP's Office of Environmental Planning. The intent of the article was to describe the Source Water Assessment Program that NJDEP needed to develop and to encourage public interest in its development. During January 1998, NJDEP compiled a list of NJDEP stakeholders and other parties thought to have an interest in the development of the Source Water Assessment Program. In February 1998, stakeholders were invited to collaborate on the Source Water Assessment Advisory Committee that would assist NJDEP in developing the Source Water Assessment Program Plan (see Appendix A, Attachment 1). NJDEP requested that staff from USEPA Region 2 collaborate in the development of the Source Water Assessment Program Plan to ensure that New Jersey's Source Water Assessment Program Plan was in accordance with the 1996 Amendments to the federal Safe Drinking Water Act and USEPA's guidance.

On March 6, 1998, NJDEP convened its first Source Water Assessment Advisory Committee meeting. Members of the following existing NJDEP advisory committees having involvement in water resources issues were invited:

- New Jersey Drinking Water Quality Institute
- New Jersey Water Supply Advisory Council
- New Jersey Water Supply Advisory Council - Public Advisory Committee
- New Jersey Ground Water Task Force
- New Jersey Clean Water Council

During the initial March 6, 1998 Source Water Assessment Advisory Committee meeting, NJDEP asked the attendees if other interests should be involved in the Source Water Assessment Program Plan development. Based on comments received at the initial meeting of the Source Water Assessment Advisory Committee, the following interests were notified by mail of future meetings and were invited to attend:

- New Jersey Non-Point Source Advisory Committee
- County Environmental Health Act Health Departments
- New Jersey League of Municipalities
- State Mapping Advisory Committee
- Natural Resources Conservation Service

Additional agencies were contacted in April 1998 based on comments received from the Policy Subcommittee for Public Participation/Education/Outreach (see Subcommittee descriptions, below). The following associations were contacted by telephone to invite them to participate on the Source Water Assessment Advisory Committee:

- Independent Gasoline Retailers Association
- Cancer Institute of New Jersey
- Chemical Manufacturers Council
- Municipal Planners Association
- Watershed Partnership of New Jersey

Some Source Water Assessment Advisory Committee members indicated that they could assist in increasing meeting attendance by individually alerting their constituents. Appendix A, Attachment 2 contains the list of invited members of the Source Water Assessment Advisory Committee. NJDEP also developed a Source Water Assessment Program newsletter to increase awareness of NJDEP's efforts (see Appendix A, Attachment 3) and to notify potential interested parties.

During the March 6, 1998 Source Water Assessment Advisory Committee meeting, a decision was made to break into three Subcommittees as follows:

Policy Subcommittee for Public Participation/Education/Outreach

Policy Subcommittee for Overall Policy/Consolidation/Integration

Technical Subcommittee for Location/Delineation/Susceptibility/Contaminants of Concern/Contaminant Source Inventory/Vulnerability

Each Subcommittee met three or four times for one-half day or more between April and August of 1998. A Source Water Assessment Advisory Committee meeting was held on July 7, 1998 for a presentation and discussion of the progress that each subcommittee had made to date. The Source Water Assessment Advisory Committee and Subcommittee meetings were mainly held at the US Geological Survey, New Jersey District Office in West Trenton, New Jersey. This meeting site was selected because it is centrally located within the State of New Jersey and has desirable access to major State highways. A list of all meeting dates is found in Appendix A, Attachment 4 of this document.

NJDEP staff attended all meetings to take minutes, to assist in answering questions and to provide technical and policy guidance. When applicable, professional staff with expertise in technical issues attended meetings and made presentations (e.g., wellhead area protection activities, data collection needs, etc.). When specific technical questions and issues arose, appropriate technical experts were invited to Source Water Assessment Subcommittee meetings to assist in addressing said questions and issues.

NJDEP staff handled all logistics and administrative tasks. A NJDEP facilitator was invited to the Technical Subcommittee meetings to ensure that the Subcommittee meetings moved through the agenda. Both technical and citizens' viewpoints were provided at all Source Water Assessment Advisory Committee and Subcommittee meetings. All subcommittee members, as well as other interested parties that had subsequently contacted NJDEP with a desire to participate in the process, were free to attend and collaborate in all Source Water Assessment Advisory Committee and Subcommittee meetings.

Whenever Source Water Assessment Advisory Committee or Subcommittee members made a recommendation or asked a key question, NJDEP described in detail in meeting minutes how it responded or replied to the recommendation or question. A summary of key issues and questions raised by the Source Water Assessment Advisory Committee and Subcommittees is found in Appendix A, Attachment 5.

C. Public Meetings, Workshops and Focus Groups

The procedures that NJDEP employed to achieve maximum public participation in developing its Source Water Assessment Program Plan submittal to USEPA was achieved through its efforts with the Source Water Assessment Advisory Committee. This section describes the opportunities for general public involvement in developing the Source Water Assessment Program Plan over and beyond that of the Source Water Assessment Advisory Committee.

NJDEP was invited to participate in six workshops, conferences and meetings throughout the State during the period when the Source Water Assessment Program Plan was being developed. The primary objectives of these meetings were to disseminate basic information on the Source Water Assessment Program, engage citizens and public officials on how they can be involved in the Source Water Assessment Program, and to provide meaningful and substantial opportunities for all interested parties to furnish comments and recommendations. NJDEP program officials attended and participated in the following meetings and seminars to fulfill these objectives:

March 6, 1998	New Jersey Water Supply Advisory Council and Policy Advisory Committee, Trenton, NJ "An Overview of the Proposed Source Water Assessment Program" Presented by Robert Kecskes, NJDEP, Office of Environmental Planning
March 25, 1998	New Jersey Section of American Water Works Association, Annual Meeting, Atlantic City, NJ "Source Water Assessment Program Update" Presented By Pat Bono, NJDEP, Bureau of Safe Drinking Water
May 11, 1998	Cape May Water Resources Coordinating Committee, Cape May Court House, NJ "An Overview of the Proposed Source Water Assessment Program" Presented by Robert Kecskes, NJDEP, Office of Environmental Planning
August 11, 1998	Water Supply Advisory Committee, NJDEP Public Hearing Room, Trenton, NJ "The Source Water Assessment Program" Presented by Sandra Krietzman, NJDEP, Bureau of Safe Drinking Water
September 21, 1998	County Environmental Health Act Annual Meeting, NJDEP Building, Trenton, NJ "Role of the County Health Agencies in the Source Water Assessment Program" Presented by Sandra Krietzman, NJDEP, Bureau of Safe Drinking Water

September 24, 1998 New Jersey Section of American Water Works Association, Fall Meeting, Eatontown, NJ
"State Perspective on Source Water Assessment" Presented by Sandra Krietzman, NJDEP, Bureau of Safe Drinking Water and Judy Louis, NJDEP, Division of Science and Research

In addition, and as described above, various newsletters and other announcements that discussed the Source Water Assessment Program Plan and how the general public could be involved were distributed by NJDEP. NJDEP also intends to coordinate with various organizations when Source Water Assessments are being conducted to ensure that there is adequate continuous public input.

The Draft Source Water Assessment Program Plan was made available to the public on November 10, 1998 in hardcopy, electronically through e-mail (or disk) and on NJDEP's web site. Three public meetings were scheduled for the northern, central, and southern parts of the State. A notice (Appendix B, Attachment 1) was sent to approximately 2000 stakeholders including the Source Water Assessment Advisory Committee members and other interested parties to ensure broad representation of the public during the public meeting process. The notice announced the dates, times and locations of the three public meetings and also included the three formats available for obtaining the Source Water Assessment Program Plan. Public notices were published in major newspapers prior to the public meetings in the northern, central and southern regions of the State (see Appendix B, Attachment 2). The notices provided a short description of the Draft Source Water Assessment Program Plan and announced that the Draft Source Water Assessment Program Plan was available to the interested public through NJDEP. NJDEP also issued a press release (Appendix B, Attachment 3) announcing the three public meetings and the availability of the Draft Source Water Assessment Program Plan. The Draft Source Water Assessment Program Plan was available at all major libraries prior to the public meetings. Appendix A, Attachment 4 provides a list of libraries that received the Draft Source Water Assessment Program Plan.

As a result of comments received upon release of the Draft Source Water Assessment Program Plan and at the first public meeting, a fourth public meeting was scheduled and held in Newark, New Jersey's largest city. All public-meeting protocols were adhered to and the meetings were recorded. Three of the four meetings were held in the evening hours to provide the public with the maximum opportunity to comment on the Draft Source Water Assessment Program Plan. The public meetings were held as follows:

MEETING LOCATION	DATE	TIME
NJDEP Building 401 E. State Street Trenton, NJ	November 23, 1998	12:30 p.m. – 3:30 p.m.
Atlantic County Library, 2 South Farragut Avenue Mays Landing NJ	November 24, 1998	6:30 p.m. – 9:00 p.m.
Morris County Cultural Center 300 Mendham Road Morristown, NJ	December 2, 1998	6:30 p.m. – 9:00 p.m.
Essex County Community College Newark, NJ	December 17, 1998	6:30 p.m. – 9:00 p.m.

NJDEP received a significant number of individual written and oral comments on the Draft Source Water Assessment Program Plan during the comment period. Originally, the public comment period was scheduled to close on December 15, 1998. As a result of early comments stating that more time was needed to provide comprehensive comments, NJDEP extended the end of the comment period to January 6, 1999. NJDEP also received two form letters, one of which was sent in by 856 people and the other sent in by 250 people. A summary of key issues raised in the public meetings and during the public comment period can be found in Appendix B, Attachment 5. Complete comments and responses are found in Appendix B, Attachment 6. The comments received resulted in changes and clarifications to the November 10, 1998 Draft Source Water Assessment Program Plan.

D. Continuous Public Participation

As noted in the opening chapter of this document, the 1996 Amendments to the federal Safe Drinking Water Act direct the states to involve the public in Source Water Assessment Programs and source water protection programs, so that the energies of an informed, educated public can be used to protect their drinking water. NJDEP is committed to continued public involvement. NJDEP will begin reconvening its Source Water Assessment Advisory Committee after submitting this revised Source Water Assessment Program Plan to USEPA. NJDEP will seek advice from the Source Water Assessment Advisory Committee on:

1. Distribution and content of the summary documents to be distributed to the public.
2. Distribution and content of the full Source Water Assessments.
3. Presentation of the models being developed by the US Geological Survey for each class of contaminants of concern
4. General education forum on drinking water issues in the State.

Additional Source Water Assessment issues will be discussed as these issues arise. Because local and regional Source Water Assessments will be incorporated into the characterization and assessment components of each watershed, and will provide the scientific basis for development of source water protection programs, this additional Source Water Assessment Program public participation will include the appropriate watershed management staff. The Source Water Assessment Advisory Committee will not discuss local watershed related issues since there are separate Public Advisory and Technical Advisory Committees set up in each watershed.

NJDEP will reconvene its Source Water Assessment Advisory Committee by reaching out to the groups in the original Advisory Committee, and will also contact additional environmental and public health groups. NJDEP strongly encourages any individuals or groups who wish to become part of the Source Water Assessment Advisory Committee to contact the Bureau of Safe Drinking Water at (609) 292-5550.

CHAPTER IV
Description of the
New Jersey Source Water Assessment Process

A. Introduction

The 1996 Amendments to the federal Safe Drinking Water Act direct each State to establish a Source Water Assessment Program for the protection and benefit of public water systems and for the support of monitoring flexibility. Further, the Amendments require the Source Water Assessment Program to:

- delineate the boundaries of the assessment areas for all sources of drinking water used by public water systems based on available hydrogeologic information,
- identify the origins of all contaminants within the delineated area, regulated under the federal Safe Drinking Water Act, and
- determine the susceptibility of the public water system to such contaminants.

The Amendments encourage the States to develop a Source Water Assessment Program that integrates other source water programs such as sanitary surveys, monitoring programs, vulnerability assessments, wellhead protection programs, and state watershed initiatives. The New Jersey Source Water Assessment Program is designed to meet the federal requirements listed above, and to address concerns specific to source waters within the state.

B. New Jersey Source Water Assessment Process for Drinking Water Systems

A Source Water Assessment provides not only an understanding of current conditions, but also serves as a predictive tool for source water management and protection. Recognizing that a number of factors need to be considered in a realistic Source Water Assessment, New Jersey has designed a strategy using a variety of information sources (see Figure 3 on page 37). Each Source Water Assessment will contain the following information:

- a <u>susceptibility assessment</u> is the central component of the Source Water Assessment; it will consist of a determination of whether the source water is, or is likely to become, contaminated via point sources, land use activities, or natural geologic conditions;
- an evaluation of <u>existing finished monitoring data</u>, to determine whether there is a current or historical record of water quality problems; and
- a listing of the <u>types of treatment</u> currently in place.

1. Identifying Current and Future Threats to the Public Water Supply (Activity 1)

a. Susceptibility Assessment

The development of the susceptibility assessment is the most important component of a Source Water Assessment. It will consist of: 1) accurate locations of each source of drinking water and a delineation of the area of concern around the water source, 2) an analysis of the inherent hydrogeological sensitivity of the drinking water source, and 3) an evaluation of the intensity of contaminant use/occurrence in the delineated area.

The first step is to accurately locate the surface water intakes and drinking water wells. The methods used for location of the water sources and the delineation methods to be used for surface water intakes and drinking water wells differ, and will be discussed in greater detail in Sections C and D of this chapter. The evaluation of information regarding the integrity of drinking water wills will be discussed in Section D.

Next, each source of drinking water has an inherent *sensitivity* to becoming contaminated as a result of natural geologic conditions. In some cases, there is a direct link between the source of water and the land surface so that contaminants may directly enter the drinking water source. This is especially true for surface waters that are subject to contamination via runoff and direct discharges. Other sources of water are naturally protected (confined) and have been isolated for so long that they are free of any anthropogenic (manmade) contaminants. These sources are not considered to be susceptible to contamination from the land surface. By evaluating the inherent sensitivity of a source of water, it is possible to determine how readily that particular source may become contaminated. By assigning a ranking (low, medium, and high) to the inherent sensitivity of each source water, it is possible to compare different sources and determine which are more sensitive than others.

The third factor that can influence whether or not a source of water may become contaminated is the actual release or presence of pollutants near the water source. Only those contaminants used near the water source are likely to impact that water source. The first step in determining which contaminants might impact a water source is to conduct an inventory of the significant pollution sources in the vicinity of the water source. A list of the types of pollution sources/activity, as well as the source of the data, and the classes of contaminants associated with each type of pollution source/activity are listed in Table 3 on page 35.

1. Contaminants of Concern

Recognizing that not all contaminants which have the potential to reach a particular water source are currently regulated under the Federal and State Safe Drinking Water Act, the New Jersey Source Water Assessment Program's strategy for identifying contaminants of concern will include: 1) specific contaminants that will be addressed

statewide, 2) contaminants from specific contaminant sources and land use coverages, and 3) contaminants that impact treatment.

a. Specific contaminants that will be addressed statewide

1. Contaminants regulated under the Federal and State Safe Drinking Water Act - In accordance with the 1996 Amendments to the Federal Safe Drinking Water Act, the Source Water Assessments must consider, at a minimum, all contaminants regulated under the Federal Safe Drinking Water Program for which monitoring is required and two additional unregulated waterborne parasites, *Giardia*, and *Cryptosporidium*. The New Jersey Source Water Assessment Program will also include five additional VOCs regulated under the New Jersey Safe Drinking Water Program. A complete list of the contaminants having either federal or state MCLs, for which monitoring is required in New Jersey can be found in Table 2.

2. Contaminants of particular concern to New Jersey - Recent studies of New Jersey ground water have shown elevated levels of radium 224 in southern New Jersey and radon in northern New Jersey. Therefore, the radiological contaminants which will be evaluated as part of the Source Water Assessment will consist not only of those that are federally regulated (gross alpha and radium 226/228) but also radium 224 and radon.

b. Contaminants from Specific Contaminant Sources and Land Use Coverages

This group of contaminants will vary depending upon the type of point source discharge, or the type of data available about the discharge of contaminants from a particular land use activity. Any contaminants discharged from a pollution source or associated with a land use activity in a delineated area will be evaluated. The methodology for this evaluation is discussed in the section below on Categories Of Contaminants Of Concern.

c. Contaminants that affect treatment

The assessment for surface water sources and ground water under the direct influence of surface water will evaluate factors known to adversely affect surface water treatment processes. Generally these factors increase the need for disinfection and cause taste and odor problems. Since these factors affect the amount of chemicals used at the treatment plant, they directly affect the formation of disinfection byproducts. The Source Water Assessment's Technical Advisory Subcommittee suggested that this list include: ammonia, phosphorus, total organic carbon/dissolved organic carbon, algae and algae related metabolites.

2. Categories of Contaminants of Concern

The contaminants likely to be found by the contaminant source inventory and the land use coverages belong to eight basic categories. Contaminants in each group share chemical and physical characteristics. The eight groups are:

- Pathogens – This group of contaminants includes bacteria, protozoans, and viruses. Both human and animal wastes may contain pathogens that present human health risks. The sources of pathogens in the environment include point sources discharges such as effluents from sewage treatment plants, and nonpoint sources such as discharges from septic fields, runoff from facilities where livestock is kept, boats, and wildlife.
- Nutrients – This group includes nitrates, ammonia, and phosphorus. The sources of nutrients are both natural and manmade. Nitrate has the most serious human health concern. High levels of nitrate are linked to the occurrence of methemoglobinemia or "blue baby disease" in infants. Other nutrients may adversely impact the efficiency of the water treatment plant. For example, high levels of nutrients in surface water can lead to algae formation. Problems associated with algae in drinking water include taste and odor problems, reduced ability to disinfect, and formation of phytotoxins. Nutrients can originate from many sources including point sources such as effluents from sewage treatment plants, nonpoint sources such as discharges from septic fields, land where fertilizers are used such as on agricultural and residential land, areas where animal waste is stored, and from sludge application areas.
- Volatile Organic Compounds (VOCs) – These manmade compounds are the most common organic contaminants in ground water in New Jersey. They are chemicals that are used as solvents, degreasers, and gasoline components. VOCs includes known human carcinogens such as benzene and vinyl chloride and probable human carcinogens such as trichloroethylene and tetrachloroethylene. Other VOCs are associated with chronic health effects such as toluene and xylene.
- Pesticides – Pesticides are a group of made-made chemicals used for control of insects, weeds, fungi, and bacteria. There are many different pesticides with many different chemical characteristics and toxicities. Point sources would include manufacturing, formulating, and distribution centers, while nonpoint sources would include land application of pesticides such as on agricultural land, residential land, and golf courses.
- Synthetic Organic Compounds (SOCs) – This is a wide-ranging group of manmade industrial chemicals. In the past, New Jersey was a leader in the manufacture and disposal of synthetic organic compounds. The major sources of SOCs are point sources such as discharges from chemical manufacturing plants, pharmaceutical plants, sewage treatment plants, and discharges from contaminated sites.
- Inorganics – Sources of inorganic contaminants can be both natural and made-made. Inorganics include chemicals such as asbestos, cadmium, lead, sodium, and chloride. The sources can be point source discharges from manufacturing

facilities and releases from a contaminated site. Inorganics can also impact source water quality due to past land use. For example, mercury and arsenic were used as pesticides until the 1950s. In addition, inorganics such as arsenic can be present in the subsurface material and can be released into the drinking water source over time.

- Radionuclides – Radionuclides have both natural and manmade sources. The decay of naturally occurring inorganic substances can produce radioactive inorganic material. The major source of radionuclides in groundwater is leaching of subsurface material into ground water. Human activities such as improper disposal of radioactive waste can also lead to contamination of source water.
- Disinfection Byproduct Precursors – The precursors of disinfection byproduct formation are natural organic matter such as leaves and organic debris in surface waters. When disinfectants are used to kill pathogens in raw water, the disinfectant may also react with any dissolved organic matter present to form disinfection byproducts. Common disinfection byproducts include trihalomethanes, haloacetic acids, and haloacetonitriles. The concentrations of disinfection byproducts formed are a function of the amount of precursor material available (total organic carbon concentration), the concentration of chlorine, time of contact, pH, and temperature.

Once the contaminant source inventory is completed, an assessment of the likelihood that a particular pollution source/activity is causing or may cause water quality problems will be performed. This assessment step will be based on a series of predictive tools or models that will be developed by the US Geological Survey. These models will be developed for each of the eight contaminant classes. Different models will be developed for surface water than for ground water. These models will be developed using existing water quality data on "raw" water. This can include raw water monitoring data collected by the purveyor, NJDEP, or an outside agency such as the US Geological Survey. The models will be used in combination with the contaminant source inventory to develop the "intensity" portion of the equation below. By combining sensitivity and intensity one can predict the susceptibility of a water source to a particular class of contaminant. The value of conducting a susceptibility assessment for each source is to help in identifying which sources are more likely to be contaminated, or are at risk of becoming contaminated as a result of increases in contaminant releases. It also identifies which types of contaminants pose a real threat to the water source, regardless of whether the contaminants are currently impacting water quality. The susceptibility assessment is, therefore, a predictive tool for managing protection, treatment, and monitoring of the source. The susceptibility assessment of a drinking water source will be based on two factors: *sensitivity* of the drinking water source to contamination from land use activities and the *intensity* of use of the contaminants within the delineated area:

Susceptibility = Sensitivity + Intensity of contaminant use/occurrence

b. Evaluation of Existing Finished Water Quality

Finished (treated) water quality monitoring data is available from the Bureau of Safe Drinking Water. Finished water data may represent one source of water or a combination of sources of water blended during treatment. Nevertheless, this water quality monitoring provides additional information on the present condition of the water source, and highlights the presence of contamination from a past or current pollution source. Monitoring data will be used as a check on the accuracy of the susceptibility assessment. For example, if a susceptibility assessment ranked a particular water source as having a low sensitivity and low intensity, one would not expect to see any contamination in the finished water. If water quality monitoring data indicates that there is contamination, then one would conclude that there is a problem with the information used to develop the susceptibility ranking. Any detections of contaminants of concern in either raw or finished water samples that do not agree with the susceptibility rankings will require a reevaluation of the initial susceptibility ranking.

c. Type of Treatment

The last barrier to protect the consumer is the treatment provided at the water treatment plants. As part of the Source Water Assessment, a listing of the types of treatment in place at each treatment facility will be gathered and reported.

2. Preliminary Source Water Assessment (Activity 2)

Once the Preliminary Source Water Assessment has been developed using the above process, the information will be made available to state, county and municipal agencies; purveyors; watershed associations; and other interested parties. The Preliminary Source Water Assessment will include at a minimum:

- a map indicating the location of the intake, or well,
- for ground water sources, information on the well attributes (well depth, aquifer the well is taking water from, etc.)
- for surface water intakes, information about flow conditions, if available,
- the delineation of the assessment area for the surface water intake or the well,
- mapped locations of regulated point sources in the delineated area, with facility name, address, and compliance/remedial status,
- a map of the land uses/land cover in the delineated area,
- the sensitivity, intensity and susceptibility ranking for the eight contaminant categories,
- the available finished water monitoring data, and
- a description of the current treatment process for that source/system.

This information will be made available on the Internet. Standard retrievals will be developed so that the information can be easily accessed for an individual source.

3. Public Review (Activity 3)

The availability of the Preliminary Source Water Assessments will be announced to state, county, and municipal agencies, water system purveyors, watershed associations, and any other interested parties. Comments received will be reviewed and considered for incorporation into the revised Source Water Assessment.

4. Options for Improving the Preliminary Source Water Assessment (Activity 4)

The Preliminary Source Water Assessments will be based on readily available information in NJDEP GIS databases or electronic text files. Additional information may be needed in order to further assess the pressures being placed on many drinking water sources. This information may include refinement of the State's data or generation of new data. Outside groups such as purveyors, local government agencies, and watershed associations may undertake these activities in order to enhance the Source Water Assessments. Specifically, areas where outside parties may supplement the Source Water Assessments include: 1) refinement of locational data and names, 2) collection of associated data, 3) conducting monitoring based on identified data gaps, and 4) providing additional details to existing land use/land cover data. As part of the Source Water Assessment Program, NJDEP will develop a process for incorporating information collected by interested parties into the revised Source Water Assessments.

5. Revised Source Water Assessment (Activity 5)

The revised Source Water Assessments will incorporate comments received on the Preliminary Source Water Assessment and any additional information generated as a result of the improvement options listed above. The revised Source Water Assessments will be formatted in the same manner as the preliminary Source Water Assessments and will be available on the Internet.

6. Summary Source Water Assessment (Activity 6)

A summary document will be developed through the Source Water Assessment Advisory Committee. The process for developing the summary document is discussed in Chapter V.

C. Delineation and Susceptibility Analysis for all Surface Drinking Water Sources in New Jersey

A Source Water Assessment will be conducted for all sources supplying active community and noncommunity drinking water intakes and all reserve intakes that have been used within the last five years. There are 45 community water system intakes and 3 nontransient noncommunity water system intakes in New Jersey.

Steps 1 and 2: Locations and Delineations

All of the 48 intakes have been located using a global positioning system (GPS), and a coverage of the intake locations is available on the NJDEP Geographic Information System (GIS).

The surface water assessments will be based on a delineation of the entire drainage area that flows past an intake (the intake delineation area). Intake delineations will include the headwaters and tributaries that drain past the intake as well as account for overland flow to the intake. Additionally, 5-year ground-water flow delineation will be added to account for ground water contributions to baseflow. Surface water delineations will be based on USGS's hydrologic unit code HUC 14. A pilot delineation for the Rahway Water Department Intake was performed using this methodology and is shown in Figure 4 on page 38. The intake delineation area will be stored on the NJDEP GIS system, and will be available on the NJDEP web page.

Step 3: Contaminant Source Inventory

The contaminant source inventory will be developed for the entire intake delineation area from existing NJDEP GIS databases and other data sets, for both point and nonpoint sources of contamination. Only those facilities or land uses that release contaminants will be included in the inventory (See Table 3).

- Point Sources: An inventory of point sources will be assembled using all available NJDEP electronic databases, both GIS and text-based. These will be supplemented by NJDEP program files that are still in a paper format. The Source Water Assessment Program goal is to inventory all relevant point sources in the intake delineation area, including known contaminated sites, industrial and commercial surface and ground water discharges, and sewage treatment plant discharges. See Table 3 for a more complete list.

- Nonpoint Sources: NJDEP currently has a digital GIS land use/land cover file for the early 1970s and for 1986. NJDEP is developing a GIS digital coverage for 1995 land use/land cover and it is expected that this will be available by the spring of 2000. These coverages will provide information regarding the types of land uses and activities taking place within the intake delineation area: agriculture, residential, urban, industrial, and undeveloped. It is important to use both the recent and historical land use data sets to account for land use changes. Nonpoint sources can have a major impact on surface water quality. One can develop a correlation between the land use type and the particular

contaminants discharged to surface water. For example, runoff from agricultural and residential land can lead to high levels of nutrients in the stream. Additionally, maps of sewered versus unsewered areas can be used to estimate which areas are likely to be impacted by septic system discharges. The amount and distribution of various land uses, along with census tract data and other data, will be combined to estimate the intensity of various nonpoint source contamination activities.

Step 4: Collection of Data from Drinking Water Purveyors

The Bureau of Safe Drinking Water will request the purveyor to provide pertinent raw water quality data, particularly any data they collect on raw water turbidity. The purveyors will also be asked to update NJDEP's information about the treatment processes currently in place at the plant, and update contingency plans/emergency procedures.

Step 5: Gather, Evaluate, and Data Manage Associated Data for Potential Source of Contamination

Once the potential sources of contamination have been identified (Step 3), the next step is to identify the regulatory program managing the site or facility, information on compliance or site status, and determine which contaminant groups are associated with each pollution source. For significant sources, permitted discharge levels, spill history, cleanup activities, etc. will be reviewed and evaluated.

