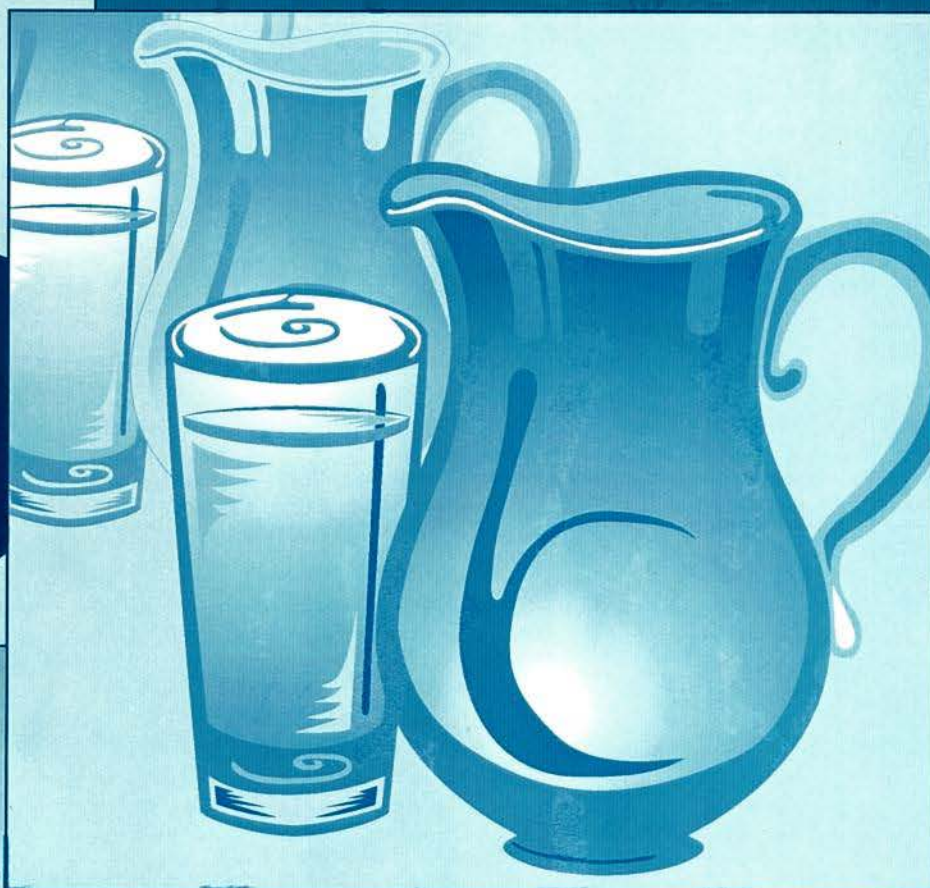


EPA Resource Guide to Federal Facility Compliance with the Safe Drinking Water Act



USEPA Office of Enforcement and Compliance Assurance

Federal Facility Enforcement Office's "Blue Book" for Compliance with the Safe Drinking Water Act



Purpose of this Document:

U.S. EPA's Federal Facility Enforcement Office prepared this document to aid regulated entities in complying with the Safe Drinking Water Act. Specifically, this document is designed to assist federal facilities with public water systems comply with the requirements of the Safe Drinking Water Act and the USEPA regulations. The statements in this document are intended solely as guidance in this effort. Among other things, the information in this document describes existing requirements for regulated entities under the Safe Drinking Water Act (SDWA) and its implementing regulations at 40 CFR 141-143. While the Agency has made every effort to ensure the accuracy of the statements in this document, the regulated entity's legal obligations are determined by the terms of its applicable environmental facility-specific permits, and underlying statutes and applicable state and local laws. Nothing in this document alters any statutory, regulatory or permit requirement. Federal facilities requiring additional information or advice should consult a qualified professional. In the event of a conflict between statements in this document and either the permit or regulations, this document would not be controlling. U.S. EPA may decide to revise this document without notice to reflect changes in EPA's regulations or to clarify and update text. U.S. EPA and local decision makers retain the discretion to adopt approaches on a case-by-case basis that differ from those described in this guidance where appropriate and authorized by underlying requirements. The guidance does not constitute rulemaking by the EPA and does not confer legal rights or impose legal obligations upon any member of the public.

The information listed below is not intended for a specific type of drinking water system (i.e. community/non-community). It is, however, intended to provide general guidance on drinking water compliance and related drinking water references using the Internet. This document contains hyperlinks to non-EPA Web sites and documents. These hyperlinks are provided as a service to readers and do not

represent an endorsement of non-EPA Web sites, documents, companies, or products. EPA does not make any representations regarding the content of these hyperlinks, or the accuracy or validity of any information contained therein.

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Part 1. The Safe Drinking Water Act

Explain how environmental laws and regulations are made in the United States.

Once Congress passes an act, the text is standardized and published in the United States Code, which is the official record of all federal laws. In order to make the laws work, Congress authorizes certain government agencies, including EPA, to create regulations that specify what is and is not legal.

The authorized agency proposes regulations that are subsequently listed in the Federal Register so that the public can consider them and submit comments to the agency. The agency considers all the comments, revises the regulation accordingly, and issues a final rule. Once a regulation is completed and has been printed in the Federal Register as a final rule, it is "codified" by being published in the Code of Federal Regulations (CFR), which is the official record of all regulations created by the federal government. The CFR is divided into 50 volumes, called titles, each of which focuses on a particular area. Nearly all environmental regulations appear in Title 40. The Safe Drinking Water Act is codified in 40 CFR 141-143.

What is the Safe Drinking Water Act?

The **Safe Drinking Water Act** (SDWA), which celebrated its 25th anniversary in 1999, is the main federal law that ensures the quality of Americans' drinking water. Under SDWA, EPA sets standards for drinking water quality and oversees the states, tribes, localities, and water suppliers who implement those standards.

Read about the act and its requirements by clicking any of these links:

Brief Overview of the SDWA

<http://www.epa.gov/safewater/sdwa/understand.pdf>

Public Law Title 42 Chapter 6A (Safe Drinking Water Act)

<http://uscode.house.gov/DOWNLOAD/42C6A.DOC>

Or, search for specific statutory citations directly from the United States Code:

Public Law Title 42 Chapter 6A (Safe Drinking Water Act)

<http://www4.law.cornell.edu/uscode/42/300f.html>

In 1996, Congress amended the **Safe Drinking Water Act** to emphasize sound science and risk-based standard setting, small water supply system flexibility and technical assistance, small system capability enhancements, capacity development, community-empowered source water assessment and protection, public right-to-know, and water system infrastructure assistance through a multi-billion-dollar state revolving loan fund.

For more detailed information, read:

Section-by-section summary of the Safe Drinking Water Act:

<http://www.epa.gov/safewater/sdwa/summ.html>

Regulatory Thematic Summary:

<http://www.epa.gov/safewater/sdwa/theme.html>

Full text version of the 1996 SDWA Amendments:

<http://www.epa.gov/safewater/sdwa/text.html>

What kind of financial assistance (other than the from the public water system's host organization) is available for federal facilities?

Unfortunately, federal facilities are not authorized to receive additional funding for drinking water system compliance under the SDWA. The SDWA, as amended in 1996, established the Drinking Water State Revolving Fund (DWSRF) to make funds available to non-federal drinking water systems to finance infrastructure improvements. The program also emphasizes providing funds to small and disadvantaged communities and to programs that encourage pollution prevention as a tool for ensuring safe drinking water. Contact the public water system's host organization (DoD, DoE, BLM, etc.) for financial issues.

