

Plan to Protect Drinking Water

WHY ARE SOURCE WATER PROTECTION PLANS IMPORTANT?

This article was developed as part of The Water We Drink, a joint effort by the Rural Community Assistance Partnership (RCAP) and the National Environmental Services Center (NESC) to provide information and increase awareness about crucial water issues, especially for rural and small community decision-makers and water and wastewater board members. The article provides a brief overview of water pollution and water use problems in the U.S., discusses how we currently go about managing these problems, and poses some considerations for moving ahead.

Water is critical to life. Ensuring that our drinking water sources are protected—now and in the future—not only means safe drinking water for us, but for our children and grandchildren.

Source water protection refers to the concept of protecting sources of drinking water, including water from lakes, rivers, and underground aquifers, from over-use and contamination. Source water protection plans can help drinking water systems and the communities they serve keep our drinking water safe. But that's not the only reason for developing these plans. Consider the value of a dependable supply of clean, safe drinking water to the local economy, development opportunities, and quality of life. Or the importance of saving money on expensive water treatment costs, especially savings that can be realized from pollution prevention.

Potential Threats to Local Water Sources

Any substance that goes down the drain, runs off of urban or agricultural landscapes, or is buried or stored underground, could eventually end up in drinking water sources. A variety of activities or land uses could pose a threat to your local waters, including agricultural practices, logging, mining, military bases, active and abandoned industrial or commercial facilities, hazardous waste sites, solid waste landfills (especially older ones), oil and gas operations, construction sites, storm water runoff from urban areas, failing septic systems and deteriorating sewer mains and wastewater treatment plant discharge, salt water intrusion (contamination) of coastal aquifers, forms of transportation that may create avenues for spills (railroads along rivers or creeks, storm water discharge from interstate highways, barges on rivers), underground tanks or wells that store waste disposal, and lawn care practices. The list could go on.

Another concern is the unsustainable use of groundwater from our aquifers. Over the past 75 years, as a result of improved energy sources and technologies for pumping groundwater to the surface, this resource has become an important supply of water in

the U.S. Approximately one-half of the population relies on groundwater for drinking water, and up to three-fourths of groundwater withdrawals are used for agricultural irrigation. Although groundwater supplies in the U.S. are vast, this water is essentially being pumped out of the ground faster than nature can replenish it. According to the U.S. Geological Survey, while the extent of depletion in groundwater levels due to increased pumping is not regularly monitored or analyzed, available information indicates that underground water-level declines in the U.S. are widespread. The consequences of these declines include increased pumping costs, water quality deterioration, reduced amount of water in streams and lakes, and land subsidence.

Current Measures That Protect Drinking Water Sources

According to Robert Glennon in his book *Groundwater Follies: Groundwater Pumping and the Fate of America's Fresh Waters*, groundwater withdrawal is regulated in different ways in different states. Many western states use the prior appropriation doctrine, which protects the rights of senior water users (those who were first to use the water). This doctrine generally means that water rights are not linked to land ownership, and senior users can continue to use it for beneficial purposes; subsequent users may use the remaining water only if it does not interfere with senior users' rights. Some western states and most eastern states rely on the reasonable use doctrine, which allows pumping for any beneficial use but does not protect senior pumpers from newer pumpers. Some states rely on the English rule of absolute ownership, which allows property owners to pump unlimited amounts from beneath their property. Two states require that all landowners above the aquifer share the water. Although some states require groundwater pumpers to obtain a permit from their state agency, the general outcome of these practices is that most states regularly allow new

wells to be developed.

For surface water use, two water rights doctrines generally apply. Most western states rely on the prior appropriation doctrine; most eastern states rely on the reasonable use doctrine, which allows property owners adjacent to the water body to make reasonable use of it. These rules can generate controversy and legal challenges, especially in times of drought or limited water availability.