Once the associated data has been compiled, it must be data managed in such a way that it can be affiliated with it's corresponding facility location and updated as needed. Coordination with the relevant NJDEP program will be essential. The planned restructuring of NJDEP's information management system should make this activity more efficient.

Step 6: Intensity of Use/Occurrence

Once the intake delineation area is delineated and the contaminant inventory is completed, the next step is to determine which contaminants have the potential to reach the intake in concentrations of concern. The factors to be considered are: 1) amount of the contaminant likely to be released, 2) distance to the intake, 3) fate and transport of the contaminant through the environment, and 4) flow conditions which may increase the likelihood of the contaminant reaching the surface water intake. The evaluation will be done by developing statistically valid scientific models for each contaminant class and performing an intensity of use/occurrence ranking. The models will be developed by the US Geological Survey, at locations where there is existing ambient water quality data. The plan is to develop eight individual models, one for each contaminant class by developing multivariate statistical models. These models are currently under development. The output from the models will be a ranking for the intensity of use/occurrence factor. A ranking of high, medium, or low intensity will be obtained from the model. When the model development is completed for a contaminant class, a model validation step will be conducted using a combination of existing data and new monitoring data.

Step 7: Susceptibility Ranking

The susceptibility of a drinking water source is based on two factors: *sensitivity* of the drinking water source to contamination from land use activities and the *intensity* of use of the contaminants within the delineated area:

Susceptibility = Sensitivity + Intensity of contaminant use/occurrence

All surface waters are, by definition, highly sensitive to contamination by point and nonpoint source discharges such as runoff, spills, and discharges. Therefore, the susceptibility assessment for surface water sources will be based on the intensity of use/occurrence of contaminants within the delineated area (i.e. the intake delineation area).

Susceptibility = Intensity of contaminant use/occurrence

The following chart presents all the possible combinations of susceptibility rankings that a surface water intake may receive.

Susceptibility Rankings for Surface Water

Sensitivity/Intensity Ranking	**High Sensitivity – High Intensity**	**High Sensitivity – Medium Intensity**	**High Sensitivity – Low Intensity**
Pathogens	High Sensitivity - High Intensity	High Sensitivity - Medium Intensity	High Sensitivity – Low Intensity
Nutrients	High Sensitivity - High Intensity	High Sensitivity - Medium Intensity	High Sensitivity – Low Intensity
VOCs	High Sensitivity - High Intensity	High Sensitivity - Medium Intensity	High Sensitivity – Low Intensity
Pesticides	High Sensitivity - High Intensity	High Sensitivity - Medium Intensity	High Sensitivity – Low Intensity
SOCs	High Sensitivity - High Intensity	High Sensitivity – Medium Intensity	High Sensitivity – Low Intensity
Inorganics	High Sensitivity - High Intensity	High Sensitivity – Medium Intensity	High Sensitivity – Low Intensity
Radionuclides	High Sensitivity - High Intensity	High Sensitivity – Medium Intensity	High Sensitivity – Low Intensity
Disinfection byproduct formation	High Sensitivity - High Intensity	High Sensitivity - Medium Intensity	High Sensitivity – Low Intensity

D. Delineation and Susceptibility Analysis for all Ground Water Drinking Water Sources in New Jersey

In New Jersey there are currently 612 community water systems with 2,434 community water supply wells, 1,034 nontransient noncommunity water systems with approximately 1,500 wells, and 3066 transient noncommunity water systems with approximately 4,000 wells.

The Source Water Assessment Program for community and noncommunity drinking water systems using ground water is similar. There are some differences in the complexity of the delineation methods being used for community and noncommunity systems. The amount of effort expended on the assessment will be equal for the community water system and nontransient noncommunity water systems. For the transient noncommunity systems the contaminant source inventory will be equivalent to the inventory prepared for community and nontransient noncommunity water system. However, the susceptibility assessment will focus on pathogens, nutrients, and other known regional contaminants (e.g., mercury, arsenic, and radium 224).

Step 1a: Location of public water supply wells and development of well attribute data

All community water system wells have been located using global positioning system (GPS) techniques. This information is stored on the NJDEP GIS. The database on well attribute data including well permit number, well drilling record, the depth of the well and the screening interval, and the aquifer that is the source of the water is nearly complete. Information from sanitary surveys will also be examined.

The Bureau of Safe Drinking Water will be contracting with most of the county health agencies in New Jersey to locate all noncommunity water system wells using GPS techniques. The New Jersey Geological Survey will locate those noncommunity wells in the two counties that do not have county health agencies. The county health agencies are being asked to obtain information on well permits and well construction such as: the depth of the well, the aquifer that is the source of the water, and information from any sanitary surveys that have been conducted. A comprehensive database containing well locations and well attribute data will be established and maintained for wells owned by noncommunity water systems.

Step 1b: Review of well integrity information

NJDEP has a many-faceted approach to insure the integrity of public wells. In order to drill a well in New Jersey, a well permit must first be obtained from NJDEP. The well permit requires the well driller to construct the well according to state regulations. In addition, in New Jersey only a licensed well driller may construct a well. The well driller has to complete a designated amount of course work and apprentice time prior to taking a test to become licensed. After each public well is constructed in New Jersey, either NJDEP or a local health agency inspects the well for compliance with the NJDEP construction regulations and water samples are collected to assure compliance with drinking water quality standards. After the well is constructed, the

licensed well driller is required to complete and submit to NJDEP a well log with details about the final well. NJDEP is data managing this information as part of the Source Water Assessment Program.

Since well integrity may change over time, public water systems are visited periodically by either the NJDEP Regional Compliance Assistance Bureau or by local health agencies. During these community water system inspections, each well is visited and visually inspected for cracks and leaks. Currently this visual inspection is limited to those wells with raised well heads. In New Jersey, all new wells and currently used wells that are modified (e.g. deepened) are required to have raised well heads.

If well integrity is determined to be unacceptable during this Step 1b, the well will be determined to be highly sensitive to all categories of contaminants.

Step 2a: Delineation of 2-year, 5-year, and 12-year time of travel areas around each Public Water System well

Two types of delineations will be conducted. The delineations will be based on the New Jersey Well Head Protection Program. The New Jersey Geological Survey has published a document entitled "Draft Guidance for Well Head Protection Area Delineations in New Jersey" (November 1998). The document outlines acceptable methods for delineation. The methods range from simple to complex. For community water systems, the estimated gradient method will be used. The New Jersey Geological Survey will use this method to delineate a 2-year, 5-year, and 12-year time-of-travel area around each community water supply well, and each nontransient noncommunity water system well that pumps over 70 gallons/minute. For all other noncommunity wells, a circular calculated fixed radius (CFR) method will be used based on the aquifer into which the well is drilled. A 2-year, 5-year, and 12-year delineation will be calculated using the CFR method. The differences in approach results from the fact that fewer well and aquifer parameters are available for noncommunity water systems.

Step 2b: Determine sensitivity of each well to contamination from the land surface using a model developed by US Geological Survey

The US Geological Survey developed a model to determine the hydrogeologic susceptibility of public water supply wells. Hydrogeologic sensitivity of a well is based on three variables: distance from the aquifer outcrop area, organic matter content of the soils at the well, and depth to the top of the open interval of the well. Regardless of land use activity, the sensitivity of the well remains the same. The existing US Geological Survey model has been applied to most community water system wells. The remaining community water system wells and all of the noncommunity wells will be assigned a sensitivity ranking of high, medium, or low using this model. Wells with high sensitivity are most likely to be contaminated by activities at the land surface, while wells with low sensitivity are protected and are unlikely to be contaminated by activities at the land surface. The sensitivity ranking is the first component of a susceptibility ranking.

Step 3: Contaminant Source Inventory

The contaminant source inventory will be developed for the entire delineation area from existing NJDEP GIS databases and other datasets for both point and nonpoint sources of contamination. Only those facilities that may potentially release the contaminants of concern will be included in the inventory (see Table 3).

- Point Sources: An inventory of point sources will be assembled using all available NJDEP electronic databases, both GIS and text-based. These will be supplemented by NJDEP program files that are still in a paper format. The Source Water Assessment Program goal is to inventory all relevant point sources in the intake delineation area including known contaminated sites, industrial and commercial surface and ground water discharges, and sewage treatment plant discharges. (See Table 3 for an expanded list.)

- Nonpoint Sources: NJDEP currently has a digital GIS land use/land cover file for the early 1970s and for 1986. NJDEP is developing a digital GIS coverage for 1995 land use/land cover and it is expected that this will be available by the spring of 2000. These coverages will provide information regarding the types of land uses and activities taking place within the intake delineation area: agriculture, residential, urban, industrial, and undeveloped. It is important to use both the recent and historical land use data sets to account for land use changes. Certain types of land uses can be associated with certain types of nonpoint source contamination. For example, there is information in the file regarding the amount of land used for growing row crops versus that used for orchards. This allows for a detailed evaluation of the percent of different kinds of agricultural uses in the intake delineation area. When combined with other data, such as pesticide usage, nonpoint source contamination contributions can be estimated from different types of agricultural areas. Additionally, maps of sewered versus unsewered areas can be used to estimate which areas are likely to be impacted by septic system discharges. In summary, the amount and distribution of various land uses, along with census tract and other data, will be combined to estimate the intensity of various nonpoint source contamination activities.

Step 4: Collect Additional Data from Drinking Water Purveyors

For community water systems and nontransient noncommunity water systems, the Bureau of Safe Drinking Water will request that the purveyor to provide any available raw water quality data to the state, an update of contingency plans/emergency procedures, and/or to update NJDEP's information on treatment processes currently in place at the plant.

Step 5: Gather, Evaluate, and Data Manage Associated Data for Pollution Sources

Once the potential sources of contamination have been identified (Step 3), the next step is to identify the regulatory program managing the site or facility, information on compliance or site status, and determine which contaminant groups are associated with each pollution source. For significant sources, permitted discharge levels, spill history and cleanup activities will need to be reviewed and evaluated. For transient noncommunity systems

only associated data relating to the occurrence of pathogens and nitrates in the water source will be gathered.

Once the associated data has been compiled, it must be data managed in such a way that it can be affiliated with it's corresponding facility location and updated as needed. Coordination with the relevant NJDEP program will be essential. The planned restructuring of NJDEP's information management system should make this activity more efficient.

Step 6: Intensity of Use/Occurrence

Once the contaminant inventory is completed for the delineated area, the next step is to determine which contaminants have the potential to reach the well in concentrations of concern. This will be done by evaluating such relevant factors as the amount and frequency that the contaminant comes in contact with the land surface through nonpoint and point sources, the existence of contaminated ground water in the delineated area, and for certain contaminants the naturally occurring geological formation in the region that may impact ground water quality. As mentioned earlier, NJDEP is working with the US Geological Survey to develop models for each of the eight contaminant classes: pathogens, nutrients, volatile organic chemicals (VOCs), pesticides, synthetic organic chemicals (SOCs), inorganic contaminants, radionuclides, and disinfection byproduct formation potential. The model will be used to rank the "intensity factor" for each class of contaminants as high, medium, or low.

The US Geological Survey developed a numerical rating model in the 1980s for pesticides that NJDEP used as the basis for its SOC waiver program.[1] This pesticide intensity model was based on the predominant land use surrounding the well, the distance to agricultural land and the distance to the nearest golf course. Each well received a ranking of high, medium, or low intensity of pesticide use in the vicinity of the well. This pesticide model will be updated to include newer information about current pesticide use and expanded to incorporate information about point sources of pesticides in the delineated area. Similar models will be developed for the other seven contaminant categories. Once the models are developed validation of the numerical models will take place using existing or new water quality data.

For transient noncommunity systems, only the models for pathogens and nutrients will be run. Information of regional contamination issues such as the presence of radionuclides, mercury or arsenic in the aquifer will be included in the Source Water Assessments for the transient noncommunity systems.

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[1] Vowinkel, E.F., 1998. Use of a Numerical Rating Model to Determine the Vulnerability of Community Water Supply Wells in New Jersey to Contamination by pesticides, Proceedings of the NWQMC National Monitoring Conference, Reno, Nevada, July 7-9, 1998, pp. III-539-546.

Step 7: Susceptibility Ranking

A susceptibility ranking will then be assigned to each well for each contaminant group. The susceptibility ranking is derived by combining the sensitivity of the well with the intensity/occurrence rankings:

Susceptibility = Sensitivity + Intensity of Contaminant Use/Occurrence

The following chart presents the possible susceptibility rankings that a well may receive for each contaminant group.

Susceptibility Rankings for Ground-water Sources

Sensitivity/ Intensity Ranking	**High Sensitivity**	**Medium Sensitivity**	**Low Sensitivity**
High Intensity	High Sensitivity – High Intensity	Medium Sensitivity – High Intensity	Low Sensitivity – High Intensity
Medium Intensity	High Sensitivity – Medium Intensity	Medium Sensitivity – Medium Intensity	Low Sensitivity – Medium Intensity
Low Intensity	High Sensitivity – Low Intensity	Medium Sensitivity – Low Intensity	Low Sensitivity – Low Intensity

Table 3: Sites/Activities Which Will Be Included in the New Jersey Source Water Assessments Pollution Inventories

Site/Activity	Information Source	Potential Associated Contaminant Groups
Agriculture	Land use	pathogens, nutrients, pesticides, inorganics
Animal feedlots/livestock yards/animal boarding facilities	Land use	pathogens, nutrients, disinfection byproduct formation potential
Bulk chemical storage	Electronic text, GIS	VOCs, SOCs, inorganics
Combined sewer overflow*	Future GIS	Pathogens, nutrients
Compost facilities	Electronic Text	Disinfection byproduct formation potential
Contaminated soils	GIS	VOCs, SOCs, pesticides, inorganics, radionuclides
Discharges to surface and ground water [NJPDES/DGW (including Class V UIC) & NJPDES/DSW]	Electronic text, GIS	All contaminant groups
Erosion	Case by case	Disinfection byproduct formation potential
Ground water discharges to surface water	GIS	All contaminant groups
Highway runoff	Case by case	VOCs, pesticides, inorganics
Industrial commercial point sources	GIS	All contaminant groups
Infiltration lagoons, spray irrigation sites, overland flow	Electronic text, GIS	Pathogens, nutrients, VOCs, pesticides, SOCs, inorganics
Interstate pollution sources	PA/NY databases	All contaminant groups
Junkyards	GIS	VOCs, SOCs, inorganics
Known contaminated sites (e.g. Superfund sites, RCRA sites, etc.)	GIS	All contaminant groups

Site/Activity	Information Source	Potential Associated Contaminant Groups
Land application of sludge*	Future GIS	Pathogens, nutrients, pesticides, inorganics
Landfills	GIS	All contaminant groups
Leaking sewer lines	Case by Case	pathogens, nutrients, VOCs
Military base	GIS	all contaminant groups
Mining operations	Electronic Files	VOCs, inorganics
Naturally occurring contaminants (e.g. arsenic, asbestos, radium, radon etc.)*	Future GIS	inorganics, radionuclides
Nonagricultural pesticide application	Land use	nutrients, pesticides
Radioactive sites	GIS	radionuclides
Recreational activities (e.g. golf courses)	GIS	nutrients, pesticides, inorganics
Runoff	Land use and GIS	pathogens, nutrients, VOCs, pesticides, SOCs, inorganics
Salt water intrusion*	Future GIS	inorganic
Septic systems*(Class V UIC-exempt and authorized by permit-by-rule)	GIS Census data	pathogens, nutrients, VOCs
Surface impoundments	GIS	pathogens, nutrients, VOCs, pesticides, SOCs, inorganics
Leaking underground storage tanks	GIS	VOCs
Wastewater treatment plants	GIS	pathogens, nutrients, VOCs, SOCs, inorganics, disinfection byproduct formation potential

* NJDEP is working on creating these GIS coverages.

Figure 3. NEW JERSEY SOURCE WATER ASSESSMENT PROCESS FOR DRINKING WATER SYSTEMS

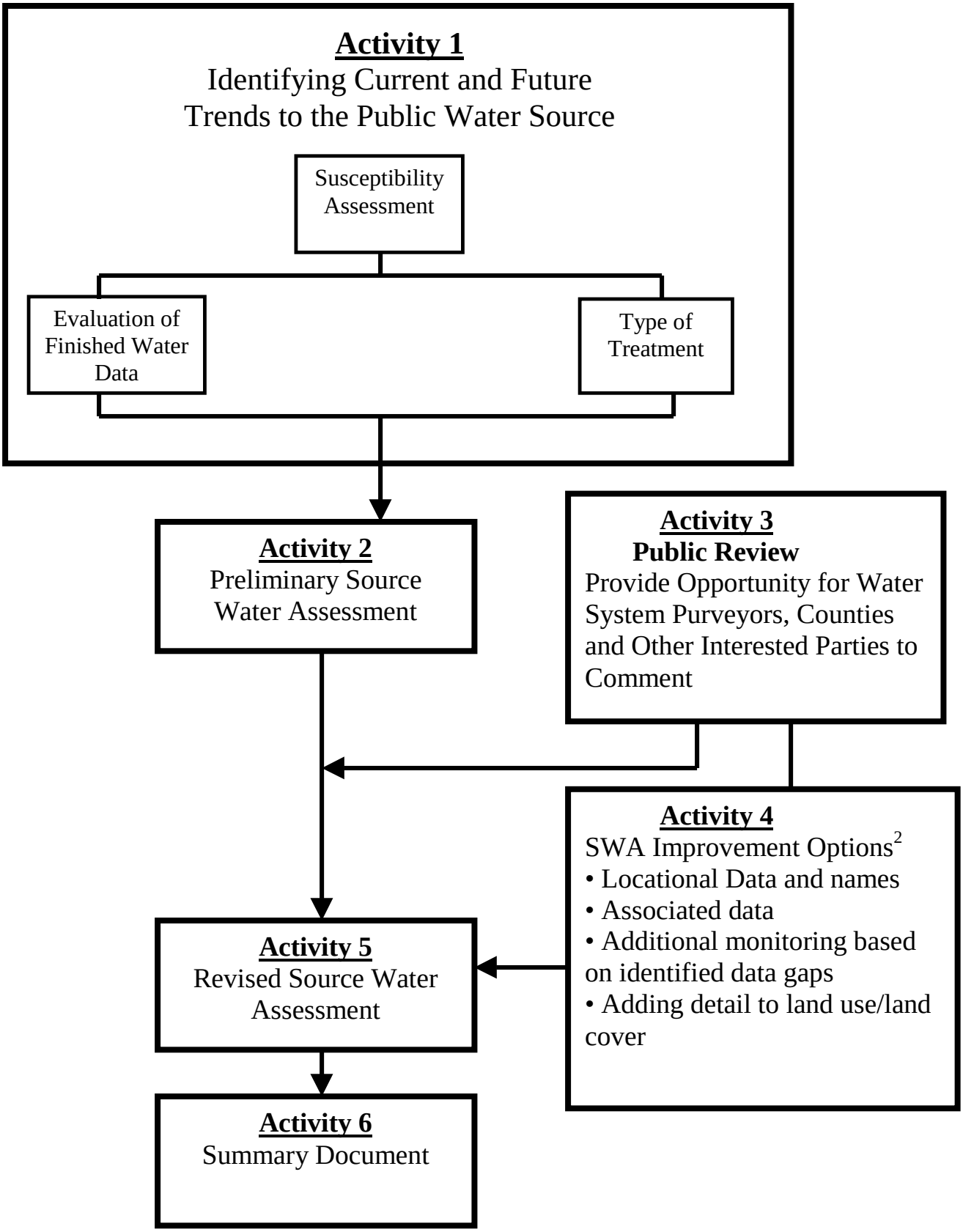
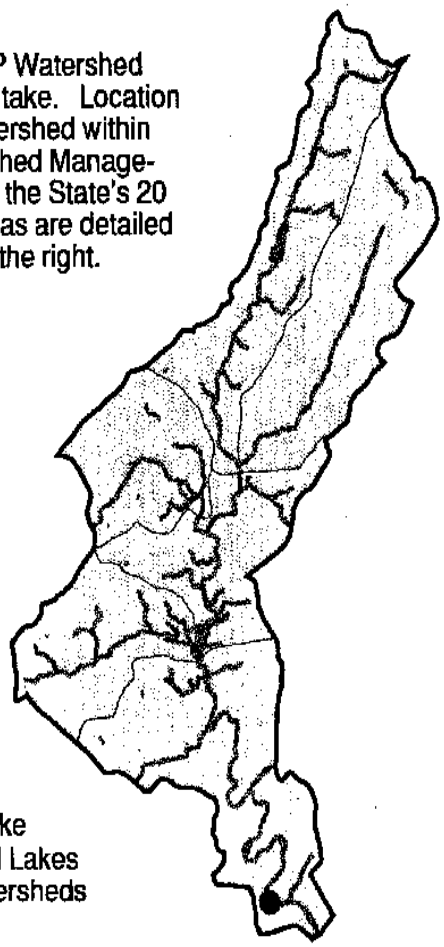


Figure 4: Source Water Assessment Program
Surface Water Intake Delineation Example: Rahway Intake

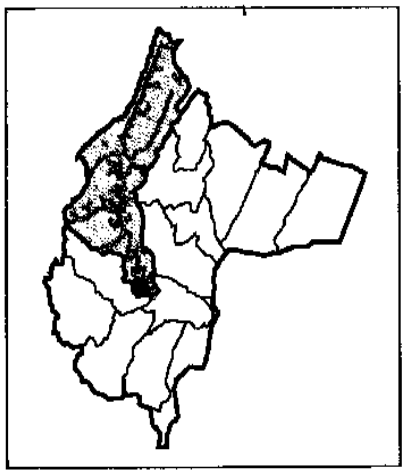
Source Water Assessment Program
Surface Water Intake Delineation Example
Rahway Intake

Delineated SWAP Watershed for the Rahway Intake. Location of the Intake Watershed within the larger Watershed Management Area 7, and the State's 20 Management Areas are detailed on the 2 maps to the right.

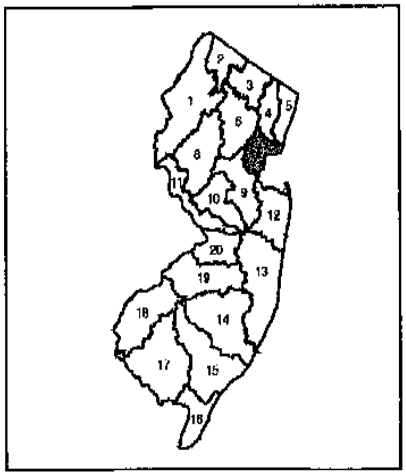


● Rahway Intake
Streams and Lakes
HUC14 Watersheds

digital cartography by G. Carter, NJDEP, DSR, 1998



SWAP Intake Delineation, plus other HUC 14 Subwatersheds within WSMA 7



Watershed Management Area 7
(Elizabeth, Rahway & Woodbridge)

CHAPTER V
The Process for Making Assessments Available to the Public

This chapter outlines NJDEP's intentions regarding the contents of the Source Water Assessments and the procedure for making the Source Water Assessments available to the public.

A. Contents of Assessments

As stated in Chapter IV, NJDEP intends to prepare Preliminary Source Water Assessments which will include information on the location of the well(s) or surface water intake(s) of the public water system, the source water protection area for each well or surface water intake, and name, address and status and mapped locations of regulated point sources and a map of land uses/land cover in the source water protection area. Also included will be the sensitivity, intensity and susceptibility ranking for the eight contaminant categories, available finished water monitoring data, and a description of the current treatment process for that source. This information will be available on NJDEP's web page. The Preliminary Source Water Assessments will undergo a public review, and comments received by NJDEP will be reviewed and considered for incorporation into the revised Source Water Assessments.

NJDEP will also prepare a summary report to be presented to the public for each water system or a group of small systems in a common area. NJDEP anticipates that these summary reports will be 2-4 pages in length, and will include a watershed-oriented map showing the source water protection area (features such as political boundaries, roads, etc. will be included as appropriate to orient the reader). The map will include the inventory of contaminant sources (including land uses), with an accompanying key showing source name, address, and type (e.g. landfill, underground storage tank, cropland, etc.). The description of the susceptibility of the drinking water source and system to contamination will be provided.

The exact format of the summary report has not been determined yet. NJDEP intends to reconvene its Source Water Assessment Advisory Committee for advice on the final design. In addition, to ensure that the summary document is understandable to the general public, NJDEP's Bureau of Risk Analysis will assist in the development of the format of the summary document. The work of the Bureau of Risk Analysis focuses on the development and effective application of tools such as risk communication and innovative risk management strategies for NJDEP.

B. Procedures for Making Source Water Assessments Available to the Public

1. Notification of Availability of Source Water Assessments

Several mechanisms will be used as follows:

a. Consumer Confidence Reports (CCR)

For community water system customers, notification of the availability of Source Water Assessments will be provided in Consumer Confidence Reports, as required by federal law. Specifically, CFR 141.153 requires each community water system to provide to its customers an annual Consumer Confidence Report that contains information on the source of water delivered. The Consumer Confidence Report must identify the source(s) of the water delivered by the community water system by providing information on the type of the water (e.g. surface water, ground water or both) and on the commonly used name (if any) and location of the body (or bodies) of water. If a Source Water Assessment has been completed, the Consumer Confidence Report must notify customers of the availability of this information and the means to obtain it. In addition, community water systems are encouraged to highlight in the Consumer Confidence Report significant sources of contamination in the source water area if they have readily available information. Where a community water system has received a Source Water Assessment from the regulatory agency, the Consumer Confidence Report must include a brief summary of the community water system's "susceptibility" to potential sources of contamination, using language provided by the regulatory agency or written by the operator.

Community water systems that have a large proportion of non-English speaking residents are required to include information in the Consumer Confidence Report in the appropriate language expressing the importance of the Consumer Confidence Report or offering additional information in that language. (USEPA offers as an example the following statement to be provided in appropriate languages: "This report contains important information about your drinking water. Translate it, or speak with someone who understands it.") States are required to make the final determination of which community water systems will need to include this information. NJDEP is currently gathering information needed to determine which languages are prevalent in this State and where these additional languages are spoken by many residents.

In addition to mailing a copy of the Consumer Confidence Report to each customer, community water system operators must make a good faith effort to reach consumers of the drinking water. Examples of additional means of reaching consumers of the drinking water include: press releases that the Consumer Confidence Report is available, radio station public service announcements, paid advertising, publication of the Consumer

Confidence Report in the newspaper, circulation to libraries and community centers, postal patron mailings, door hangers delivered by meter readers, posting in prominent places, and the Internet. For community water systems serving more than 100,000 people, there is also a regulatory requirement to place a copy of the Consumer Confidence Report on the Internet.

b. New Jersey State Law

Current New Jersey State law (P.L. 1997, c. 314) requires all public water suppliers to annually notify their customers of the results of water testing. NJDEP is in the process of preparing specific guidance for those water suppliers that are not covered under the federal law, specifically non-community water systems.

c. Existing mailing lists

NJDEP's Source Water Assessment mailing list numbers approximately 2,000 interested individuals and groups in the State. In addition, NJDEP received many inquiries regarding the Draft Source Water Assessment Program Plan since November 10, 1998 when the Draft Source Water Assessment Program Plan was released. These people (approximately 1000) have been added to NJDEP's distribution list for Source Water Assessment information.

d. Other

NJDEP will issue periodic press releases and newsletters, attend local meetings, and perform additional outreach to notify the public about the availability of the summary reports and the complete Source Water Assessments. Additionally, NJDEP intends, where possible, to discuss the findings with the Watershed Public Advisory Committees and/or Technical Advisory Committees in watersheds where assessment results have been made available. Assessment results will also be incorporated into NJDEP's Environmental Indicators Report whenever possible.

2. Distribution of the Source Water Assessment and Summary Reports

The summary report and all supporting documentation used in creating the Source Water Assessments will be available on NJDEP's web page. Information about the Source Water Assessment Program in New Jersey is currently found at http://www.state.nj.us/dep/watersupply/swap.htm.

NJDEP received a number of comments at the public meetings regarding distribution of the summary reports. NJDEP will reconvene its Source Water Assessment Advisory Committee to address additional distribution beyond its web page.