Note: Federal Facilities are not authorized DWSRF allocations according to federal law. The SDWA citation that prohibits the use of DWSRF funds for Federally-owned systems is section 1452(a)(2). The USEPA reflects this limitation in 40 CFR 35.3520(d).

How does the act apply to Federal Facilities?

Section 1447 of the SDWA, as amended in 1977, provides that, subject to a national security exemption, each Federal Agency shall be subject to, and comply with, all Federal, State, and local requirements, and administrative authorities. To support this change in prior policy the congressional committee stated the following "... Furthermore, the committee intends that Federal agencies comply with State and

What does "Primacy" mean?

"Primacy" refers to the agency of the state/tribe or federal government that has primary enforcement responsibility (primacy) with respect to the Safe Drinking Water Act. The state or USEPA Regional office usually maintains primacy under the SDWA. Currently, Wyoming is the only State that does not have SDWA primacy.

local drinking water requirements and regulations which are more stringent than the primary drinking water standards." A state with primacy does not have jurisdiction over Indian Lands due to the Indian land's status as "sovereign nations." Therefore, the federal government has jurisdiction over public water systems on Indian lands, unless the Indian Tribe obtains primacy.

On August 6, 1996, the Safe Drinking Water Act (SDWA) Amendments of 1996, Public Law Number 104-182 (the Amendments), became law. Prominent among the Amendments, are several provisions uniquely applicable to federal entities. The new SDWA clarifies that Federal agencies could be subject to fines and penalties for a violation of an administrative order. Federal Facilities can be subject to fines and penalty orders issued by the EPA or the state. In 1998, the Army's Redstone Arsenal received a cash penalty of \$80,000 and \$807,000 in supplemental environmental projects for improper management of a drinking water system that served 22,000 people.

This guidance explains the Amendment's application to federal entities and offers advice to regions when exercising the enhanced SDWA authorities. In brief, the Amendments:

- significantly enhanced the SDWA's pre-existing waiver of sovereign immunity,
- reiterated EPA's express enforcement authority over federal entities,
- streamlined the pre-existing statutory process for issuing public water system compliance orders,
- expanded EPA's administrative penalty authority for any violation of the SDWA including the public water supply and underground injection control requirements and requirements imposed by an administrative order,
- provided citizens the opportunity to obtain judicial review of penalty orders,
- required states to use any penalty or fine collected from a federal entity under Section 1447 for environmental purposes.

Read about major enforcement policy documents at the links below:

Guidance on Federal Facility Penalty Order Authority Under the Safe Drinking Water Act, as amended in 1996

<http://es.epa.gov/oeca/fedfac/policy/safedrink.pdf>

Is there guidance designed specifically for federal facilities to implement the Safe Drinking Water Act and applicable executive orders?

Yes. Federal facilities may use sections of "The Yellow Book" to help them develop compliance plans for the SDWA (and other environmental regulations). The Yellow Book Guide to Environmental Enforcement and Compliance at Federal Facilities has been written to meet the needs of a diverse audience. The Yellow Book's primary purpose is to provide individuals with Federal Facility environmental responsibilities with an informational tool to help comply with environmental requirements and to clearly explain the compliance and enforcement processes used by EPA and States at Federal Facilities. The Yellow Book was originally published in November 1988. The revised and reissued Yellow Book, published in February 1999,

supersedes the 1988 version. The Yellow Book is available on CD-ROM from USEPA's Office of Enforcement—Federal Facility Enforcement Office.

Consult the Federal Facility "Yellow Book" for a listing of most Federal Facility environmental regulations and executive orders. The "Yellow Book" provides more background about the SDWA and federal facilities and includes important executive orders (eg. EO 13148) related to drinking water.

To view the "Yellow Book," click on the link below:

Full version of the Federal Facility "Yellow Book"
<http://es.epa.gov/oeca/fedfac/yellowbk/yellowbk.pdf>

The SDWA constantly refers to a Public Water System. What is a Public Water System?

Public water systems are the foundation of the drinking water program under SDWA. In general, the SDWA and the USEPA define a public water system as one that serves water by pipes or other constructed conveyances to at least 25 persons or 15 service connections for at least 60 days per year (see official definition below). Such water systems may be owned by homeowner associations, investor-owned water companies, local governments, and others. Examples of Federal Facility water systems include facilities like office buildings, housing areas, recreational facilities, and bombing ranges that have drinking water systems that meet the minimum requirements. Water that does not come from a public water supply, and which serves one or only a few homes, is called a private supply. Federal Facilities that are served drinking water from another public water system should expect to receive public notices from their provider only if deficiencies are identified during routine monitoring.

USEPA Official SDWA Definition: A public water system (PWS) is a system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen service connections or regularly serves at least twenty-five individuals daily--at least 60 days out of the year.

Click on the link below for an USEPA policy letter on PWSs.

USEPA policy letter regarding public water system classification
http://www.epa.gov/safewater/wsg/wsg_66a.pdf

Community water systems are public systems that serve people year-round in their residences. EPA also regulates other kinds of public water systems--such as those at schools, factories, campgrounds, or restaurants--that have their own water supply. Of the three types of PWS, community water systems have the most requirements (monitoring, operator certification, etc.) since CWS usually serve more consumers per system.

Non-Transient Non-Community Water System is a public water system that is not a community water system and regularly serves at least 25 of the same persons over 6 months per

year. Typical monitoring requirements include periodic sampling for organics, inorganics, and total coliforms.

Transient Non-Community Water System is a water system that is not a NTNCWS. This system serves transient consumers. Transient consumers represent individuals who have the opportunity, to consume water from a water system, but who do not fit the definition of a residential or regular consumer. Obvious examples are people stopping by at a highway rest stop, people vacationing for a few days or weeks at a hotel or resort, people having lunch or dinner at a restaurant, etc. Transient non-community water systems are typically required to only monitor for coliforms, nitrate, and nitrite.

Click to read online or download a PDF version of the August 5, 1998 Federal Register notice on the revised Definition of a Public Water System, as amended by Section 1401(4) of the 1996 SDWA Amendments.

<http://www.epa.gov/ogwdw/pws/pwsdef.pdf>

What are some key definitions I should know before applying the SDWA at my facility?

Understanding the key legal definitions of the SDWA is very important for a successful compliance program. Several important definitions are listed below:

Definitions

Human Consumption. Defined to include drinking, bathing, showering, cooking, dishwashing, and maintaining oral hygiene.

Constructed Conveyance. Broadly interpreted to refer to any manmade conduit such as ditches, culverts, waterways, flumes, mine drains, or canals.

**Determining
Constructed
Conveyances**

Natural Waterways. Factors that a primacy agency should consider to determine whether or not a natural waterway is considered a "constructed conveyance" include whether or not it exists in its current configuration substantially from human modifications, who owns or controls the water, and the reason why water is present.

Counting. Whether a "constructed conveyance" counts as a connection depends on whether the water supplier knows or should know that the connection exists or that the individuals are using the water from that connection for human consumption.

**Water Suppliers'
Liability**

A supplier cannot limit its SDWA liability by not making efforts to gather necessary information and documentation regarding its users' water use, or solely by requiring its users to sign a waiver agreement.

**Constructed
Conveyance
Exclusions**

Other Than Residential Use Exclusion. A "constructed conveyance" system may automatically exclude a connection from being counted if its use is exclusively for purposes other than residential uses.

Alternative Water Exclusion. A "constructed conveyance" system may exclude a connection from being counted if the primacy agency makes a factual determination based on documentation submitted by the water supplier that the water supplier is providing its users at that connection with alternative water that provides the equivalent level of public health protection as the applicable **NPDWRs**.