Various laws are in place to manage the impacts of water pollution. For example, laws regulate the burial and monitoring of underground storage tanks (UST) that contain fuels, chemicals, or other hazardous substances that can leak out and pose a threat to groundwater. There are 640,000 USTs subject to regulation; many others are not. Other laws govern the injection of hazardous and nonhazardous wastes, including industrial, oil and gas production, radiological, and other waste, into deep or shallow wells or natural underground formations. Underground injection is used to dispose of more than 50 percent of these liquids generated in the U.S. While most underground injection wells are considered to be safe, some types of shallow wells that hold motor vehicle wastes or stormwater drainage, for example, are some of the most overlooked sources of groundwater contamination. An estimated 1.5 million of these wells are in existence.

Great strides have been made to curb the level of pollution discharged into U.S. waterways from point sources. Point source pollution is wastewater from sewage treatment plants, power plants, manufacturing or other facilities that is treated and discharged directly into a water body through one point, such as through a pipe or ditch. Being able to trace the source of contamination helps to determine ways to reduce the contaminant's concentration or eliminate it as a problem. Point source pollution is regulated by the Clean Water Act, the federal law that sets contaminant and discharge limits for specific waterways.

Contaminants also enter water bodies through dispersed, or nonpoint sources. Nonpoint source pollution occurs when water that flows over the landscape or through the soil as a result of rain, snow melt, or irrigation, picks up natural or human-made pollutants and makes it way into surface waters (rivers, lakes, streams) or underground aquifers. Pollutants can include chemicals, pesticides, sediment, animal waste, and in the case of faulty septic or sewer systems, human waste. This nonpoint source pollution process can occur in agricultural, urban, or forested areas, and on public or private property.

According to the U.S. Environmental Protection Agency, nonpoint source pollution is the primary cause of water quality problems, and is harmful to drinking water sources, recreation, fisheries, and wildlife. Water that runs off agricultural land is considered to be the number one source of water quality problems in the rivers and lakes assessed by federal and state governments. Faulty septic and other sewer systems have been identified as a leading cause of water pollution in small communities and rural areas.

Because there are so many types of nonpoint sources of pollution from so many dispersed locations across the country, it is considered to be difficult to regulate. For the most part, the Clean Water Act leaves the regulation of nonpoint pollution sources up to each state. While some states have adopted regulations, many states use other incentives to curb this pollution, such as facilitating local watershed and land use planning efforts, encouraging the use of best management practices (a wide variety of strategies, such as planting vegetation along a waterway to help remove or filter pollutants flowing from adjacent land), providing technical assistance, and sharing costs with local partners for implementing prevention and control measures.

Water Quality and Water Use Challenges

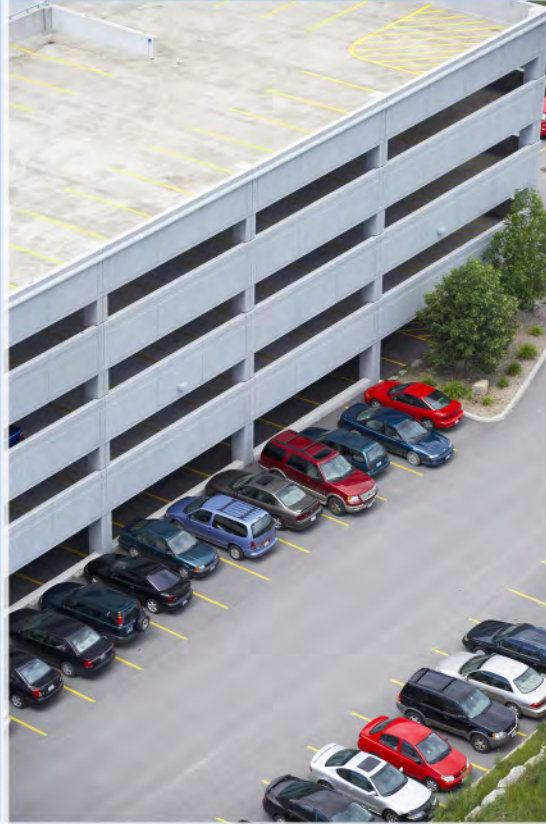
To be safe, public drinking water systems, which are regulated by another federal law, the Safe Drinking Water Act, are required to treat the water they draw from local water sources. The drinking water they produce for public consumption must not include contaminant levels higher than what the law allows, and public water systems in the U.S. have been very successful in protecting public health and providing safe water to drink.