CHAPTER VI
State Program Implementation

A. Timetable for Completing the Assessments

The timetable for tasks that make up the Source Water Assessment Program is shown in Table 4.

Table 4
Timetable for the Completion of the Source Water Assessment Program in New Jersey

Tasks/ Dates	July 1998	Jan. 1999	July 1999	Jan. 2000	July 2000	Jan. 2001	July 2001	Jan. 2002	July 2002	Jan. 2003	July 2003
Locate community Water system wells	Com-plete										
Collect community Water system well Attribute data				Com-plete							
Locate noncommunity water system wells					Com-plete						
Collect non-community water system well Attribute data					Com-plete						
Community water System delineations						Com-plete					
Noncommunity water system delineations						Com-plete					
Contaminant source inventories							Com-plete				
Susceptibility of community water Systems								Com-plete			
Susceptibility of noncommunity water systems									Com-plete		
Preliminary assessments										Com-plete	
Complete assessments And summary reports available to the public											Com-plete

B. Request for Extension

The 1996 Amendments to the federal Safe Drinking Water Act outline a timetable that a State must meet to have a successful Source Water Assessment Program. Specifically, the first milestone laid out in the 1996 Amendments is for each State to complete and submit a Source Water Assessment Program Plan for approval to USEPA by February 6, 1999. NJDEP released its Draft Source Water Assessment Program Plan to the public in November 1998, and had four public meetings in November and December of 1998. The public comment period was extended to January 6, 1999. NJDEP received a great number of public comments, which have resulted in revisions to the Source Water Assessment Program Plan.

USEPA has nine months to approve the New Jersey Source Water Assessment Program Plan after it is submitted to them. The 1996 Amendments state that upon approval of the Source Water Assessment Program by USEPA, the State has two years to complete Source Water Assessments of all drinking water sources for public water systems in the State. USEPA may extend this period for up to 18 months, based on an individual State's needs and/or constraints in completing the Source Water Assessments. New Jersey is hereby requesting an 18-month extension to the completion data, which is allowed by the 1996 Amendments to the federal Safe Drinking Water Act.

There are several reasons New Jersey is requiring this extension.

1. The size and scope of the project is ambitious. NJDEP proposes to use separate, sophisticated models, which are currently being developed by the US Geological Survey, to evaluate each class of contaminants of concern by type of source water. The US Geological Survey previously developed a similar model for NJDEP to evaluate susceptibility of community wells to pesticide contamination.

2. Recognizing the utility of the GIS system, NJDEP intends to put the majority of the data used in creating the susceptibility determinations in a GIS compatible file, and as a result will rely heavily upon the use of GPS location data. NJDEP is confident of its GPS locations for community wells. NJDEP's first attempt to GPS locate the approximately 4000 noncommunity wells will be done as part of the Source Water Assessment Program. This will also be the first time NJDEP has systematically collected and managed accurate attribute data for all noncommunity wells.

3. NJDEP is proposing to include as contaminants of concern additional classes of contaminants of concern beyond the minimum required by USEPA.

4. Each of the thousands of Source Water Assessments NJDEP is proposing to do will involve an evaluation of existing data that must be coordinated among several NJDEP programs, and NJDEP asserts that a careful evaluation can only be performed if the State is allow sufficient time.

The Source Water Assessment Program will be funded through a percentage of the money that is allocated to New Jersey each year from USEPA as part of the Drinking Water State Revolving Fund (SRF). There are two main set-asides that are dedicated for Source Water Assessment activities: the source water program administration set-aside and the delineation and assessment set-aside. In September 1998, New Jersey received the ten percent delineation and assessment set-aside for federal Fiscal Year 1997 of $2.7 million dollars. The statute allows the States four years to obligate the funds, which would be September 2002. New Jersey's Source Water Assessment Program has been designed to correspond to the allocation of the fund over a four-year timeframe. These set-asides are defined in more detail below.

C. Resources for the Source Water Assessment Program

1. State Revolving Fund Set-Asides

Section 1452 of the 1996 Safe Drinking Water Act Amendments authorizes numerous set-asides from the Drinking Water State Revolving Fund and allows States to use certain percentages of their allotment for various purposes other than project construction. There are two sections of the federal Safe Drinking Water Act that allow States to use this set-aside money for Source Water Assessment and protection activities.

a. Administration

Section 1452 (g)(2)(B) of the 1996 Amendments to the federal Safe Drinking Water Act authorizes each State to use up to 10% of the funds allotted to the State under this section to "administer or provide technical assistance through source water protection programs." In the capitalization grant that was awarded to New Jersey in September 1998, New Jersey received $300,000 for federal fiscal year 1997 (October 1, 1996-September 30, 1997) and $300,000 for federal fiscal year 1998 (October 1, 1997-September 30, 1998) to cover the costs of developing the Source Water Assessment Program Plan and for the development of programs for the remainder of the set-aside activities under Section 1452 (k) of the Safe Drinking Water Act. These will be discussed below.

b. Delineation

Section 1452 (k)(1)(c) of the 1996 Amendments to the federal Safe Drinking Water Act allows States to make expenditures from the capitalization grant for Federal Fiscal Year 1997 to delineate and assess source water protection areas in accordance with section 1453, the "Source Water Quality Assessment Program." The ability to allocate funds for source water delineation and assessment is limited to Federal Fiscal Year 1997. New Jersey was allotted $2,794,730 or 10% of the New Jersey Drinking Water State Revolving Fund allocation for Federal Fiscal Year 1997 for the Source Water Assessment Program. Funds must be obligated within four years of the grant award.

2. Additional Funding Sources

a. Water Supply Bond Act for the Well Head Protection Program

An additional $1.7 million previously appropriated for implementing New Jersey's well head protection program will be used for the Source Water Assessment Program. These funds are part of a $3.0 million allocation provided by a 1988 Update to the New Jersey Statewide Water Supply Plan. NJDEP anticipates that it will request an appropriation of the remaining $1.3 million to complete well head protection area delineations, contamination source inventories and susceptibility assessments, as a component of the Source Water Assessment Program.

b. Watershed Protection Fund

There are other activities in NJDEP that are indirectly benefiting the Source Water Assessment Program. The Watershed Protection Fund is providing $1,070,000 for the development of the 1995 Land Use/Land Cover GIS coverage. These coverages are an important tool for developing the Source Water Assessments.

D. Delegation of Efforts

At this time, NJDEP does not anticipate delegating any portions of the Source Water Assessment Program to other government agencies or associations through formal delegation agreements. Additional agencies, such as public water systems, may perform Source Water Assessments through contracts using the procedures outlined in this document.

E. Coordination with State Agencies and Other State Programs

In order to carry out the tasks associated with the Source Water Assessments, the Source Water Assessment Program staff will coordinate with the following groups:

1. Within NJDEP

a. Most information regarding locations of significant potential sources and data available on significant potential sources is housed within NJDEP, including but not limited to the Site Remediation Program, the Division of Water Quality, the Division of Solid and Hazardous Waste Management, and the Pesticide Control Program.

b. Information related to well attribute data is housed within NJDEP's Bureau of Water Allocation as well as at the local government level. The Bureau of Water Allocation also maintains data on water use.

c. Information regarding the protection and development of water supplies in New Jersey is in the "Water for the 21st Century: The Vital Resource. New Jersey Statewide Water Supply Plan." The Division of Watershed Management is the lead group for this plan.

d. The Division of Watershed Management is the lead group, with support for the Division of Science, Research and Technology, for implementing NJDEP's 1997 document "Statewide Watershed Management Framework Document for the State of New Jersey." This document established a planned approach to achieving water quality goals by emphasizing a geographic focus (as does the Source Water Assessment Program) for managing water resources, continuous improvement in water quality based on sound science, and stakeholder input. The first steps in this process are to characterize and assess stakeholder input. Because both programs are using a geographic focus and are identifying sources and contaminants of concern through the assessment process, there are many similarities between the two programs. The Source Water Assessment Program will utilize portions of the Watershed Management Program in the parts of the State where their assessments are in progress. In addition, the Watershed Program will provide the continuing public participation throughout the Source Water Assessment process. The Source Water Assessment Program does not anticipate establishing any other watershed-based technical or advisory groups for the purpose of reviewing assessments, but may request that the watershed groups provide input as needed.

2. With New Jersey State and Local Agencies Outside NJDEP

a. Since state activities in New Jersey related to drinking water, wastewater, and remediation of contaminated sites are all housed within NJDEP, significant coordination with other New Jersey State agencies is not anticipated.

b. NJDEP anticipates the need to coordinate with water suppliers for the purpose of obtaining data on turbidity and any other raw water quality data they collect.

c. NJDEP will contract with CEHA certified agencies for the collection of location and attribute data for noncommunity wells. "CEHA" stands for County Environmental Health Act (N.J.S.A. 26:3A2-21 et seq.). NJDEP believes CEHA agencies are best suited for collection of this data as they are more familiar with local issues and availability of data on the local level. To date 19 counties have certified local health agencies to conduct a variety of environmental health programs on behalf of NJDEP. Mercer and Morris Counties do not participate in the CEHA program. A number of New Jersey counties have located and collected some of this information, but the data is not complete.

d. NJDEP may contract with other agencies to perform Source Water Assessments. NJDEP will be the lead agency for delineating source water protection areas using the published guidelines developed for wellhead protection areas and guidance developed in-house for the delineation of areas upstream of surface water intakes. The initial contaminant source inventory data will also be assembled by NJDEP using NJDEP

GIS land use coverages and contaminant source inventory data from NJDEP regulatory programs. Source Water Assessments performed by other agencies must be made compatible with NJDEP Source Water Assessment formats so that the information will be easily added to the data from NJDEP's WebPages.

e. Additional data used for Source Water Assessments from other agencies, research studies, and other data sources must be compatible with NJDEP formats.

F. Coordination With Other States

For source water protection areas that cross-state boundaries, NJDEP will coordinate with New York, Pennsylvania, and the Delaware River Basin Commission to ensure that consistent information is being made available to the public. Source Water Assessment Program staff in New York, Pennsylvania, and New Jersey have discussed data sharing so that delineated source water protection areas that cross state boundaries will be performed using the best interstate data available. NJDEP intends to meet with New York Source Water Assessment Program staff this summer to discuss the specifics of their process. Source Water Assessment Program staff in New Jersey have had one meeting with the Pennsylvania Source Water Assessment Program staff to date and have been sharing program information. The Delaware River Basin Commission will also play an important role in the assessments of interstate waters.

G. Coordination With Federal Agencies

NJDEP will seek advice from USEPA about available databases. Source Water Assessment staff met with USEPA Region 2 in May to discuss sharing of databases.

H. Reporting of Program Progress

NJDEP plans on reporting Source Water Assessment Program progress to USEPA as required in the capitalization grant agreement. The agreement requires that a “Biennial Report” be prepared and an annual program review be performed by USEPA. Annual progress on the Source Water Assessment Program will also be reported to USEPA as was negotiated during the recent Performance Partnership Agreement between NJDEP and USEPA Region 2.

USEPA is interested in tracking progress through the following four reporting requirements:

- The total number of public water systems, categorized as ground water, surface water, or combined. This will be consistent with the Safe Drinking Water Information System reporting (SDWIS)

- The number of public water systems by category with “completed” delineations, source inventories, and susceptibility determinations.

- The population served by the public water systems in source water protection areas.

- How completed local assessments have been made available to the public

I. Updating the Assessments

1. Delineations

   Source water protection areas will be delineated over the next two years. For ground water, the delineation methodology used in the Source Water Assessment Program is based on the process included in the Well Head Protection Program Plan approved by USEPA in 1991. Since 1991, new research has shown increased survival rates for certain microbiological contaminants in ground water. As a result of this updated information, source water protection areas for microbial contaminants in New Jersey are increased from a 200-day time-of-travel to a 2-year time of travel. This was done in anticipation of the Groundwater Rule requirements that are planned for release in 1999 by USEPA. The Source Water Assessments would therefore be valid for implementation of the Groundwater Rule.

   In general, once delineations are performed, the delineations will not be changed unless NJDEP becomes aware of better well attribute information or better information that should be used to perform a surface water delineation. All new sources of public drinking water supply will receive a delineation according to the draft wellhead delineation procedures that are referenced in this Source Water Assessment Program Plan. All the delineations will be placed on the NJDEP GIS. The sensitivity ranking developed for each source of drinking water using the models developed by US Geological Survey will only be updated if new information becomes available.

2. Contaminant source inventory

   The information on contaminant source inventories, contaminated site locations, and site status will be developed by several NJDEP programs and will change over time as new sites are discovered, assessed and remediated. Once potential contaminant sources are identified, these sites must be linked to the regulatory program information. Important information for the Source Water Assessment includes status of the site, whether the site is in compliance with the existing regulatory limits or not and if there is ongoing remediation at the site. Others such as water systems, watershed associations, health departments, researchers and other interested parties will have an opportunity to add additional information to the Source Water Assessment inventory and highlight problematic parameters and sites when the preliminary assessment is released. NJDEP needs to base the Source Water Assessment on the contaminant source data that are available at the time that the assessment is performed. In order to make the assessment meaningful, the contaminant source inventory, contaminated site location information, and site status

information will be current as of an assigned date. The intensity of use rating for each contaminant group will be current based on the assigned date, too.

3. Sanitary surveys

The Interim Enhanced Surface Water Treatment Rule (IESWTR) was issued by USEPA as a final rule on December 16, 1998. The rule requires states to conduct sanitary surveys for all surface water and ground water under the direct influence (GWUDI) of surface water systems regardless of size. Sanitary surveys are required no less frequently than every three years for community systems and no less frequently than every five years for non-community systems. In the IESWTR, a sanitary survey is defined as an onsite review of the water source (identifying sources of contamination using results of Source Water Assessments where available), facilities, equipment, operation, maintenance, and monitoring compliance of a public water system to evaluate the adequacy of the system, its sources and operations and the distribution of safe drinking water. A sanitary survey must address each of the following eight elements: source; treatment; distribution system; finished water storage; pumps, pump facilities, and controls; monitoring and reporting and data verification; system management and operation; and operator compliance with State requirements.

NJDEP currently conducts annual inspections of community water systems. NJDEP conducts inspections of some non-community water systems at a lesser frequency but the majority of non-community inspections are performed by the county health agencies. These are generally visual inspections of the source(s) of the drinking water source, facilities and on-site records of monitoring. NJDEP will incorporate information gathered during these inspections into the Source Water Assessments as appropriate. In addition, information from the Source Water Assessments will be used as part of the sanitary survey process that NJDEP eventually develops.

4. Underground Injection Control

Since 1983, New Jersey has had comprehensive regulations and a strong permit program that address Underground Injection Control (UIC) wells. Class IV wells are expressly prohibited in New Jersey under these rules. New Jersey has specific ground water regulations in its New Jersey Pollutant Discharge Elimination (NJPDES) permit program, which require compliance with the State's Ground Water Quality Standards. All UIC Class V wells in New Jersey are required to obtain a NJDPES permit. These NJPDES permits will be included in the universe of sources of contamination for the Source Water Assessments. Although New Jersey does regulate Class I, II, and III UIC wells, there are currently there are no Class I, II or III wells in the State.

CHAPTER VII
Source Water Protection Issues

A. General Issues

Source Water Assessment results will be incorporated into the characterization and assessment efforts of NJDEP's Watershed Management Program. Consequently, that program will also play a role in advising the general public of public water supply system assessment results. In addition, by incorporating the Source Water Assessment results into the overall watershed management framework, these assessments will be integrated into other NJDEP initiatives and partnerships, such as NJDPES, total maximum daily load determinations (TMDL), and estuary restoration.

USEPA's Source Water Protection goal is 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 under both wellhead protection and watershed protection programs. Although there is no statutory requirement to develop Source Water Protection Programs, USEPA is encouraging States to pursue the development of protection programs through existing and new authorities.

B. Programs for Source Water Protection Activities

After the Federal Fiscal Year 1997 funds are designated for delineation and assessment activities, there are additional activities that can be funded with the set-aside monies for the years to come. The Source Water Assessment and protection activities include:

- loans to public water systems to acquire land or conservation easements to protect the source water of the system from contamination and to ensure compliance with the national primary drinking water regulations;
- loans to community water systems to implement local, voluntary source water protection measures to protect source water in delineated protection areas in order to facilitate compliance with the national primary drinking water regulations;
- loans to community water systems to develop a source water quality protection partnership petition; and
- expenditures for the establishment and implementation of wellhead protection programs under Section 1428.

During the summer of 1998, NJDEP sent out approximately 2000 copies of the Final Intended Use Plan for 1998 and a call for projects for the Drinking Water State Revolving Fund for Federal Fiscal Year 1999 funds. At the same time NJDEP asked the public water systems if there was any interest in participating in the loan programs listed above. To date, there has been no interest in loans for these source water protection activities.

The “source water quality protection partnership petition” noted above is a new program outlined in the 1996 Amendments to the federal Safe Drinking Water Act. The partners in this program are the owner or operator of a community water system or a local or municipal government and the state. The role of the state is to assist in the development of a voluntary incentive-based partnership among the water system, the local government and other affected parties to reduce the presence of drinking water contaminants, to assist in obtaining financial or technical assistance for source water protection activities, and to develop a long-term plan for the protection of community water systems. NJDEP will investigate the usefulness of this program in New Jersey after the development of the Source Water Assessment Program Plan.

APPENDIX A

Public Participation for Draft Source Water Assessment Program Plan Development

APPENDIX A
ATTACHMENT 1:

February 1998 Memo Inviting Stakeholders to Participate on the Source Water Assessment Advisory Committee

M E M O R A N D U M

TO:	New Jersey Drinking Water Quality Institute and other interested parties
THROUGH:	Barker Hamill, Chief Bureau of Safe Drinking Water
FROM:	Sandy Krietzman, Environmental Scientist Bureau of Safe Drinking Water
SUBJECT:	Development of a "Statewide Source Water Assessment Plan"
MEETING DATE:	March 6, 1998
LOCATION:	US Geological Survey 2nd Floor conference room 810 Bear Tavern Road West Trenton, New Jersey (Directions attached)
TIME:	9:30 a.m.-12 noon (Lunch provided)

This notice is to invite you to participate in the New Jersey Department of Environmental Protection's (NJDEP) efforts in organizing a public participation effort for the development of a "Statewide Source Water Assessment Plan." The NJDEP is forming a joint Public Advisory Committee/Technical Advisory Committee drawing from the expertise of three NJDEP advisory bodies and other interested parties. The importance of including stakeholders in this process will ultimately lead to a useful and meaningful document that addresses a wide range of ideas and does not duplicate the efforts of other regulatory and non-regulatory programs.

The purpose of the Source Water Assessment Program, as stated in the 1996 amendments of the Safe Drinking Water Act, is "...for the protection of and benefit of public water systems, and for the support of monitoring flexibility..". The assessment and ultimately the protection of public water systems will undoubtedly result in the improvement of the quality of life throughout the State. The assessments will also allow NJDEP to design monitoring schedules for public water systems that will reflect the conditions of the in the vicinity of the water source. Monitoring flexibility for public water systems has become an important issue since the list of USEPA regulated contaminants was expanded to include over 80 contaminants and the monitoring costs became prohibitive, especially for small water systems.

A Source Water Assessment Program has two main components: A) the delineation of the boundaries of the areas from which public water systems receive supplies of drinking water and B) the identification of any contaminants that may originate within the delineated area to determine the susceptibility of the public water systems to those contaminants. The Source Water Assessment Program applies to both ground water and surface water sources of drinking water.

Since the "Statewide Source Water Assessment Plan" must be submitted to USEPA Region 2 by February 6, 1999, it is important to move forward in the development of this plan. We expect to meet monthly into the summer to develop the program and anticipate holding public hearings in the fall. This meeting will introduce persons interested in the assessment and protection and drinking water sources to the current programs in place in New Jersey for the assessment and protection of drinking water, and will begin the planning process by outlining the tasks necessary for the completion of the planning.

Appendix A: Public Participation for Draft Plan Development
Attachment 2: Invited Members of the Source Water Assessment Advisory Committee

Last Name	First Name	NJDEP Advisory Committee*	Public Interest **	Public Health	Vul Pop	Bus/ Indus	State/ Local Gov	Land Cons	Drink Water Supp	Waste Water TP	Farmer	Develo per	Other
Albert	Richard	NPS					X						
Alexander	Calliope												X
Ali	Fedrows	PAC, CWC, NPS, GWT					X						
Alpaugh	G. Lester	NPS					X						
Apgar	Julie												X
Ashmun	Candice	GWT	X										
Atherholt	Tom						X						
Auerbach	Ann	WSAC	X										
Balmer	Candace												X
Barnes	Michael												X
Baxter	Thomas	PAC, NPS							X				
Belton	Thomas												
Beyer	George	WSAC, GWT									X		
Bono	Pat						X						
Borieholtz	Debra	NPS					X						
Brennan-Lisak	Cate						X						
Briganti	Lou								X				
Brill	Tim	NPS					X						
Canace	Bob						X						
Cann	Budd	NPS					X						
Cantor	Ray						X						
Caputo	Mark												X
Carew	Christopher	GWT					X						
Carter	Gail						X						
Cenno	Kimberly	NPS, GWT					X						

Appendix A: Public Participation for Draft Plan Development
Attachment 2: Invited Members of the Source Water Assessment Advisory Committee (contd.)

Last Name	First Name	NJDEP Advisory Committee*	Public Interest **	Public Health	Vul Pop	Bus/ Indus	State/ Local Gov	Land Cons	Drink Water Supp	Waste Water TP	Farmer	Developer	Other
Chalofsky	Barry	CWC, NPS					X						
Chapman	Andrew								X				
Chorba	Bruce	DWQI											X
Christman	Keith												X
Cicali	Michael	GWT					X						
Cohen	David	WSAC				X							
Cohen	Sandra						X						
Cohn	Perry	DWQI					X						
Colton	Kent											X	
Cummings	Laura								X				
Cywinski	Ray								X				
Day	Clifford	NPS					X						
DeCandia	Anthony	GWT		X									
DeWan	Elain						X						
Dillingham	Tom		X										
DiLodovico	Anthony	GWT				X							
Dixon	Kevin								X				
Donald	Kevin	GWT							X				
Doyle	Frank	PAC					X						
Doyle	Joseph	NPS					X						
Drewes	Thomas	PAC, NPS					X						
Drewes	Donna	NPS					X						
Dudley	Sally	GWT	X										
Dyksen	John	GWT							X				
Evenson	Eric	PAC, NPS					X						
Fair	Abigail	PAC	X										

Appendix A: Public Participation for Draft Plan Development
Attachment 2: Invited Members of the Source Water Assessment Advisory Committee (contd.)

Last Name	First Name	NJDEP Advisory Committee*	Public Interest **	Public Health	Vul Pop	Bus/ Indus	State/ Local Gov	Land Cons	Drink Water Supp	Waste Water TP	Farmer	Developer	Other
Famularo	Richard	NPS							X				
Fekete	Andras	NPS					X						
Ferdinando	Clem	GWT		X									
Fielding	H. Page	GWT					X						
Filippone	Dr. Ella	DWQI, GWT	X										
Fishman	Mr. L.	DWQI					X						
Fitzpatrick	Jack	PAC					X						
Forgione	Lucy												X
Foster	Ruth						X						
Friedman	David	NPS					X						
Gesser	Stephany						X						
Gilding	Tom					X							
Goble	William	WSAC							X				
Goldfine	Neil	GWT							X				
Golub	Eugene	DWQI	X										X
Gould	Steve	GWT					X						
Hale	Kathy	NPS, GWT	X										
Hamill	Barker	DWQI					X						
Hance	Billie Joe	NPS											X
Hansler	Gerald	PAC					X						
Haskin	Peggy	PAC, GWT	X										
Hecker	Larry						X						
Helinski	Joan								X				
Hess	Suzanne	GWT					X						
Hordon	Robert	PAC											X
Howlett	Rick		X			X							

Appendix A: Public Participation for Draft Plan Development
Attachment 2: Invited Members of the Source Water Assessment Advisory Committee (contd.)

Last Name	First Name	NJDEP Advisory Committee*	Public Interest **	Public Health	Vul Pop	Bus/ Indus	State/ Local Gov	Land Cons	Drink Water Supp	Waste Water TP	Farmer	Developer	Other
Hunter	Dr. Joseph	DWQI											X
Hutchinson	Ridgely	CWC				X							
Hyacinth Foundation					X								
Impomeni	Mark												X
Inhoffer	Wendell	DWQI							X				
Jacobi	Anna B.	CWC	X										
Jenniss	Steve	DWQI					X						
Kaminsky	Michael	NPS					X						
Kane	Pat	NPS	X										
Kasabach	Haig						X						
Kauffman	Charles	GWT	X										
Kecskes	Bob						X						
Kiscelica	Bruce						X						
Kneser	Marie	NPS, GWT	X										
Korzun	John	CWC				X							
Kostin	Oleg								X				
Kratzer	Todd	NPS					X						
Krietzman	Sandy						X						
Kruger	Ann		X										
Kruse	William	GWT					X						
Kryak	Joan						X						
Kull	Robert						X						
LaPierre	Paul	DWQI	X										
Lee	Joseph						X						
Leister	David		X										
Litwack	Howard					X							

Appendix A: Public Participation for Draft Plan Development
Attachment 2: Invited Members of the Source Water Assessment Advisory Committee (contd.)

Last Name	First Name	NJDEP Advisory Committee*	Public Interest **	Public Health	Vul Pop	Bus/ Indus	State/ Local Gov	Land Cons	Drink Water Supp	Waste Water TP	Farmer	Developer	Other
Louis	Judy						X						
Lubnow	Fred	GWT											X
Lundin	Clifford	GWT					X						
Madden	John	GWT				X							
Marino	David	DWQI							X				
Maslyn	Mark										X		
Matarazzo	Pat	PAC, CWC								X			
Matarazzo	Anthony	GWT							X				
Matteo	Jean	GWT							X				
Mattle	Joe						X						
McCloskey	George		X										
McCracken	Anthony	CWC					X						
McGeorge	Leslie	DWQI					X						
McKee	Tom						X						
McKeon	David	GWT					X						
Mitchell	William								X				
Moore	Craig	NPS					X						
Muessig	Karl						X						
Mumman	Jim	NPS					X						
Najarian	Dr. Tavit	DWQI				X							X
Neil	Bill	PAC	X										
Nelson	Norman								X				
Nicholson	Bob						X						
Nieswand	Steven						X						
Noll	Dean	WSAC	X										
Notte	Jerry								X				

Appendix A: Public Participation for Draft Plan Development
Attachment 2: Invited Members of the Source Water Assessment Advisory Committee (contd.)

Last Name	First Name	NJDEP Advisory Committee*	Public Interest **	Public Health	Vul Pop	Bus/ Indus	State/ Local Gov	Land Cons	Drink Water Supp	Waste Water TP	Farmer	Developer	Other
Oberthaler	Robert						X						
Ofori	Linda						X						
Olohan	Michael	NPS	X										
O'Marra	John	GWT							X				
Palatine	Richard	NPS					X						
Palmer	Bill	PAC	X										
Phiefer	David	PAC, CWC	X										
Pittore	Pat	CWC					X						
Pollison	David	GWT					X						
Preston	Dan	PAC							X				
Pringle	Dave		X										
Pryor, P.E.	Joseph	CWC				X							
Quo	George												X
Race	Sam	NPS					X						
Reilly	Sean	GWT				X							
Reisner	Susan	PAC					X						
Ricci	Rocco	WSAC	X										
Romagna	Theresa	GWT					X						
Roosa	Phil						X						
Sanchez	Jessica						X						
Schorr	Paul						X						
Scro	Robert						X						
Seitz	William												X
Schaffer	Karen						X						
Shelton	Theodore	PAC, CWC, NPS											X

Appendix A: Public Participation for Draft Plan Development
Attachment 2: Invited Members of the Source Water Assessment Advisory Committee (contd.)