What are the "NPDWRs"?

"NPDWRs" stands for the **National Primary Drinking Water Regulations**. These standards are promulgated by the Environmental Protection Agency to enforce the Safe Drinking Water Act and codified in 40 CFR 141.

Treatment Exclusion. A "constructed conveyance" system may exclude a connection from being counted if the primacy agency makes a factual determination based on documentation submitted by the water supplier that the water at the connection is treated to provide the equivalent level of public health protection as the applicable NPDWRs.

Special Irrigation District

If in existence prior to May 18, 1994, and providing primarily agricultural service with only incidental residential use, a piped irrigation district may not be considered a PWS if all of its connections comply with the alternative water or treatment exclusions (above) for "constructed conveyance" suppliers.

It is important to remember that the USEPA does not regulate drinking water wells that supply water to fewer than 25 people and have fewer than 15 service connections, *but state agencies may.* Consult with local and state drinking water representatives for more stringent requirements. Click on the links below to locate your system's state drinking water representative:

Local drinking water information by state:
<http://www.epa.gov/safewater/dwinfo.htm>

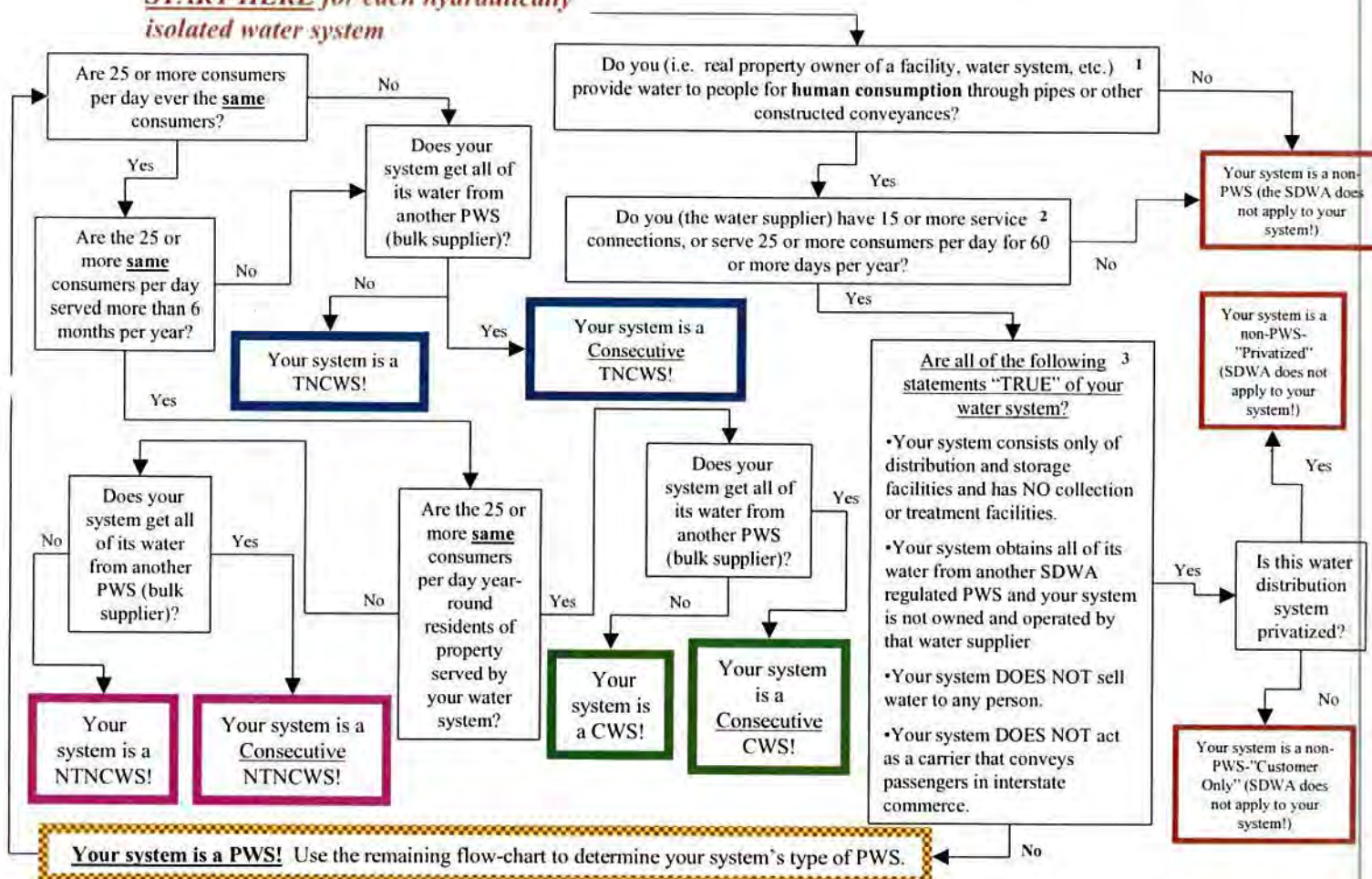
State drinking water protection offices, private water organizations, and public health organizations
<http://www.epa.gov/safewater/links.html>

How do you know if your water system really is a PWS?

Use the decision tree below to decide if your system meets the legal requirements of a public water system (box 1 and 2). Then determine if your system meets the legal requirements (local, state, and federal) for a regulated public water system (box 3). If your system meets all 4 requirements of box 3, then it is an unregulated PWS (TNCWS, NTNCWS, and CWS are defined above).

Decision Tree to Determine Public Water System Type*

START HERE for each hydraulically isolated water system



*Determine your system's actual legal classification through your primary agency SDWA POC -- this example is for illustration purposes only! (NOT FOR COMPLIANCE)

- This chart may be changed in the future due to new USEPA regulations governing consecutive public water systems (i.e. Stage 2 DBP Rule).

Where can I go to find what these drinking water terms mean?

You may wish to consult EPA's drinking water glossary if you find unfamiliar terms in the following pages. Click on the link below to review unfamiliar terms:

Drinking Water Glossary of Terms
<http://www.epa.gov/safewater/glossary.htm>

What regulations apply to a PWS?

The Environmental Protection Agency sets standards that, when combined with protecting ground water and surface water, are a critical to ensuring safe drinking water. EPA works with its regional offices, states, tribes, and its many partners to protect public health through implementing the Safe Drinking Water Act.

For a table of currently regulated contaminants, potential health effects, and sources, read National Primary Drinking Water Standards, which lists the legally enforceable standards (Maximum Contaminant Levels) that apply to public water systems as well as National Secondary Drinking Water Regulations, the non-enforceable guidelines for contaminants that may cause cosmetic or aesthetic effects in drinking water.

Click on this link to find out about the legal requirements enforced by the NPDWRs (including treatment techniques, available control technologies, public notification, consumer confidence reports, and monitoring requirements):

National Primary Drinking Water Regulations (NPDWRs)
<http://www.epa.gov/safewater/regs/cfr141.pdf>

Click on this link to see a list of all regulated contaminants and their corresponding maximum permissible level in drinking water:

Maximum Contaminant Levels (MCLs)
<http://www.epa.gov/safewater/mcl.html>

Click on this link to find out about the non-enforceable requirements for taste and odor issues covered by the NSDWRs:

National Secondary Drinking Water Regulations (non-enforceable)
<http://www.epa.gov/safewater/regs/cfr143.pdf>

Click on this link for detailed information on current drinking water regulations and corresponding implementation manuals (guidance documents)

USEPA's Web for Regulations and Guidance
<http://www.epa.gov/safewater/regs.html>

Where can I find guidance on contaminants regulated by the National Primary/Secondary water regulations and on unregulated contaminants?

