

# Proper Well Construction First Step In Water Quality

(Continued from Page A1)

of the liquid went onto the ground. Eventually, the high density liquid fertilizer had to go somewhere.

With the help of fire department and Haz Mat crews, the spill was contained. Stauffer, a broiler and feeder pig farmer for many years, was worried — could the liquid end up in the farm's groundwater?

"Containing the spill to a small area of the farm was very helpful. But the test well in that vicinity was very high in nitrates . . . up at like 200 parts per million," said Stauffer. (The allowable EPA-established limit is 10 parts per million for drinking water.) Stauffer said the spills never affected the hand-dug house well, which "would have hurt," he said.

And fortunately, the spill didn't leak into the nearby Trout Run Creek, which "would have been a big problem for us," he said.

Right now, working with USGS, about five wellheads are under continual survey, and the

water is tested quarterly for nitrates.

Time has passed since the accident, and the contaminated well is near normal, according to Stauffer. Other wells have tested high in coliform bacteria in the past — but since installing an ultraviolet light and monitoring the water, the problems have disappeared.

Stauffer believes that farmers must take more time and effort to manage nutrients on the farm, which affects water quality directly. He follows close nutrient management planning to ensure most of his crops obtain only the nutrients they need.

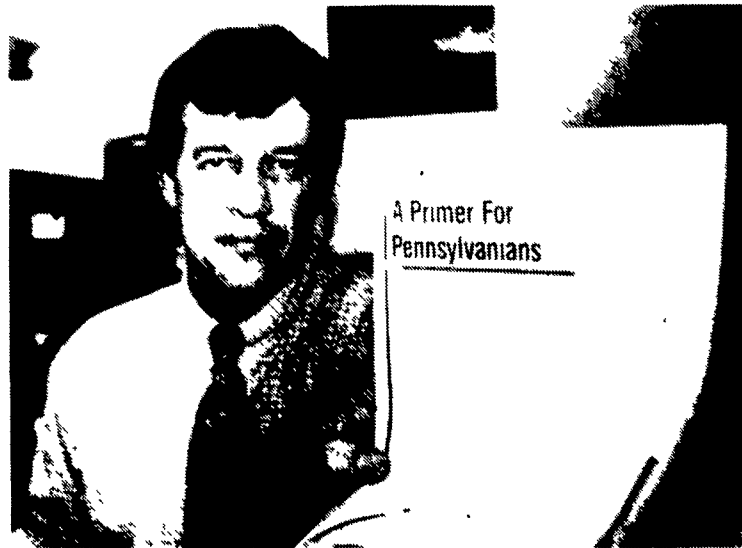
### Test well water

For dairy farmers, having the well water tested is as commonplace as cleaning out the sprayer or filling the silo. Many of the milk inspectors test for high nitrates on the farm, and farmers must comply.

Farmers, to get the milk check,



Troy Myers, Myers Bros. Drilling Contractors, removes weathered rock from the casing location at a site in Ronks.



David D. Bingaman, environmental specialist with the Pennsylvania Department of Agriculture, said farmers should constantly examine what they do near a wellhead site. "Maybe it's a situation (where) you have to abstain from using a certain chemical because it's prone to leaching or you have highly erodible soils," he said.

are quick to install filters and employ other methods which are quick-fixes to the problems of nitrates in the well, without solving the real problems — is there surface water contamination? And should they be drilling a new well?

A well is often located near a farm building. David Bingaman, environmental specialist with the Pennsylvania Department of Agriculture, recalled a story of a Cumberland County dairy farmer who located a barn right over the top of a well.

Bingaman said the farmer appeared more concerned about possible pesticide contaminant levels than nitrate levels in the well.

Bingaman said a common problem is site location. "A lot of that is what happens," he said. "And that would carry over to nitrates as well. If you spill liquid nitrogen near your well, you may contaminate your own water."

"And if you spill a little bit in your routine work over a period of years, a similar type of problem may develop."

Bingaman said farmers should constantly examine what they do near a wellhead site. "Maybe it's a situation (where) you have to abstain from using a certain chemical because it's prone to leaching or you have highly erodible soils," he said.

Farmers should take time to examine where the contamination may be occurring. A lot of it, according to Bingaman, may be from "storm events" that carry nitrates into the well. Could the results be from overapplication of commercial fertilizers? Manure? From a manure holding facility? Septic system? Residential housing?

"Certainly the storage areas that are being installed are made with preventative measures to ensure that you're not getting contamination from the storage area," said Bingaman. "Without evidence otherwise, we have to assume that they're working to some degree."