Last Name	First Name	NJDEP Advisory Committee*	Public Interest **	Public Health	Vul Pop	Bus/ Indus	State/ Local Gov	Land Cons	Drink Water Supp	Waste Water TP	Farmer	Developer	Other
Shissias	James	GWT				X							
Sidiqui	Tariq	GWT							X				
Simmons	Herb	NPS					X						
Sinclair	James	GWT				X							
Smith	Frances	NPS						X					
Smullen	Jim	NPS				X							
Somboonlakana	Donna	NPS					X						
Spayd	Steve						X						
Stanely	Joseph												X
Starcher	Robert												X
Stedfast	David	NPS					X						
Stokes	John	PAC, NPS	X										
Strickland	Mark	PAC				X							
Sullivan	Richard	DWQI	X										
Sullivan	Barry	CWC					X						
Swartz	Caroline	GWT					X						
Sykes	Karen	NPS					X						
Tao	Pen	PAC							X				
Taylor	R. Chadwick	CWC		X									
Teague	John R.												X
Tompkins	Richard	CWC							X				
Troast	David	GWT					X						
Tudor	Robert	PAC, NPS					X						
Ubel	Susan	GWT					X	X					
Usechak	Louise												X
Van Arsdall	Tom										X		

Appendix A: Public Participation for Draft Plan Development
Attachment 2: Invited Members of the Source Water Assessment Advisory Committee (contd.)

Last Name	First Name	NJDEP Advisory Committee*	Public Interest **	Public Health	Vul Pop	Bus/ Indus	State/ Local Gov	Land Cons	Drink Water Supp	Waste Water TP	Farmer	Developer	Other
VanAbs	Daniel	NPS, GWT					X						
Ventura	Andria		X										
Vogel	Margaret												X
Von Aulock	Sabine	NPS					X						
Vowinkel	Eric	NPS					X						
Wagner	Norbert	PAC							X				
Wagner	Anthony					X							
Webber	Paul	CWC	X										
Webber	Grover	GWT					X						
Werry	Allison	GWT					X						
Westergaard	Richard	GWT					X						
Whiteley	Marilyn	NPS	X										
Williams	Kathryn	GWT		X									
Williams	Ronald								X				
Witte	Charles	GWT								X			
Wittenberg	Nancy	PAC, NPS, GWT										X	
Wolfe	Bill	PAC	X										
Zabihach	Raymond	NPS, PAC					X					X	
Ziemba	Doug	CWC					X						
Zoltowski	Joseph												

*** Members from the following NJDEP advisory committees were invited to participate in the development of the Draft Source Water Assessment Plan that was issued on November 10, 1998. Others were added to the Source Water Advisory Committee as requested. Everyone listed on this table and others who attended the Committee and Subcommittee meetings were mailed copies of meeting notices and minutes: Drinking Water Quality Institute (DWQI), Water Supply Advisory Council (WSAC), Water Supply**

Advisory Council Public Advisory Committee (WSAC_PAC), Clean Water Council (CWC), Nonpoint Source Advisory Committee (NPS) and Groundwater Task Force (GWT).

**** The columns list the general areas that the Source Water Assessment Advisory Committee members represent: Public Interest Groups, Public Health Organizations, Vulnerable Populations (Vul Pop), Business/Industry (Bus/Indus), State/Local Government, Land Conservation (Land Cons), Drinking Water Suppliers (Drink Water Supp), Wastewater Treatment Plant Operators (Waste Water TP), Farmers, Developers, and Others (includes academic representation).**

APPENDIX A
ATTACHMENT 3:
Source Water Assessment Plan Newsletter for notifying potential interested parties, distributed in June 1998

For distribution to the general public
NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

SOURCE WATER ASSESSMENT AND PROTECTION

NEWSLETTER
June, 1998

Background -- Safe drinking water is essential to the quality of community life. For the most part, water resource managers have relied on the treatment of potable supplies to provide this safety. However, given the large and growing population of New Jersey, the protection of good sources of surface and ground water drinking supplies from contaminants is an absolute necessity. Further, there is a growing body of evidence that is concluding that prevention of drinking water sources from contamination is indeed a cost-effective measure of ensuring good quality of water at the tap. In consideration of these factors, the 1996 Amendments to the federal Safe Drinking Water Act included provisions for the Source Water Assessment Program (SWAP).

What is SWAP? The SWAP builds on the 1986 Amendments to the Safe Drinking Water Act, which established the Well Head Protection Program, a proactive effort to identify the origins of potential contaminants in the source waters of our public ground water supply wells and to implement appropriate controls for those contaminants. While much still needs to be accomplished, the program has largely been successful. The 1996 Amendments provides an even greater focus on the proactive protection of our sources of drinking water supplies by placing a rigorous schedule to complete our Well Head Protection Program and by requiring our potable surface water supplies to be equally protected.

The SWAP consists of a number of systematic steps. The first step is to delineate (map) the source water protection areas of all individual public (surface and ground) water supply systems. For systems served by ground water, this step is facilitated by the Department's ongoing Well Head Protection area delineation program. To date, the Department of Environmental Protection (Department) has plotted the locations of approximately 95% of the community wells and 23% of the non-community wells throughout the state, and is currently in the process of delineating their well head protection areas. For public water supply systems served by surface water, the watershed upstream of the potable intake or reservoir will be delineated, from the very headwaters to where the water is withdrawn. The same will apply where it is known that public wells are interconnected with surface waters.

The second step is identify the contaminants of concern and to inventory the origins of these potential contaminants that may present a threat to public health in each source water

protection area. These include all contaminants regulated under the Safe Drinking Water Act and subsequent rules. Potential sources of contaminants include (but are not limited to) Superfund sites, underground storage tanks, ground water and surface water discharges, septic systems, and stormwater runoff from urban, suburban, commercial and agriculture areas.

The third step is to determine the public water supplies' susceptibility to draw water that may be potentially contaminated by inventoried sources at concentrations that would pose concern. This step will likely take into consideration hydrologic and hydrogeologic factors, characteristics of contaminants and their source (e.g., time of travel and location, toxicity, fate and transport, etc.), and the effectiveness of mitigation (e.g., treatment and control measures). All susceptibility assessments are expected to be completed by the end of the year 2002.

The fourth step is taken when a public water supply in a source water protection area is found to be susceptible to inventoried contaminants during the development of the SWAP. This step would plan and implement measures to mitigate any potential threats. Measures may include more effective prevention and mitigation controls. This step would begin in the year 2003.

The SWAP promotes a strong ethic of public information and involvement during the Department's decision-making processes. The Department has begun to involve the public in developing a plan to implement SWAPs for each public water supply in New Jersey. A SWAP Advisory Committee has recently been convened and is meeting on a monthly basis until the SWAP is drafted and a series of public hearings are held (anticipated this fall and winter). As SWAPs are completed for each individual drinking water supply, their findings will be made available to the public that uses that supply. In addition, the Department plans to facilitate SWAPs based on locally driven partnerships.

The Department also plans to advance its SWAP efforts through the integration of existing State programs. Programs such as Safe Drinking Water, Watershed Management, Science and Research and the Environmental Infrastructure Trust Fund are likely to be substantially coordinated in this effort to integrate protection of drinking water supplies.

Significant funds have been made available through the Drinking Water State Revolving Fund provisions of the Safe Drinking Water Act to develop and implement SWAPs throughout the state. New Jersey is expected to receive $27 million in 1997 funding. Of that amount, up to 10 percent will be set-aside for source water delineations and assessments of public water supply systems. However, funds (about $2.7 million) for these activities are only available from the 1997 grant.

Future Meetings -- The Department is encouraging the interested public to participate in the development of the state's SWAP. The next SWAP Advisory Committee meeting is scheduled for July 7 in the Department's Public Hearing Room from 9:30 AM to 3:30 PM. Future meetings will be scheduled on that date. The public is invited to attend this meeting and future meetings.

For Information -- For more information on the program, please contact Sandy Krietzman or Pat Bono of the Water Supply Element (609 292-5550), Robert Kecskes of the Office of Environmental Planning (609 777-1053), or Judy Louis of the Division of Science and Research (609 984-3889). To e-mail these staff, simply type in the first name's first initial and the first seven letters of the last name, and *dep.state.nj.us*.

APPENDIX A
ATTACHMENT 4

Source Water Assessment Advisory Committee and Subcommittee Meetings

March 6, 1998	SWAP Advisory Committee
April 14, 1998	SWAP Subcommittee Meetings
	Public Participation/Education/Outreach in the morning Overall Policy/Consolidation/Integration in the afternoon
April 16, 1998	SWAP Subcommittee Meeting
	Location/Delineation/Contaminants/Inventory/Vulnerability
May 12, 1998	SWAP Subcommittee Meetings
	Public Participation/Education/Outreach in the morning Overall Policy/Consolidation/Integration in the afternoon
May 14, 1998	SWAP Subcommittee Meeting
	Location/Delineation/Contaminants/Inventory/Vulnerability
June 16, 1998	SWAP Subcommittee Meetings
	Public Participation/Education/Outreach in the morning Overall Policy/Consolidation/Integration in the afternoon
June 18, 1998	SWAP Subcommittee Meeting
	Location/Delineation/Contaminants/Inventory/Vulnerability
July 7, 1998	SWAP Advisory Committee
August 6, 1998	SWAP Subcommittee Meeting
	Location/Delineation/Contaminants/Inventory/Vulnerability

APPENDIX A
ATTACHMENT 5:
Summary of Key Issues and Questions Raised by Advisory Committee and Subcommittees

Key program issues were initially identified by NJDEP staff and discussed at each Source Water Assessment Subcommittee meeting. Participants were asked to include key issues and questions that should be resolved during the next meeting. Below is a description of key issues / recommendations that were raised during the Source Water Assessment Advisory Committee process, broken down by subcommittee where the issue was focused.

Policy Subcommittee for Public Participation/Education/Outreach

There were three meetings of this subcommittee.

1. Insuring Adequate Stakeholder Involvement/Recommendations—During the initial Policy Subcommittee for Public Participation/Education/Outreach meeting there was concern that there were a number of organizations that are involved in drinking water issues that were not invited to participate in the Source Water Assessment Program Plan development.
   As a result, several additional organizations and stakeholders were invited to collaborate on the Source Water Assessment Advisory Committee. In addition, some Policy Subcommittee for Public Participation/Education/ Outreach members alerted their constituents to collaborate. NJDEP provided a Source Water Assessment Program Plan newsletter for this purpose (Appendix A, Attachment 4). NJDEP newsletters were disseminated to applicable parties having an interest in drinking water. The Policy Subcommittee for Public Participation/Education/ Outreach assisted in developing the newsletters. Last, NJDEP strongly encouraged all Source Water Assessment Advisory Committee members to update their constituents regarding the Source Water Assessment Program Plan development.

2. Source Water Assessment Program/Watershed Management Coordination—There was concern that there was overlap in the missions of the Source Water Assessment Program and the New Jersey Watershed Management Program.

   NJDEP has made a conscious effort to coordinate the Source Water Assessment Program with the Watershed Management Program to ensure that both efforts are optimally developed and to reduce potential duplication. The process for integrating these two programs is under development within NJDEP. The objective of the newly created NJDEP Division of Watershed Management is to improve the coordination and integration of all watershed-related processes, including monitoring and assessment. Because of the separate scales of focus presently in place, it was concluded that the Source Water Assessment Program would

"evolve" or gradually be integrated into the Watershed Management Program. The first phase, which includes the process of delineating water supply sources, inventorying potential sources of contamination and determining the susceptibility of water systems, will be achieved under the auspices of the Source Water Assessment Program. Plans to protect (Source Water Protection Program) the supplies from contaminated sources will be developed and implemented under the auspices of the Watershed Management Program. During the first phase, watershed management advisory committees will be made aware of the Source Water Assessment Program activities taking place and will be invited to review information for accuracy and completeness. By 2003, all Source Water Assessments are targeted for completion.

3. Interstate Coordination—A consensus was reached that the Source Water Assessment Program should be coordinated with other states that share surface water drinking water supplies with New Jersey. Consequently, NJDEP has committed to coordinating assessment efforts with the Delaware River Basin Commission, and other agencies that regulate interstate waters including the New York State Department of Environmental Conservation and the New York State Department of Health, and the Pennsylvania Department of Environmental Protection.

4. Making the Assessment Results Available to the Public—The Public Participation Subcommittee recommended that the Consumer Confidence Report be used to notify the general public that the Source Water Assessment results were available. The Public Participation Subcommittee also suggested that NJDEP provide the following means for the public to obtain information on the Source Water Assessment Program: a NJDEP toll free number; placement of the Source Water Assessments in local libraries; through the Internet. The Federal rules for the development of the Consumer Confidence Reports were promulgated on August 19, 1998, after the date of the last Source Water Assessment Advisory Committee or Subcommittee meeting. These Federal regulations require that community water systems, the only water systems required to distribute Consumer Confidence Reports under the Federal Act, notify their "customers" of the availability of the Source Water Assessment once it has been completed and include a way to obtain the information. In addition, systems are encouraged to highlight in the report significant sources of contamination in the source water area if they have readily available information. Where a system has received a Source Water Assessment from the regulatory agency, the Consumer Confidence Report must include a brief summary of the system's susceptibility to potential sources of contamination, using language provided by the regulatory agency or written by the operator. NJDEP cannot require specific language to be used in the Consumer Confidence Reports unless NJDEP goes to rulemaking.

In response to the advice from this Subcommittee, NJDEP plans on making reports available through the NJDEP web site when the assessments are complete. The final Source Water Assessment Program Plan is available at www.state.nj.us/dep/watersupply. NJDEP is beginning the steps to develop a Source Water Assessment Program homepage to ensure that

the entire public has access to both the Source Water Assessment summary reports as well as the information used to complete the assessments. NJDEP will also make the summary reports available at local libraries.

The issue of distribution of each complete Source Water Assessment was also raised at the November and December 1998 public meetings (see Appendices B and C). As a result of the Subcommittee's recommendations and written and oral comments received at the November and December 1998 public meetings, NJDEP will reconvene its Source Water Assessment Advisory Committee to obtain additional input on the issue of distribution of the summary reports and the full Source Water Assessments. Additionally, NJDEP intends to meet with the Watershed Public Advisory Committee and Technical Advisory Committees to discuss Source Water Assessment results. Source Water Assessment results will also be incorporated into NJDEP's Environmental Indicators Report whenever possible.

Last, it was agreed that should an assessment result conclude that a supply is significantly vulnerable to sources of contamination, NJDEP, the water purveyor, or other organizations would try to refine the assessment in order to determine source water protection priorities for that supply.

5. Contents of Assessment Results—NJDEP and the Source Water Assessment Advisory Committee recommended that assessment results that are presented to the public should:
   a. be a small "report" no more than 2-4 pages;

   b. consist of a watershed-oriented map showing the intake/reservoir and upstream drainage area for surface water potable supply watersheds, and a map of the well(s) for well head protection area(s) for ground-water supplies (both would show features such as political boundaries, roads, etc.);

   c. include the inventory of potential sources of contaminants, to the degree possible based on length considerations.

   d. describe the susceptibility of the drinking water source to contamination.

   NJDEP intends to reconvene the Source Water Assessment Advisory Committee as it finalizes the design of this summary report.

It was agreed that assessment results should be used to raise public awareness about the importance of land use planning and water supply protection: assessment results will be helpful tools for proper land use planning. NJDEP is in the process of adopting water quality regulations and other initiatives that relate land use planning to the protection of drinking water. As described in Chapter IV, simplified but conservative assessment methodologies will be employed for Source Water Assessment purposes because of time constraints. More detailed methodologies, especially for complex geological settings and in densely developed surface water potable supplies, may be employed during the development of protection plans in the watershed management phase. The format and contents of the Source Water Assessment results are presented in Chapter IV.

Policy Subcommittee for Overall Policy/Consolidation/Integration

There were three meetings of this Subcommittee.

1. A Minimum Assessment Needs to be Performed for Each Water Source—A certain minimum level of effort needs to be defined for all types of water sources so that the intent of the statute is met and resources can be appropriately allocated. Once this level of effort is a defined, other programs that are performing similar activities may be able to assist NJDEP in performing Source Water Assessments or in gathering data. This discussion has been incorporated into Chapter IV, the chapter that defines the steps in the Source Water Assessment process.

2. Linkages to Other Assessment and Protection Programs Need to be Defined—There are many programs within NJDEP and other environmental agencies that are striving for the same improvements in environmental outcomes as the Source Water Assessment Program. Past protection efforts have not always included the protection of the drinking water source. Therefore, coordination with other NJDEP initiatives was also emphasized in this Subcommittee, especially the watershed program (see discussion above). There was also a request that an emphasis be placed on the protection of source waters. NJDEP will pursue defining protection activities and when possible will offer specific suggestions as part of the Source Water Assessment.

3. Water Quality and Quantity should be Linked to the Source Water Assessment—Members of the Subcommittee recognized the importance of both water quantity and water quality issues in ensuring adequate supplies of safe drinking water. In order to develop an integrated water management program, water quantity and water quality assessments will need to be linked. Currently, NJDEP is establishing watershed management programs for each of the state's 20 delineated watershed areas. Water quantity issues will be addressed through these programs. When complete, the Source Water Assessments will provide the drinking water component of the watershed management plans.

Technical Subcommittee for Location/Delineation/Contaminants of Concern/ Contaminant Source Inventory/Vulnerability

There were four meetings of the Technical Subcommittee. A number of issues were discussed; the following is a summary of the major ones.

1. Ground Water Under the Direct Influence (GWUDI) of Surface Water-- To date there have been 24 community water supply wells identified as being under the direct influence of surface water. Members of the technical subcommittee suggested that these wells be evaluated on a case by case basis, and NJDEP agreed.

2. Tentatively Identified Compounds-- A number of participants raised concerns about the fact that NJDEP does not currently have a policy which addresses actions to be taken whenever

chromatographic tentatively identified compounds (TICs) are reported in raw or finished drinking water.

NJDEP's response to this issue is that establishing a policy regarding TICs in raw or finished drinking water is beyond the scope of the current Source Water Assessment Program. The New Jersey Safe Drinking Water Act created the New Jersey Drinking Water Quality Institute, an advisory group to assist NJDEP in setting drinking water standards and policies affecting the drinking water program. The Bureau of Safe Drinking Water will refer the issue of whether or not to develop a policy on TICs in drinking water to the NJ Drinking Water Quality Institute. (Additional discussion on this issue can be found in the Response to Comments Section of Appendix B, Attachment 1.)

3. Additions to the Federally Mandated List of Contaminants of Concern for Ground Water -- Participants expressed concern that the list of contaminants regulated under the federal and state Safe Drinking Water Regulations does not include all pollutants which have been reported in raw and finished drinking water throughout the state. Suggestions centered around issues which have been raised in the media and by other NJDEP programs. Suggested additions to the list included: 1) unregulated contaminants which could be emitted by significant pollution sources within the delineated area, 2) contaminant plumes within the delineated area, 3) contaminants for which NJDEP has issued a classification exemption area, 4) naturally occurring contaminants such as radium 224, and radon, 5) estrogenic compounds and pharmaceuticals, and 6) unregulated pesticides. NJDEP recognizes that not all pollutants found in drinking sources are regulated under the federal or state Safe Drinking Water Act**.** The contaminants of concern description of Chapter IV has been written to be inclusive of contaminants the NJDEP identifies through its source inventory.

4. Additions to Federally Mandated List of Contaminants of Concern for Surface Waters -- Although a number of pesticides are included in the list of contaminants of concern, participants would like to see the assessment include several unregulated aquatic pesticides used for aquatic weed control (sonar, fluridone, copper sulfate). The NJDEP will look at these compounds, as wells as others, as per the contaminants of concern description of Chapter IV. In addition, a number of drinking water purveyors stated that their main concerns are water quality parameters that affect the treatment processes at the plant (sediment, TOC, phosphorus, nitrogen, and algae). The purveyors consider nonpoint source pollution to be a major problem. NJDEP developed a Source Water Assessment process where the purveyors will be sent a preliminary delineation, a contaminant source inventory, and a land use/land cover analysis. At that time the purveyors will be asked about additional water quality problems. In addition, the contaminants of concern language of Chapter IV is written to be inclusive of contamination NJDEP finds during the source inventory.

5. Recharge Areas -- Participants in the technical committee wanted to know why NJDEP was not considering recharge areas in the Source Water Assessment Program.

The source water protection area delineated for each public well is in fact the closest part of that well's recharge area, and the most sensitive. NJDEP will be delineating each source water protection area based on the best available data, and thus will be mapping the first

portion of the well's recharge area. For some wells, the source water protection area delineated as part of the Source Water Assessment process will be the well's entire recharge area. For other wells, the source water protection area will only be a portion of the well's entire recharge area.

On a larger scale, NJDEP is mapping ground-water recharge areas throughout the entire State. The methodology, already developed by the New Jersey Geological Survey (NJGS), identifies recharge areas based on land use/land cover, soil characteristics, and rainfall data. To date, this methodology has been applied to Monmouth and Cape May Counties as well as the Upper Passaic Watershed. The methodology produces maps of broad recharge areas.

NJDEP recognizes that the delineated source water protection areas will deal with more short-term (to twelve years) protection of the ground water. By comparison, protection of full recharge areas is an essential step to ensure sustainable, adequate water supply for the future. Both approaches are necessary to provide complete protection of ground-water supplies used for drinking water. Integration of the Source Water Assessments and the recharge areas will take place within the Watershed Management Program. NJGS is currently in the process of developing recharge areas for the state, as a component of the Watershed Management Program. The goal is to develop recharge maps for each watershed management area. Protection of recharge areas should be a major factor in Governor Whitman's initiative to protect an additional 1,000,000 acres of open space.

6. Revision of NJ Wellhead Protection Program, Tier 1- Attenuation of Microbial Pollutants-- The initial New Jersey Wellhead Protection Program (as published in December, 1991) called for a delineation of 200 days to protect against microbiological contamination (Tier 1). However, based on a literature review and recent studies, it is known that survival rates for Hepatitis A and other pathogens are much longer. In addition, the EPA Ground Water Rule Workgroup recommended a minimum two-year time of travel for protection against pathogens in connection with the Ground-water Rule (scheduled for proposal in mid-1999). Based on these factors, participants of the Technical Subcommittee recommended increasing the time of travel delineation for Tier 1 to two years for the purposes of the Source Water Assessments, and NJDEP agreed.

APPENDIX B

Public Participation for Final Source Water Assessment Program Plan Development

APPENDIX B
ATTACHMENT 1

Source Water Assessment Plan Newsletter For Distribution to Municipal Governments and Municipal Planning Boards:

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

SOURCE WATER ASSESSMENT AND PROTECTION NEWSLETTER

November, 1998

Background -- Safe drinking water is essential to the quality of community life. For the most part, water resource managers have relied on the treatment of potable supplies to provide this safety. However, given the large and growing population of New Jersey, the protection of good sources of surface and ground water drinking supplies from contaminants is an absolute necessity. Further, there is a growing body of evidence that is concluding that prevention of drinking water sources from contamination is indeed a cost-effective measure of ensuring good quality of water at the tap. In consideration of these factors, the 1996 Amendments to the federal Safe Drinking Water Act included provisions for the Source Water Assessment Program (SWAP). These provisions will likely affect your municipality to some degree.

What is SWAP? The SWAP builds on the 1986 Amendments to the Safe Drinking Water Act, which established the Well Head Protection Program, a proactive effort to identify the origins of potential contaminants in the source waters of our public ground water supply wells and to implement appropriate controls for those contaminants. While much still needs to be accomplished, the program has largely been successful. The 1996 Amendments provides an even greater focus on the proactive protection of our sources of drinking water supplies by both placing a rigorous schedule to complete our Well Head Protection Program and by requiring our potable surface water supplies to be equally protected.

The SWAP consists of a number of systematic steps. The first step is to delineate (map) the source water protection areas of all individual public (surface and ground) water supply systems. For systems served by ground water, this step is facilitated by the Department's ongoing Well Head Protection area delineation program. To date, the Department of Environmental Protection (Department) has plotted the locations of almost all of the community wells and large numbers of the non-community wells throughout the state, and is currently in the process of delineating their well head protection areas. For public water supply systems served by surface water, the watershed upstream of the potable intake or reservoir will be delineated, from the very headwaters to where the water is withdrawn. It is likely that your municipality is either upstream of a potable surface water supply or has wells in it that will be delineated.

The second step is identify the contaminants of concern and to inventory the origins of these potential contaminants that may present a threat to public health in each source water

protection area. These include all contaminants regulated under the Safe Drinking Water Act and subsequent rules. Potential sources of contaminants include (but are not limited to) Superfund sites, underground storage tanks, ground water and surface water discharges, septic systems, and stormwater runoff from urban, suburban, commercial and agriculture areas. As is the typical case, some of these are probably located in your municipality, and likely to be inventoried during the assessment process.

The third step is to determine the public water supplies' susceptibility to draw water that may be potentially contaminated by inventoried sources at concentrations that would pose concern. This step will likely take into consideration hydrologic and hydrogeologic factors, characteristics of contaminants and their source (e.g., time of travel and location, toxicity, fate and transport, etc.), and the effectiveness of mitigation (e.g., treatment and control measures). All susceptibility assessments are expected to be completed by the year 2003.

The fourth step is taken when a public water supply in a source water protection area is found to be susceptible to inventoried contaminants. This step would plan and implement measures to mitigate any potential threats. Measures may include more effective prevention and mitigation controls. If any of the activities identified during the second step (inventory of contamination sources) are located in your municipality and is shown to contribute to a public water supply's susceptibility to contamination, that activity will probably be affected by the SWAP. This step would begin in the year 2003.

The SWAP promotes a strong ethic of public information and involvement during the Department's decision-making processes. The Department has involved the public in developing a plan to implement the SWAP for each public water supply in New Jersey. A SWAP Advisory Committee has been convened and has met on a monthly basis through the spring and summer. As assessments are completed for each individual drinking water supply, their findings will be made available to the public that uses that supply. In addition, the Department plans to facilitate assessments based on locally driven partnerships.

Your Role -- The preventive nature of the SWAP encourages cooperative efforts at the state, county and municipal government levels in the protection of a common public resource -- surface and ground water drinking supplies. Using the tools provided by the SWAP, municipalities will possess a better understanding of the nature of their water resources and how to better protect their drinking water supply, or that which your municipality shares with other municipalities. Over time, the Department will likely be asking your municipality to participate in this cooperative effort.

Future Meetings -- The Department is encouraging the interested public to participate in the development of the state's SWAP, including making comments on the program in order to improve it. Final public meetings are scheduled for:

November 23, 1998	12:30-3:30	NJDEP Headquarters in Trenton
November 24, 1998	6:30-9:00	Atlantic County Library in Mays Landing
December 2, 1998	6:30-9:00	Morris County Cultural Center in Morristown

For Information -- For more information on the program, or to obtain a copy of the proposed SWAP, please contact the Water Supply Element (609 292-5550), the Office of Environmental Planning (609 777-1053), or email SWAP@dep.state.nj.us. Copies of the SWAP are also available at all county and major city public libraries. Comments on the proposed SWAP will be accepted until December 15, 1998.

APPENDIX B
ATTACHMENT 2

Public Notices in Major Newspapers

The following newspapers were sent notice of the public meetings:

Asbury Park Press
Atlantic City Press
Trenton Times
Star Ledger
Home News and Tribune (Neptune)
Courier Post (Cherry Hill)
Daily Record (Parsippany)
Daily Journal (Vineland)

New Jersey Herald (Newton)

Notice of Public Meetings and Opportunity for Comment
New Jersey Source Water Assessment Program

Take notice that the New Jersey Department of Environmental Protection (DEP) will hold three public meetings in November and December to describe and accept comment on its proposed Source Water Assessment Program. This new plan focuses on assessment of source water areas in order to ensure safe drinking water. Source water is the area delineated by the state from which surface and ground water drinking water supplies originate.