Health Advisories provide information on certain contaminants. Health Advisories provide water professionals with guidance about health effects of various contaminants. These values are

based on non-cancer health effects for different durations of exposure (e.g., one-day, ten-day, longer-term, and lifetime).

Click on the following link to learn more about Drinking Water Advisories:

USEPA's Drinking Water Advisories

<http://www.epa.gov/waterscience/drinking/standards/>

What is the regulatory history of the SDWA and what are the potential future actions?

This chart shows the order in which EPA regulated more than 90 drinking water contaminants since the creation of the SDWA.

USEPA's Contaminant Timeline

http://www.epa.gov/safewater/consumer/contam_timeline.pdf

This chart describes future USEPA drinking water rulemaking efforts.

USEPA's Chart of Key Regulatory Dates

http://www.epa.gov/safewater/pws/imp_milestones.pdf

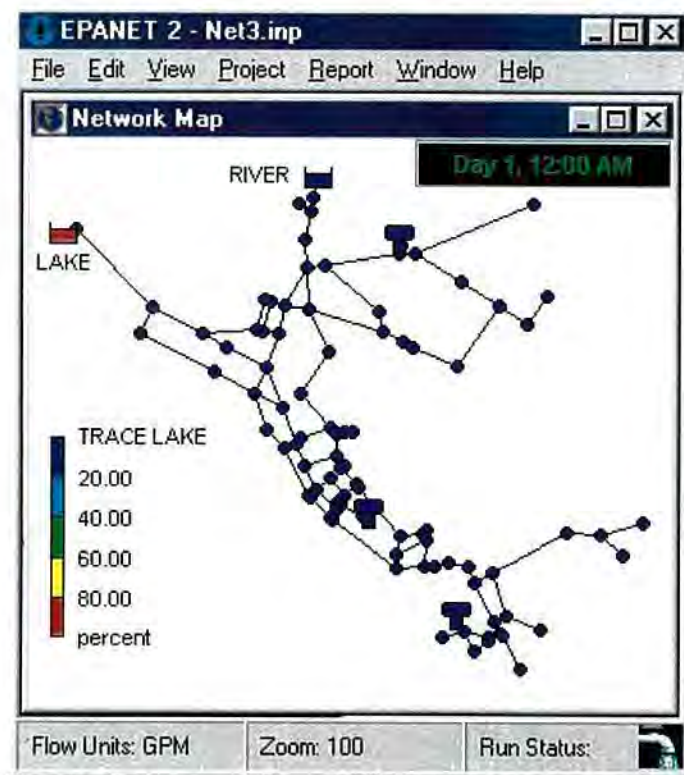
Part 2. Technical Assistance

How Does Water Get To a Consumer's Faucet (Distribution System Issues)?

In a typical community water supply system, water is transported under pressure through a distribution network of buried pipes. Smaller pipes, called service lines, are attached to the main water lines to bring water from the distribution network to your house. In many community water supply systems, water pressure is provided by pumping water up into storage tanks that store water at higher elevations than the houses they serve. The force of gravity then "pushes" the water into your home when you open your tap. Houses on a private supply usually get their water from a private well. A pump brings the water out of the ground and into a small tank within the home, where the water is stored under pressure. Water distribution system modeling is important for all water systems because low pressure within the distribution system can drastically change the quality of water delivered to the system's consumers and must be monitored closely. Low pressure (defined as below 20 psi) increases the potential for contaminants to back-flow or back siphon into the water distribution system. Many states require PWSs to maintain a minimum pressure of 20 psi in their distribution system because a pressurized system (>20 psi) is less likely to draw contamination into the distribution system through pipe cracks or cross-connections.

What resources are available to federal facilities to perform water quality modeling?

EPANET (see picture) is a Windows 95/98/NT program that performs extended period simulation of hydraulic and water-quality behavior within pressurized pipe networks. A network can consist of pipes, nodes (pipe junctions), pumps, valves and storage tanks or reservoirs.



EPANET tracks the flow of water in each pipe, the pressure at each node, the height of water in each tank, and the concentration of a chemical species throughout the network during a simulation period comprised of multiple time steps. In addition to chemical species, water age and source tracing can also be simulated.

EPANET 2 Website:

<http://www.epa.gov/ORD/NRMRL/wswrd/epanet.html#Description>

The Windows version of EPANET provides an integrated environment for editing network input data, running hydraulic and water quality simulations, and viewing the results in a variety of formats. These include color-coded network maps, data tables, time series graphs, and contour plots.

EPANET was developed by the Water Supply and Water Resources Division (formerly the Drinking Water Research Division) of the U.S. Environmental Protection Agency's National Risk Management Research Laboratory. It is public domain software that may be freely copied and distributed.

Click here to download EPANET software, upgrades, and documentation:

Installation Software

<http://www.epa.gov/ORD/NRMRL/wswrd/EN2setup.exe>

Software Developer's Toolkit Upgrades (not for typical users)

<http://www.epa.gov/ORD/NRMRL/wswrd/EN2toolkit.zip>

EPANET User's Manual

<http://www.epa.gov/ORD/NRMRL/wswrd/EN2manual.PDF>

Another good water distribution system modeling site is maintained by the University of Kentucky. Engineers at the University of Kentucky and their associates have been developing and supporting state-of-the-art pipe network modeling technology for over 30 years. A number of technical achievements and teaching awards have been presented to members of the development team in recognition of this work that has set the world standard for pipe network technology.

The PIPE2000 graphical user interface (GUI) incorporates all the best existing modeling capabilities and introduces a number of powerful new ones. This advanced WINDOWS (95, 98, NT4, NT5) GUI will allow access to steady state, transient, gas, and steam models for a variety of applications. The PIPE2000 GUI incorporates powerful mapping and comprehensive facilities management capabilities (AM/FM). The PIPE2000 development effort combined a high level of hydraulic expertise for model development and advanced computer-engineering design of the graphical interface. This is the only way to produce the powerful modeling tools needed by today's engineers. Choose your modeling tools only after you have taken a comprehensive look at costs, capabilities and level of technical support. Browse this web site for detailed information and evaluation material and you are the judge.

Please click on the KYPIPE Website listed below to learn more about the University of Kentucky's water distribution

<http://www.kypipe.com/pipe2000.html>

What resources are available to federal facilities to learn how to conduct appropriate operations and maintenance projects on a public water system?

MIL-HDBK-1164 provides general technical guidance for operating and maintaining (see picture) potable water systems at fixed military installations (and other federal facilities). Since no two installations are exactly alike, this handbook is supplemental to site-specific operations and maintenance (O&M) manuals provided for each installation. The handbook applies to all personnel responsible for operating and maintaining fixed-base water systems, including supervisors as well as operators. To provide military personnel with the most up-to-date information available the handbook guides the reader to industry standards, manuals of practice, training guides, handbooks, and miscellaneous documents published by the American Water Works Association (AWWA) and other authorities in the water supply and treatment field. This manual is not intended to



be read in its entirety. Rather, the reader is expected to refer to individual parts as the need arises.

Operations and Maintenance of Water Supply Systems

<http://www.afcesa.af.mil/Directorate/CES/Civil/Water/mh1164.pdf>

MIL-HDBK-1005/7A, Water Supply Systems

http://www.afcesa.af.mil/Directorate/CES/Civil/Water/1005_7A.pdf

Are federal facility public water systems required to conserve drinking water?

