

Well·A·Syst

Wellhead Assessment System



A voluntary program to assist private drinking water well users evaluate and modify practices to protect their drinking water supply.

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Colorado's Well Assessment System

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TO THE PRIVATE WELL OWNERS IN COLORADO:

It is estimated that in Colorado 500,000 residents depend on groundwater for drinking purposes, and approximately 20% of those residents are on private wells. As the population continues its migration to rural areas, more people are finding they no longer receive a bill from the municipal water utility; instead the water from the tap comes from a well on their own property, which means the quality of their water is now their direct responsibility.

Most ground water contamination results from human activities. These sources of potential pollution include agricultural activities and failing septic tanks (nitrates and bacteria); mining (sulfates); and abandoned hazardous waste sites and landfills (organic and inorganic chemicals). You can help protect your water supply by learning to recognize potential sources of pollution and working to reduce or eliminate them. The *Well*A*Syst* program is designed to help you do this.

*Well*A*Syst* in Colorado is based on voluntary pollution prevention and is designed to:

- create an awareness of potential risks to water quality on your property;
- encourage voluntary solutions to alleviate pollution risks; and
- promote management practices to protect and enhance your drinking water supply.

The assessments are completely voluntary and confidential. The well owner decides whether to go through the worksheets, and whether to share the results with anyone. No government agency or consultant will be collecting the results for enforcement actions or sales pitches. At the same time, however, well owners are provided valuable information, and are able to make informed decisions to protect not only their drinking water, but the health and financial security of their families as well.

The project incorporates three levels of information, beginning with this series of worksheets, which are designed to be a "first look" at your individual situation. The worksheets provide a set of questions intended to get you thinking about your drinking water well, where it is located relative to the other facilities on your property, and how your current activities may impact its quality. After you have reviewed the questions in these worksheets, you may find your well is already protected to the best extent possible. More than likely, however, you will conclude that small changes could increase the level of protection you can provide to your drinking water.

The worksheets give you an idea of who to contact for more information, and provide phone numbers for agencies and organizations that can help you. The contacts will often be able to give you the name of a person in your own community who can provide you with information in managing the activities around your well, information usually geared to your specific needs. Many of the agencies have detailed booklets or brochures that cover several of the same topics as the *Well*A*Syst* worksheets.

The next level of information in *Well*A*Syst* are reprints from the workbook *Home*A*Syst: An Environmental Risk-Assessment Guide for the Home*. The chapters are *Site Assessment*; *Drinking Water Well Management*; *Household Wastewater, Septic Systems and Other Treatment Methods*; and *Managing Household Waste*. These chapters go into considerable detail in describing what to look for, how to develop, and how to implement a plan of action to protect your drinking water well.

The third level is for those individuals who want an entire home environmental assessment package in addition to water quality, including things like indoor air quality and energy conservation; for that, the entire *Home*A*Syst* workbook will be available for purchase at a modest cost.

Acknowledgments

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Illustrations used in this publication are taken from *Protecting Your Resources Through a Farm and Home Assessment* and from *Home*A*Syst: An Environmental Risk Assessment Guide for the Home*, developed by the National Farm*A*Syst/Home*A*Syst Program, in cooperation with NRAES, the Northeast Regional Agricultural Engineering Service. Permission to use these materials was granted by the National Farm*A*Syst/Home*A*Syst Office.

*Well*A*Syst* and all other programs of the cooperating agencies are offered on a nondiscriminatory basis without regard to race, color, national origin, religion, gender, age, marital status or disability.

GLOSSARY

absorption system—wastewater disposal field and adjacent soils for the treatment of sewage in an individual sewage disposal system by means of infiltration

aquifer—a soil or rock formation which contains water and is a source that can be pumped for surface uses such as drinking water, irrigation water, etc.

bacteria—microscopic organisms that live in the soil, water, and organic matter that perform a variety of biological decomposition processes; may be beneficial or harmful

bedrock—the solid rock underlying all soil, sand, clay, gravel, and loose material on the earth’s surface

cistern—a tank for catching and holding liquids (usually rainwater)

compost—a controlled process to decompose organic matter by microorganisms

contaminant—a substance which makes another substance impure or unsuitable for its original use; may include a chemical material, organic material, live organism, radioactive material or heated or cooled water

corrosion—the process of weakening or destroying due to chemical action, for example, rusting of underground petroleum storage tanks

ground water (also groundwater)—all water below the surface of the land; ground water usually refers to subsurface water in a zone of saturation that can be pumped from a well or that flows from a spring or seep

ground water table—the upper surface of ground water in the zone of saturation

grout—a thin mortar for filling cracks and crevices in masonry; any material which is used to form a permanent impermeable seal between the casing and the well bore or between two strings of casing or which is used in plugging and sealing wells

holding tank—a watertight receptacle for the retention of wastewater either before, during or after treatment; can also be used as a secondary water source

household waste water—water that is discarded from your kitchen and/or bathroom

impervious—material that does not allow another substance to penetrate or pass through it

impermeable—having a texture that does not permit water or air to flow through easily

infiltration—the movement of water into and through the soil

nitrate—a water soluble and mobile form of nitrogen; a necessary compound for plant growth but can produce health risks when excess amounts reach drinking water supplies

permeability—the property of a material which permits movement of water through the material

sandy soil—a soil having a high sand content, high infiltration rate, and a high rate of water transmission

sanitary landfill—a system of trash and garbage disposal in which the waste is buried between layers of earth

sediment—material deposited by water; the term is also defined as any matter that settles to the bottom in a liquid

septic system—a system designed to treat household wastewater in which solid organic sewage is decomposed and purified by anaerobic bacteria; standard components consist of a septic tank and a drain/leach field

septic tank—a watertight, accessible covered receptacle designed and constructed to receive sewage from a building sewer, to settle solids from the liquid, to digest organic matter, and store digested solids through a period of retention and allow the clarified liquids to discharge to other treatment units for final disposal

sewage—a combination of liquid wastes which may include chemicals, house wastes, human excreta, animal or vegetable matter in suspension or solution, or other solids in suspension or solution and which is discharged from a dwelling, building or other structure

well casing—a pipe or tube constructed of PVC or metal used to line the borehole of a well to prevent contamination of a drinking water supply system

