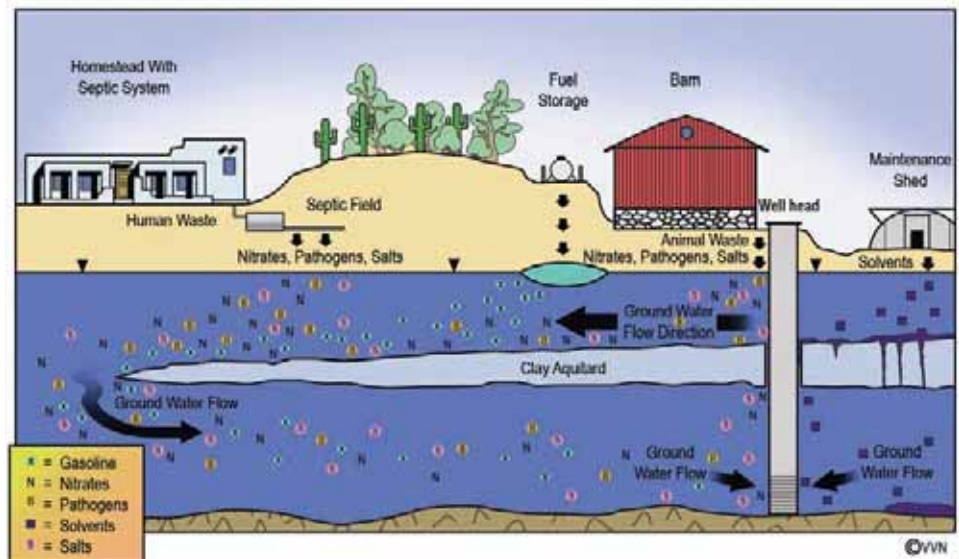


# A Well Owner's Guide for Arizonans

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This figure from the well owner's guide shows a cross-section of a well, and sources and types of contaminants found in aquifers. Protecting a water supply includes identifying contaminants (see box insert) and removing potential sources of contamination. Well head protection is important since wells are direct conduits to groundwater (GW). Other common sources of GW contaminants are intercepting seepage from the septic field, a leaky fuel storage tank, and chemicals stored in a maintenance shed. When the pump is on, the change in groundwater flow direction pulls the contaminants into the well. (Source: *Arizona Well Owner's Guide to Water Supply*. University of Arizona, College of Agricultural and Life Sciences, Arizona Cooperative Extension publication #AZ1485).



**In Arizona the number of new domestic wells now exceeds 3,000 each year, with an estimated 93,000 wells across the State. These private wells provide water supply to an estimated 120,000 households, or about 5% of the state's population.**

The University of Arizona Cooperative Extension is publishing the *Arizona Well Owner's Guide To Water Supply* booklet (publication # AZ1485, 2009) and will be sponsoring a series of workshops to assist the well owner in the maintenance of their water supply, encouraging routine testing and monitoring the quality of water.

During the development of this guide, the authors strived to communicate to the reader (private well owner) three major points. First, aquifers are a shared (common) source of water. Second, wells must be properly constructed, maintained and protected (in particular at the well head) to insure a safe water supply. Thirdly, well owners are responsible for the quality and safety of their well water and should therefore test the water quality frequently. The well owner's guide provides context for these points with background information on Arizona geology, water sources, water quality standards, and water treatment options.

Included in the guide is an overview of the state's water resources and how Arizona's major cities use these supplies. Descriptions of the three regions of the state with similar geology and climate (physiographic provinces) are provided. In addition, Arizona's aquifer materials, types, and their water flow (transmissivity) characteristics are described.

Common naturally occurring constituents that may be toxic to human health in elevated concentrations are discussed, including: arsenic; radioactive elements; nitrate; pathogenic organisms; and, fluoride. Examples of human-made (anthropogenic) contaminants are provided, including new, emerging chemical and biological water contaminants.

The importance of appropriate maintenance of septic systems and general landscape housekeeping is also discussed, as many water well contaminants originate near the well head. The transport of contaminants and the vulnerability of private wells to contamination are explained at a technical level comfortable to the lay person. Routine well sampling is emphasized, with specific analysis recommended based on well location in the state.

Although these private wells are exempt from regulation in Arizona, a discussion of primary and secondary regulatory maximum contaminant levels (MCLs) is included in the guide to prepare the well owner to select appropriate water treatment options.

This spiral-bound, 76-page guide was published in full color and, contains numerous graphics, a glossary of technical terms, and an extensive list of websites of interest. The appendix section contains tables of the National Drinking Water Standards, water problems, symptoms, possible sources, and water treatment options.

Arizona well owners are encouraged to obtain a copy of this guide. Electronic (pdf format) and hard copies can be downloaded or purchased from the following University of Arizona, College of Agriculture and Life Sciences websites:

Publications Distribution Center: <http://cals.arizona.edu/extension/publications.html>

The Water Resources Research Center: <http://cals.arizona.edu/AZWATER/>