

Pipeline



Small Community Wastewater Issues Explained to the Public

Source Water Protection for Local Officials

Water—instantly available at the turn of a tap—is something most of us take for granted. As long as it is clean, we can drink it, cook with it, wash with it, and play in it. However, having good drinking water requires work: We need to make efforts today to have clean water for tomorrow. This may be the most compelling reason to create a source water protection plan and put it to use.

Many human activities have an impact on our drinking water sources. As populations expand and more people move into rural areas, extra pressure is put on our water resources, but clean water and healthy ecosystems are vital in terms of quality of life for both humans and animals.

Your drinking water sources are valuable assets to you and the people you serve. Although water systems commonly consider treatment to be the best defense against contaminants, preventing contamination from reaching your treatment plant better protects the resource and the public, and in the long term will keep treatment costs in check.



As an official in a small community, one of your responsibilities is to provide for the health, safety, and welfare of its residents (including reliable drinking water). Some good reasons to protect your source water are:

- safe drinking water is central to our health, well-being, and economic viability, now and in the future,
- while public water systems have primary responsibility for water supply protection, communities are essential players in this effort,

- our water supplies are limited, and
- cleaner source water means lower treatment costs.

Source water can be polluted in different ways and each community will need to address unique conditions. But, U.S. Environmental Protection Agency (EPA) research shows that one of the biggest causes of pollution is contamination from septic systems that are not working properly, thereby allowing untreated wastewater to be released into the environment. This *Pipeline* focuses on wastewater issues related to source water protection.

Protecting Source Water Saves Money

As a small community official, providing drinking water to the community is often part of your job. By preventing water contamination in the first place, getting it back to pure and clear will be an easier and less expensive task. Contamination that doesn't reach your intake is contamination you will never have to filter or treat.



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Pipeline

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Some direct impacts of contamination include: the cost of obtaining a temporary drinking water source, the cost of investigating contamination sources, cleanup and remediation costs, increased monitoring costs, legal and consulting fees, and, if the situation deteriorates, the development of a new water source. Indirect costs of contamination include: loss of customer confidence in the local drinking water supply, devalued real estate, and potential lawsuits from consumption of contaminated water.

According to EPA, the cost of dealing with contaminated groundwater ranges from 30 to more than 200 times the cost of a wellhead protection program. Similar savings are possible for systems that use surface water as their source.

Onsite Systems Work if Maintained

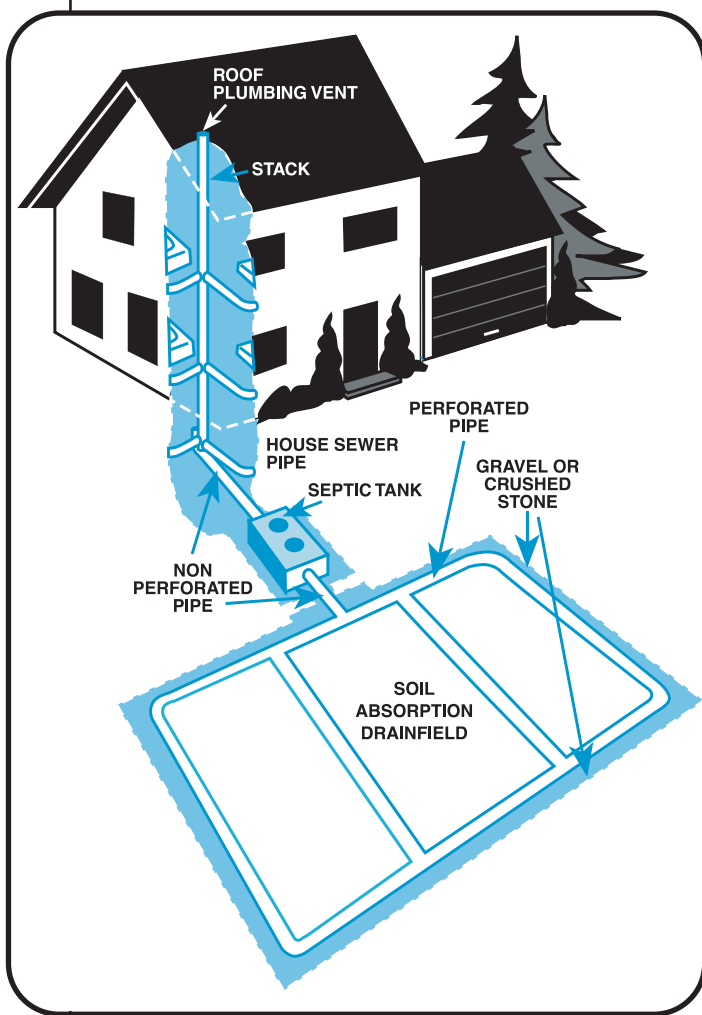
Onsite wastewater treatment systems collect, treat, and release about four billion gallons of effluent per day from an estimated 26 million homes nationwide. In predominantly rural states, onsite systems serve up to half of all households. While properly managed onsite systems are a viable long-term solution for wastewater disposal, failing onsite systems

