

The Ground Water Sentinel

Passaic Valley Ground Water Protection Committee ~ Volume I, Issue 3 - July 2002

Well Head Protection Ordinance Moves Ahead

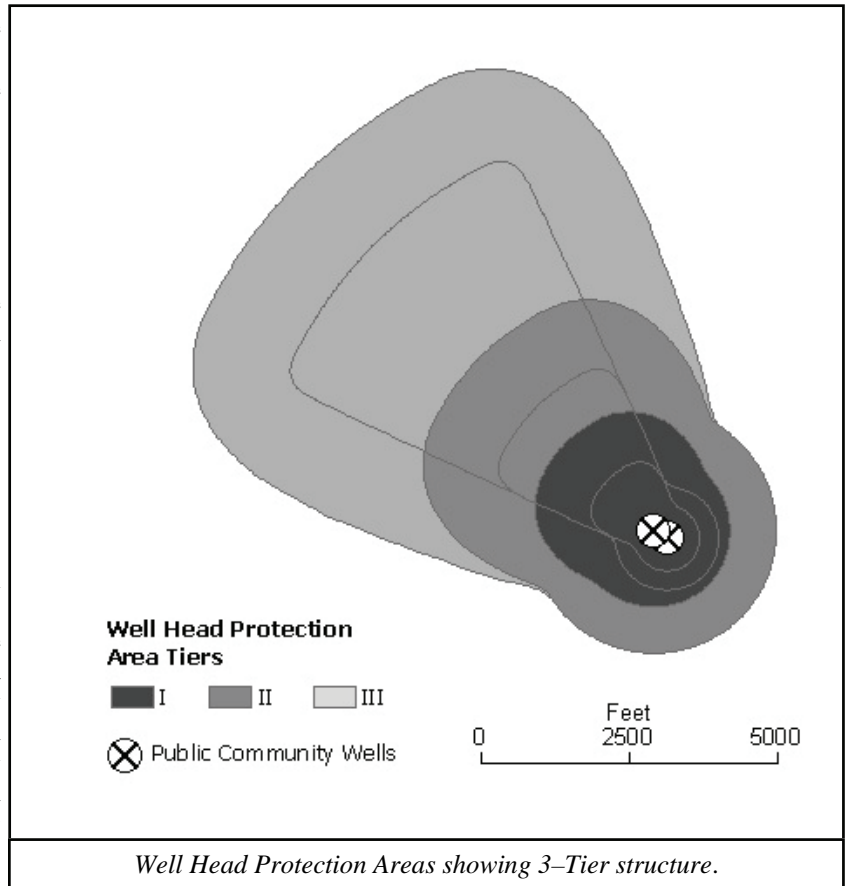
Any owner of a drinking water well, whether it be a private family well or a public water supply system, must take responsibility for safeguarding the area around the well from pollutants. This is because ground water in the vicinity of a pumping well is particularly vulnerable to contamination, and once contaminated, it is costly and difficult to clean up.

Ground water quality and quantity problems have occurred because of over-development and drought. Municipalities that have public wells within their jurisdiction are now facing the responsibilities of protecting their ground water sources or finding other sources, if available.

Working to preserve ground water sources, the Passaic Valley Ground Water Protection Committee has researched and developed its Draft Model Municipal Well Head Protection Ordinance. This ordinance is intended to reduce the chances in the future that contaminants will seep into ground water and be pumped out of a Public Community Well. The Public Community Wells to be protected include wells located within the Buried Valley Aquifer Systems. Although protection is needed for all wells, public and private, the Passaic Valley Ground Water Protection Committee is beginning with this ordinance to protect Public Community Wells.

A **Well Head Protection Area** consists of three levels, or tiers, of protection:

- **Tier 1** needs the firmest restrictions on land use and activities because water that seeps into the ground in these areas is likely to move to the well head and be pumped out in less than two years. This water can carry pathogenic microbes and viruses as well as toxic contaminants into the water supply. With this short time frame there would probably be no warning about the pollution coming and no way to clean it up before it reaches the well. Prevention of pollution is the only solution.
- **Tier 2** covers areas from which toxic pollutants seeping into ground water can travel to the well head in less than five years. The chances of detecting and cleaning up such



Well Head Protection Areas showing 3-Tier structure.

pollutants before they reach the well is problematic. Prevention of pollution is the best solution.

- **Tier 3** pollutants take from five to twelve years to travel to the well head. This allows some lead time for cleaning up pollution, but the best solution is still prevention. For these areas the ordinance suggests Best Management Practices in order to minimize the entry of pollutants into ground water.

Because there are presently many Potential Pollutant Sources existing within the delineated Well Head Protection Areas, this ordinance only attempts to regulate future changes in land use and activities within Well Head Protection Areas. This approach is doable, and helps businesses and residents understand the need for Well Head Protection.

The Buried Valley Aquifer Systems

Nearly one-half of New Jersey residents rely on ground water for their drinking water needs. Ground water provides 60 million gallons per day, supplying 70% of the water used by people and industries in Watershed Management Area 6, which covers the watersheds of the Mid and Upper Passaic River, the Whippany River, and the Rockaway River, and most of the Central Passaic River Basin. Most of this ground water comes from buried valley aquifers in the Central Passaic River Basin and the Rockaway Valley. These interconnected buried valley aquifers underlie large areas in Morris County, and parts of Essex, Somerset and Union Counties. They supply high quality water, in very large amounts, due to their unique geological characteristics as buried valley, or valley-fill, aquifers. The figure below shows three of these buried valley aquifer systems, the Millburn, Chatham, and Whippany buried valleys, which are located in eastern Morris County, western Essex County, and northern Union County.

The “Buried Valley Aquifer Systems” region is characterized by a network of former river valleys which were filled with glacial outwash material by the Wisconsin glacier, which covered much of northern New Jersey until about 11,000 years ago. The glacial outwash material that fills these ancient valleys is composed of layers of silt, sand and gravel, that were deposited by the glacier’s bulldozer-like action and subsequent runoff of massive amounts of melt-water. Their

grainy nature makes these deposits highly permeable, allowing water to flow readily through the spaces between the rocky debris. These buried valleys act somewhat like great, geologic sponges, which is why they have been commercially reliable sources of water ever since the end of the 19th Century.

In the early 1980s, the US Environmental Protection Agency designated these ground water systems as “sole source” aquifers, meaning they are the principal source of drinking water for the area. This was prompted by the Passaic Valley Ground Water Protection Committee, under provision of the federal Safe Drinking Water Act, as a means of protecting the aquifer recharge zones from contamination that might occur through inappropriate land development. However, intensified use of the aquifers, documented substantial drops in static water table levels, increased potential for contamination, and loss of recharge due to impervious cover clearly show that these precious resources are in even more danger today than they were 20 years ago.

Take the Township of Montville as an example. By 2001 the water in the township’s oldest public community supply well had dropped 57 feet from its level in 1970, indicating that ground water is being used faster than it is being replaced. In addition, in December of 2000 a private well was discovered as being contaminated with tetrachloroethylene, a dry cleaning

fluid and metal degreaser. Now Montville is in the process of determining how to deal with 60 known private wells that are contaminated. Since these public and private wells draw from the same aquifer, the contamination plume may also spread to public community wells.

What is happening in Montville is not an isolated occurrence. Ground water depletion, and the potential for contamination, exist throughout the Buried Valley Aquifer Systems region. Municipalities that depend upon federally designated “sole source” aquifers should be taking steps now toward safeguarding ground water quantity and quality. The tools are readily available. It’s a matter of choosing to be proactive now, or reactive later.