But given the fact that federal and state regulations allow certain levels of pollution to enter our water sources in the first place, local leaders and drinking water system personnel may ask "Are our current water protection strategies adequate?" Or, "What costs are imposed on the drinking water utility and the community to treat the water and remove contaminants?"

The issues surrounding current water use and water pollution practices are complex, but in the end, there are important questions at stake. Is it best to prevent or seek to control water pollution? Who has the right to pollute? Who is responsible for cleaning it up? To what extent do citizens have the right to a reliable supply of clean and safe water? At what point do economic, agricultural, or private property interests infringe on public health or water availability? What is the appropriate balance for protecting everyone's rights? And finally, where do local governments and their public drinking water systems stand and what options are available at the local level?

Source Water Protection Planning Can Help

Source water protection planning involves a series of steps that can help a community, group of communities, or everyone in a watershed work toward preventing or limiting threats to the water sources. A watershed is an area of land that drains into a river, river system, or other body of water such as a lake.



Watersheds and the water flowing through them may cross many boundaries such as city, county, state, and even national borders. Planning on a watershed level, rather than for a single community or body of water, has the potential to be more effective in protecting waterways. It's not surprising that the most successful source water protection planning requires the combined efforts of many partners, such as local leaders; economic, energy, and agricultural interests; public and private water systems; resource



managers; citizen groups; and the public. Local watershed organizations may already be working on source water protection and may have a lot of information available.

Initial planning steps include identifying the watershed or source water protection area; identifying contamination or threats to water availability; and evaluating how susceptible the water sources are to these threats. State drinking water agencies have already identified some of this information for every public drinking water system in their state. It is available in a document called a source water assessment. This assessment may need to be updated and developed in more detail, but it can be a good starting place.

The next steps include developing action plans detailing what will be done, when, and by whom; determining management measures to prevent, reduce, or eliminate threats (measures can include zoning, developing local ordinances, purchasing land near the water source, and public education); and identifying alternative sources of water in case of emergencies. There are many resources available to help with watershed or source water protection planning, and you may want to consider working with an outside facilitator, such as a technical assistance provider from the Rural Community Assistance Partnership or your state drinking water agency.

Developing a source water or watershed protection plan is a voluntary activity that requires time, effort, resources, and local leadership. Important payoffs can include reduced costs for drinking water treatment, more reliable water supplies, and increased public health, quality of life, economic opportunities, and environmental protection. Ultimately, ensuring we have safe and clean water to drink is everyone's responsibility. However, local decisions are critical for protecting water sources from pollution and overuse. Investigating the situation in your community, state, or watershed; bringing all parties to the table; discussing all perspectives; setting priorities; and enacting workable solutions at the local level may offer the best chance to prevent contamination and ensure safer and more sustainable water sources for the long term.



Resources for Source Water or Watershed Protection

Be sure to check with your state's drinking water agency, technical assistance providers, or local watershed groups for information and state-specific resources.

Groundwater Foundation

Web site. Nonprofit organization dedicated to educating people and inspiring action to ensure sustainable, clean groundwater for future generations.

<http://www.groundwater.org/>

How-To Manual: Update and Enhance Your Local Source Water Protection Assessments

(September 2006). U.S. Environmental Protection Agency.

http://epa.gov/safewater/sourcewater/pubs/update_enhance_assessments.pdf

National NEMO Network (Nonpoint Education for Municipal Officials) Web site.

Originally developed at the University of Connecticut, now a confederation of 32 educational programs in 31 states, with the goal of protecting natural resources through better land use and land use planning.