This program will benefit residents by assessing the quality of public water supplies. DEP will first assess source water for all 4,561 public surface and ground water systems and make results available to the public. DEP and stakeholders will subsequently develop plans to protect drinking water sources that are susceptible to potential contaminants.

The program will: 1) outline the strategic approach to conduct the assessments;
2) delineate boundaries of areas providing source water for public water systems; and
3) identify the origins, where possible, of potential contaminants in the area to determine the susceptibility of public water supplies. All assessments are expected to be completed by the year 2003. The results will be made available to the public. Protection plans for susceptible source waters will follow.

The state is providing $1.7 million toward the assessment program from a 1981 bond fund for well head protection, while the U.S. Environmental Protection Agency (EPA) has provided $2.7 million.

Public meetings will be held: Monday, **November 23**, from 12:30-3:30 p.m. in the

NJDEP Public Hearing Room, 1st Floor, 401 East State Street, **Trenton**.
Tuesday, **November 24**, from 6:30-9 p.m. in the Atlantic County Public Library,
2nd Floor, 2 South Farragut Avenue, **Mays Landing**.
Wednesday, **December 2**, from 6:30-9 p.m. in the Morris County Cultural Center,
1st Floor, 300 Mendham Road, **Morristown.**

Public comment will be accepted until Dec. 15. DEP will submit the Source Water Assessment Plan to EPA for approval in February 1999 in accordance with amendments to the Safe Drinking Water Act.

For further information on these meetings, or to obtain a copy of the proposed Source Water Assessment Program, call the Water Supply Element at (609) 292-5550, the Office of Environmental Planning at (609) 777-1053, or email SWAP*@dep.state.nj.us*. Copies of the draft program are also available at all county and major city libraries.

Written comments by interested persons on the draft Source Water Assessment Program are welcome and should be submitted by December 15 to:

NJDEP Bureau of Safe Drinking Water
Attn: SWAP Comments
PO Box 426
Trenton, New Jersey 08925

Comments may also be submitted to the DEP through the above email address (SWAP*@dep.state.nj.us*).

_____
Shing-Fu Hsueh, Ph.D.
Administrator
Water Supply Element
Department of Environmental Protection

_____
Date

Notice

APPENDIX B

ATTACHMENT 3

NJDEP PRESS RELEASE OF NOVEMBER 12, 1998

Release: Nov. 12, 1998 **CONTACT: Loretta O'Donnell or Amy Collings**
98/146 (609) 984-1795 or 292-2994

DEP TO INITIATE WATER ASSESSMENT PROGRAM

Public meetings to be held Nov. 23, 24 and Dec. 2

The New Jersey Department of Environmental Protection (DEP) will hold three public meetings in November and December to accept comment on its new plan that focuses on prevention in order to ensure safe drinking water.

"This program will benefit residents by assessing the quality of public water supplies. DEP will first assess source water for all 4,561 public surface and ground water systems and make results available to the public. DEP and stakeholders will then develop plans to protect drinking water sources that are susceptible to potential contaminants," said DEP Commissioner Bob Shinn.

Source water is the area delineated by the state from which surface and ground water drinking water supplies originate. The program will: 1) outline the strategic approach to conduct the assessments; 2) delineate boundaries of areas providing source water for public water systems; and 3) identify the origins, where possible, of potential contaminants in the area to determine the susceptibility of public water supplies.

All assessments are expected to be completed by the year 2003. The results will be made available to the public.

The state is providing $1.7 million toward the assessment from a 1981 bond fund for wellhead protection, while the U.S. Environmental Protection Agency (EPA) has provided $2.7 million.

Public meetings will be held: Monday, **November 23**, from 12:30-3:30 p.m. in the NJDEP Public Hearing Room, 1st Floor, 401 East State Street, **Trenton**.
Tuesday, **November 24**, from 6:30-9 p.m. in the Atlantic County Public Library, 2nd Floor, 2 South Farragut Avenue, **Mays Landing**.
Wednesday, **December 2**, from 6:30-9 p.m. in the Morris County Cultural Center, 1st Floor, 300 Mendham Road, **Morristown.**

(more)

Public comment will be accepted until Dec. 15. DEP will submit the Source Water Assessment Plan to EPA for approval in February 1999 in accordance with amendments to the Safe Drinking Water Act.

For further information on these meetings, or to obtain a copy of the proposed Source Water Assessment Program, call Sandy Krietzman of the Water Supply Element at (609) 292-5550, Bob Kecskes of the Office of Environmental Planning at (609) 633-1179, or email SWAP*@dep.state.nj.us*. Copies of the draft program are also available at all county and major city libraries.

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APPENDIX B
ATTACHMENT 4

Libraries that Received the Draft Source Water Assessment Program Plan

Bergenfield Free Public Library
50 West Clinton Ave.
Bergenfield, NJ 07621-2707

Englewood Library
31 Engle Street
Englewood, NJ 07631-2903

Gloucester City Coll, Media Ctr.
Sewell, NJ 08080

Lodi Memorial Library
1 Memorial Dr.
Lodi, NJ 07644-1626

Johnson Free Public Library
275 Moore St.
Hackensack, NJ 07601-7507

Little Ferry Public Library
239 Liberty St.
Little Ferry, NJ 07643-1736

Mount Holly Library
307 High Street
Mount Holly, NJ 08060-1405

Mount Laurel Library
100 Walt Whitman Ave.
Mount Laurel, NJ 08054-9539

Cliffside Pk Public Library
505 Palisade Ave.
Cliffside Park, NJ 07010-2914

Atlantic City Public Library
1 N. Tennessee Ave.
Atlantic City, NJ 08401-4606

Atlantic County Library
40 South Farragut Ave.
Mays Landing, NJ 08330

New Milford Public Library
200 Dahlia Ave.
New Milford, NJ 07646

Lyndhurst Public Library
355 Valley Brook Ave.
Lyndhurst, NJ 07071-1810

Paramus Free Public Library
E 116 Century Road
Paramus, NJ 07652-4338

Burlington County Library
5 Pioneer Boulevard
Westampton, NJ 08060-1796

Rutherford Public Library
Park Ave. & Chestnut St.
Rutherford, NJ 07070

Bass River Community Library
P. O. Box 304
New Gretna, NJ 08224

Willingboro Public Library
One Salem Rd.
Willingboro, NJ 08046

Camden Free Public Library
418 Federal Street
Camden, NJ 08101

Pennsauken Free Public Library
5605 Crescent Boulevard
Pennsauken, NJ 08110-1834

Millville Public Library
210 Buck St.
Millville, NJ 08332-3818

Wildwood Crest Public Library
6301 Ocean Ave.
Wildwood, NJ 08260

Caldwell Public Library
268 Bloomfield Ave.
Caldwell, NJ 07006-5102

Gloucester City Library
Hudson & Monmouth Sts
Gloucester, NJ 08030-1592

Cumberland County Library
800 E. Commerce St.
Bridgeton, NJ 08302-2279

East Greenwich Public Library
Cohawkin Rd.
Clarksboro, NJ 08020

Montclair Public Library
50 South Fullerton Ave.
Montclair, NJ 07042-2629

Moorestown Library
111 W. Second St.
Moorestown, NJ 08057-2480

Camden County Free Library
203 Laurel Road
Voorhees, NJ 08043

Collingswood Public Library
771 Haddon Ave.
Collingswood, NJ 08108

Bridgeton Free Public Library
150 E. Commerce St.
Bridgeton, NJ 08302-2613

Cherry Hill Public Library
1100 Kings Highway North
Cherry Hill, NJ 08034-1911

Vineland Public Library
1058 E. Landis Ave.
Vineland, NJ 08360-4041

Clementon Memorial Library
Gibbsboro Rd. Municipal Building
Clementon, NJ 08021

Cape May County Library
30 W. Mechanic St.
Cape May Court House, NJ 08210-1498

East Orange Public Library
21 S. Arlington Ave.
East Orange, NJ 07018-3804

MonroeTwp. Free Public Library
306 S. Main St.
Williamstown, NJ 08094-1727

Orange Public Library
348 Main St.
Orange, NJ 07050-2708

Gloucester County Library
389 Wolfert Station Road
Mullica Hill, NJ 08062

West Deptford Public Library
420 Crown Point Road
Thorofare, NJ 08086-0089

Gibbstown Public Library
415 Swedesboro Road
Gibbstown, NJ 08027

Hoboken Free Public Library
500 Park Ave.
Hoboken, NJ 07030-3906

Hamilton Twp. Public Library
1 Municipal Drive
Hamilton, NJ 08619-3809

Cranbury Public Library
23 N. Main St.
Cranbury, NJ 08512-3203

Jersey City Public Library
472 Jersey Ave.
Jersey City, NJ 07302-3456

Tewksbury Twp. Public Library
Main St. P. O. Box 49
Oldwick, NJ 08858-0049

Trenton Public Library
120 Academy St.
Trenton, NJ 08608-1302

Hunterdon County Library
State Highway 12
Flemington, NJ 08822-1200

Lambertville Public Library
6 Lilly St.
Lambertville, NJ 08530

Swedsboro Public Library
Kings Highway
Swedsboro, NJ 08085-9608

Newark Public Library
P. O. Box 630 5 Washington St.
Newark, NJ 07101-0630

Woodbury Public Library
33 Delaware St.
Woodbury, NJ 08096-5295

High Bridge Public Library
71 Main St.
High Bridge, NJ 08829-1902

Princeton Public Library
65 Witherspoon St.
Princeton, NJ 08542-3225

Bayonne Free Public Library
697 Avenue C
Bayonne, NJ 07002-2806

Flemington Public Library
118 Main St.
Flemington, NJ 08822-1617

Hopewell Public Library
13 E. Broad St.
Hopewell, NJ 08525

Kearny Public Library
318 Kearny Ave.
Kearny, NJ 07032-2505

Frenchtown Public Library
Boro Hall Second St.
Frenchtown, NJ 08825

Mercer County Library
2751 Brunswick Pike
Lawrenceville, NJ 08648-4132

East Brunswick Public Library
2 Jean Walling Civic Center
East Brunswick, NJ 08816

Edison Twp. Free Public Library
340 Plainfield Ave.
Edison, NJ 08817-3147

Old Bridge Public Library
1 Old Bridge Plaza
Old Bridge, NJ 08857-2498

Plainsboro Public Library
506 Plainsboro Road
Plainsboro, NJ 08536

Matawan-Aberdeen Public Library
165 Main Street
Matawan, NJ 07747-3126

New Brunswick Public Library
60 Livingston Ave.
New Brunswick, NJ 08901-2520

Asbury Park Public Library
500 First Ave.
Asbury, NJ 07712-6117

Monmouth County Library
125 Symmes Drive
Manalapan, NJ 07726-3224

Freehold Public Library
28-1/2 East Main Street
Freehold, NJ 07728-2202

Chester Library
250 Route 24
Chester, NJ 07930

E. Hanover Public Library
415 Ridgedale Ave.
E. Hanover, NJ 07936-1440

Butler Public Library
1 Ace Road
Butler, NJ 07405-1375

Florham Park Public Library
107 Ridgedale Ave.
Florham Park, NJ 07932-1707

Middletown Township Library
55 New Monmouth Road
Middletown, NJ 07748-2103

Morris County Free Library
30 East Hanover Ave.
Whippany, NJ 07981-1825

Chathams Joint Public Library
214 Main St. P. O Box 477
Chatham, NJ 07928-2411

Dover Free Public Library
32 E. Clinton St.
Dover, NJ 07801-3953

Kinnelon Public Library
Kinnelon Road
Kinnelon NJ 07405

Mendham Twp. Public Library
Cherry Lane
Brookside, NJ 07926

Mount Olive Public Library
Wolfe Road
Budd Lake, NJ 07828-3899

Rockaway Twp. Public Library
61 Mount Hope Rd.
Rockaway, NJ 07866-1634

North Haledon Public Library
129 Overlook Ave.
North Haledon, NJ 07508-2533

Montville Twp. Public Library
90 Horseneck Road
Montivlle, NJ 07045-9626

Roxbury Twp. Public Library
103 Main St.
Succasunna, NJ 07876-1417

Morristown Twp. JT Public Library
1 Miller Rd.
Morristown, NJ 07960-5234

Wanaque Public Library
616 Ringwood Ave.
Wanaque, NJ 07465-2012

Somerset County Library
N. Bridge & Vogt Drive
P. O. Box 6700
Bridgewater, NJ 08807-0700

Elizabeth Public Library
11 S. Broad St.
Elizabeth, NJ 07202-3401

Elmer Public Library
116 S. Main St.
Elmer, NJ 08318-2233

Sussex County Library
125 Morris Turnpike
Newton, NJ 07860

Penns Grove-Carneys PT Library
S. Broad St.
Penns Grove, NJ 08069-1696

Somerville Public Library
35 West End Ave.
Somerville, NJ 08876-1808

Rahway Public Library
1175 St. & Georges Ave.
Rahway, NJ 07065-2631

Parsippany-Troy Hills Library
292 Parsippany Road
Parsippany, NJ 07054

Ocean County Library
101 Washington St.
Toms River, NJ 08753-7625

Paterson Free Public Library
250 Broadway
Paterson, NJ 07501-2032

Pennsville Public Library
190 S. Broadway
Pennsville, NJ 08070-2220

Bernardsville Library
2 Morristown Road
Bernardsville, NJ 07924-2316

Wayne Public Library
12 Nellis Drive
Wayne, NJ 07470-3585

Salem Free Public Library
112 W. Broadway
Salem, NJ 08079-1302

Fanwood Memorial Library
North Ave. & Tillotson Road
Fanwood, NJ 07023

Woodstown-Pilesgrove Library
14 School Lane
Woodstown, NJ 08098-1331

Sparta Public Library
22 Woodport Road
Sparta, NJ 07871-2420

Union Towsnhip Public Library
Friberger Park
Union, NJ 07083

William H. Walters Free Library
1001 E. Boulevard
Alpha, NJ 08865-4418

Roselle Public Library
104 W. Fourth Ave.
Roselle, NJ 07203-2083

Phillipsburg Public Library
200 Frost Ave.
Phillipsburg, NJ 08865-1625

Summit Public Library
75 Maple St.
Summit, NJ 07901-2504

Hackettstown Public Library
110 Church St.
Hackettstown, NJ 07840-2206

Oxford Public Library
Washington Ave.
Oxford, NJ 07863

Belvidere Free Public Library
60 Paul St.
Belvidere, NJ 07823

Plainfield Public Library
Eight St. at Park Ave.
Plainfield, NJ 07060

Warren County Library
199 Hardwick St.
Belvidere, NJ 07823-1591

APPENDIX B
ATTACHMENT 5

Summary of Key Issues Raised in Public Meetings and in Written Comments

Key issues raised during the public meetings and in written comments received by NJDEP on the Draft Source Water Assessment Program Plan are as follows:

1. Timing and location of the public meetings

   Many commentors stated that the timing of the release of the Draft Source Water Assessment Program Plan and the public meetings, at the end of November and beginning of December, was not conducive to the public being able to thoroughly review the Draft Source Water Assessment Program Plan or to a large turnout at the public meetings because of other obligations during the holiday season. Additionally, commentors criticized NJDEP for not holding public meetings in urban areas or in an area with a public concerned about their drinking water such as Toms River.

   NJDEP recognizes that the public meetings were held at a busy time of year and that the timing was not optimum. However, the timing was dictated by NJDEP's attempts to meet the deadlines laid out in the 1996 Amendments to the federal Safe Drinking Water Act. NJDEP held four public meetings around the state (three of which were evening meetings) in an effort to provide access to the process among the general public. NJDEP chose the locations of the public hearing because of their central location in the northern, central and southern parts of the State. An additional public meeting was scheduled for Newark, Essex County, in response to early comments received on the Draft Source Water Assessment Program Plan. Additional response is found in the Response to Comments Section of Appendix B, Attachment 6.

2. Public participation

   A number of critical comments were received concerning NJDEP's public participation efforts, both in the development of the Source Water Assessment Program Plan and plans for future actions.

   In response to comments, NJDEP intends to reconvene its Source Water Assessment Advisory Committee to conduct additional public outreach and to seek advice on several issues raised during the public comment period. Details are found in Chapter III and in the Response to Comments Section of Appendix B, Attachment 6.

3. Distribution and content of the completed Source Water Assessments and Summary Reports

A number of comments were received regarding distribution and content of the summary reports that are to go out to the general public and the completed, full Source Water Assessments that are to be available to those who desire additional information. Most commentors want widespread notification about and distribution of the summary documents.

NJDEP agrees with the goal of widespread notification about and distribution of the summary reports. NJDEP is amenable to putting in as much information as possible in the summary reports. NJDEP is also interested in having the completed Source Water Assessments available to all who may be interested. NJDEP will reconvene its Source Water Assessment Advisory Committee to help decide the best ways to ensure widespread notification about and distribution of the summary reports and the full Source Water Assessments and also seek advice on the final design of the summary reports. Additional details are found in the Response to Comments Section of Appendix B, Attachment 6, and in the revised Chapter III.

4. Contaminants of concern

Many commentors were unclear about what contaminants would be considered contaminants of concern for the Source Water Assessments. Many commentors believed NJDEP was proposing to limit the contaminants of concern to only those compounds that are currently required to be monitored by some public water systems as part of the New Jersey Safe Drinking Water Act (this particular list had been included in Appendix D of the Draft Source Water Assessment Program Plan).

NJDEP had not intended to limit the contaminants of concern to only those compounds monitored for as part of the federal and state Drinking Water Acts. NJDEP has revised the Source Water Assessment Program Plan to clarify its intentions regarding contaminants of concern. This can be found in Chapter IV.

5. Databases

Many commentors believed NJDEP intended to only use the limited set of databases as contained in NJDEP's Departmental Integrated Facility File (DIFF) for point sources of contamination and to rely on outdated land use maps for nonpoint sources of contamination. Many commentors were unclear about what NJDEP intended to consider a significant potential source for completing the Source Water Assessments.

The Response to Comments Section of Appendix B, Attachment 6 as well as the revised Chapter IV clarify NJDEP's intent to use a wide range of GIS and electronic databases, not just those found as part of the DIFF. NJDEP also clarifies that it intends to use both old and newer land use maps, depending on the contaminant of concern, as past land use practices are sometimes responsible for today's problems.

6. Expand assessment of transient noncommunity water systems

A significant number of comments were received requesting that NJDEP evaluate transient noncommunity wells in the same manner as proposed for community water systems and nontransient noncommunity water systems.

There are approximately 4,000 transient noncommunity wells in New Jersey. Historically less has been known about the transient noncommunity wells because of the lesser degree of regulation that they have been subject to. The GPS location process and the collection of attribute data as part of the Source Water Assessments will be a major undertaking and is expected to be time consuming, but it will for the first time get accurate information about these wells into a useable database.

As a result of the comments received, the contaminant source inventory for transient noncommunity systems will be equivalent to the contaminant source inventory prepared for community and nontransient noncommunity water systems. However, the susceptibility assessment for transient noncommunity systems will focus on pathogens, nutrients, and other known regional contaminants (e.g. mercury, arsenic, radium 224).

7. Sampling of drinking water supplies

A number of commentors believed that sampling of public water supplies was going to be done as part of the Source Water Assessment Program, and that the issue to be decided in the Source Water Assessment Program Plan was what contaminants to sample for. Many commentors stated that sampling of public water supplies for a wide range of contaminants should be done under the Source Water Assessment Program.

NJDEP clarifies in the Response to Comments Section of Appendix B, Attachment 1 that across the board sampling of public water systems is not a task of the Source Water Assessment Program. The purpose of a Source Water Assessment Program is to make a determination of a public water system's susceptibility to contamination from significant potential sources inventoried within the delineated source water protection area of each public well and public surface water intake. A decision to routinely sample all public wells or public surface water intakes for additional compounds would be made as part of source water protection measures. Of course, if during an individual Source Water Assessment it appears there is a significant potential source that may be impacting a public well or surface water intake, NJDEP will evaluate the need for additional sampling of the individual public well or public surface water intake. But the issue of across the board sampling is not a Source Water Assessment task.

8. Tentatively Identified Compounds (TICs)

A significant number of comments were received about Tentatively Identified Compounds (TICs). Overall, there is a general misunderstanding that Tentatively Identified Compounds are in fact easily identified and that this information is being withheld by NJDEP. Comments generally fell into two categories: that public water systems and NJDEP should report the

presence of Tentatively Identified Compounds found in raw and finished drinking water, and that when Tentatively Identified Compounds are found at a contamination site, their presence should be reported in the Source Water Assessment.

In the response to comments, we discuss the specific laboratory steps that must be taken in order to determine if a Tentatively Identified Compound is present and then how to proceed in order to determine the identity of the Tentatively Identified Compound.

The Source Water Assessment Program will be based on the presence of a class of identified compounds (i.e., synthetic organic chemicals) at a contaminated site. If there are Tentatively Identified Compounds present at the contaminated site, these will be included if they can be classified into one of the eight categories of contaminants (i.e., synthetic organic chemicals are one of the eight categories of contaminants). The Source Water Assessment Program will be depending on the NJDEP regulatory program responsible a site for identifying the Tentatively Identified Compounds, and the Source Water Assessment Program will direct interested parties to the regulatory program until such time as our data are linked together. Research currently underway at Superfund sites using nonconventional methods and in source waters upstream of surface water intakes will further our understanding of the importance of Tentatively Identified Compounds.

Tentatively Identified Compound information is not generally reported to NJDEP as part of the routine monitoring performed by drinking water systems. Regulatory decisions regarding drinking water quality are based on identified regulated compounds (plus a set of unregulated compounds) that are positively identified, not tentatively identified, using a set of USEPA analytical methods that are set in federal regulation. NJDEP's response to this issue is that establishing a policy regarding TICs in raw or finished drinking water is beyond the scope of the current Source Water Assessment Program. In the Response to Comments Section of Appendix B, Attachment 6, it is pointed out that the New Jersey Safe Drinking Water Act created the New Jersey Drinking Water Quality Institute, an advisory group to assist NJDEP in setting drinking water standards and policies affecting the drinking water program. The Bureau of Safe Drinking Water will refer the issue of whether or not to develop a policy on TICs in drinking water to the NJ Drinking Water Quality Institute.

9. Available resources

A number of commentors questioned whether NJDEP has allotted sufficient financial and staffing resources to implement a thorough Source Water Assessment Program.

NJDEP believes adequate resources have been allotted to implement the program.

10. Overall comprehensiveness

A significant number of commentors wrote NJDEP to express their concern that the Source Water Assessment Program Plan was not comprehensive enough to protect public health. These commentors requested that NJDEP fill in loopholes on issues related to contaminants, polluters, and public disclosure.

NJDEP intends for the Source Water Assessments to be extremely comprehensive, using a large number of databases for sources and pollutants. The completed Source Water Assessments will serve the purpose of having the polluter pay by identifying sources that may affect individual public wells and surface water intakes. NJDEP is committed to full disclosure of all information gathered in implementing the Source Water Assessment Program. NJDEP believes this will be facilitated by the efforts being taken to upgrade and enhance all data management systems in NJDEP. Additional details are found in the Response to Comments Section of Appendix B, Attachment 6.

APPENDIX B
ATTACHMENT 6

Response to Comments of Public Meeting and Written Comments

This attachment contains the written and oral comments received on the Draft Source Water Assessment Plan at the four public meetings of November 23, November 24, December 2 December 17, 1998, and during the public comment period. The document is organized as follows:

A. Public Participation Issues
B. Contaminants of Concern
C. Assessment Process
D. Final Assessments
E. Notification
F. Protection and Prevention
G. Treatment Issues
H. Recharge Issues
I. Water Supply Issues
J. General Comments

A. PUBLIC PARTICIPATION ISSUES

1. COMMENT: Numerous commentors stated that outreach to the general public was very poor regarding the make up of the advisory committees. Several commentors stated that one environmental group did its own outreach and got other public interest groups to attend the advisory committee meetings. It was also stated that as a result of the fact that all the advisory group meetings were held in the Trenton area (Central New Jersey) and all were held during working hours, the committees were made up mainly of government representatives and water purveyors. Only one environmental group was able to attend on a regular basis.

   RESPONSE: NJDEP's strategy for establishing the Source Water Assessment Advisory Committee was to invite members from existing NJDEP committees to participate in the development of the Source Water Assessment Program Plan. These committees included the following: Drinking Water Quality Institute, Water Supply Advisory Council, Water Advisory Council Public Advisory Committee, Clean Water Council, Nonpoint Source Advisory Committee, and Ground Water Task Force, plus associated mailing lists from these committees. Several of the appointees to these committees have been specifically

designated to represent the public. More than 2,000 individuals, organizations and agencies were made aware of the Source Water Assessment Program Plan through newsletters sent out by the Source Water Assessment Advisory Committee. The Draft Source Water Assessment Program Plan listed organizations invited to attend, as does the final. The Final Source Water Assessment Program Plan lists the membership of the Source Water Assessment Advisory Committee that received mailings on Source Water Assessment proceedings as well as the names and affiliations of the persons participating in the technical and citizen advisory committee meetings. Based on the list of members of the Source Water Assessment Advisory Committee, NJDEP believes it was extremely successful in recruiting members of established government, water purveyor and industry associations. During the Advisory Committee meetings, NJDEP also polled Committee members as to what additional groups should be invited, and then invited the recommended groups. But NJDEP acknowledges that representation of grassroots environmental groups on the Advisory Committee and Subcommittees is lacking. It is correct that all the Advisory Committee and Subcommittee meetings were held in what NJDEP believed was a centrally located office, during normal business hours. While NJDEP did not receive any complaints about the location or time during the Source Water Assessment Advisory Committee or Subcommittee meetings, it acknowledges the time may have precluded representatives from some grassroots organizations, many of whom contribute their time and effort for free, from attending. NJDEP intends to reconvene its Source Water Assessment Advisory Committee and welcomes new members. In addition, as part of reconvening the Source Water Assessment Advisory Committee, NJDEP will again reach out directly to environmental and public health groups.

2. COMMENT: Several commentors stated that additional public participation and public outreach is called for now, and said that NJDEP should not take a “wait and see” position regarding this need.

   RESPONSE: NJDEP agrees. NJDEP will reconvene its Source Water Assessment Advisory Committee and will do additional public participation and outreach. The reader is referred to Chapter III for additional information.

3. COMMENT: A few commentors noted that while not stated in the Draft Source Water Assessment Program Plan, during the public hearings NJDEP did mention training sessions held by the Clean Water Fund as part of NJDEP’s public participation process. The training sessions conducted by the Clean Water Fund should not be counted by NJDEP as their “public participation.”

   RESPONSE: NJDEP agrees that the training done by the Clean Water Fund does not “count” as one of NJDEP’s public participation outputs. However, the Clean Water Fund did receive a “Source Water Assessment and Protection Public Participation Leadership Project” grant of $20,000 from USEPA to enhance public participation and to conduct training sessions for Source Water Assessments. NJDEP felt that this grant was part of the statewide public participation for the Source Water Assessment Program Plan. As a result of these sessions, additional groups and citizens were made aware of the Source Water Assessment Program.

4. COMMENT: A few commentors noted that the Draft Source Water Assessment Program Plan, on pages 9 and 10, lists a number of meetings NJDEP attended to do presentations before the Draft Source Water Assessment Program Plan was completed. However, these meetings did not entail public participation, and instead were focussed on water professionals, and thus should not count as NJDEP public participation activities.

   RESPONSE: Pages 9 and 10 of the Draft Source Water Assessment Program Plan listed six meetings and seminars where NJDEP staff were invited to provide presentations on the development of the Source Water Assessment Program Plan. While NJDEP did solicit comments and questions during these meetings and seminars, and while NJDEP believes they were an important part of getting the word out about and getting feedback on the Source Water Assessment Program, NJDEP agrees that the primary audiences of these meetings and seminars would likely have been government, water purveyor, and industry associations. The USEPA-funded training sessions conducted by the Clean Water Fund, however, provided supplemental outreach to grassroots organizations that NJDEP might have missed. In addition, NJDEP has revised the Public Participation Section of the Source Water Assessment Program Plan in Chapter III to address the need for additional outreach.