Yes. Executive Order 13123 mandated the establishment of water conservation goals (eg. identify conservation opportunities and install cost-effective water-conserving fixtures equipment) for Federal Agencies. The Department of Energy (DOE) was tasked to take the lead in this effort, with inputs from the Military Services and other Federal Agencies. The products of the effort are listed below.

Department of Energy's Website for water conservation (contains topics on: Water Conservation Requirements and Guidance for Implementing Executive Order 13123, and guidance on Identifying and Implementing Successful Water Conservation Projects):

<http://www.eren.doe.gov/femp/techassist/waterconserve.html>

Executive Order 13123

Greening the Government Through Efficient Energy Management

<http://www.eren.doe.gov/femp/resources/exec13123.html>

Guidance to Establish Water Efficiency Improvement Goal for Federal Agencies

<http://www.afcesa.af.mil/Directorate/CES/Civil/Water/Federal%20Water%20Efficiency%20Goal%20&%20BMPs%2010%20May%2000.doc>

MIL-HDBK-1165, Water Conservation.

<http://www.afcesa.af.mil/Directorate/CES/Civil/Water/1165.pdf>

How can water systems control cross-connections?

Contamination can enter a water system in many ways, usually through some type of opening to the distribution system (i.e. cracked pipe, damaged reservoir hatch, etc.). One common route is through cross-connections. Cross-connections are conditions that allow contaminated water to mix with potable water.



Cross-connections can happen if an individual begins filling a livestock water tank by placing a garden hose inside the tank during filling. If water pressure is lost while the tank is filling, dirty water from the livestock tank could flow backwards through the garden hose into the drinking water system. Similar situations occur when filling pesticide sprayers, fertilizer tanks, etc. Cross-connections control programs are mandated by the SDWA and should be eliminated or protected using backflow devices (see inset picture above) and routine surveillance programs.

Several websites provided cross-connection and backflow guidance. The Foundation for Cross-Connection Control and Hydraulic Research is a leader in cross-connection control technology. The Foundation for Cross-Connection Control and Hydraulic Research at University of Southern California was founded in 1944. The Foundation is considered by many to be the world's authority in the field of cross-connection control. The Foundation offers training courses and training tools to assist those involved in cross-connection control. The foundation also provides an updated list of approved backflow prevention assemblies.

Click on the link below to explore the website for the Foundation for Cross-Connection Control and Hydraulic Research at University of Southern California
<http://www.usc.edu/dept/fccchr/>

Another website dealing with cross-connection control is located at the EPA Region 4 website.

Click on this link to explore the Georgia Water System Instruction Manual
<http://www.epa.gov/region4/peerreview/states/georgia/gainst.htm>

What actions should the water system take during an emergency, natural disaster, or known waterborne disease outbreak?

Safety should be the first priority of any water system during emergencies or natural disasters (floods, tornado, etc.). Preventing contamination to the drinking water system is the next most important. If contamination is suspected, contact your system's primacy agency. The following guidance clarifies how long to boil water during a boil water advisory or other drinking water emergency. This guidance was prompted by the fact that various agencies have issued inconsistent instructions on the duration of boiling.

http://www.epa.gov/safewater/wsg/wsg_11.pdf

Linked below is an article from the *Morbidity and Mortality, Weekly Report* (September 18, 1994), on the boil water advisory issued during December 1993 for Washington, DC. The last paragraph of this article includes a joint EPA/Centers for Disease Control policy statement on how long individuals should boil their water when a water system issues a boil water notice.

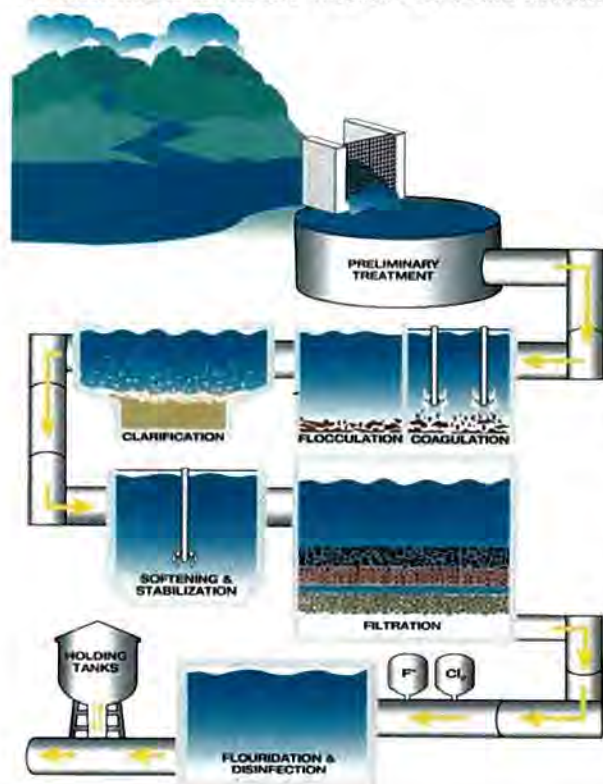
http://www.epa.gov/safewater/wsg/wsg_134.pdf

The memorandum linked below clarifies EPA's guidance on water treatment chemicals and the operation of public water supplies during emergencies. Specifically, this guidance addresses emergency disinfection.

http://www.epa.gov/safewater/wsg/wsg_61.pdf

How do Public Water Suppliers treat my water to make it safe (Treatment Issues)?

Water suppliers use a variety of treatment processes to remove contaminants from drinking water. These individual processes may be arranged in a "treatment train" to remove undesirable contaminants from the water. The most commonly used processes for surface water plants (and



possibly even plants using groundwater under the direct influence of surface water) include filtration, flocculation and sedimentation, and disinfection. Some treatment trains also include ion exchange and adsorption. A typical water treatment plant would have only the combination of processes needed to treat the contaminants in the source water used by the facility. Most groundwater facilities usually do very little treatment, primarily only disinfecting the water. The EPA is responsible for identifying "Best Available Treatment Technologies" (BATs) for every regulated contaminant. Some BATs are listed below. If you want to know what types of treatment are used for your water supply, contact your local water supplier or public works department.

Flocculation/Sedimentation

Flocculation refers to water treatment processes that combine small particles into larger particles, which settle out of the water as

sediment. Alum and iron salts or synthetic organic polymers (alone, or in combination with metal salts) are generally used to promote coagulation. Settling or sedimentation is simply a gravity process that removes flocculated particles from the water.

Filtration

Many water treatment facilities use filtration to remove remaining particles from the water supply. Those particles include clays and silts, natural organic matter, precipitants from other treatment processes in the facility, iron and manganese, and microorganisms. Filtration clarifies water and enhances the effectiveness of disinfection.

Ion Exchange

Ion exchange processes are used to remove inorganic constituents if they cannot be removed adequately by filtration or sedimentation. Ion exchange can be used to treat hard water (i.e. water which contains divalent cations like calcium and magnesium). It can also be used to remove arsenic, chromium, excess fluoride, nitrates, radium, and uranium.

Adsorption

Organic contaminants, color, and taste- and odor-causing compounds can stick to the surface of granular or powdered activated carbon (GAC or PAC). GAC is generally more effective than PAC in removing these contaminants. Adsorption is not commonly used in public water supplies.

Disinfection (chlorination, ozonation, UV, etc.)

Water is often disinfected before it enters the distribution system to ensure that dangerous microbes are killed and is mandatory for SW and GWUDISW systems. Chlorine, chloramines, or chlorine dioxide most often are used because they are very effective disinfectants, and residual concentrations can be maintained to guard against biological contamination in the water distribution system. Ozone and UV are powerful disinfectants, but are not effective in controlling biological contaminants in the distribution pipes because they do not leave any residual disinfectant in the treated water. Water systems that use ozone or UV could become contaminated after the disinfection point (i.e. in the distribution system) because there is no residual.