<http://nemonet.uconn.edu/>

SMART About Water Web site. National Environmental Services Center (NESC). SMART About Water is a collaborative project of NESC and the Rural Community Assistance Partnership. The Web site provides a multitude of resources for protecting source water, especially from untreated wastewater from failing septic and sewer systems.
<http://www.nesc.wvu.edu:16080/smart/index.cfm>

Source Water Protection Web site. U.S. Environmental Protection Agency. Provides information and resources about ways that local leaders and organizations can plan for and implement source water protection.
<http://cfpub.epa.gov/safewater/sourcewater/sourcewater.cfm?action=Protection&view=general>

Source Water Protection Case Studies Web site. U.S. Environmental Protection Agency. Searchable list of successful source water protection programs from across the country.
http://cfpub.epa.gov/safewater/sourcewater/sourcewater.cfm?action=Case_Studies

Source Water Stewardship: A Guide to Protecting and Restoring Your Drinking Water (2003). The Clean Water Network, Clean Water Fund, and the Campaign for Safe and Affordable Drinking Water.
<http://www.cleanwaterfund.org/files/publications/national/source-water-stewardship-guide.pdf>

The Water We Drink Web site. The Rural Community Assistance Partnership and the National Environmental Services Center. Offers free educational resources and an article about proper disposal of pharmaceuticals and personal care products.
<http://www.nesc.wvu.edu/water-wedrink/>

Unmeasured Danger: America's Hidden Groundwater Crisis (July 2009). Food and Water Watch.
<http://www.foodandwaterwatch.org/water/unmeasured-danger-america's-hidden-groundwater-crisis/>

Water Today... Water Tomorrow? Protecting Drinking Water Sources in Your Community: Tools for Municipal Officials. New England Interstate Water Pollution Control Commission.
<http://www.neiwpcc.org/source-wateroutreach/>

Watersheds Web site. U.S. Environmental Protection Agency. Provides information, resources, and links for watershed protection activities.
<http://water.epa.gov/type/watersheds/index.cfm>

Your Water. Your Decision. Web site that offers a customizable guide and other tools and information about source water protection to spur action among local leaders.
<http://www.yourwateryourdecision.org/home>

References

Estimated Withdrawals from Principal Aquifers in the United States, 2000 (July 2005). U.S. Geological Survey, Circular 1279. M.A. Maupin, N.L. Barber.
<http://pubs.usgs.gov/circ/2005/1279/>

Ground-Water Availability in the United States (2008). U.S. Geological Survey, Circular 1323. T.E. Reilly, K.F. Dennehy, W.M. Alley, W.L. Cunningham.
http://pubs.usgs.gov/circ/1323/pdf/Circular1323_book_508.pdf

Groundwater Report to the Nation: A Call to Action (2007). Ground Water Protection Council.
<http://www.gupc.org/calltoaction/>

Polluted Runoff (Nonpoint Source Pollution) Web site. U.S. Environmental Protection Agency.
<http://www.epa.gov/owow/keep/nps/wbatis.html>

Polluted Runoff (Nonpoint Source: Introduction) Web site. U.S. Environmental Protection Agency.
<http://water.epa.gov/polwaste/nps/nonpoint1.cfm>

Protecting Water Quality from Agricultural Runoff (March 2005). U.S. Environmental Protection Agency.
http://www.epa.gov/owow/NPS/Ag_Runoff_Fact_Sheet.pdf

National Characteristics of Drinking Water Systems Serving Populations Under 10,000 (July 1999). U.S. Environmental Protection Agency.
<http://www.epa.gov/ogwdw000/ndwac/smallsys/smallsys.pdf>

Source Water Protection Tech Brief (2008). National Environmental Services Center.
http://www.nesc.wvu.edu/pdf/dw/publications/ontap/2009_tb/sourcewater_DWFSOM125.pdf

Water Follies: Groundwater Pumping and the Fate of America's Fresh Waters (2002). Robert Glennon. Island Press. Washington, DC.



Sandra Fallon is a training specialist with the National Environmental Services Center at West Virginia University.