can pose a serious threat to public health, drinking water resources, and aquatic life.

Failing septic systems are a significant source of groundwater contamination leading to waterborne disease outbreaks and other adverse health effects. The bacteria, protozoa, and viruses found in untreated wastewater can cause various gastrointestinal illnesses as well as hepatitis A.

A conventional gravity-based onsite treatment system, which consists of a pipe from the home, a septic tank, a drainfield, and the soil is essentially the responsibility of untrained and often uninformed system owners (see the illustration on page 3). Sadly, homeowners rarely consider these underground systems until raw sewage backs up into the house or breaks out of the system and surfaces in the yard. The performance of a wastewater system must not be taken for granted. All property owners that use onsite systems should have them pumped and inspected on a regular basis.

When a septic system is not properly maintained or fails to work properly, untreated domestic wastewater can reach your source water. In



state-by-state because each program is tailored to that individual state's water resources and drinking water priorities but all provide basic information about known and potential sources of pollutants to drinking water supplies unique to each water system.

States conducted a source water assessment for every community water system within their state, and provided them to the system. These assessments are available from the state source water protection program office or your local system.

(Be advised that many drinking water system personnel have not been trained about the source water assessments, and do not know how to interpret or use the assessment.)

A source water assessment is intended to provide basic information to public water suppliers and the general public regarding: 1) where their drinking water comes from, and 2) the degree to which it may be impacted by potential sources of contamination. Specifically, a source water assessment includes the following:

- The status of a public water system's source water protection plan.
- A description of the water source(s) used by the public water system.

- A determination of the susceptibility of the water sources to contamination.
- A list of contaminants of concern for the water source(s).

Each source water assessment report includes the following three key components:

1. A map showing the delineation, or outline, of public drinking water assessment areas,
2. An inventory of known and potential sources of contamination in the delineated areas, and
3. An assessment of the susceptibility of water supplies to the identified potential contamination sources.

With this information, public water suppliers are expected to develop measures to protect their water supply sources from human-made or catastrophic events. These measures are known as a source water protection plan (SWPP) and are voluntary at this time.

From Assessment to Protection

The source water assessment provides a listing of threats without necessarily being clear on what specific actions could (or should) be taken by your community. An SWPP is the first step in actually reducing the risk of contamination.

When devising your SWPP, consider these points:

- Target critical water resource protection areas for land conservation.
- Make sure your water resource protection goals

these cases, what was initially a homeowner responsibility becomes a community problem. For many communities, having a source water or wellhead protection plan and putting it to use is the best way to assure good water quality.

Your Source Water Protection Plan

The 1996 amendments to the Safe Drinking Water Act required that all states develop source water assessment programs to identify possible contamination of drinking water sources. States conducted source water assessments and produced studies or reports that provide basic information about the drinking water in each public water system. These source water assessments differ

New Hampshire Hamlet Links Protection and Education



Meredith, New Hampshire, is one of those New England towns seemingly designed to appear on a postcard. Nearby Lake Waukegan is not only the town's drinking water source but also the site of much happy summer recreation—swimming, boating, and fishing. So far, water quality is quite good, but wise heads predict potential contamination from the many summer cottages with aging septic systems situated on its banks.