5. COMMENT: A large number of negative comments were received on the method and timing of the release of the Draft Source Water Assessment Program Plan. The main criticisms were: the first and only draft of the Source Water Assessment Program Plan was released only 10 days before the first public hearing, allowing inadequate time for review; the Draft Source Water Assessment Program Plan was posted on NJDEP's web page on November 9, 1998, but in fact the document could not be retrieved by all types of internet software at first, further reducing the review time for those unable to receive e-mail copies of the documents and those unwilling to come to Trenton to get a copy or to wait for the regular mail; many people lack computers, and the fact that copies of the Draft Source Water Assessment Program Plan were sent to over 110 county and major city libraries was not well publicized. In addition, a representative from one major environmental group stated that the main reason the Draft Source Water Assessment Program Plan was noticed by the general public (to the degree that it was) was because of the outreach and networking efforts of this environmental group.

   RESPONSE: NJDEP acknowledges the short review time and the technical problems with the web site address. Anyone calling NJDEP with a problem accessing the document was given an alternate website address that worked for all software. Each of the public notices placed in nine major newspapers and the 2000 mailings that went out to the Source Water Assessment Program's mailing list did note the availability of the Draft Source Water Assessment Program Plan in county and major city libraries. NJDEP issued a press release when the Draft Source Water Assessment Program Plan was issued, but this was not picked up by a significant number of newspapers. NJDEP does agree that the actions of the environmental organizations were responsible for a significant percentage of the turnout at the public meetings, and much of the media coverage that focussed on the Draft Source Water Assessment Program Plan. As noted above, the Clean Water Fund received a grant from USEPA to enhance public participation in the Source Water Assessment Program, and NJDEP appreciates the fact that they were so successful. The Source Water Assessment

Program has reevaluated its public participation and public outreach methods, and intends to be more active in the future.

6. COMMENT: Many negative comments were received concerning the dates and locations of the public meetings. Specifically, commentors stated that the three originally scheduled public meetings (November 23, November 24, and December 2, 1998) all fell around the busiest and most traveled time of the year, making it at worst impossible and at best inconvenient for people to attend. Many commentors stated that some of the locations of the public meetings were inaccessible via public transportation (Morristown was offered as one example) and the some of the public meeting times were inconvenient (such as the mid-day meeting in Trenton), with the net result that public participation was actually discouraged. Many commentors felt that NJDEP ignored key areas of the state in the public meeting locations, and requested NJDEP hold at least two additional public meetings – one in an inner city area such as Newark, and one in the South Jersey "Toms River" area. Additionally, numerous requests were made to extend the public comment period.

   RESPONSE: NJDEP was absolutely not trying to discourage public participation. NJDEP realizes the public meetings were held at a busy time of year. Putting together the Draft Source Water Assessment Program Plan took longer than had been expected. In order for NJDEP to meet it's obligation to get the final Source Water Assessment Program Plan to USEPA by February 6, 1999, NJDEP anticipated it needed to have a public comment period of at least 30 days and a time to prepare responses of at least 30 days. This meant that the public comment period had to start no later than the end of November or beginning of December. In response to comments received at the first public meeting, NJDEP stated at the first and at subsequent public meetings that the comment period would be extended until January 6, 1999. Also in response to the public comments, a fourth public meeting was scheduled for December 17, 1998, and was held in the City of Newark, Essex County. NJDEP chose the locations of the original three public meetings because of its belief that they represented locations that could be reached with minimal travel time from all areas of the state. NJDEP proposes additional steps in the revised Public Participation Section of Chapter III to increase public participation in the future.

7. COMMENT: A few commentors noted they were unable to comment on the Intake Map (Section IX, Figure 2), as it was not displayed in the Draft Source Water Assessment Program Plan.

   RESPONSE: NJDEP acknowledges it was not displayed in the paper copy of the Draft Source Water Assessment Program Plan. It was displayed and discussed at the Technical Advisory Subcommittee meetings and also at all four public meetings, and was also available on the NJDEP web site.

8. COMMENT: While there was consensus in the Public Participation Subcommittee on the public disclosure mechanism listed on page III-5 of the Draft Source Water Assessment Program Plan, several groups called for more extensive disclosure in terms of content and mechanism for disclosure. NJDEP failed to report the broader list of recommendations made by the Subcommittees. In some cases, NJDEP included recommendations made by the

Public Participation Subcommittee and Technical Subcommittees, but failed to respond to the comments. The Draft Source Water Assessment Program Plan states that the Public Participation and Technical Subcommittees had consensus on certain issues when in fact consensus was not reached. For instance, the environmental community did not agree that it would suffice to "summarize (quantify), not show, the inventory of potential sources of contaminants" with the maps of the potential sources of contamination being available upon request on NJDEP web site. In fact, the environmental community feels that source water maps should include the complete inventory of sources. In addition, the environmental community believes the Draft Source Water Assessment Program Plan fails to reflect the true consensus that was reached concerning "Tentatively Identified Compounds (TICs) and recalls that at the August 6, 1998 Technical Advisory Subcommittee meeting it was in fact agreed that the presence of TICs would be disclosed in the Source Water Assessments.

RESPONSE: NJDEP believed general consensus had been reached on these issues within the Source Water Assessment Advisory Committee and Subcommittees. However, in light of this comment and similar comments, NJDEP has revisited several of these issues. Regarding the issue of summarizing the inventory of potential sources on the maps or in the text of the summary reports that are to be presented to the general public, NJDEP is willing to list the potential sources. NJDEP intends to reconvene the Source Water Assessment Advisory Committees for advice on the final design of the Summary reports to be given to the general public. The issue of Tentatively Identified Compounds (TICs) is discussed in the contaminant of concern section of this response to comments.

9. COMMENT: One commentor stated that on page III-7, NJDEP fails to reflect the environmental community's position that the stakeholder process should continue through the implementation of the Source Water Assessment Program Plan.

   RESPONSE: The Public Participation Section of Chapter III has been modified to reflect NJDEP's intention to continue the public participation process.

10. COMMENT: A few commentors asked NJDEP to justify not giving the general public access to the Preliminary Source Water Assessments.

    RESPONSE: NJDEP had intended all along for the Preliminary Source Water Assessments to be available any interested members of the general public.

11. COMMENT: A few commentors noted that the Clean Water Fund trained approximately 100 people at its training funded by USEPA, and gave the list of attendees to NJDEP. These 100 people should have been notified about the public hearing.

    RESPONSE: NJDEP records show that a copy of the Draft Source Water Assessment Program Plan went to each of the 100 people. Information about the public meetings is found on page III-10 of the Draft Source Water Assessment Program Plan. They have now been put on the mailing list for all correspondence.

12. COMMENT: Several commentors state that NJDEP must find ways to interest a larger percentage of the general public in the seriousness of these issues, and that NJDEP should explore the use of public service announcements and commercials.

    RESPONSE: NJDEP agrees it must find ways to involve a larger percentage of the public. We will take these comments under consideration, and will investigate the possibility of using public service announcements and commercials.

13. COMMENT: Several commentors stated that Congress mandated substantial public participation, but NJDEP has not been effective, as evidenced by the fact that the majority of people at the public hearing were there because they heard about it through the actions of the New Jersey Environmental Federation, not NJDEP.

    RESPONSE: While attendees were not asked how they heard about the public hearings, NJDEP acknowledges it needs to do more about getting the general public involved. As noted earlier, NJDEP will reconvene its Source Water Assessment Advisory Committee to address this issue.

14. COMMENT: One commentor stated that while the Draft Source Water Assessment Program Plan states that the Farm Bureau was invited to attend the Source Water Assessment Advisory Committee meetings, in fact that is not true.

    RESPONSE: A member of the New Jersey Farm Bureau is on the New Jersey Water Supply Advisory Council, appointed by the Governor, to represent the agricultural community. This representative was sent copies of all meeting notices and minutes. NJDEP will also reach out to grassroots public health and environmental groups when it reconvenes its Source Water Assessment Advisory Committee.

15. COMMENT: One commentor stated that the current Source Water Assessment Advisory Committee is made up primarily of groups that have an economic interest in preventing the monitoring and regulation of pesticides in our drinking water supply. Therefore, some of the faults of the Draft Source Water Assessment Program Plan are attributable to the make up of the Advisory Committee.

    RESPONSE: NJDEP does not agree that the majority of interests represented on the current Source Water Assessment Advisory Committee have an interest in preventing the monitoring and regulation of pesticides. However, NJDEP does agree that future public participation must include more environmental and public health organizations as well as members of the general public.

B. CONTAMINANTS OF CONCERN

1. Numerous commentors requested that NJDEP test for a broad range of contaminants, including an expanded list of pesticides and Tentatively Identified Compounds (TICs).

   RESPONSE: First, NJDEP believes there is a degree of misunderstanding about the purpose of Source Water Assessment. In brief, routine or across the board sampling of public wells or public surface water intakes is not a task or goal of a Source Water Assessment. One of the purposes of a Source Water Assessment is to gather the appropriate information from potential sources of contamination so that stakeholders (including the public, NJDEP, and purveyors) can make informed decisions about issues such as expanding the list of sampling parameters for public water systems. Second, based on this comment and similar comments, NJDEP believes there is much to be gained if the public is provided additional opportunities for education about what can and cannot be sampled for in public water systems and what the limitations are. NJDEP intends to do additional public outreach on this issue, and is reconvening its Advisory Committee to work on public participation issues, among other things. This will be effort well spent when it comes time to make Source Water Protection decisions.

2. COMMENT: Numerous comments were received requesting that NJDEP include a list of nine pesticides that they judged to be among the highest use and most toxic in the State, specifically bensulide, chlorothalonil, chlorpyrifos, cyanazine, diazinon, mecoprop, metalaxyl, paraquat, and pendimethalin. These pesticides are among the top ten in use for pest control at golf courses, in lawn care, and in agricultural use.

   RESPONSE: NJDEP agrees that these nine pesticides are among the highest use pesticides in the State. The Source Water Assessment Program will be evaluating the potential for nonpoint source contamination of water by all pesticides by evaluating pesticide use on various land uses. In order to do that, the program will be relying on information obtained from the various pesticide use surveys conducted by the Pesticide Control Program in NJDEP. Because of these pesticide surveys, NJDEP has information about the type and amount of pesticides associated with various types of agriculture, golf courses, residential land, and right-of-way spraying. Thus, different subgroups of pesticides can be tied to particular land uses. For example, the pesticides used on row crops will differ from the types of pesticides used on golf courses, etc. By doing a detailed land use/land cover analysis it will be possible to differentiate between the types of pesticides that impact different drinking water sources. Statewide pesticide use numbers are not useful, since they are only average numbers and do not necessarily apply to the particular land use(s) in any individual delineated area.

   The commentors may not have been aware that the list of nine pesticides suggested for addition to the Contaminant of Concern List are not all capable of contaminating drinking water. Pesticides are a diverse group of chemicals with a broad range of chemical properties. Not all pesticides end up in the water matrix; some adhere to soil and sediment, other pesticides readily degrade in the environment. There are a number of factors that must be taken into consideration when evaluating the

likelihood of a pesticide application impacting a drinking water source. These factors include: 1) fate and transport mechanisms (degradation rate, water solubility), and 2) soil characteristics. Of the nine pesticides which were suggested, only three have the physical and chemical properties that would result in their impacting surface or ground water: cyanazine, diazinon, and metalaxl.

Cyanazine is a herbicide that is used in agriculture. It has been found at low concentrations in surface water and ground water samples in New Jersey. The Bureau of Safe Drinking Water has asked the laboratory in the Department of Health and Human Services to add cyanazine to its standard analysis method for herbicides. In any future monitoring for pesticides, data on cyanazine detections will be evaluated.

Diazinon is an organophosphate insecticide. It has been detected in a US Geological Survey study of surface water using ultrasensitive methods at low levels (ranging from 0.002 to 0.3 parts per billion). The detections were associated with urban land use. A similar US Geological Survey study on ground water found low levels of diazinon in shallow ground water next to a detention basin (0.01 to 0.04 parts per billion). Diazinon is not likely to remain in the environment for long periods of time due to its tendency to photodegrade, biodegrade and volatilize. However, the possibility for diazinon runoff into surface water, or leaching into ground water cannot be ruled out. In evaluating the impact of pesticides on drinking water sources, particular land uses where diazinon use is high will be noted.

Metalaxyl is a fungicide primarily used in agriculture and on golf courses. Studies conducted by the Pesticide Control Program in NJDEP have identified metalaxy in runoff from golf courses. It will be included in the evaluation of the particular land uses associated with its use.

3. COMMENT: Several commentors stated NJDEP should include pesticide degradation products of desethylatrazine and heptachoroepoxide on the list of "Contaminants of Concern," especially since these were found in 48.6% of wells sampled during a recent survey conducted by the US Geological Survey.

   RESPONSE: The Source Water Assessment Program will be evaluating pesticides used on particular land uses. Compounds such as atrazine are used extensively on field crops; that is the type of information that will be generated in the Source Water Assessments. The Bureau of Safe Drinking Water is aware that metabolites of atrazine (or other pesticides) may also be present.

4. COMMENT: Several commentors stated aquatic use pesticides should be identified and monitored in community and noncommunity water systems particularly near intakes.

   RESPONSE*:* NJDEP agrees. The issue of evaluating aquatic use pesticides was raised at the technical Advisory Subcommittee. It was decided that these pesticides are important ones to include in assessing impacts on surface water intakes, particularly reservoirs. NJDEP will work with the Pesticide Control Program and the individual purveyors to evaluate the potential impact of aquatic herbicides on drinking water treatment.

5. One commentor stated that application rates of fertilizer as well as data on lime use should be factored into the Source Water Assessment process, as these two factors are linked to radium mobilization in the Cohansey aquifer.

   RESPONSE: NJDEP will take these factors into consideration as it develops the Susceptibility Model with the US Geological Survey for radionuclides. At the present time, NJDEP does not have any site-specific data on the use of fertilizers or lime. NJDEP believes the susceptibility model for radium will be based on a regional analysis of areas of the state where radium has been shown to be a problem for public water systems and/or private wells.

6. COMMENT: Several commentors stated that naturally occurring radiological contaminants should be included as contaminants of concern.

   RESPONSE: NJDEP agrees with this comment and had intended for the Draft Source Water Assessment Program Plan to reflect this. Based on these and similar comments, the language in the contaminants of concern section of Chapter IV has been revised to be clearer.

7. COMMENT: A number of commentors stated that NJDEP should test for a wider range of chemical and agricultural pollutants, including those that are generally accepted to be carcinogenic such as PCBs and Dioxin.

   RESPONSE: The decision of what additional contaminants of concern to test public wells and public surface water intakes for is a decision that will be made after a Source Water Assessment is completed. NJDEP's intent in doing an inclusive contamination source inventory, and a sophisticated susceptibility model, is to ensure that all stakeholders will be able to make informed decisions by having all the data necessary to do so. As a side note, PCBs and dioxin are "regulated" compounds under the Safe Drinking Water Act. Community water systems and nontransient noncommunity water systems are currently required to sample for these compounds or to obtain a waiver from sampling.

8. COMMENT: Several commentors stated that styrene acrylonitrile trimer and azo dyes should be included in the list of contaminants of concern. Each of these compounds has been found in a drinking water supply in South Jersey and their presence is believed to be from an upgradient pollution site.

   RESPONSE: NJDEP has modified the contaminants of concern section of Chapter IV to clarify NJDEP's intent to look at a wide range of compounds. Also, NJDEP intends to include all sites on the Known Contaminated Sites-NJ (KCS-NJ) list on the "contamination source inventory" for each source water protection area.

9. COMMENT: A large number of commentors stated that they believed the Draft Source Water Assessment Program Plan as currently written excludes contaminants and pollution sources such as unregulated contaminants from contaminated sites such as in Toms River.

NJDEP has revised Chapter IV to clarify its intentions to include a wide range of contaminants, including those being released at contaminated sites such as Toms River.

10. COMMENT: Several commentors requested that specific lists of compounds, such as the "Contaminant Candidate List," the list of Health Advisories published by USEPA, and the US Geological Survey monitored compounds under the National Water Quality Assessment (NAWQA) program be added to the contaminants of concern list.

    RESPONSE: The Source Water Assessment Program will focus on pollution sources in the delineated area, and determine the contaminants that are discharged from those pollution sources. Evaluation of fate and transport of the particular class of contaminants will be done in order to determine if a particular class of contaminants can impact a drinking water source. In this way a targets list of potential contaminants will be developed for each delineated area.

11. COMMENT: A few commentors stated that the Draft Source Water Assessment Program Plan does not explicitly address any of the possible causes of childhood cancer, and that it should be modified to do so.

    RESPONSE: The purpose of conducting a Source Water Assessment is to determine a public water system's susceptibility to contamination by significant potential sources within a source water protection area. Investigation of the causes of childhood cancer is performed through epidemiological studies. These epidemiological studies are very complex, because many environmental, socioeconomic, genetic predisposition and lifestyle factors must be evaluated in order to make valid conclusions. The drinking water program depends on drinking water standards to provide protection, and some of those standards are based on cancer risk.

12. COMMENT: Several commentors stated that the list of compounds regulated under the Safe Drinking Water Act is very limited, and that all pollutants should be included in the Source Water Assessments.

    RESPONSE: NJDEP had not intended to limit the contaminants of concern to just the list of the compounds regulated under the Safe Drinking Water Act. Language in Chapter IV Source Water Assessment Program Plan has been revised to clarify NJDEP's intentions.

13. COMMENT: Several commentors stated that monitoring for additional contaminants should be performed, and that new techniques such as HPLC should be used.

    RESPONSE: NJDEP's Division of Science, Research, and Technology is currently evaluating the use of nonregulatory analytical methods, including high performance liquid chromatography (HPLC), to evaluate unregulated chemicals in drinking water. When this research is completed, recommendations about alternate analytical techniques will be forthcoming.

14. COMMENT: Numerous commentors stated that Tentatively Identified Compounds (TICs) should be included in the Source Water Assessment Program Plan, and that the Bureau of

Safe Drinking Water should require the purveyors to report TICs. It was also stated that the Bureau of Safe Drinking Water should report TICs to water utilities and local health officers, require public disclosure of the discovery of TICs, and require the identification of the TICs so that the appropriate health protection measures can be taken.

RESPONSE: In order to address the numerous concerns regarding Tentatively Identified Compounds (TICs), NJDEP would like to take this opportunity to explain what TICs are.

Environmental samples can be analyzed in a number of ways, but in order to obtain meaningful, reproducible test results, NJDEP requires that standard test methods be used to analyze samples. Standard methods used by the drinking water program are "USEPA 500 series methods." In New Jersey, commercial laboratories are contracted by water utilities to perform sampling of the drinking water supply; there are approximately 300 New Jersey state certified drinking water laboratories. Other regulatory programs use other standard methods to measure environmental contamination.

Each USEPA analytical method used for testing drinking water is designed to look for a specific group of contaminants, known as a "target list" for that method. The quality assurance sections of these methods contain the precision and accuracy information that is used to set the control limits. Without control limits it would be impossible to determine if the chemist calibrated the equipment correctly, and accurately identified the compound and its reported concentration. The equipment is calibrated following the guidelines set forth in the USEPA method. The chemist determines the presence of a contaminant by interpreting the peaks on a graph (a chromatogram). Each peak identifies the presence and concentration of one of the targeted chemicals. Analytical methods will also produce peaks for chemically related contaminants which are not specifically targeted by the method. These unidentified peaks are especially difficult to interpret because the equipment is not calibrated in such a way to accurately identify them. For USEPA methods that use a mass spectrometer, a computer assists the chemist by matching the unidentified peaks to a library of known chemicals. Although, the computer generates a list of likely matches, it cannot positively identify the chemical causing the peak or the concentration of that chemical in the sample, because that chemical was not a target of the analytical method. Thus the peak is referred to as a "Tentatively Identified Compound" or TIC. Ultimately, the identification of TICs is dependent on the type and calibration of the equipment used to analyze the sample, the extent and accuracy of the computer library, and the skill of the analytical chemist interpreting the chromatogram.

Because sampling and analytical methods are designed with specific target chemicals in mind, it is unknown whether TICs reported in a given analytical run represent contaminants in the environment or contaminants entering the sample bottle due to sampling or laboratory practices. NJDEP is conducting a major research project designed to pursue the identification of the types of TICs that may be present in a sample due to sampling and/or laboratory procedures. Analysis is also underway to characterize chemicals that may be described as TICs using conventional analytical methods using more sensitive methods. There is a methodology to pursue the identification and quantification of chemicals that show up as TICs. The process is lengthy and expensive and sometimes does not work.

In order to confirm the identify of an unknown TIC, the following steps must be taken:

1. additional samples must be collected to confirm the presence of the TIC in the drinking water source,

2. the likely structure of the TIC must be determined using an appropriate mass spectrometric technique (high resolution)

3. once the identification of the TIC has been narrowed down to one or more possibilities, standards must be purchased or synthesized in a pure form suitable for use as a calibration standard,

4. a new, or revised version of the original analytical method must be developed in order to confirm the identity of the TIC and to measure its concentration in the drinking water sample, and

5. finally, the quality assurance/quality control limitations need to be defined based on method calibrations before the identity and the concentration of known TIC can be reported.

The Source Water Assessment Program will be based on the presence of a class of identified compounds (i.e., synthetic organic chemicals) at a contaminated site. If there are Tentatively Identified Compounds present at the contaminated site, these will be included if they can be classified into one of the eight categories of contaminants (i.e., synthetic organic chemicals are one of the eight categories of contaminants). The Source Water Assessment Program will be depending on the NJDEP regulatory program responsible a site for identifying the Tentatively Identified Compounds, and the Source Water Assessment Program will direct interested parties to the regulatory program until such time as our data are linked together. Research currently underway at Superfund sites using nonconventional methods and in source waters upstream of surface water intakes will further our understanding of the importance of Tentatively Identified Compounds.

Tentatively Identified Compound information is not generally reported to NJDEP as part of the routine monitoring performed by drinking water systems. Regulatory decisions regarding drinking water quality are based on identified regulated compounds (plus a set of unregulated compounds) that are positively identified, not tentatively identified, using a set of USEPA analytical methods that are set in federal regulation. NJDEP's response to this issue is that establishing a policy regarding TICs in raw or finished drinking water is beyond the scope of the current Source Water Assessment Program. In the Response to Comments Section of Appendix B, Attachment 6, it is pointed out that the New Jersey Safe Drinking Water Act created the New Jersey Drinking Water Quality Institute, an advisory group to assist NJDEP in setting drinking water standards and policies affecting the drinking water program. The Bureau of Safe Drinking Water will refer the issue of whether or not to develop a policy on TICs in drinking water to the NJ Drinking Water Quality Institute.

15. COMMENT: A few commentors stated that NJDEP is reluctant to release data on Tentatively Identified Compounds (TICs) because it believes it will alarm the public, especially considering that some of the TICs may turn out to be naturally occurring and/or innocuous. The commentors stated that NJDEP should not worry about alarming the public, since the only way NJDEP is going to be able to do its job is if it has the public as its ally.

    RESPONSE: NJDEP is very careful about the quality of data used to make regulatory decisions. The data must go through a quality assurance quality control check to make sure that the chemicals are truly present at the levels reported by the commercial laboratories. After the data undergo this review, data are released in order to make regulatory decisions. There is more of a concern about releasing inaccurate or misleading data than releasing data that will alarm the public. Tentatively identified compound data, as described above, do not accurately identify contamination nor are the concentrations more than estimates until a more thorough evaluation (steps one through five, above) are performed.

16. COMMENT: One commentor stated that saltwater intrusion problems should be included in the assessment.

    RESPONSE: NJDEP agrees and salt water intrusion will be included in the Source Water Assessments, when appropriate.

17. COMMENT: One commentor stated that the effect of airborne emissions, including paticulates, on water supply should be included as part of the Source Water Assessments.

    RESPONSE: NJDEP recognizes that contaminants in air may end up in the water supply in one of several ways: through deposition directly into a stream or river; via overland runoff; or by deposition on land with subsequent percolation of rainwater through soil carrying the contaminant(s) into ground water. Preliminary studies funded by NJDEP suggest that important contaminants from air emissions may be PCBs, polyaromatic hydrocarbons (PAHs), chlorinated pesticides, metals (including mercury) and nutrients. NJDEP is currently funding a project to establish an air deposition network of nine stations, and monitoring will be conducted for three years. Any drinking water issues that are identified from this work will be incorporated into the Source Water Assessment Program.

18. COMMENT: One commentor stated that the Source Water Assessment Program should target nonregulated compounds used in lawn care. Another commentor stated that NJDEP should also include any compounds that have mercury in them.

    RESPONSE: NJDEP believes that by “nonregulated” the commentor means contaminants that are not specifically listed in the Federal and State Primary and Secondary Drinking Water Standards. NJDEP agrees with these statements, and had intended for the Draft Source Water Assessment Program Plan to reflect this. Based on this comment and other comments, the contaminants of concern language of Chapter IV has been modified to clarify NJDEP’s intent.

19. One commentor said that during the public meeting, it was stated that NJDEP has additional ways to enhance the Source Water Assessment Process, but does not provide any explicit language, and requests clarification.

    RESPONSE: NJDEP intends to circulate a Preliminary Assessment, and will seek input at that time.

20. COMMENT: One commentor stated that introductory remarks made at the public hearing say the Source Water Assessment Program Plan has a built in flexibility to increase the number of things to be tested for, and the commentor requests clarification on exactly where this is found in the Source Water Assessment Program Plan.

    RESPONSE: The answer to this question is twofold. First, NJDEP wishes to reiterate that routine sampling and testing of public wells and public surface water intakes is not a task of the Source Water Assessment Program. Any decisions to change routine sampling requirements for public water systems would be made after the Source Water Assessments are complete. Second, during the introductory remarks at the public hearings, NJDEP was explaining that the "contaminants of concern" that NJDEP intends to look at are extremely inclusive.

    NJDEP wishes to reiterate that the Source Water Assessment Program itself is not about routine testing of public water systems. As a result of the Source Water Assessment Program, it possible that source water protection measures might be developed that include additional testing of certain types of water systems (transient noncommunity systems, for example). That will be a longer-term result.

21. COMMENT: One commentor stated it is possible to put chemical "markers" on certain pesticides and other types of chemicals. The commentor suggested that NJDEP pursue a legislative mandate to require this so as to make identification of compounds in water easier.

    RESPONSE: Pesticides are regulated under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) by USEPA. This is a national issue but is outside the scope of the Source Water Assessment process.

C. ASSESSMENT PROCESS

1. COMMENT: A large number of commentors stated that transient noncommunity water systems should be evaluated in the same manner as community water systems. Commentors stated that sources near transient non-community water systems should be evaluated for contaminants such as mercury and radium in the Kirkwood-Cohansey aquifer, volatile organic compounds from gas stations, and pesticides from land uses including farms and golf courses.

   RESPONSE: The Final USEPA Guidance, "State Source Water Assessment and Protection Programs (August 1997)" requires states to do assessments on all public water systems, not

just community water systems. USEPA does recognize that achieving the same level of exactness and detail in assessments for all public water systems is a significant undertaking that may not be possible with the funding provided and may not be appropriate for the purposes of this assessment. Therefore, USEPA recommends that a state establish a strategic approach to its Source Water Assessment process that will result in different levels of assessment for various levels of public water systems. NJDEP, with guidance from its advisory groups, had proposed in the Draft Source Water Assessment Program Plan to consider only nitrate and microbiological contaminants as contaminants of concern for transient noncommunity wells and had proposed to do an assessment for only nitrates and microbial contaminants for transient noncommunity water systems. However, as a result of comments received at the public meetings, the contaminant source inventory for transient noncommunity systems will be equivalent to the contaminant source inventory prepared for community and nontransient noncommunity water systems. However, the susceptibility assessment for transient noncommunity systems will focus on pathogens, nutrients, and other known regional contaminants (e.g. mercury, arsenic, and radium 224).

