

# It's Time To Consider A Groundwater Management Plan

Last of a series

**Editor's note:** In the second part of the water quality series, Lancaster Farming pinpointed potential causes of groundwater pollution. Also, proper wellhead construction and maintenance strategies were outlined in order for farms to maintain water quality. The quality of life on the farm can be threatened by the quality of the water supply. The final installment of the series shows how farmers can utilize various management practices to ensure groundwater quality for their farm.

ANDY ANDREWS  
Lancaster Farming Staff

*Groundwater flows among municipalities.*

— Virginia Thompson, EPA

FAYETTEVILLE (Franklin Co.) — Evan Burkholder knew he had a problem.

A manure storage pad could only hold so much on the farm. When it rained, manure washed away directly into a nearby stream. The contaminated water flowed down in heavy rains to streams which eventually flowed into the Chesapeake Bay.

Burkholder feared possible DER fines. He didn't want to be forced from farming. But the huge farm debts after his father's paralyzing stroke kept him from fixing the problems.

But he sought help, through the conservation district and from many other sources, and got it.

Unfortunately, an old manure pad was only 35 feet away from a 60-foot well. The well, abandoned and sealed, sunk 10 percent, according to Burkholder, and water from the pad washed into and contaminated the well.

With help from the Soil Conservation Service, and under specifications, the well was resealed with clay and banked to prevent contamination.

In the past, farmers may have located their manure storage area too close to a well. If there are problems with the structure or the site, what happens to the well?

How many farms, like Burkholder, face a similar situation?

How many, like Calvin Zerbe, in Bernville (profiled in part 1 of the series), have had water, conta-

minated by nitrates, washing into their farm or family well?

## Contamination potential

The potential exists, on many older farms with hand-dug wells or shallow water sources, for nitrates to contaminate them.

And if so, many of those farm families that drink the water could be in serious danger.

Infants that drink the contaminated water could face a serious and life-threatening problem called methemoglobinemia. The poisoning also affects young animals and ruminants, in much the same ways. But what about the long-term effects?

A nitrate bulletin published by Sierra Chemical Company in January 1989 said that "the effect of (the condition) on these animals can be fatal and can cause abortions, birth defects, and generally poor health. Long-term health effects of nitrates have not been proven."

However, the document indicates that "because of suspected links to cancer, birth defects, and nervous system damage, nitrates are currently the subject of various research studies."

## Major concern

James S. Shortle and Wesley N. Musser, Penn State researchers, write that "ground and water pollution by agricultural activities has become a major environmental policy concern throughout the United States and other countries, as well as in Pennsylvania," in their report in the Sept./Oct. 1992 "Farm Economics" newsletter. The key to controlling groundwater pollution lies in controlling nutrient applications through farm nutrient management plans, according to the researchers.

In the near future, Pennsylvania will have a nutrient management law, which will provide steps in the right direction. But a total water quality package not only requires the management of nutrients effectively, but a plan to manage groundwater itself.

It's time for a water resource management plan.

## Follow steps

The Alliance For a Clean Rural Environment (ACRE), an organization founded to encourage environmental stewardship and protect



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water quality, outlines methods to achieve water best management practices in their booklet, "Water Quality Protection: Frank Answers To the 20 Most Frequently Asked Questions." Fact Sheet Number 20 shows how to protect rural wells from contamination through the following steps:

1. Locate wells properly. Your wellhead should be on the highest ground possible, above the flood level of any nearby stream and away from your septic system, barnyard or feed lot, fuel storage tanks and ag chemical transfer or mixing/loading areas.

2. Inspect wells, especially at the casing. Ask your well driller for information about the casing in your well — their original records will prove useful and important. To prevent surface water run-in, the casing and locking cap should extend at least a foot above ground level to keep surface water away from the well. Inspect your well for signs of cracking of the casing or the grout which seals the space between the well casing and the borehole walls of the well.

3. Maintain chemigation equipment installed on your well to prevent backsiphoning or direct injection of ag chemicals into water sources. Inspect check valves regularly.

4. Store ag chemicals away from your well. Avoid the chance for accidents and spills by keeping chemicals in a secure, weather-proof location, 100 feet or more away from your wellhead. Do not store any chemicals near abandoned wells and check to make sure abandoned wells are properly sealed.

5. Mix and load spray equipment as far away from wellheads as possible and watch to prevent tank overflow.

6. Rinse spray equipment as far from wellheads as possible and on ground that is lower than the wellhead. (Editor's note: Many experts believe it is better to dispose the chemical on the field it was originally applied on.)