Bingaman said many of the wells in this region of the country are located on limestone-type soils, which are prone to contamination because of "the porous nature of the rock and the ability of things like sinkholes and macropores to allow water to move during storm events from the surface area down into a sinkhole or macropore and enter the ground-



A heavy downpour during the swine show at the Ephrata Fair proves an example of a "storm event" that could force heavy amounts of nitrate into wells. Farmers should take time to examine where the contamination may be occurring.

water flow systems very rapidly."

### Limestone geology

Leon Ressler, Lancaster County Extension environment specialist, said much of Lancaster County is "limestone geology, which has fractures in the bedrock and is also prone to sinkholes. Sinkholes are a direct conduit of surface water into the groundwater, and we have some shallow outcroppings of rock which are cracked. So when you get shallow percolation through the shallow topsoil to the cracks in the bedrock, that can quickly transport whatever's coming in off the surface to the water supply."

Bingaman said "proper well construction is very important," including properly cased wells with necessary grouting around the surface to ensure that you're not getting surface water flowing

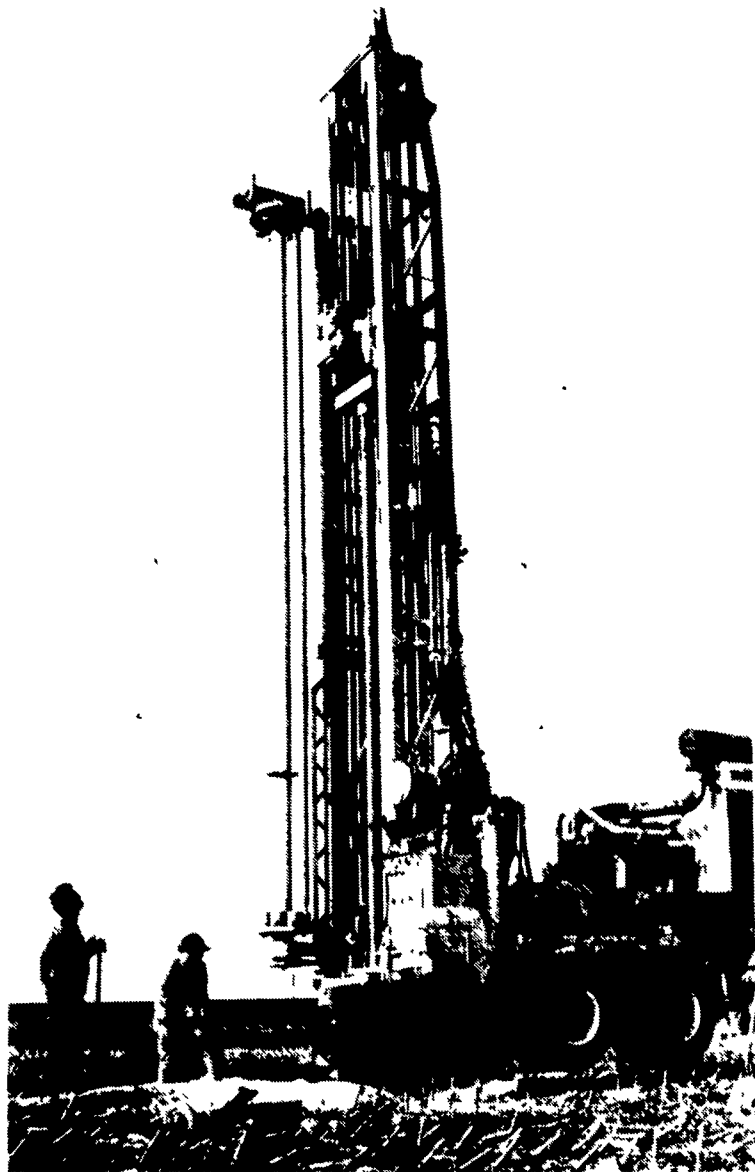
down along the edge of the casing and contaminating the well.

But although many wells are old and improperly constructed, for the most part problems go unreported. Many new wells are dug, often to increase supply, as when farmers continue to increase herd size or expand their operations.

But one potential problem at a farm may be well abandonment. "If for whatever reason you no longer use a well," said Ressler, "what you really should do is cut the casing off about six feet below the surface so it's out of your way. Fill the casing with concrete below that point and seal it off (put some concrete around the top) to keep any surface water from following that old casing."

In the case of an improperly constructed old well, simply abandoning it leaves the potential for

(Turn to Page A20)



Rodger Myers, far left, observes the drilling operation at a site in Ronks. This drill penetrates to about 127 feet.