“We knew we had the beginnings of a big problem,” says Angela Labrecque, town planner of this thriving resort town of 7,000. “So, we decided to be proactive and make sure the waterfront property owners’ realize their responsibility for keeping their septic systems working properly. Our message is that a healthy septic system protects property values, public and private beaches, the public water supply as well as aquatic life.”

are in agreement with your comprehensive town plan.

- To prevent the contamination of present and future drinking water from malfunctioning septic systems, consider establishing a comprehensive decentralized wastewater system management program. This might include routine inspections and pumping schedules for existing systems or more restricted siting, design, and construction regulations for new construction.
- Take advantage of available geographic information system (GIS) maps to inventory all septic systems in your source water protection area.
- Educate the public about land use practices to protect water supplies.
- Educate homeowners about the need for routine septic system management, including pumping and inspections.
- Explore programs to help homeowners pay for new systems, repairs, or upgrades.

systems are the main water pollution problem in many communities, correcting this situation through a source water protection plan is a logical first step.”

To ensure widespread acceptance and commitment to the protection plan, develop the plan with a group of people representing the diverse viewpoints and local expertise of the community. Working with a team of stakeholders is especially advisable when the protection area is large, extends into multiple political jurisdictions, or has a large number of potential contaminant sources. Possible team members include county sanitarians, water and wastewater operators, elected officials, local health officials, regulatory officials, county extension agents, watershed planning groups, service organizations, youth groups, senior citizen groups, and school personnel, as well as representatives from the community at-large.

Projects can range in size from very large and costly, to small, simple solutions costing next to nothing. Projects can address such varied issues as the effects of storm water runoff, fertilizer application, and above ground storage tanks on your source water to improving the management of onsite wastewater treatment systems. The existing source water assessment will direct your efforts.

For your SWPP to be a success, you can't rest on your laurels for too long after its implementation. The plan itself will need to be updated and potential trouble spots reviewed and re-assessed as time goes on.

“Nothing is more important than a clean, safe supply of water,” says Gerald Iwan Ph.D., executive director of the National Environmental Services Center.

“Good water is the key to a host of other issues, including quality of life, public health, environmental protection, and economic development. And, because failing wastewater



Dr. Gerald Iwan

Lake Waukewan, a 928-acre water body nestled in the Lakes Region in the middle of the state, provides the drinking water for most of downtown Meredith plus a

few nearby neighborhoods. Aware of the potential for contamination from unmanaged and possibly failing septic tanks, town officials are working with RCAP Solutions, with support from the SMART About Water program, and a team of volunteers in an effort to educate the owners of these potentially prob-

lematic systems. (See the sidebar at the right to learn more about the SMART About Water program.)

Meredith's SWPP identified malfunctioning septic tanks as a threat to the lake. To address this concern, the town's GIS analyst is working with volunteers from the Lake Waukewan Watershed Advisory committee to gather data and create a map of properties within 250 feet of the shore that use septic tanks for their wastewater treatment. They will then conduct a septic risk analysis to determine how real the threat of contamination is from these older onsite systems.

Local officials are especially concerned about the recent trend where property owners are renovating seasonal camps for year-round habitation, thereby putting more pressure on these at-risk treatment systems, some of which are more than 40 years old. The risk analysis



SMART about WATER

In 2008, NESC launched Smart About Water, an 18-month project in partnership with the Rural Community Assistance Partnership (RCAP) designed to assist small communities in their efforts to protect drinking water quality. Funded by the U.S. Environmental Protection Agency, the project will develop and provide training and technical assistance about source water and wellhead protection, and will focus on untreated wastewater from failing septic and sewer systems, the largest contributor to water quality degradation.

To learn more about this project, call NESC at (800) 624-8301 or visit the Smart About Water Web site at www.nesc.wvu.edu/SMART/.



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and Drinking Water



and mapping project will help the watershed committee work with the town's board of selectmen (similar to a town council) to generate a management plan.

To determine the current level of public interest about the hazards of untreated wastewater, local officials recently mailed a packet of materials to Meredith residents who live within the study area. The mailing consisted of an informational flyer and an EPA brochure, both describing septic systems and offering recommended operation and maintenance tips, along with a postcard with return postage from RCAP Solutions to request more information.

