

Protecting Private Drinking Water Supplies: An Introduction

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This NebGuide, one of six in a series designed to help rural families protect their drinking water, describes the relationship of groundwater to drinking water and how to use these publications to assess contamination risks and develop appropriate responses.

Groundwater is a “hidden” resource, stored in the spaces or voids, called pore spaces, between particles of sand, gravel, soil, and rock. A layer of sand, gravel, soil, or rock that is saturated, meaning all pore spaces are filled with water, and able to transmit groundwater in sufficient quantities to meet needs is known as an aquifer.

Groundwater provides nearly all the drinking water in rural Nebraska. It is essential that the quality of groundwater, along with that of surface water resources, be protected. It is especially important to protect the drinking water supply on your acreage, farm, or ranch.

The layers of soil, sand, and gravel above the aquifer provide some, but not complete, protection from contamination. Your groundwater can be contaminated when pollution sources are not managed carefully. Identifying high-risk activities can help you determine where to use limited financial resources to address potential problems. By increasing knowledge and using careful management, you can greatly reduce the risk of water contamination, often with little or no cost or effort.

Evaluating the activities around your acreage or farmstead, and the location of potential contamination sources in relation to your drinking water well is necessary to determine the potential risk to your water supply. The design and construction of structures and their location relative to your drinking water well, the

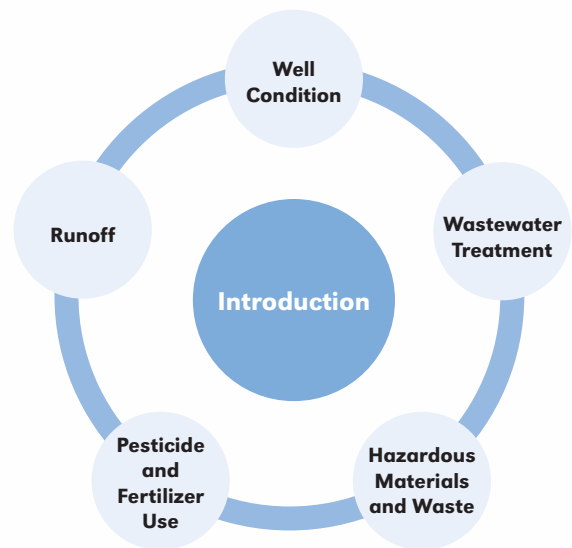


Figure 1. This NebGuide is one of six in a series designed to help rural families protect their drinking water supplies. All are available on the UNL Extension Publications website under the topic Water Management.

condition of the well, and the storage and disposal of potential contaminants are important factors in assessing risks. By identifying contamination risks around your acreage or farmstead and taking action to reduce the risks, you can better protect the health of your family, prevent potential liability from water contamination, and avoid difficulties in selling your property.

Outline of NebGuide Series Topics

This series of six NebGuides (*Figure 1*) will help you evaluate how your acreage or farmstead activities might be affecting your drinking water and other water supplies. NebGuide topics include management of the

well, wastewater treatment system, runoff, pesticides and fertilizers, and hazardous materials and waste. Some of the information will be reassuring, and some may encourage you to modify certain practices. Either way, you will have the information you need to do the best possible job of protecting the water supply your family depends on for drinking water.

Your drinking water well should provide safe water. If wells are poorly located, constructed, or maintained, they can allow bacteria, nitrate, or other pollutants to contaminate the groundwater serving as your drinking water source. A contaminated well can pose a serious health threat to water users. The NebGuide *Protecting Private Drinking Water Supplies: Water Well Location, Construction, Condition, and Management* (G2050) will help you evaluate risk factors associated with the location, construction, condition, and maintenance of your well.

Most acreages, farms, and ranches use septic systems or other onsite wastewater treatment systems for treating wastewater and returning it to the environment. If systems are poorly designed, located, constructed, or maintained, they can contribute to groundwater contamination. Potential contaminants in household wastewater include disease-causing bacteria, infectious viruses, household chemicals, and excess nutrients, such as nitrate. The NebGuide *Protecting Private Drinking Water Supplies: Household Wastewater (Sewage) Treatment System Management* (G2051) will help you evaluate the type of onsite wastewater treatment system in use, the quality and quantity of wastewater generated, the return of treated wastewater to the water cycle, potential threats to your well, and the disposal of septage.

Runoff is the water from irrigation, rain, or melting snow that moves across your property. As it flows, runoff can collect and transport soil, pet waste, livestock manure, salt, pesticides, fertilizer, oil and grease, leaves, litter, and many other potential pollutants. Polluted runoff can flow down a poorly sealed well or an unplugged well where it can contaminate groundwater. In areas with porous, sandy soils, pollutants carried by runoff

may percolate through the soil into groundwater. The NebGuide *Protecting Private Drinking Water Supplies: Runoff Management* (G2052) will help you evaluate contaminants present or generated on your property, as well as landscape management practices that could affect runoff quality and quantity.

Pesticides (herbicides, insecticides, fungicides, and rodenticides) and fertilizers (nitrate and phosphorus) play an important role in the management of your rural property. If pesticides and fertilizers are not stored, handled, and applied correctly, they can seep through soil into groundwater. The NebGuide *Protecting Private Drinking Water Supplies: Pesticide and Fertilizer Storage and Handling* (G2054) will help you evaluate storage, use, and disposal of pesticides and fertilizers.

Consider the variety of products used in households and on your rural property — paints, solvents, oils, cleaners, wood preservatives, batteries, and adhesives. Also, consider the amount of these products that goes unused or is thrown away. Minimizing the amounts of these substances used on your property, along with practicing proper disposal procedures can protect groundwater, the source of your drinking water. The NebGuide *Protecting Private Drinking Water Supplies: Hazardous Materials and Waste Management* (G2053) will help you evaluate your management of products such as ash, building/wood maintenance products, vehicle/metal equipment maintenance products, and wood-preserving products.

Assess and Plan to Reduce Contamination Risks

Return to this NebGuide after reading each of the other NebGuides in this series and complete the worksheet. List activities or structures that you identified as being high risk for causing contamination. For each entry, identify a response option to reduce the risk. Keep this list handy and refer to it often. It provides important information to help you protect the groundwater that provides drinking water for you and your family.

Worksheet to Assess Risks to Your Drinking Water Supply and Options for Reducing Those Risks

You can save this worksheet to your home computer and use Adobe® Reader to add information relative to your situation, using the other publications in this series to help you complete a risk assessment. To add your information, move your cursor to an area and type. The worksheet can then be saved to your computer. You can also print a blank copy and fill it in by hand. After reviewing each publication in the series, you can add more information to the worksheet. Reference the completed worksheet as you take steps to reduce any risks to your drinking water supply. To access other NebGuides in this series, visit the University of Nebraska–Lincoln Extension Publications website at extension.unl.edu/publications. (Download a free Adobe® Reader from Adobe.com.)

<i>NebGuide</i>	<i>Risk Identified</i>	<i>Options to Reduce Risk</i>
Well Condition (G2050)		
Wastewater Treatment (G2051)		
Runoff (G2052)		

<i>NebGuide</i>	<i>Risk Identified</i>	<i>Options to Reduce Risk</i>
Pesticide and Fertilizer Use (G2054)		
Hazardous Materials and Waste (G2053)		

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