Technology Transfer

The National Drinking Water Clearinghouse (NDWC) provides technical assistance to water plant operators and managers on a variety of issues. NDWC offers Tech Briefs on many treatment options available for drinking water contaminants. Each fact sheet provides concise technical information about a drinking water treatment technology relevant to small systems. The Tech Briefs are aimed at drinking water professionals, particularly small system operators, and the content is fairly technical. Tables and/or helpful illustrations are provided, as are sources for more information.

Click on the link below to access all NDWC Tech Briefs:

http://www.estd.wvu.edu/ndwc/NDWC_eduprod.html#briefs

Example Tech Briefs:

Disinfection:

<http://www.estd.wvu.edu/ndwc/TB1.pdf>

Filtration:

<http://www.estd.wvu.edu/ndwc/TB2.pdf>

Organics Removal:

<http://www.estd.wvu.edu/ndwc/TB5.pdf>

How often is my water supply tested (sampling and monitoring issues)?

EPA has established pollutant-specific minimum testing schedules for public water systems. To find out how frequently you should be testing your drinking water, contact your state agency in

charge of drinking water.

The table on this page shows the major groups of contaminants and the minimum frequency that most public water systems must test for them. If a problem is detected, there are immediate retesting requirements that go into effect and strict instructions for how the system informs the public about the problem. For example, if a routine coliform sample test positive, 4 repeat samples must be taken at specified locations in the distribution system. The system must also take 5 additional routine coliform samples in the same distribution system the following month. Until the system can reliably demonstrate that it is free of problems, the retesting is continued.

Typical Community Water System Monitoring Schedule	
Contaminant	Minimum Monitoring Frequency
Acute Contaminants	
Bacteria	Monthly or quarterly, depending on system size and type (includes chlorine and pH)
Protozoa and Viruses	Continuous monitoring for turbidity, monthly for total coliforms, as indicators
Nitrate/Nitrite	Annually
Chronic Contaminants	
Volatile Organics (e.g., benzene)	Ground water systems, annually for 2 consecutive years; surface water systems, annually
Synthetic Organics (e.g., pesticides)	Larger systems, twice in 3 years; smaller systems, once in 3 years
Inorganics/Metals	Ground water systems, once every 3 years; surface water systems, annually
Lead and Copper	Annually
Radionuclides	Once every 4 years
General requirements may differ slightly based on the size or type of drinking water system.	

Typical Non-Community Non-Transient Water System Monitoring Schedule	
Contaminant	Minimum Monitoring Frequency
Acute Contaminants	
Bacteria	Monthly or quarterly, depending on system size and type (includes chlorine and pH)
Protozoa and Viruses	Continuous monitoring for turbidity (if surface water or GWUDISW), monthly for total coliforms, as indicators
Nitrate/Nitrite	Annually
Chronic Contaminants	
Volatile Organics (e.g., benzene)	Ground water systems, annually for 2 consecutive years; surface water systems, annually
Inorganics/Metals	Ground water systems, once every 3 years; surface water systems, annually
Lead and Copper	Annually
Radionuclides	Once every 4 years
General requirements may differ slightly based on the size or type of drinking water system.	

Typical Transient Non-Community Water System Monitoring Schedule	
Contaminant	Minimum Monitoring Frequency
Acute Contaminants	
Bacteria	Monthly or quarterly, depending on system size and type (includes chlorine and pH)
Nitrate/Nitrite	Annually
Chronic Contaminants	
None.	
General requirements may differ slightly based on the size or type of drinking water system.	

What records should be kept by the public water system?

Title 40 CFR 141.33 establishes record keeping requirements for public water systems concerning bacteriological and chemical analyses. Section 141.33 (a) specifies that bacteriological records must be kept at least five years and chemical analyses at least 10 years. However, there is no specific language addressing the length of time radiological records must be maintained. Furthermore, the final Radionuclides Rule of December 7, 2000 (65 FR 76707) does not contain any language that would modify 40 CFR 141.33 - Record maintenance.

The link below clarifies record keeping requirements for the Radionuclides Rule.
http://www.epa.gov/safewater/wsg/wsg_H50.pdf

Am I required to notify my consumers about the quality of water my systems delivers?

Yes. The USEPA developed the Public Notification and Consumer Confidence Report (only for CWS) regulations specifically for this purpose. Public water systems must notify their consumers when they violate primacy agency drinking water standards (including monitoring requirements) or otherwise provide drinking water that may pose a risk to consumers' health. EPA has revised the existing Public Notification rule to better tailor the form, manner, and timing of the notices to the relative risk to health. The revised rule makes notification easier and more effective for both water systems and the customers that they serve.

Click on this link to view the **Public Notification Handbook** [816-R-00-010 / June 2000]. This guide provides instructions and includes templates that water suppliers can use for various types of public notices.

Download **The Public Notification Handbook** as a PDF file
<http://www.epa.gov/safewater/pws/pn/handbook.pdf>

Click on this link to open various Public Notification templates available from the USEPA:
[Microsoft Word and Word Perfect files of PN templates](#)

Water suppliers that serve the same people year-round (i.e. CWS) must also prepare annual water quality reports (consumer confidence reports) for their customers. The first reports were due by October 1999 and are now required each year by July 1. The reports tell where drinking water comes from, what's in it, and how you can help protect it.

Click this link to view a Consumer Confidence Report fact sheet:
<http://www.epa.gov/safewater/ccr/ccrfact.html>

Find out about your local drinking water (and see if your report is on-line)
<http://www.epa.gov/safewater/dwinfo.htm>

Or learn more about drinking water and health and how you can help protect your tap water.
<http://www.epa.gov/safewater/dwhealth.html>

To find out how frequently your drinking water is tested, contact your water system or state agency in charge of drinking water. Individuals may also inquire about their drinking water through the USEPA's Safe Drinking Water Information System (SDWIS/FED).

What is SDWIS/FED?

EPA maintains drinking water data in several databases. It uses this information to help manage environmental programs, and provides public access to the data through the Internet.

Safe Drinking Water Information System - Federal version (SDWIS/FED): SDWIS/FED is EPA's national regulatory compliance database for the drinking water program. It includes information on the nation's 170,000 public water systems and violations of drinking water regulations.

Website for SDWIS/FED basic information:

<http://www.epa.gov/safewater/sdwisfed/sdwis.htm>

SDWIS/FED is a database designed and implemented by EPA to meet its needs in the oversight and management of the Safe Drinking Water Act (SDWA). The database contains data submitted by states and EPA regions in conformance with reporting requirements established by statute, regulation, and guidance. A "sister" system, SDWIS/State (Safe Drinking Water Information System/State version), is a database designed by EPA and the states to help states (and EPA regions) run their drinking water programs and fulfill EPA reporting requirements.

This EPA web site provides a significant amount of historical as well as current and planned information concerning SDWIS/FED. For example, users may browse through or download the most current copies of various SDWIS/FED user documents, a variety of rule reporting guidance documents, general documents describing the operations of SDWIS/FED software. Users may also download copies of SDWIS/FED PC-based software, view current and proposed event schedules, become familiar with current SDWIS/FED news and events, and submit information and determine the status of problems encountered with SDWIS/FED software and reports.

Website for SDWIS/FED data retrievals:

http://www.epa.gov/enviro/html/sdwis/sdwis_query.html

About MS Excel PivotTables®

To use these tables you'll need MS Excel 97 or 2000. Detailed instructions are available for downloading, and summary instructions are included in each PivotTable®. No prior knowledge of spreadsheets is required.