2. COMMENT: Several commentors stated that testing should be done at all highway rest stops, especially because of their association with the presence of gasoline tanks. It was stated that if NJDEP does not require this testing, it would be letting the owners of these gasoline tanks "off the hook."

   RESPONSE: First, a water system that only served a highway rest stop would be considered a transient noncommunity system. Transient noncommunity water systems are required to sample only for nitrates and pathogens.

   Regarding the specific concern about gasoline tanks, NJDEP has a very comprehensive Site Remediation Program that oversees remediation of any releases from underground storage tanks. There are certain minimum requirements that owners and operators of underground storage tanks are required to follow (including upgrades, construction specifications, and steps to follow if a release is suspected or confirmed). If an underground storage tank at a rest stop leaked, the Site Remediation Program would evaluate the need for sampling of nearby potable wells, irrespective of the type of potable well. The owner or operator of the underground tank would be required to pay for the sampling.

3. COMMENT: One commentor stated that the scope of the Source Water Assessment Program Plan is too ambitious, and stated that instead NJDEP should focus its attention on community water systems.

   RESPONSE: NJDEP agrees this is an ambitious plan, but believes the evaluation of noncommunity water systems is necessary.

4. COMMENT: A significant number of commentors stated that the Source Water Assessment Program Plan is not comprehensive enough to protect public health. These commentors requested that NJDEP fill in loopholes on issues related to contaminants, polluters, and public disclosure.

RESPONSE: NJDEP intends for the Source Water Assessments to be extremely comprehensive, and in fact is going beyond the minimum requirements of the 1996 Amendments to the federal Safe Drinking Water Act. NJDEP will use a wide range of GIS and electronic databases to complete the Source Water Assessments. The completed Source Water Assessments will serve the purpose of having the polluter pay by identifying sources that may affect individual public wells and surface water intakes. NJDEP is also committed to full disclosure of all information gathered in implementing the Source Water Assessment Program. NJDEP believes this will be facilitated by the efforts being taken to upgrade and enhance all data management systems in NJDEP. Revisions have been made to the Source Water Assessment Program Plan to clarify NJDEP's intentions to implement a program that results in comprehensive Source Water Assessments.

5. COMMENT: One commentor stated that farmers must be regulated for agricultural chemicals.

   RESPONSE: Agricultural applicators, including farmers, are licensed by the NJDEP Pesticide Control Program for the application of restricted use pesticides. These pesticide applicators are required to pass exams as well as maintain continuing education credits on the proper use of pesticides and equipment. The NJDEP Pesticide Control Program asks pesticide applicators about the types and quantities of pesticides used once every three years and compiles this information. This information has been used to develop pesticide monitoring strategies in drinking water supplies. By linking land use data with pesticide application data, the Source Water Assessment Program will be able identify significant potential sources of pesticides in the vicinity of water sources.

6. COMMENT: NJDEP received a large number of comments about the quality of drinking water wells used at migrant farm camps. A number of commentors stated that they have first hand knowledge of farm worker coming down with pesticide related illness, and that farm workers have a rate of cancer four times higher than average. A number of commentors noted that while farm workers may be a transient group in that they are only at a particular camp for a short period of time, they go from camp to camp their entire lives. Several commentors stated that studies in the past have shown nitrate contamination in wells used for drinking water at migrant farm camps, and that it is reasonable to expect elevated levels of pesticides would be found if testing was done. Other commentors stated that the water supply at farm camps actually is tested and that it is a distortion of the facts to suggest otherwise.

   RESPONSE: The majority of wells at migrant farm camps in New Jersey are considered "nonpublic" water systems, either because of the number of people served or the relatively small number of days the water system is used. Refer to Chapter II for definitions of water systems. The 1996 Amendments to the federal Safe Drinking Water Act require states to implement a Source Water Assessment Program for public water systems, and as a result, Source Water Assessments will not be done on most migrant farm camp wells in New Jersey. However, NJDEP agrees that this is a serious issue, both in New Jersey and nationwide, although it is outside the scope of the Source Water Assessment Program.

Farm labor camps are regulated by both the federal and state Departments of Labor and local health agencies. The drinking water is tested at the beginning of the season for bacteria. If the farm labor camp serves 25 or more people more than 60 days a year, it is a public water system. This type of public water system, transient noncommunity, is required under state and federal Safe Drinking Water Acts to only sample annually for nitrate and once per quarter of operation for bacteria. The other regulatory agencies need to review the procedures and testing frequency to determine the adequacy of testing.

7. COMMENT: One commentor stated that the farming and agricultural communities are concerned that the Source Water Assessments be a reflection of sound science and not just based on the fact that we can now measure contamination to such low concentrations, such as parts per trillion for some compounds. The commentors stated that the Source Water Assessments should not imply something is harmful just because it is present.

   RESPONSE: NJDEP agrees with this statement when the substance in question is below the applicable standard.

8. COMMENT: One commentor stated that a copy of the pollution source inventory should be shared with each county.

   RESPONSE: NJDEP intends for all Source Water Assessment-related data to be on NJDEP's web site, where counties and other interested parties will have access.

9. COMMENT: One commentor asked for clarification on how noncommunity wells will be located in a county that does not have a county health agency.

   RESPONSE: For counties that do not have a county health agency (Mercer and Morris) or that do not have the resources to do the work, NJDEP will either locate the noncommunity wells or contract with another agency or consultant to perform this work.

10. COMMENT: Several commentors stated that updated data, not data over 12 years old, must be used in the assessments.

    RESPONSE: NJDEP believes that <u>both</u> historic and recent data should be used. NJDEP believes its intentions were misconstrued regarding the use of the 1986 land use maps versus 1995/1996 land use maps. NJDEP has paid over $1 Million for these more recent data sets, and does intend to use them in the contamination source inventories for all systems across the state. In addition, NJDEP's experience is that in order to identify both point and nonpoint sources of contamination that might impact water quality, it is important to review current <u>and</u> past land uses practices within the delineated area. The purpose of reviewing "old land use/land cover data" is to identify past contaminant sources that may no longer exist but may still have an impact on source water quality. This information will be used in addition to the most recent land use/land cover data available. There have been a number of instances throughout the state whereby past land use activities have lead to health concerns, including arsenic in residential soils built on former orchards, mercury contamination in the Kirkwood-Cohansey aquifer, and chromium in residential soils built on old industrial sites.

11. COMMENT: Several commentors stated that NJDEP should include valuable work that many smaller groups are conducting, such as outside groups, purveyors, etc.

    RESPONSE: NJDEP agrees with this comment. The purpose of making the Preliminary Source Water Assessments publicly available is to solicit additional information from outside parties. Data that meets minimum quality control criteria will be reviewed for incorporation into the final Source Water Assessments.

12. COMMENT: One commentor stated NJDEP needs to distinguish acute and chronic problems and provide guidance in ranking susceptibility to enable proper action to be taken and resources to be appropriately targeted.

    RESPONSE: NJDEP agrees with this comment. According to the Safe Drinking Water Act, acute contaminants are coliform bacteria and nitrate, which will be addressed in each Source Water Assessment, for every type of public water system. Acute problems can also be defined as high levels of contamination for chemicals with a chronic risk assessment. NJDEP believes the commentor is asking that NJDEP respond to high levels of contamination if found as part of the Source Water Assessments. The Source Water Assessment will provide to water systems, on a well by well and surface water intake by surface water intake basis, a susceptibility rating.

13. COMMENT: One commentor stated that any regulated facility should be evaluated for the potential to contaminate source water, not just those that release contaminants of concern.

    RESPONSE: In order to develop a practical and effective assessment the contaminant source inventory will concentrate on those facilities (and nonpoint source activities) with the potential to significantly or cumulatively impact source water for contaminants within the eight classes of contaminants of concern. The eight contaminant classes cover an enormous spectrum of contaminants and include virtually all recognized contaminating chemicals. The rationale is that a focused, targeted assessment of recognized problem areas will result in a more useful outcome, an outcome that can be translated into achievable and concrete protection measures. This is seen as preferable to a process that considers everything, regardless of its probability or importance. Prior experience has demonstrated the impracticality of assessments that consider every possibility, but at the end leave no clearly identifiable concepts or positions upon which future activities can be based. Source Water Assessment is viewed as an ongoing process. The conscious focusing of the assessment on high and moderate probability impacts is viewed as a strategy for providing a firm foundation upon which to build future assessments.

14. COMMENT: One commentor stated that NJDEP needs to collect and utilize data from within and outside the agency during the preliminary assessment process and not wait until the final assessment.

RESPONSE: NJDEP agrees with this comment and this had been its intention. Distribution of the Preliminary Source Water Assessments will not be limited to a specific group or groups.

15. COMMENT: One commentor requested that NJDEP provide more detail on how the state will coordinate assessments where source water protection areas cross state boundaries.

    RESPONSE: The Source Water Assessment Program staff in New York, Pennsylvania, and New Jersey have been in contact to discuss data sharing so that delineated source water protection areas that cross state boundaries will be performed using the best inter-state data available. NJDEP intends to meet with New York Source Water Assessment Program staff this summer to discuss the specifics of their process. Source Water Assessment Program staff in New Jersey have had one meeting with the Pennsylvania Source Water Assessment Program staff to date and have been sharing program information. The Delaware River Basin Commission will also play an important role in the assessments of inter-state waters.

16. COMMENT: One commentor stated NJDEP should specify a strategy for filling data gaps when data is vital to the process, but absent or of poor quality.

    RESPONSE: NJDEP agrees that there will be times when data is absent or of poor quality. In some circumstances, NJDEP will have to go out and obtain the data, and in other circumstances the use of assumptions may be warranted.

17. COMMENT: One commentor stated NJDEP should use data from within the agency, such as pesticide studies, maps and databases, etc.

    RESPONSE: NJDEP agrees with this comment, and intended for the Draft Source Water Assessment Program Plan. Based on this comment and similar comments, the Source Water Assessment Program Plan has been revised to make this clearer.

18. COMMENT: A few commentors stated that NJDEP should clarify how it will seek out and utilize more advanced well head delineations.

    RESPONSE: NJDEP believes the commentors are referring to performing more advanced "source water protection areas." The concept of performing these advanced delineations is based on two principles. First, where data are currently available, an advanced delineation will likely provide a source water protection area that is more accurate. Secondly, an interested party, such as a water purveyor or owner of a regulated potential or existing source may wish to perform an advanced delineation to provide certainty regarding the application of a source water protection area to a specific geographic location. Situations such as a well that receives a portion of its water from a nearby river that has good hydraulic connection to the aquifer, or a well field that is affected by well interference or contamination are also good candidates for an advanced delineation. In addition, where adequate hydrogeologic studies and models exist, NJDEP may decide to provide an advanced delineation of a source water protection area. The major factor will be the availability of data, and the availability of time

to conduct this work within the context of the Source Water Assessment schedule mandated by USEPA. Interested parties will be encouraged to develop advanced delineations.

19. COMMENT: One commentor stated that the accuracy of the location data for wellheads is plus or minus 40 feet. This commentor asked what NJDEP intends to do early in the process to seek greater location accuracy, and also stated that a public participation process should be developed in order to enhance the accuracy of this data.

    RESPONSE: Location data gathered today by NJDEP using global positioning system (GPS) tools currently available is generally accurate to plus or minus five feet. Location data gathered by NJDEP four years ago using GPS tools then available was generally accurate to plus or minus forty feet. Location data gathered in several years will probably be even more accurate than plus or minus five feet on a routine basis. However, NJDEP believes that the earlier data gathered on wellheads, accurate to plus or minus forty feet, is more than sufficient for the purposes of completing all the necessary steps of the Source Water Assessments. NJDEP is aware of the degree of location precision, and the process is not sensitive to the difference between five and forty feet. For example, because of the scale of most information, the actual lines on the maps that are drawn will themselves be almost fifty feet wide. The lines on most topographic maps are of a thickness of tens of feet, depending on the scale used. NJDEP is also erring on the side of being conservative when doing the Source Water Assessments. For instance, when determining each source water protection area, NJDEP uses values that will give a larger, rather than smaller delineated area.

20. COMMENT: One commentor stated that all pollution sources should be considered regardless of their proximity to the tributary.

    RESPONSE: NJDEP will inventory all significant potential sources in each delineated source water protection area, if the significant potential source is on a geographic information system (GIS) or electronic coverage. Still, given contaminant transport mechanisms, all potential contaminant sources influencing a water source are not equally threatening. For the Source Water Assessment Program to be valuable in any practical sense, sites or practices of significant threat must be distinguished from those that are innocuous.

21. COMMENT: One commentor stated that noncommunity water systems deserve the same delineation process as the community water systems.

    RESPONSE: NJDEP agrees that this would be the optimum situation. But well attribute data, such as the depth of the well or amount of screen in the well, for noncommunity water systems is often poor or missing, so the more generalized delineation of source water protection areas using the Calculated Fixed Radius (CFR) method is more appropriate and more protective due to the lack of information. However, for those noncommunity water systems delivering over 70 gallons per minute or over 100,000 gallons per day, NJDEP's intention is to use the estimated gradient method to delineate source water protection areas.

22. COMMENT: One commentor stated that surface water delineations must include water conditions downstream and downgradient under low flow and overuse conditions, which causes reverse flow and salt water intrusion.

    RESPONSE***:*** This is NJDEP's intention. The Source Water Assessment Program Plan is a general description of the process that will be used to address most of the intakes. Specific conditions which affect surface waters supplying drinking water intakes will need to be evaluated on a case by case basis. Unique situations such as tidal flow, reverse flow, and reservoir systems will be given a case by case analysis. The source water protection area for each surface water intake includes a protective downstream margin of error. This will allow for a more protective source water protection area, and account for any local reversal.

23. COMMENT: A few commentors stated that NJDEP needs to develop a public input process for establishing a model for susceptibility ranking and its ranking system.

    RESPONSE: NJDEP has contracted with the US Geological Survey to create scientifically valid susceptibility models for each category of contaminants of concern, for both ground water and surface water. NJDEP will seek advice from its reconvened Advisory Committee on the best ways to present this information to the public.

24. COMMENT: A large number of commentors stated that NJDEP must justify why it only considers a subset of the DIFF to warrant inclusion in the Source Water Assessments. In addition, several commentor stated that by only using part of the DIFF, NJDEP almost excluded the use of one of the pesticide databases in the DIFF.

    RESPONSE: There are no pesticide databases in the DIFF. Part of the confusion about the DIFF is due to an inadequate description of the DIFF in the Draft Source Water Assessment Program Plan and the prior lack of emphasis on the multiple databases to be used for the assessments. The Source Water Assessment Program intends to fully use all relevant databases available. The DIFF file contains information on many programs in NJDEP, including those managed by NJDEP's Land Use Regulation Program. Portions of the DIFF database include permitted facilities that have no impact on drinking water source quality. Examples are CAFRA permitted sites for shoreline development on marine waters or sites with no environmental discharges. To prevent the inventory of sites from becoming unmanageably cumbersome due to irrelevant information, only those portions representing facilities with discharges will be included. One exception to this is facilities with air permits, which will not be included in the initial assessments. The current state of data does not permit us to model or distinguish levels of impact of air releases on local source waters. This problem was recognized prior to the initiation of Source Water Assessment Program. An air deposition network has been designed, funded and implemented. Unfortunately, it will be several years before enough analytical results from the air deposition network are available for inclusion in source water assessments. It is important to stress that the issue of air deposition is not being ignored. It is being actively addressed and will be included in future assessments.

25. COMMENT: One commentor asked that NJDEP clarify if there is a predictable distance that water will travel in a two, five or twelve year time period, or whether it varies by soil type or some other factor.

    RESPONSE: The distance is predictable and depends on several factors, including the type of geologic formation the water is in (for instance, ground water in a gravel aquifer generally travels faster than ground water in a fine sand aquifer) and the "hydraulic gradient" of the water. The hydraulic gradient generally mimics the slope of the land surface, so if the land surface is flat, the hydraulic gradient will be lower and the ground water will travel slower than if the land surface is steep.

26. COMMENT: One commentor requested that NJDEP explain the difference between a confined and unconfined aquifer. Another commentor asked NJDEP to clarify if any assessment will be done on "confined" wells.

    RESPONSE: Technically, confined aquifers are aquifers that are separated from the atmosphere by an impermeable geologic formation, such as a thick clay layer. Based on previous work by NJDEP and the US Geological Survey related to a well's susceptibility to pesticide contamination, NJDEP generally considers certain confined wells in the Coastal Plain that are more than 0.5 miles away from their outcrop area to be insensitive to contamination from significant potential sources, because 0.5 miles corresponds to a travel time of greater than twelve years. For those confined wells that are considered insensitive to significant potential sources, NJDEP will consider the source water protection area to be the 50-foot, owner controlled zone mandated by the Public Water System Construction Regulations at N.J.A.C. 7:10-11.1. For these wells, the land surface area where discharges effecting ground water may occur is beyond the twelve year travel time. The US Geological Survey study previously conducted for NJDEP also concluded that all wells in glacial and bedrock aquifers should be considered to be drawing water from the land surface within twelve years (and thus will be considered unconfined), unless site-specific data prove otherwise.

27. COMMENT: Several commentors asked NJDEP to clarify in the Source Water Assessment Program Plan how it will handle the fact that many currently undeveloped parcels in headwater areas may be industrial or commercial in the future.

    RESPONSE: The Source Water Assessment done for each public water system will contain an inventory of <u>existing</u> significant potential sources. The Source Water Assessment does not include future use. NJDEP is considering putting in a blanket statement on all Source Water Assessments to that effect.

28. COMMENT: Several commentors pointed out that the entire process is to take until the year 2003, and asked NJDEP to clarify what will happen in the interim if certain areas are found that are highly contaminated or are highly susceptible to contamination in the interim.

RESPONSE: NJDEP will respond in those situations because the programs within NJDEP with regulatory oversight will already be involved in creation of the Source Water Assessments.

29. COMMENT: A few commentors asked NJDEP to clarify if it will give priority to places where it knows of or suspects contamination.

    RESPONSE: In general, NJDEP intends to do community water systems first, followed by nontransient noncommunity water systems and then transient noncommunity systems. At this time, NJDEP does not have a specific outline for the order that wells will be done for various classes of contaminants of concern. On the other hand, if NJDEP knows of or suspects contamination, NJDEP has and will continue to reach out to the affected communities. An example of this is the radium 224 problem discovered in the Kirkwood Cohansey aquifer in Southern New Jersey. NJDEP is moving forward on working with the public and water suppliers to address this issue because of its urgency, regardless of where it would queue up in the Source Water Assessment Program.

D. FINAL ASSESSMENTS

1. COMMENT: Several commentors stated that the final Source Water Assessments should be made available in their entirety for public review in an accessible repository.

   RESPONSE: NJDEP agrees. At a minimum, the Source Water Assessments will be available on NJDEP's web site. NJDEP will reconvene its Source Water Assessment Advisory Committee to help determine additional appropriate repositories, such as libraries.

2. COMMENT: One commentor stated that maps of pollution sources should be produced on a county-wide basis and made available at an acceptable repository along with individual assessments for each source of water supply.

   RESPONSE: NJDEP generally agrees. NJDEP expects that a wide variety of people will be reviewing and using the Source Water Assessment information for various purposes. NJDEP expects to store the information in such a manner that individual users can retrieve information that meets their needs using commonly available technology, whether map or text based. When the Source Water Assessments are completed, they will be available at a minimum on NJDEP's web site. Counties, municipalities, and the public will have access to them on the web site. The technology is such that each user can then decide how to develop maps or data specific to their particular concern. However, NJDEP also recognizes that not everyone will have Internet access, and NJDEP will address this issue when it reconvenes its Advisory Committee.

3. COMMENT: One commentor stated that municipalities need to be included as recipients of the Source Water Assessments because of their role in determining land use.

RESPONSE: NJDEP generally agrees with this comment, but the details of distribution beyond NJDEP's web site have not been finalized yet. NJDEP intends to reconvene its Advisory Committee issue to further address this issue.

E. NOTIFICATION

1. COMMENT: One commentor stated that the Source Water Assessments should provide more information to the public on drinking water quality.

   RESPONSE: Each Source Water Assessment will provide information about the quality of finished drinking water provided by the particular public water system. Additional explanation is provided in Chapter IV.

2. COMMENT: One commentor stated that water suppliers should be required to notify all drinking water consumers about test results in writing which should include a list of contaminants found, a range of levels of these contaminants, health effects including threats to vulnerable populations such as children and pregnant women, and known or suspected sources of these contaminants and the acceptable levels of these contaminants.

   RESPONSE: What this comment is describing is a modified "Consumer Confidence Report." For the first time in 1999, community water systems are required to prepare Consumer Confidence Reports that describe contaminants that were detected in finished water and associated information. The methods and guidance for the contents and distribution of a Consumer Confidence Report was developed by a group of national experts and interested parties. New Jersey will follow this national guidance. Also, as required by federal regulations (40 CFR 141.32), when a water supplier in New Jersey fails to comply with the maximum contaminant levels, the water supplier is required to notify the public by a newspapers, direct mail, and/or radio depending on the type of violation.

3. COMMENT: One commentor stated that Consumer Confidence Reports (CCRs) should be made available to individual well owners that draw water from the same water bearing zone of the local purveyor. Individual well owners within a 2-, 5- and 12-year time of travel of a public well should be notified.

   RESPONSE: Current federal law only requires that community water systems provide Consumer Confidence Reports to the customers that are served by the water supplier. Although community water systems must make a good faith effort to also reach consumers of the drinking water (such as tenants in apartment buildings) as outlined in Chapter VI, there is no obligation on the part of community water system to contact individual well owners.

   In addition, a Consumer Confidence Report provides information on the quality of finished drinking water, meaning after the water has undergone any treatment that is provided by the water supplier. A Consumer Confidence Report might not might not discuss all contaminants in the aquifer that may occur in individual wells.

For the most part, information on the locations of the approximately 400,000 nonpublic wells in New Jersey is still primarily in paper files at the state and local level, when those records exist at all. At the present time it is not known precisely where private wells are located with respect to the source water protection areas, or who owns the private wells or from which ground water source those wells obtain their water. However, while outside the specific scope of the Source Water Assessment Program (because individual wells are nonpublic wells, see Chapter 2), NJDEP believes it might be workable to target this section of the public for information about the Source Water Assessments. As noted in the revised Source Water Assessment Program Plan, NJDEP will continue the public participation process and will be looking to its Source Water Assessment Advisory Committee for guidance on the distribution of the Source Water Assessments beyond NJDEP's website.

4. COMMENT: Assessment results must be sent to all NJ households and workplaces. The reports sent to each household must state that the information is available and how to call or request by mail and obtain it. The Draft Source Water Assessment Program Plan should include a method for informing workers about the quality of the drinking water in their workplace**.**

RESPONSE: All NJ households and workplaces are not served by public water. An estimated 400,000 households have domestic wells for drinking water. For those household and workplaces that are served by public water, the Consumer Confidence Report (CCR) regulations will be an important means of informing the public about the availability of the Source Water Assessments. The regulations that were published in August 1998 state that in addition to mailing a copy of the CCR to each customer, water utilities must make a good faith effort to reach consumers of the drinking water. Examples of additional means of reaching consumers of the drinking water include: press releases that the report is available, radio station public service announcements, paid advertising, publication of the report in the newspaper, circulation to libraries and community centers, postal patron mailings, door hangers delivered by meter readers, posting in prominent places, and the Internet. For water systems serving more than 100,000 people, there is a regulatory requirement to place a copy of the CCR on the Internet. New Jersey will continue the public participation process and will be looking to the Source Water Assessment Advisory Committee for guidance on the distribution of the Source Water Assessments beyond NJDEP's website.

5. COMMENT: A few commentors stated that Preliminary Assessments, not just the final Assessments, should be disclosed to the general public.

RESPONSE: NJDEP does intend for the Preliminary Assessments to be widely available, including to the general public.

6. COMMENT: A few commentors stated that the release of the Source Water Assessments should be instantaneous with the completion of the Source Water Assessments, so the public can promptly be informed about the quality of their water and be able to seek quick remedies if necessary.

RESPONSE: NJDEP intends to make all information in the Source Water Assessments available as quickly as possible.

7. COMMENT: Several commentors requested NJDEP describe the summary document for public release and how NJDEP intends to distribute this information beyond placing it on their web site.

   RESPONSE: This has not been finalized yet. NJDEP intends to reconvene its Source Water Assessment Advisory Committees and seek advice on how best to communicate to the public in a summary fashion the information to be contained in the Source Water Assessments, as well as the best way to distribute the full documents beyond inclusion on NJDEP's website.

8. COMMENT: The summary should include additional information such as an explanation of what the rankings mean in terms of water quality. Vulnerability (editors note: the term "vulnerability" has been changed to "susceptibility" in the Source Water Assessment Program Plan) ranking descriptions must also include impact on drinking water before treatment.

   RESPONSE: NJDEP agrees with this statement, but the details of the Summary documents will be worked out after NJDEP seeks additional input from its Source Water Assessment Advisory Committee. NJDEP agrees that susceptibility must include impacts on drinking water before treatment.

9. COMMENT: One commentor stated that actual and potential contamination sources must be named and mapped no matter what the susceptibility determination ranking is.

   RESPONSE: NJDEP agrees with this statement.

10. COMMENT: One commentor stated that maps should include points of reference. Narratives should include the contaminants of concern from each pollution source and health effects.

    RESPONSE: NJDEP agrees with this statement, where it is possible.

11. COMMENT: A few commentors stated that NJDEP should translate the summary assessment reports and Consumer Confidence Reports (CCRs) into the state's most prevalent languages to ensure greater accessibility to the information.

    RESPONSE: One of the major avenues of notification about the availability of completed Source Water Assessments will be through the Consumer Confidence Reports. As described in Chapter VI, community water systems are required by federal law to provide notification on the availability of Source Water Assessments to their customers. Community water systems that have a large proportion of non-English speaking residents are required to include information in the Consumer Confidence Report in the appropriate language expressing the importance of the Consumer Confidence Report or offering additional information in that language. (USEPA offers as an example the following statement to be

provided in appropriate languages: "This report contains important information about your drinking water. Translate it, or speak with someone who understands it.") States are required to make the final determination of which community water systems will need to include this information, and NJDEP is in the processing of doing this.

NJDEP recognizes that customers of community water systems are not the only ones who drink public water and that the Consumer Confidence Report is not the only avenue to notify the public about the presence of the Source Water Assessments and Summary documents. NJDEP will use the language information developed for the community water systems and when it does Source Water Assessment Program public outreach, it will include a similar phrase in its announcements and postings.

12. COMMENT: One commentor stated that NJDEP should keep all stakeholders up-to-date on the state's public disclosure progress.

    RESPONSE: NJDEP agrees with this comment.

13. COMMENT: A few commentors stated that NJDEP and USEPA should do press releases when the Source Water Assessments are done and publicize through newspapers.

    RESPONSE: NJDEP will take this comment into consideration to publicize the final Source Water Assessments. NJDEP did issue a press release to announce the Draft Source Water Assessment Program Plan, but it was not picked up by a large number of papers or other media.

14. COMMENT: Several commentors stated that proposals in the Draft Source Water Assessment Program Plan for public disclosure are inadequate. The example was offered that tenants will not find out about Source Water Assessments under the plan as it is currently written.

    RESPONSE: NJDEP will reconvene its Source Water Assessment Advisory Committee for input on the best ways to do public disclosure. NJDEP recognizes that notification of the availability of completed Source Water Assessments through the Consumer Confidence Reports is not sufficient. NJDEP is committed to reaching a large audience.

15. COMMENT: One commentor stated that in order to increase public disclosure of the Source Water Assessments, utilities should be required to send the Consumer Confidence Reports to all the mailing address in a zip code instead of to all the "customers."

    RESPONSE: NJDEP will reconvene its Source Water Assessment Advisory Committee to work out the best ways to reach a large audience.