"This was a very simple and low-cost project," LaBrecque explains. "I generated the flyer here at my desk, the EPA brochure was free, and RCAP provided postage. We are looking forward to learning how concerned our citizenry is about this potential for contamination of our local waters. Our intent is do just that—make homeowners aware of what effect their septic tanks and poorly treated wastewater might have on our lake's water quality and what they can do to prevent it."

"This is the kind of small, almost 'home-grown', project we love," says Bob Morency, the local RCAP Solutions New Hampshire state lead. "It is such a pleasure to work on a problem ahead of time instead of trying to fix things after they become critical. If we can educate the owners of these high-risk systems on how to take care of them and help them understand the value of routine inspection

and pumping schedules, as well as a few simple do's and don'ts of good disposal practices, we can keep that source water clean and clear."

While saving money on treatment costs is a great reason to protect a community's source water, it's only part of the picture. As the people of Meredith, New Hampshire are learning, a dynamic SWPP can help maintain a good quality of life and provide the blueprint for a viable future.

Resources

The SMART About Water Web site (www.nesc.wvu.edu/SMART/) provides a number of articles, training materials, and other information related to source water and wellhead protection. If you have specific questions about these topics, call NESC's technical assistance unit toll free at (800) 624-8301 and select option "3."

EPA's source water protection site, located at <http://cfpub.epa.gov/safewater/sourcewater/index.cfm>, covers various aspects of source water and wellhead protection.

The New England Interstate Water Pollution Control Commission's source water protection guide *Water Today . . . Water Tomorrow? Protecting Drinking Water Sources in Your Community: Tools for Municipal Officials* can be downloaded from the NEIWPCC Web site at www.neiwpcc.org/sourcewater-outreach/.

Related Pipeline Issues

Related *Pipeline* newsletters are available online as PDFs at www.nesc.wvu.edu/pipeline.cfm or you may call our toll free number (800.624.8301) and order hard copies for \$0.40 each:

How to Keep Your Water "Well," Summer 2002, Product #SFPLNL30

Maintaining Your Septic System—A Guide for Homeowners, Fall 2004, Product #SFPLNL

Septic Systems and Source Water Protection: Homeowners Can Help Improve Community Water Quality, Summer 2008, Product #SFPLNL

Designed with the septic system owner in mind, the NESC Web site has dozens of *Pipelines* available to download at no charge.

Onsite System Management

For many small communities, the solution to their wastewater problems, now and in the future, is through onsite system management. Usually, these entities oversee the operation and maintenance of onsite systems so that future problems are prevented. When considering such a program, address:

- How to prevent septic systems from impacting drinking water sources.
- How to address future development so that onsite systems are sited, designed, operated, and maintained.
- How to change public and political attitudes toward the need for decentralized systems management.
- How to fund effective onsite management programs.

For more information about onsite wastewater management programs, visit the NESC Web site at www.nesc.wvu.edu.

Where's the Money?

As a local official, paying for projects is always a primary concern. Here is a list of organizations that fund source water and wellhead protection programs.

USDA's Rural Development Utilities Service (RDUS)

The Water and Environmental Programs (WEP) offer loans, grants, and loan guarantees to rural areas and to communities with a population of 10,000 or less. RDUS funding can be used for installing, repairing, improving, or expanding drinking water, wastewater, solid waste, and storm drainage facilities as well as for land acquisition, legal fees, engineering fees, capitalized interest, equipment, initial operating and maintenance costs, and project contingencies. Projects are administered locally by state and district Rural Development offices. RDUS Emergency Community Water Assistance Grants are provided after a natural disaster to extend, repair, and perform maintenance to water infrastructure. (See www.usda.gov/rus/ for more information.)

EPA's Drinking Water State Revolving Fund

EPA awards grants to states through the drinking water state revolving fund (DWSRF). In turn, the states offer low-interest loans to drinking water systems to improve infrastructure. New Hampshire, for example, provided loans to systems to purchase land or conservation easements to protect drinking water sources from contamination. In these cases, states must develop a process for ranking projects according to importance. Typically, the priority setting system requires that land be located within a delineated source water or wellhead protection area. Each state determines how loans are repaid. (More information can be found at www.epa.gov/safewater/dwsrf.html.)