PivotTables® are multidimensional databases (MDBs) that provide online analytical processing, or OLAP. They enable you to quickly summarize, cross-tabulate, and analyze large amounts of data. You can pivot, or rotate, rows and columns to see different summaries of the source data, filter the data, and drill-down to the details in the underlying source data.

For example, you can easily find the number of systems reporting a certain type of violation, in a certain year, for a certain state. To see the data in context, you can compare the results to those of other states, or to other states in that region. To look for trends you can build a graph to compare the results across several years. To investigate an unusually high or low result you can see if the problem stems from a certain contaminant or rule, within a certain system type, size

category, or primary source. Using the PivotTables described in these instructions, you could probably perform this analysis in less than 15 minutes.

Download Current SDWIS/FED Pivot Table
<http://www.epa.gov/safewater/data/00detailtable.zip>

Who operates the water treatment plant (Operator Training Issues)?

The Safe Drinking Water Act Amendments of 1996 directed EPA to:

- initiate a partnership with States, water systems, and the public to develop information on recommended operator certification requirements;
- issue guidelines specifying minimum standards for certification and recertification of the operators of community and nontransient, noncommunity public water systems;
- reimburse training and certification costs for operators of systems serving 3,300 persons or fewer, including per diem for unsalaried operators, who are required to undergo training as a result of the Federal requirement, through grants to the States.

In order to avoid a reduction of 20% of their Drinking Water State Revolving Fund (DWSRF) allocation, States are required to implement the EPA guidelines or an equivalent State program. Federal Facilities must comply with the state's drinking water regulations, including all State operator certification requirements. Even though the SDWA requires states to develop operator certification requirements for CWS and NTNCWS, states may choose to develop operator certification requirements for TNCWS.

This notice includes EPA's process and schedule for reviewing state operator certification programs and for making Drinking Water State Revolving Fund (DWSRF) withholding determinations; a clarification in the Operator Certification Guidelines with respect to the validation of certification exams; and the final allocation methodology for funding grants to states for the Operator Certification Expense Reimbursement Grants program.

Operator Certification Notice:
<http://www.epa.gov/safewater/opcert/finaladditions.pdf>

Operator Certification Manual
<http://www.epa.gov/OGWDW/opcert/opguide.pdf>

Where can operators go for technical training on a variety of water-related topics?

Established by the U.S. EPA Office of Ground Water and Drinking Water, the **Drinking Water Academy (DWA)** is a long-term training initiative whose primary goal is to expand EPA, State, and Tribal capabilities to implement the 1996 Amendments to the Safe Drinking Water Act (SDWA). In addition to providing classroom and Web-based training, the DWA will act as a resource for training materials pertaining to SDWA implementation. EPA formed the DWA to help EPA, States, and Indian Tribes enhance program capability to meet the public health protection objectives of the SDWA requirements. The 1996 SDWA Amendments created a number of new programmatic challenges for the States, Tribes, and the water systems they

regulate. The Amendments also provided new funding opportunities to meet these growing needs. DWA training will support EPA, State, and Tribal efforts to implement these new regulations.

The USEPA's Drinking Water Academy is a great resource for public water system operators. Contact the Academy through the link listed below.
<http://www.epa.gov/safewater/dwa.html>

Part 3. Managerial Assistance

How can a federally owned public water system improve plant performance on limited funds?

Capacity Development is the key! The Capacity Development Program addresses issues affecting all drinking water systems, especially public water systems serving populations less than 3,300. Capacity development refers to the technical, financial, and managerial capacity of a system to provide safe drinking water.

Click on the following link to learn about capacity development and how strategic planning can allow your system to continue to comply with new regulations:
<http://www.epa.gov/safewater/smallsys.html>

What information is available for managers of public water systems?

The USEPA's website "Public Water System Supervision Program" is a great resource for water system managers and operators. Through the Public Water System Supervision (PWSS) program, EPA implements and enforces drinking water standards to protect public health.

The USEPA PWSS website is listed below.

This site contains several USEPA policy letters and guidance documents for PWS operators and managers.
<http://www.epa.gov/safewater/wsg.html>

Managers can also access the Local Government Environmental Assistance Network (LGEAN). The LGEAN is a "first-stop shop" providing environmental management, planning, and regulatory information for local government elected and appointed officials, managers and staff.

LGEAN also enables local officials to interact with their peers and others on-line. In an effort to reach all local governments, LGEAN publishes a quarterly newsletter titled "SCAN" and manages a toll-free hotline service.

Connect to LGEAN through the following website:
<http://www.lgean.org/>

What tools are available to assess the performance and ability of a public water system to produce safe drinking water?

System assessments like compliance audits, comprehensive performance evaluations, sanitary surveys, etc. are all excellent evaluation tools to ensure your public water system is producing safe and reliable drinking water.

Following is a list of recent documents and resources available from the Federal Facilities Enforcement Office.

Available resources for Federal Facilities:

<http://es.epa.gov/oeca/fedfac/complian/fedfacs.pdf>

The Environmental Protection Agency (U.S. EPA) is responsible for ensuring that Federal Facilities and organizations comply with federal laws that protect the public health and the environment. U.S. EPA's Office of Enforcement and Compliance Assurance (OECA) has begun combining traditional enforcement activities with more innovative compliance approaches including the provision of compliance assistance to the general public. U.S. EPA's Office of Compliance Assistance was established in 1994 to focus on compliance assistance-related activities. U.S. EPA is also encouraging the development of self-assessment programs at individual facilities. Voluntary audit programs play an important role in helping companies meet their obligation to comply with environmental requirements. Such assessments can be a critical link, not only to improved compliance, but also to improvements in other aspects of an organization's performance. For example, environmental audits may identify pollution prevention opportunities that can substantially reduce an organization's operating costs. Environmental audits can also serve as an important diagnostic tool in evaluating a facility's overall environmental management system or EMS.

USEPA is developing 13 multi-media Environmental Audit Protocols to assist and encourage Federal Facilities and organizations to perform environmental audits and disclose violations in accordance with OECA's Audit and Small Business Policies. The audit protocols are also intended to promote consistency among regulated entities when conducting environmental audits and to ensure that audits are conducted in a thorough and comprehensive manner.

U.S. EPA has developed these audit protocols to provide regulated entities with specific guidance in periodically evaluating their compliance with federal environmental requirements.

The Audit Protocols are designed for use by individuals who are already familiar with the federal regulations but require an updated comprehensive regulatory checklist to conduct environmental **compliance** audits at regulated facilities. Typically, compliance audits are performed by persons who are not necessarily media or legal experts but instead possess a working knowledge of the regulations and a familiarity with the operations and practices of the facility to be audited. These two basic skills are a prerequisite for adequately identifying areas at the facility subject to environmental regulations and potential regulatory violations that subtract from the organizations environmental performance. With these basic skills, audits can be successfully conducted by

persons with various educational backgrounds (e.g., engineers, scientists, lawyers, business owners or operators). These protocols are not intended to be a substitute for the regulations nor are they intended to be instructional to an audience seeking a primer on the requirements under Title 40, however, they are designed to be sufficiently detailed to support the auditor's efforts.

Click the following link to download the current SDWA Audit Protocol
<http://es.epa.gov/oeca/main/strategy/sdwafina.pdf>

Improving Plant Performance

The following references address improving plant performance, protecting public health, and handling treatment plant wastes. They may be valuable resources for plant managers and operators alike.

