

What is the State's Role?

The Iowa Department of Natural Resources, working in concert with the Wellhead Protection Advisory Committee, has developed the Iowa Wellhead Protection Plan. Documents providing guidance for delineation of the wellhead protection area, inventory of contaminant sources, and management strategies are available from the IDNR and the U.S. Environmental Protection Agency. The IDNR will also provide technical assistance and will review all community wellhead protection plans if desired.

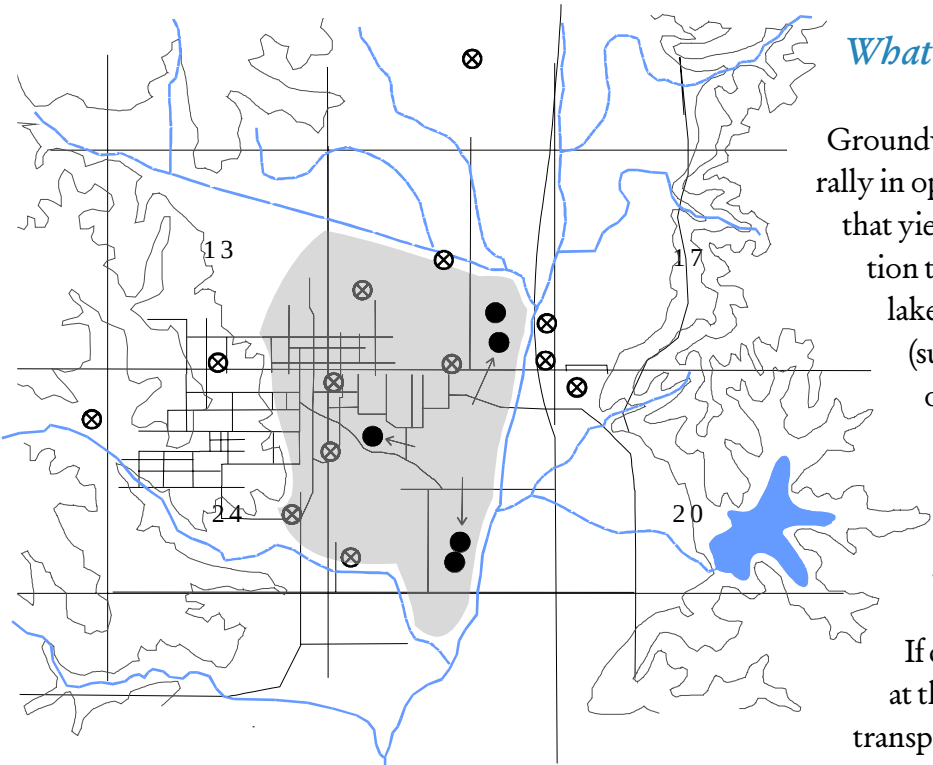
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WELLHEAD PROTECTION



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Wellhead Protection — What is it?

Wellhead protection is designed to protect the groundwater sources of public water supplies from contamination. The process includes defining the area that contributes water to a well or well field (see map), inventorying the potential sources of contamination (⊗) within that area, and implementing management plans to reduce the likelihood of contamination occurrence. Public water resources are essential for both people and the economy, thus wellhead protection is a valuable investment in the future.

What is Groundwater?

Groundwater accounts for about 80% of all drinking water in Iowa. It occurs naturally in open spaces in sediment and rock below the Earth's surface. The porous strata that yield water to wells are referred to as aquifers. Groundwater begins as precipitation that soaks into the ground. Some of this water travels laterally to rivers and lakes, but some also percolates deeper, recharging aquifers. The recharge area (surface area that contributes precipitation to an aquifer) varies with the depth of the aquifer and the geologic setting of the area. Therefore, the recharge area for a well or well field may be the immediate vicinity around the well or may be a great distance away from the well.

How Does Groundwater Contamination Occur?