EPA's Clean Water Act (CWA) Fund

Annually, the clean water state revolving fund (CWSRF) provides more than \$5 billion in water quality projects through low-interest or no-interest loans. It can provide 100 percent of the project cost with a repayment schedule of up to 20 years. The program provides assistance to communities, water systems, and other organizations, such as land conservation associations, for projects that protect source water and enhance water quality. In 2007, 77 percent of all loans were made to communities with populations less than 10,000. Each state decides how loans are repaid; some examples are recreational fees for fishing licenses or entrance fees, drinking water fees, wastewater user charges, fees paid by developers, and donations or dues made to nonprofit groups. Repaid money is rolled back into the CWSRF. (Visit www.epa.gov/owmitnet/cwfinance/cwsrf/ for more information.)

EPA's Non-Point (319) Source Implementation Grants

These grants are awarded to states and tribes for implementing nonpoint source projects and programs, including best management practices installation for animal wastes, pesticide and fertilizer control, stream bank restoration, and lake protection/restoration. Grantees, except for tribes, are required to provide 40 percent of the total cost of the project. (For more information, see www.epa.gov/owow/nps/cwact.html.)

EPA's Five Star Restoration Grant Program This program provides modest challenge grants (from \$5,000 to \$20,000) to community-based groups for restoring wetlands and streams. The National Association of Counties, the National Fish and Wildlife Foundation, and the Wildlife Habitat Council have joined together with EPA for this effort. Funding for the program is provided by EPA's Office of Wetlands, Oceans and Watersheds, and by the National Marine Fisheries Service's Community-based Restoration Program for selected projects in coastal areas. More than 300 projects have been funded to date. (To learn more, go to www.epa.gov/owow/wetlands/restore/5star/.)

For more information about funding water and wastewater projects, call Robin Anderson, program associate with the National Environmental Services Center, at (800) 624-8301 ext. 5562.

Reprint Info

Readers are encouraged to reprint *Pipeline* articles in local newspapers or include them in flyers, newsletters, or educational presentations. Please include the name and phone number of the National Environmental Service Center (NESC) on the reprinted information and send us a copy for our files. If you have any questions about reprinting articles or about any of the topics discussed in this newsletter, please contact the NESC at (800) 624-8301.

RELATED NESC PRODUCTS

Community Onsite Options and Approaches to Onsite Management Videos on DVD

National Environmental Services Center

These videos discuss the implementation of onsite management systems (OMS) in five communities. Wastewater professionals from each of the communities explain why their community instituted an OMS, the approach they took, how it is administered, and its benefits. Ongoing, competent maintenance, monitoring, and management are emphasized, as well as discussion of advanced treatment systems, such as aerobic treatment units, sand filters, and cluster systems.

DPDVMG56/DVD (2003) \$20.00

Community Self Assessment

NESC/National Onsite Demonstration Program

The community self-assessment process helps a community collect information that can serve as a basis for local wastewater management strategies. The objective of this interactive CD-ROM is to provide information to community leaders, local officials, and other interested parties to help them understand the community's existing situation. The primary audiences for this tool are community environmental and public health officials, selected community professionals, and other related community professionals and associated staff possessing the appropriate expertise and knowledge to complete the assessment process.

DPCDM03/CD-ROM (2002) \$10.00

Financing Your Community's Onsite Management System

NESC/National Onsite Demonstration Program

This interactive CD-ROM provides information about funding streams that maybe available to your community through various agencies and organizations to finance your community onsite wastewater management efforts.

DPCDFN01/CD-ROM (2002) \$10.00



Septic Systems, Soils, and Groundwater Protection

Cornell Cooperative Extension

This booklet discusses basic background information about septic systems and their environmental effects. The characteristics of raw sewage and septic tank effluent are discussed in detail along with potential public or environmental health concerns.

WWBLGN261/Booklet: 16 pp. (N/A) \$2.45

How to Order NESC Products

To place an order, call us toll free at (800) 624-8301 or (304) 293-4191. or send email to info@mail.nesc.wvu.edu. Be prepared to give the item number and title of the product you wish to order. Shipping charges will apply.



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