7. Dispose of empty containers away from wells. Never use an abandoned well or a sinkhole for a trash dump. An improperly abandoned well can spell real problems.

To obtain additional information about wellhead protection and maintenance, contact ACRE at Suite 900, 1155 15th St., N.W., Washington, DC 20005, (202) 872-3863.



Evan Burkholder measures the depth of his newly installed 300,000-gallon liquid manure storage facility. A well-constructed, well-maintained storage structure helps toward improving the water quality on the farm.

## More than fence

Probably one of the most important considerations of all is not simply to think of the area directly around the wellhead as the most important. Protecting groundwater is more than putting a fence around the wellhead, and groundwater does not understand political boundaries.

At a recent groundwater education conference in New Holland, Virginia Thompson, chief of the groundwater protection section of EPA Region III, said that "groundwater flows among municipalities," and that, for any groundwater quality program to work, "perseverance and the spirit of cooperation are required."

Groundwater rights in this region need to be reconsidered, according to Charles Abdalla, associate professor of ag economics at Penn State. "Landowners may draw water from beneath their land for beneficial uses on that

land regardless of the consequences to neighbors," said Abdalla. "The landowner with the deepest well or most powerful pump wins. Control over water management should be shared among all users. Those concerned about water issues must recognize this political reality."

"One of the primary objectives is to get people to think beyond political boundaries and to think in terms of watershed areas when you think about enacting policy to protect our water," said Leon Ressler, Lancaster County Extension environmental specialist. "Groundwater problems are watershed-wide and region-wide. The political boundaries that are in the middle have no significance from a groundwater standpoint."

"If we approach the problem with an open mind," he said, "and a willingness to tackle the problem, I think we can make some major strides."

## Conference On Water Rights, Law Set

LANCASTER (Lancaster Co.) — Water availability probably will be the next major environmental issue facing agriculture. Total water use has grown rapidly in the recent decades, while the supply of available water remains the same.

In light of this, agricultural water users are encouraged to attend a meeting on water law, water rights, and irrigation management, scheduled on January 4, in the auditorium of the Farm and Home Center, Lancaster, from 8:30 a.m. until noon.

The agenda for the meeting will be as follows:

8:30-9:00 Registration, Coffee, Doughnuts

9:00-9:05 Current Rainfall Data-Leon Ressler

9:05-9:30 Designing an Irrigation System to Meet Your Needs-Dr. Herb Brodie, University of Maryland Extension Ag Engineer

9:30-10:00 Managing Your Irrigation System-Dr. Al Jarret Penn State Extension Ag Engineer

10:00-10:30 Consumptive Water Use In Agriculture-Dr. Al Jarret

10:30-11:00 The History and Current Role of The Susquehanna River Basin Commission in Regulating Water Use- Dave Heicher, Program Specialist, SRBC

11:00-11:30 The Department of Environmental Resources's proposed State Water Management Plan, Tom Fiddler, Assistant to the Deputy Secretary for Field Operations, DER

11:30-12:00 Water Management Policy in Maryland-Dr. Herb Brodie

Irrigation dealers will have exhibits at the meeting. To register contact Leon Ressler at (717) 394-6851 by December 29. There will be no registration fee for the meeting.

## Get Your Well Water Tested

WASHINGTON, D.C. — There are many possible sources of well contamination, including improperly abandoned wells, sinkholes, underground storage tanks, septic systems — a farmer wanting to assess the source of contamination needs to consider all those factors.

The Alliance For a Clean Rural Environment (ACRE), based in Washington, D.C., says that if you are one of the 10.5 million rural households with a private well, you are responsible for testing and maintaining your drinking water quality.

In ACRE's Fact Sheet 19, "Testing Well Water For Contamination," the organization says that most county health departments can help you with routine water

testing of common contaminants, such as coliform bacteria, nitrates, pH, and total dissolved solids. "Testing for the first two items is very important, for their presence can lead to health concerns," according to ACRE.

If your county health department can't test your water themselves, they can tell you how to collect samples for testing by your state board of health or private labs. The price from most laboratories averages \$25-\$50. Contact your local extension office, local EPA office, or simply look in the phone book yellow pages under "Laboratories-Testing."

For more information, contact ACRE, Suite 900, 1155 15th St., N.W., Washington, DC 20005, (202) 872-3863.