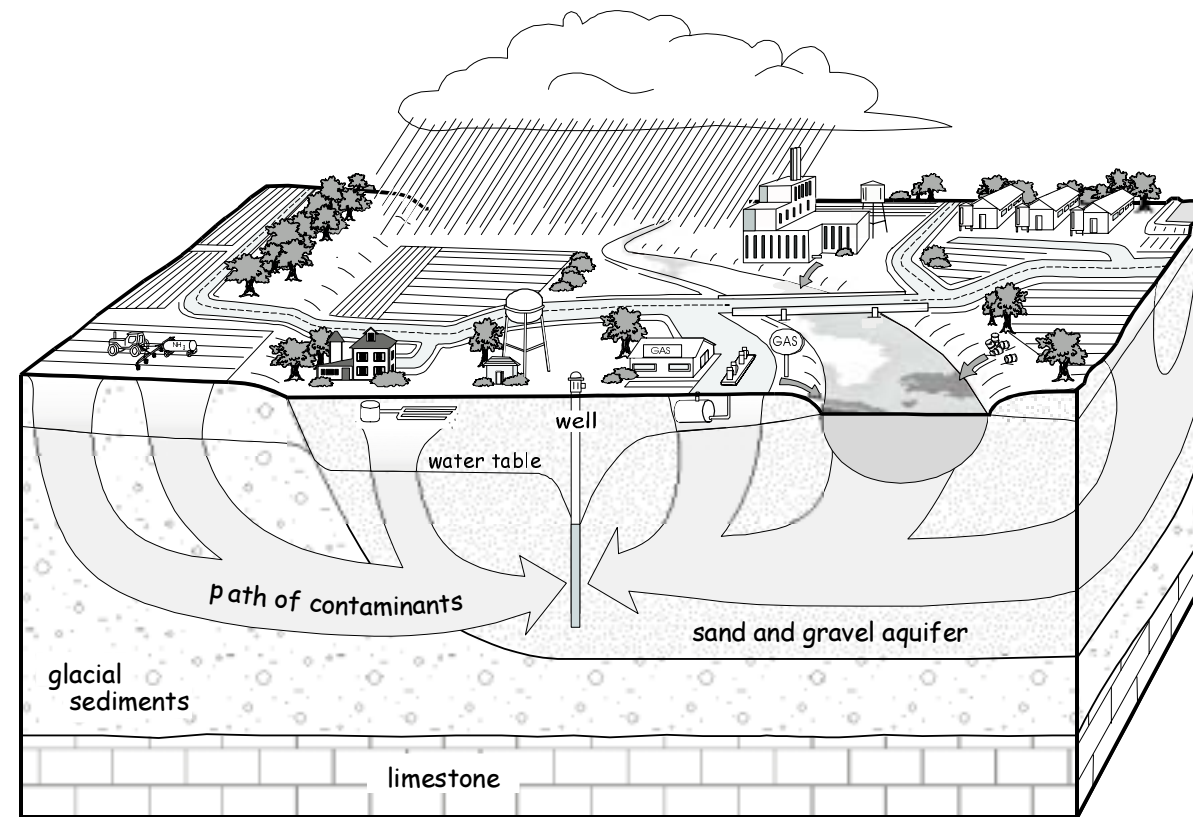
If downward percolating precipitation comes into contact with a contaminant, at the surface or below it, the water may mobilize some of the contaminant and transport it to an aquifer. Spills of liquid contaminants can also infiltrate to aquifers. When a well is pumping, it lowers the water table in the immediate vicinity, thus increasing the flow of groundwater toward the well. Therefore, a contaminant may enter an aquifer at some distance from a well, but still be transported to the well with the groundwater.

What Can Contaminate Groundwater?

Contaminants can be categorized as: biological (bacteria, viruses), inorganic chemicals (nitrate), organic chemicals (fuels, pesticides, solvents), and metals. Potential contamination sources are commonly associated with obvious features such as landfills, gas stations, industrial and agricultural operations, but contamination can occur from many everyday activities as well. Lawn and garden chemicals, beauty shops, dry cleaners, photo processing labs, and septic systems are but a few of the hundreds of potential contamination sources. It takes only a small amount of some contaminants in drinking water to pose a health risk.

What is a Wellhead Protection Plan?

Wellhead protection is a voluntary program designed to assist local communities in avoiding contamination of their drinking water sources. Wellhead protection plans are produced by the communities themselves, reflecting the amount of protection that they deem necessary. Wellhead protection plans will vary in detail from community to community because of differing



circumstances, but all wellhead protection plans will contain these key elements:

Public participation: Local citizens should be involved in all stages of wellhead protection. Provisions for education regarding drinking water sources and potential contamination should be included in the wellhead protection plan.

Delineation of the wellhead protection area: A wellhead protection area is the geographic area surrounding a well or well field where contaminant sources will be

identified and management strategies will be employed to minimize the potential for contaminants to enter the groundwater system. Delineation of the wellhead protection area will be accomplished using one of the methods recommended by the Iowa Wellhead Protection Plan. The size and shape of the wellhead protection area depends on the type of aquifer, local geology, and pumping rate.

Inventory of contaminants: An inventory of potential sources of contamination within the wellhead protection area will be

made. This inventory will provide a good assessment of the possible threats to a community's drinking water.

Management of the wellhead protection area: Strategies should be developed to manage activities within the wellhead protection area to reduce the risk of aquifer contamination.

Contingency plans: Public water suppliers should develop plans for dealing with short-term and long-term loss of drinking water sources. The wellhead protection plan should include these emergency response plans.

Who is Responsible for Wellhead Protection?

Wellhead protection should be a community effort. Defining the wellhead protection area, inventorying potential contaminants, and developing management strategies may be conducted by local officials and a community advisory team representing the various interests in the community. Help with some of these steps can be obtained from a number of public and private agencies. Implementation of the management plan will be accomplished under local control in the wellhead protection area.