Optimizing Water Treatment Plant Performance with the Composite Correction Program

EPA/625/8-90/017

This document summarizes the results of an ongoing project to evaluate the effectiveness of the Composite Correction Program approach to improving the performance of drinking water treatment facilities. This approach is a logical and systematic evaluation of a water treatment facility. It is made by a team with knowledge of drinking water treatment plant design, operation, and operational trouble shooting in order to identify the unique combination of factors limiting performance. The facility's capacity, operational performance, maintenance program, and administration are among the factors investigated.

Once the significant elements affecting a plant's performance have been identified, a program may be initiated to address these findings and thus assist the community in using its existing major unit processes to achieve the desired finished water quality.

The results of the 13 drinking water plant evaluations done to date are summarized, as are two corrective action programs. The case studies focus on the potential for the approach to improve the performance of small systems in meeting the turbidity removal requirements of the Surface Water Treatment Rule.

Order

<http://www.epa.gov/ttnrmrl/625/8-90/017.htm>

Optimizing Water Treatment Plant Performance Using the Composite Correction Program - 1998 Edition

EPA/625/6-91/027

The Composite Correction Program (CCP) has been developed and demonstrated as a method of optimizing surface water treatment plant performance to enhance public health protection from microbial pathogens. It focuses on effective use of the existing water treatment processes as barriers against passage of particles to the finished water. It consists of two components - a Comprehensive Performance Evaluation (CPE) followed by Comprehensive Technical Assistance (CTA). A CPE is conducted to identify the factors limiting treatment plant performance. A CTA is the performance improvement phase that can be implemented to address the performance limiting factors identified by the CPE. This handbook reflects the experience gained from over 70 CPEs and 9 CTAs. In addition, seven state pilot programs have provided the basis for the concept of area-wide application of the CCP, which is also described in the handbook. This handbook will be useful to treatment plant operations and administrative personnel, consultants, technical assistance providers and State and local officials interested in fostering water treatment plant performance improvement.

Comprehensive Correction Program Manual (CPE and CTA)

<http://www.epa.gov/ttnrmrl/Docs/625691027.pdf>

Guidance Manual for Conducting Sanitary Surveys of Public Water Systems; Surface Water and Ground Water Under the Direct Influence (GWUDI)

EPA 815-R-99-016 - April 1999

This manual provides guidance on how to conduct a sanitary survey of surface water and ground water under the direct influence (GWUDI) of surface water drinking water systems. A comprehensive sanitary survey is an important element in helping water systems protect public health. Sanitary surveys are carried out to evaluate: (1) the capability of a drinking water system to consistently and reliably deliver an adequate quality and quantity of safe drinking water to the consumer, and (2) the system's compliance with federal drinking water regulations. Much of the information generated by a sanitary survey helps identify existing and potential sanitary risks. This guidance manual will identify **assessment criteria** to be evaluated for sanitary risks. The manual also describes how to identify **significant deficiencies** that represent an imminent health risk and require immediate correction.

Click here to view the Sanitary Survey Guidance Manual

<http://www.epa.gov/safewater/mdbp/pdf/sansurv/sansurv.pdf>

Ground Water and Wellhead Protection

EPA/625/R-94/001

This document is for those responsible for delineating the boundaries of a wellhead protection area, identifying and evaluating potential contaminants, and identifying wellhead management options. It is divided into two parts: (I) Wellhead Protection Area (WHPA) Delineation and (II) Implementation of Wellhead Protection Areas.

Part I: Chapter 1 provides a general introduction to fundamentals of contaminant hydrogeology, followed by Chapter 2 (Potentiometric Maps) and 3 (Measurements and Estimation of Aquifer Parameters for Flow Equations), which cover essential hydrogeologic concepts for WHPA delineation. The last three chapters in Part I cover specific WHPA delineation methods: simple geometric and analytical methods, hydrogeologic mapping and computer modeling.

Part II: Chapter 7 provides an overview of the major steps in developing a wellhead protection program. Chapters 8 (Contaminant Identification and Risk Assessment) and 9 (Wellhead Protection Area Management) contain numerous tables, checklists, and worksheets for the steps that follow delineation of wellhead protection areas. Chapter 10 includes six case studies that illustrate delineation methods and implementation approaches for a variety of hydrogeologic settings.

Order this document:

<http://www.epa.gov/ttnrmrl/Handbks.htm>

Management of Water Treatment Plant Residuals

EPA/625/R-95/008

This handbook is the result of a cooperative effort among the American Society of Civil Engineers, the American Water Works Association, and EPA. It was developed over a four-year period with the assistance of many individuals working in the water supply and residuals management fields. It contains chapters on regulatory issues, characterization, processing, direct discharge to surface waters, discharge to wastewater treatment plants, landfilling, land application, brine waste disposal, radioactive waste disposal, economics, case studies, and waste minimization and reuse.

The handbook provides the consensus opinion/judgment of the cooperating organizations as to what constitutes best practice. It first gives meaningful guidance to federal, state, and local regulatory personnel in reviewing drinking water treatment plant plans for residuals management, and it secondly helps the utility to select an environmentally sound way for managing its residuals. The handbook strives to provide enough information for the user to do a feasibility design of the selected process(es). Design

examples, case studies, results of recent research in the field, and pollution prevention methods and technologies are included to the extent that information was available.

Order this Document:

<http://www.epa.gov/ttnrmrl/Handbks.htm>

Environmental Planning for Small communities: A Guide for Local Decision-Makers

EPA/625/R-94/009

EPA's Office of Research and Development in concert with the Office of Regional Operations and State/Local Relations announce the availability of a new publication for small communities.

Environmental Planning for Small Communities - A Guide for Local Decision-Makers presents a process for creating and implementing a community environmental plan. With a comprehensive environmental plan, local decision-makers can create an integrated approach to protecting the environment and meeting their community's needs. Planning ahead to solve environmental problems can especially help small communities that do not have the resources to meet all of the regulatory requirements at once. This approach will help the community prioritize solutions to environmental problems and develop a strategy for regulatory compliance.

Chapter 1 introduces the goals of creating a plan and putting it into action.

Chapter 2 describes how to build a planning team that can lead your community in creating its environmental plan.

Chapter 3 explains the importance of developing a shared vision, or framework, for your community's future.

Chapter 4 describes how to define your community's needs by determining the greatest problems facing your community's public health, environment, and quality of life; by determining which environmental regulations apply to your community; and by evaluating the effectiveness of your environmental facilities. Chapter 5 explains how to figure out which technologies and strategies can work in your community.

Chapter 6 discusses how to weigh your community's needs and possible ways of meeting those needs to set priorities for action.

Chapter 7 is about implementation: putting the plan into action, evaluating how well the plan works, and revising the plan as you need to.

This guide provides general information about environmental issues and offers suggestions for dealing with many of these issues. The reader will still have questions about what their community can and should do. Appendices are provided that include information on regulations, assessing risks, and where to turn for help. With minimal exposure in the form of large conference distribution, about 3,000 copies have been distributed in seven months. This demand is significant in that it is by word-of-mouth

only. The guide is being used as the primary resource document for a Region VIII pilot project in South Dakota for three small communities. These communities with the assistance of the regional Rural Community Assistance Project (RCAP) personnel are identifying and prioritizing their local environmental issues. Similar pilot projects are being conducted in Region X in the states of Idaho and Oregon.

The Decision-Makers Guide is also the cornerstone of several community-based environmental projects being proposed under the Environmental Technology Initiative and other Office of Research and Development initiatives.

Order

<http://www.epa.gov/ttnrmrl/625/R-94/009.htm>

References

All material presented in this document was drawn from local, state, and federal websites pertaining to drinking water.