16. COMMENT: One commentor stated that to include a summary of the Source Water Assessment on only one Consumer Confidence Report is unacceptable. This commentor stated that it should be on every single Consumer Confidence Report for every single year

until an updated one is done, and then that new one should be on every single CCR for every single year, and so on.

RESPONSE: Community water systems are required by federal law to issue a Consumer Confidence Report yearly. Chapter VI describes in some detail the information about Source Water Assessments that must be included in the Consumer Confidence Reports. This information must be included every year, not just the first time the Source Water Assessment is available. NJDEP wishes to clarify that the community water system is not required to include the full "Summary Document" that will be prepared by NJDEP for each public water system.

F. PROTECTION & PREVENTION

1. COMMENT: Several commentors requested NJDEP better define how the watershed will play a role in advising the general public of public water supply system results, and stated there are concerns regarding the use of the watershed program for public participation.

   RESPONSE: Source Water Assessments will be incorporated into watershed characterization and assessment reports. Where these reports have already been developed, the Source Water Assessments will serve as a major appendix. These reports will subsequently be used to facilitate watershed-specific dialogues between NJDEP staff and watershed stakeholders that will serve both to expand the information available to identify problems and issues within each watershed management area, and also to prioritize watershed management issues and target activities. NJDEP will hold public meetings in each of the watershed regions, or watershed management areas (as needed), to present the findings of each preliminary characterization and assessment report. The current thinking is that source waters that are found to be moderately or highly susceptible to potential contamination sources would be assigned a high ranking for the development and implementation of protection plans, as part of the watershed implementation schedule. Source waters with a low susceptibility ranking would have protection plans developed and implemented after that. The susceptibility ranking of the various source waters will be a major topic that NJDEP will use to increase public participation when it forms watershed stakeholder groups, and to increase public participation where stakeholder groups have already been formed. This process has been incorporated into the Source Water Assessment Program.

2. COMMENT: One commentor stated that the Draft Source Water Assessment Program Plan does not clarify how the individual Source Water Assessments will be used by public water supplies, such as recommending to the water purveyors or the public how the assessments should be used.

   RESPONSE: The information in the Source Water Assessments should used to determine priorities for the protection of the source of drinking water supply. New Jersey will continue the public participation process and will be looking to the Source Water Assessment Advisory Committee for guidance on the scope of general recommendations for protection

activities that be included in the Source Water Assessments. Site-specific protection of source waters will be discussed in the development of Watershed Management Plans through the technical and policy advisory committees that will be established for each watershed.

3. COMMENT: One commentor stated the Source Water Assessment Program should provide protection for water sources, and enforce strict codes of land use around public water sources before they are degraded. The commentor referred specifically to a 400-acre golf course proposed in Ocean County which is upstream of the Jakes Branch of the Tom's River and near two public wells.

   RESPONSE: Source water protection issues will be an outcome of the Source Water Assessment process. Land use decisions in New Jersey are a local issue, and NJDEP hopes that local planners will be able to use the Source Water Assessments for planning purposes.

4. COMMENT: Several commentors stated that the Source Water Assessment Program Plan must include a pollution prevention approach.

   RESPONSE: This will be a goal to handle under source water protection measures. Issues related to source water protection are found in Chapter VII of the Source Water Assessment Program Plan.

5. COMMENT: A number of commentors stated that people have a right to know what is in their water and what are the measures to be taken that would prevent contamination.

   RESPONSE: NJDEP agrees wholeheartedly with this comment. NJDEP believes the Source Water Assessment Program will provide a great deal of this information.

6. COMMENT: One commentor stated that more aggressive mechanisms should be used for protecting water resources.

   RESPONSE: NJDEP believes that the Source Water Assessment Program will serve as the basis for pursuing more aggressive mechanisms to be put in place as part of the Source Water Protection Program. By focusing on activities in a delineated source water area, NJDEP and affected stakeholders will have a valuable tool where these activities are more specifically identified and prioritized with respect to potential contaminants. These activities can then be targeted in a pollution prevention approach during the development of protection plans.

7. COMMENT: One commentor stated that there should be support for the following principles: make polluters pay for cleaning-up; acquire open space to buffer water supplies; implement pollution precaution strategies; adopt run-off and pesticide reduction programs; redirect development; and require compliance with the State Plan.

   RESPONSE: NJDEP agrees with this comment, and believes the Source Water Assessment process will go along way to achieving these goals.

8. COMMENT: One commentor stated that the Source Water Assessment Program Plan should provide the technical criteria, data, and assessment that will identify the critical water supply lands that should be preserved.

   RESPONSE: NJDEP believes the Source Water Assessment Program Plan will be a fundamental tool to carry out this task.

9. COMMENT: Several commentors stated that the analysis of present and future land use (as identified through current zoning) should be part of the Source Water Assessment Program. For example, a parcel may be a forest now but zoned for high-density housing, which would impact water supplies differently.

   RESPONSE: Future land use is beyond the scope of Source Water Assessments. Besides being technically unmanageable (zoning is handled on the local level, is subject to frequent changes), future land use is an issue that should be considered as part of source water protection measures.

10. COMMENT: One commentor stated that the Source Water Assessment Program should identify the areas at risk for future development, and that cumulative and secondary impacts must be included.

    RESPONSE: Identifying areas at risk for future development is a source water protection activity, and the results of the Source Water Assessments can be used in that endeavor.

11. COMMENT: Several commentors stated that NJDEP should make a commitment to institute water protection programs.

    RESPONSE: NJDEP agrees. Chapter VI of the Source Water Assessment Program Plan addresses source water protection issues.

12. COMMENT: One commentor noted that the Draft Source Water Assessment Program Plan states that the summary reports sent to the general public will "be to encourage public involvement in developing future source water protection plans" but does not explain how it will accomplish this goal. The public must be informed specifically how they can get involved in the watershed management phase and other state protection efforts.

    RESPONSE: NJDEP will reconvene its Source Water Assessment Advisory Committee to further consider several issues, including the final design of the summary reports. NJDEP will seek advice from its Source Water Assessment Advisory Committee at that time concerning what to put in the summary reports to explicitly encourage public involvement.

13. COMMENT: Numerous commentors stated that implementation of the Source Water Assessment Program would require additional financial and staffing resources.

    RESPONSE: NJDEP believes adequate financial and staffing resources have been dedicated to the Source Water Assessment Program.

14. COMMENT: One commentor stated that money should be made available to research and identify various contaminants and also to educate landscapers, farmers, and golf course owners in the alternatives to the use of pesticides and fertilizers.

RESPONSE: NJDEP is currently carrying out a number of research projects using monies from the A-280 Safe Drinking Water Research Fund, the results of which will directly aid in the implementation of the Source Water Assessment Program, as well as the drinking water program in general. In addition, NJDEP's Pesticide Control Program does promote education and outreach on the use of and alternatives to pesticides.

G. TREATMENT ISSUES

1. COMMENT: One commentor stated that there should be close coordination between the water utilities and the Bureau of Safe Drinking Water on treatment issues.

   RESPONSE: NJDEP agrees. It is imperative for the Source Water Assessment Program to work closely with the drinking water utilities in order to provide an accurate and useful assessment.

2. COMMENT: One commentor stated pollution prevention is the focus of the Source Water Assessments, and therefore treatment should not be considered as part of the Source Water Assessment. The commentor stated that treatment is a secondary protection.

   RESPONSE: The evaluation of treatment technology is not a replacement for a susceptibility analysis. A susceptibility analysis will be performed for all sources of drinking water. Treatment of drinking water is considered to be the last barrier of defense in a multibarrier approach. The purpose of reviewing current treatment technology is two-fold. The first is to ensure that the treatment in place adequately removes contaminants already present in the source water. The second is to ascertain if additional treatment processes are likely to be needed in order to address imminent threats.

3. COMMENT: One commentor asked how existing treatment adequacy will be evaluated if unregulated contaminants from Contaminated Sites are not included.

   RESPONSE: NJDEP believes the commentor is referring to them list that was originally included as Appendix D in the Draft Source Water Assessment Program Plan and contains Federal and New Jersey State Primary and Secondary Drinking Water Standards as of November 1996. NJDEP has revised the language in the contaminants of concern section of Chapter IV to clarify NJDEP's intention to include a more far-reaching universe of contaminants.

H. RECHARGE ISSUES

1. COMMENT: NJDEP received a large number of comments related to recharge. Commentors stated that the Source Water Assessment Program must consider ground water recharge areas. Commentors stated that drinking water supply recharge areas should be and must be included. Commentors also stated that a claim that there is no direct connection between a specific well and its recharge area is an unacceptable excuse for excluding these crucial areas form consideration and protection. Commentors stated that recharge areas should be mapped by the methodology developed by the NJ Geological Survey.

   RESPONSE: The response to these comments is twofold. First, NJDEP agrees with these comments. The source water protection area that will be delineated for each public well is in fact the next twelve years of recharge to that well. This is the most important part of any public well's recharge area, because it consists of the recharge area the well will draw from over the next twelve years. For some wells, the area encompassed by the twelve year travel time will be the well's entire recharge area. For other wells, the area encompassed by the twelve year travel time will only be a percentage of the wells total recharge area. Second, large scale recharge areas are currently being mapped by NJDEP through a program separate from the Source Water Assessment Program, using the methodology developed by the New Jersey Geological Survey. This will include the areas beyond the delineated source water protection areas being generated by the Source Water Assessment Program.

2. COMMENT: One commentor stated that recharge issues, which are ignored in the Draft Source Water Assessment Program Plan, are especially important in consideration of the $400 million available to the State to buy open space to preserve wetlands.

   RESPONSE: NJDEP agrees that recharge areas are extremely important. As clarified above, the source water protection area delineated for each public well will be the first twelve years of that well's recharge area.

3. COMMENT: One commentor asked NJDEP to clarify how NJDEP will handle instances where surface water intersects a ground water protection area?

   RESPONSE: In New Jersey, there are 24 community wells considered "ground water under the direct influence" (GWUDI) of surface water. Source water protection area delineations and susceptibility determinations will be made on a case by case basis for these 24 wells. NJDEP does not have an estimate at the present time of the number of noncommunity wells considered to be under the influence of surface water. The Bureau of Safe Drinking Water is currently collecting that data.

4. COMMENT: One commentor stated that effluent from sewage treatment plants should be diverted to provide aquifer recharge, and that money should be provided for capital projects to improve sewage treatment levels.

   RESPONSE: This comment is beyond the scope of the Source Water Assessment Program, which is simply about doing an inventory of contamination sources and a determination of a

public water system's susceptibility to contamination by those sources, within the delineated source water protection area. The comment will be forwarded to the Watershed Management Program for consideration.

I. WATER SUPPLY ISSUES

1. COMMENT: One commentor stated the Source Water Assessment Program Plan must address issues of water available for public use now and in the future.

   RESPONSE: The primary purpose of a Source Water Assessment is to provide consumers and water suppliers with a "snapshot" of their drinking water quality. As such, assessments will focus on evaluating the quality of their current drinking water supply. There are certain water sources in the state, such as the Northeast part of the state, where water quantity will have a significant effect on water quality and where data are available, the data will be evaluated. The watershed management program expects to update Source Water Assessments over time by evaluating the effects of both current and future land uses on drinking water supplies. In addition, NJDEP has other programs that concentrate on water availability, such as the Water Supply Master Plan.

2. COMMENT: One commentor stated NJDEP should inform the public about the interrelationship between water flows and water quality.

   RESPONSE: NJDEP plans on reconvening the Source Water Assessment Advisory Committee to discuss issues regarding distribution and content of the Source Water Assessments and Summary reports. It is anticipated that this group will also identify drinking water education needs. This will be included in the identified needs.

3. COMMENT: One commentor stated NJDEP should reassess the safe yields of water sources in New Jersey.

   RESPONSE: This is an issue that is outside the scope of the Source Water Assessment process. However, as provided for in the New Jersey Statewide Water Supply Master Plan, the safe yield of some of New Jersey's reservoir systems will be reassessed over the next few years. The Passaic River and Hackensack River reservoir systems are among the systems scheduled for reassessment.

4. COMMENT: One commentor stated that drought needs to be identified as a possible source of contamination. Another commentor stated that winder drought should specifically be considered in Source Water Assessments.

   RESPONSE: Rather than being a significant potential source of contamination, NJDEP believes a drought exacerbates contamination by reducing the assimilative capacity of the state's water resources during these periods. However, drought will be factored into the Total Maximum Daily Load (TMDL) development in the Watershed Management Program, where water quantity and water quality will be integrated to estimate how each influences

the other. NJDEP will evaluate "worst case" scenarios in its development of TMDL assessments for surface water supplies. If drought or winter drought conditions are considered among one of these scenarios, these conditions will be evaluated. Due to their comprehensive nature, the TMDLs for surface water supplies should be considered as future refinements to assessments being conducted under the Source Water Assessment process.

5. COMMENT: A few commentors stated NJDEP should support public education for water supply issues.

   RESPONSE: NJDEP agrees. NJDEP currently provides a lot of education on water issues and produces numerous publications for students, teachers, and the general public. NJDEP also does a lot of outreach through presentations and public talks, and provides materials for others to distribute. Public education will continue through the Source Water Assessment Advisory Committee and through various outreach activities that are part of the watershed process.

J. GENERAL COMMENTS

1. COMMENT: One commentor stated that a water purveyor in Southern New Jersey uses synthetic pesticides and fertilizers and the company literature promotes weed-free lawns which adds to non-point pollution.

   RESPONSE: NJDEP understands the concern. It is not appropriate for NJDEP to comment on the practice of using fertilizer and pesticides on lawns as long as the application is done properly**.**

2. COMMENT: One commentor stated that New Jersey and the federal government have been remiss in allowing drinking water as a means of remediating a Superfund site.

   RESPONSE: According to current regulations, existing sources of drinking water that have become contaminated may be retrofitted with treatment so that the water meets drinking water standards. NJDEP acknowledges that Superfund sites and other waste disposal sites may contain undocumented chemicals. Current conventional analytical methods for analyzing a water sample for contamination may not pick up all possible synthetic organic chemicals present.

   NJDEP has undertaken a significant research project, using monies from the A-280 Safe Drinking Water Research Fund, to use non-conventional analytical procedures to screen impacted waters for the presence of non- and semi-volatile organic substances. This study will provide information as to whether non-regulated chemicals are occurring in selected impacted water supplies and whether current water treatment processes remove them. This is a three year project, and NJDEP is in the middle of the second year of the project. The total cost of this study is expected to be approximately $300,000**.**

In addition, USEPA is conducting a study in New York and New Jersey to look for tentatively identified compounds in drinking waters. USEPA's study is to investigate the efficiency of water treatment units that have been installed as part of a Superfund strategy at Superfund sites in Region 2. USEPA is conducting their study to determine if the Superfund strategy (i.e., water treatment of the public system) is protective of public health and to identify areas of concern or noncompliance with the USEPA's Records of Decisions (RODs). The results will be part of the five year review of the RODs from each of the Superfund sites being investigated. USEPA is using two conventional USEPA analytical methods that can determine the presence of some volatile and semi-volatile compounds but not non-volatile compounds.

3. COMMENT: One person urged NJDEP to adhere to the stated principle that any pollution activity within the watershed has the potential to impact water quality at the surface water intake.

   RESPONSE: NJDEP agrees, and this was incorporated in the Draft and Final Source Water Assessment Program Plan.

4. COMMENT: One person urged NJDEP to release Draft Wellhead Protection regulations in 1999.

   RESPONSE: NJDEP released "Draft Guidance for Well Head Protection Area Delineations in New Jersey" along with the Draft Source Water Assessment Program Plan. This document contains the methodology for delineating wellhead protection areas in New Jersey. NJDEP is discussing the merits of writing regulations to formalize the process for performing these delineations. If NJDEP decides to codify the delineation process, the regulations will be placed on NJDEP's regulatory agenda. It is unlikely that the regulations will be proposed by the fall of 1999, but may be proposed at a future date.

5. COMMENT: One person stated that officials in Montville Township are allowing too many trees to be cut down, and the results are slowly devastating this area's water and air.

   RESPONSE: NJDEP believes that the completed Source Water Assessments will help local governments make informed decisions about water quality issues.

6. COMMENT: Several commentors stated that this plan is a once in a century opportunity to do an exhaustive testing for what is in our drinking water. The assessments should be an assessment of everything that there is, and the public should have access to every single bit of information.

   RESPONSE: NJDEP clarifies that routine sampling of public water systems is not a task of the Source Water Assessment Program. However, NJDEP does intend to make all information used in performing the Source Water Assessments available to the public. The Source Water Assessment Program believes that this will be achievable in light of the steps the NJDEP is taking to systematically organize program data electronically.

7. COMMENT: One person stated that New Jersey needs to establish a guiding principle that no one is going to be exposed to contamination in their drinking water, and that safe drinking water should be measured against the criteria of zero tolerance as the optimum level.

   RESPONSE: NJDEP follows legislative guidance for setting drinking water standards through the 1983 Amendments to the New Jersey Safe Drinking Water Act. These Amendments state that within certain feasibility limits, the maximum contaminant levels (MCLs) for carcinogens, other than those resulting from compounds with public health benefits (e.g. disinfecting agents), shall permit cancer in no more than one in one million persons ingesting that chemical for a lifetime. The MCLs for noncarcinogens, and those carcinogens resulting from compounds with public health benefits, shall eliminate, within the limits of practicability and feasibility, all adverse physiological effects that may result from ingestion.

8. COMMENT: Several people stated that the public is more concerned than ever regarding the safety of their drinking water supply, and more people than ever are drinking bottled water.

   RESPONSE: Congress recognized the national concern regarding the safety of drinking water supplies when crafting the 1996 Amendments to the federal Safe Drinking Water Act. As a result, each community water system must mail a Consumer Confidence Report to each customer to inform him or her of their drinking water quality during the previous year. There is an common perception that bottled water is a safer source of drinking water than water that is provided by a public water supplier. Sales of bottled water are estimated to be about $4 billion annually. Tap water and bottled water are required to meet the same drinking water standards; in fact, tap water in NJ and water bottled in NJ may be safer than other areas of the country because these sources must comply with stricter New Jersey drinking water standards. In a recent report that was released by the Natural Resources Defense Council, 1000 bottles of water sold under 103 brand names were tested. Some samples of bottled water contained bacteria or chemicals in levels that were considered unsafe because they might cause cancer or other illnesses. The report said that no one should assume that just because water comes from a bottle it is necessarily purer or safer than most tap water.

9. COMMENT: One commentor stated he suspected that financial constraints are responsible for the inadequacy of the Draft Source Water Assessment Program Plan, and there needs to be a public forum on priorities in the State.

   RESPONSE: The Source Water Assessment Program expects to use a combination of existing and new resources to accomplish all the tasks. NJDEP believes there is adequate funding to accomplish the assessments in the manner proposed in this Source Water Assessment Program Plan.

10. COMMENT: One commentor stated that disinfectants, such as chlorine, can cause significant health problems.

    RESPONSE: NJDEP recognizes that some people are concerned about the use of drinking water disinfectants. The use of chlorine disinfection for drinking water began in 1908 in

Jersey City, NJ. The use of chlorine disinfection spread throughout the country and resulted in a dramatic decrease in cases of typhoid fever nationwide. Chlorine and other disinfectants such as ozone have provided important tools for the protection of public health from water sources contaminated with pathogens. Today, 200 million people nationwide drink water that is chlorinated; most of the community water systems in New Jersey provide chlorination treatment. Water systems that serve chlorinated surface water are required to maintain a minimum concentration of chlorine residual in the water distribution system at all times.

In December 1998, USEPA adopted a "maximum residual disinfectant level" of 4 milligrams per liter for chlorine. This is the first time that a maximum level for chlorine in drinking water has been established. USEPA is setting this new type of standard to encourage water systems to control their treatment processes to reduce disinfectant demand and control their disinfection treatment processes to reduce disinfectant levels.

The Source Water Assessment Advisory Committee asked that total organic carbon and dissolved organic carbon be included as part of the evaluation of surface water sources. The Source Water Assessment Program will look at the relationship of these precursors to disinfection byproduct formation.

11. COMMENT: One commentor stated that lead contamination from shooting ranges has contaminated soils, crops, and will pollute more if contamination from shooting ranges is not stopped. NJDEP's Division of Fish, Game and Wildlife allows this practice.

    RESPONSE: Source Water Assessment Program staff will evaluate the likelihood of lead contamination of surface water or ground water from shooting ranges.

12. COMMENT: Several commentors stated that the Source Water Assessment Program Plan should address environmental justice issues.

    RESPONSE: Environmental justice identifies and addresses disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations. The drinking water program is in compliance with environmental justice policies because all public water systems in New Jersey are required to deliver water that complies with the same drinking water standards. In addition, all Source Water Assessments will proceed according to the same criteria for location, delineation, contaminant source inventory and susceptibility analysis, regardless of where the source is located or who is served by the public water system. NJDEP does not believe there are outstanding environmental justice issues that need to be addressed in the Source Water Assessments themselves. However, getting information out about the Source Water Assessment Program and availability of the Summary Reports can be addressed in light of environmental justice issues, since certain groups may not have the same access to information sources such as the internet. NJDEP will seek advice from its Source Water Assessment Advisory Committee when it is reconvened.

13. COMMENT: One commentor stated that the State Plan should make reference to the Source Water Assessment Program Plan.

RESPONSE: A representative of the Office of State Planning attended several of the Source Water Assessment Advisory Committee meetings and was sent copies of all the minutes and drafts of the Source Water Assessment Program Plan.

14. COMMENT: Several commentors stated that the Draft Source Water Assessment Program Plan does not propose to go beyond the federal minimum and that this is not acceptable.

    RESPONSE: NJDEP believes New Jersey's Source Water Assessment Program Plan will in fact go far beyond the federal minimum, notably in the list of contaminants of concern and in the evaluation of non-community wells. The Source Water Assessment Program Plan has been revised to better reflect NJDEP's intentions, as well as changes that have been made in light of the comments received.

15. COMMENT: A few commentors stated that ground water systems should provide information on raw (untreated) water, not just finished (i.e. treated) water.

    RESPONSE: Ground water systems are not required by any of the state or federal regulations to monitor raw water on a regular basis. The federal and state Safe Drinking Water Act regulations require that finished water be monitored in the water distribution system (total coliform, disinfection byproducts, and radiological), at selected homes in the water distribution system (lead and copper), or as the water leaves the treatment plant (all other regulated contaminants). However, because some water systems collect additional data from their raw water sources, NJDEP will seek that information from water suppliers.

16. COMMENT: One commentor stated that NJDEP must provide a detailed work plan as to how each Source Water Assessment Program dollar would be spent and for what, and who would carry it out as required by the Intended Use Plan (IUP).

    RESPONSE: NJDEP submitted a capitalization grant application to USEPA in June 1998 for the State Revolving Fund. The capitalization grant application consisted of construction project funding requests and non-project set-aside project funding requests. The non-project set-aside funding requests were accompanied by a workplan. Draft workplans for the Source Water Assessment Program, for both the delineation and assessment set-aside (1452 k) and the source water assessment program administration set-aside (1452 g), were distributed at the Source Water Assessment Consolidation Subcommittee meeting for Federal Fiscal Year 1997. These workplans are available from the Bureau of Safe Drinking Water upon request. The first capitalization grant for Federal Fiscal Year 1997 was awarded to NJDEP in September 1998.

17. COMMENT: One commentor stated that the state should set up a stable, permanent source of funding for source water protection.

    RESPONSE: Funds are available each year as part of the federal Safe Drinking Water Act State Revolving Fund Program. The State Revolving Fund allows up to 10 percent of the funds allocated to New Jersey each year for the following protection activities: 1) loans to

public water systems to acquire land or conservation easements to protect the source water from contamination; 2) loans to community water systems to implement local, voluntary, source water protection measures; 3) loans to community water systems to develop a source water quality protection partnership petition and 4) expenditures for the establishment and implementation of wellhead protection programs as defined in section 1428 of the 1996 amendments to the federal Safe Drinking Water Act.

As the twenty Watershed Management Areas in New Jersey develop watershed management plans, appropriate protection activities for drinking water sources will also be included. There may be additional funding opportunities available through this process.

18. COMMENT: A few commentors stated that while they believe the watershed process has potential, given its history they lack NJDEP's confidence that the watershed process will achieve the desired source water protection results in any fashion, let alone a timely one, with out a specific plan and timeline.

    RESPONSE: NJDEP's Division of Watershed Management, has the responsibility of developing watershed management plans for the 20 watershed management areas in New Jersey. By the time the assessments are completed in these areas, the watershed program should be capable of developing appropriate protection strategies.

19. COMMENT: One commentor state that the primary responsibility of NJDEP is to look out for the well being of the population, and to ensure that people will not be afraid to drink the water. The commentor stated that part of the scope of this study should be to determine how soon NJDEP can get people not to be afraid to drinking the water without compromising their health.

    RESPONSE: NJDEP needs to do a better job communicating information about drinking water quality to the public. This issue will be discussed in the Source Water Assessment Advisory Committee.

20. COMMENT: One commentor stated that there is a need to create a balance between the well being of the population and the economic development of the state, and that this provides for the determination as to whose interests state agencies will respond to in defining their actions when implementing Source Water Protection measures as an outcome of the Source Water Assessments.

    RESPONSE: NJDEP has to weigh the interests of all stakeholders when making decisions. NJDEP encourages all parties with an interest in Source Water Protection to become part of the process.

21. COMMENT: One commentor stated that NJDEP should affirm publicly that the time frames laid out in the Safe Drinking Water Act Amendments of 1996 are going to be met, and that all necessary resources, both economically and in terms of personnel, will be committed.

RESPONSE: It is NJDEP's intention to meet the deadlines set forth in the federal Safe Drinking Water Act amendments of 1996. NJDEP is applying for the 18-month extension that was allowed in the 1996 amendments**.**

22. COMMENT: Several commentors stated that it is a laudable goal to look at all the data and data resources, and also stated appreciation for including radium 224 in the list of contaminants of concern.

    RESPONSE: NJDEP appreciates the comment.

23. COMMENT: One commentor stated that there are a tremendous number of tasks to be accomplished in order to complete all the Source Water Assessments by the year 2003. The commentor asked if NJDEP has been sitting on this for a long time.

    RESPONSE: NJDEP agrees there is a great deal of work to be done. Some of the work has already been done. For instance, the location of the public community wells and surface water intakes has been determined using global positioning technology (GPS) (See Chapter IV.C and D). NJDEP has reached out to the counties who are going to help locate the non-community wells using section 1452k monies from the state revolving fund non-project set-asides. This is an ambitious undertaking, and NJDEP does not take the amount of work to be done lightly.

24. COMMENT: One commentor stated that protection of corporations is being put ahead of protection of the average person, at the direction of Governor Whitman.

    RESPONSE: NJDEP strongly disagrees. The Source Water Assessment Program Plan has been revised to give more information about the work NJDEP is undertaking, and to clarify that NJDEP did and does intend for the Source Water Assessments to be very aggressive in identifying sources and having the contaminants of concern include a large number of compounds. NJDEP is going far beyond the minimum requirements of the 1996 Amendments to the federal Safe Drinking Water Act, so as to act in the best interests of the citizens of New Jersey.

25. COMMENT: One commentor asked NJDEP to clarify if the Source Water Assessment Program Plan addresses reservoirs. This commentor is concerned that they end up with brown water when they "change over" and also that there are so many people involved in the reservoir system. The commentor wants to know if their water is protected.

    RESPONSE: The Source Water Assessment Program will address all sources of drinking water: wells, rivers, lakes and reservoirs. The water in lakes and reservoirs sometimes becomes mixed as a result of temperature changes and the changes in the density of water. This results in a resuspension of sediments that may be the cause of the brown water. Although this water quality problem cannot be linked to a specific source of contamination, NJDEP will be looking at turbidity data in raw water (untreated) as part of the Source Water Assessments in order to acknowledge these types of issues.