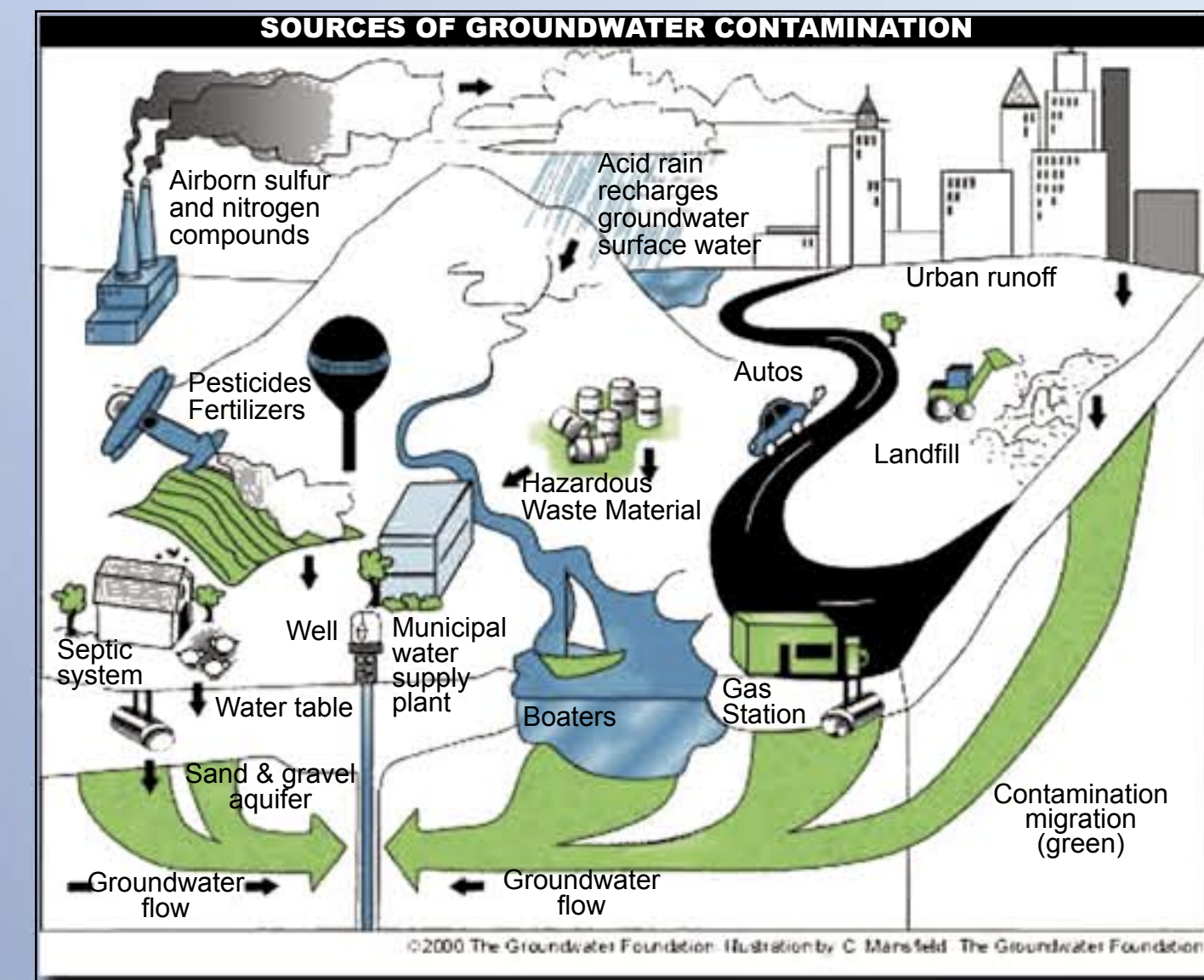


GLOBAL PLUMBING!

HOW IS GROUNDWATER CONTAMINATED?

In the past, because we did not understand how vulnerable groundwater was, we have been careless. Even today gasoline and other harmful liquids leak from underground storage tanks into the groundwater supply. Pollutants soak into groundwater from poorly constructed landfills or septic systems. Groundwater is polluted by runoff from fertilized fields, livestock areas, abandoned mines, salted roads and industrial areas. Few people realize it, but homeowners can contribute to groundwater contamination by dumping household chemicals down the drain or pouring them on the ground. Further, because groundwater moves so slowly, the contamination is likely to remain concentrated and close to the point where the pollution occurred. When contaminated, groundwater quality must be restored before it can be used.



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HOW IS GROUNDWATER CONTAMINATION PREVENTED?

Communities generally protect groundwater and prevent pollution

by carefully monitoring land use, minimizing hazards such as shallow injection wells, and making sure other practices, such as de-icing roads, use environmentally friendly materials. Restricting activities near the well field area and removing hazardous materials such as leaky tanks is also helpful. Individuals help protect groundwater by using and disposing of chemicals properly and getting directly involved in monitoring and education activities.

THINGS YOU CAN DO TO CONSERVE AND PROTECT YOUR WELL WATER

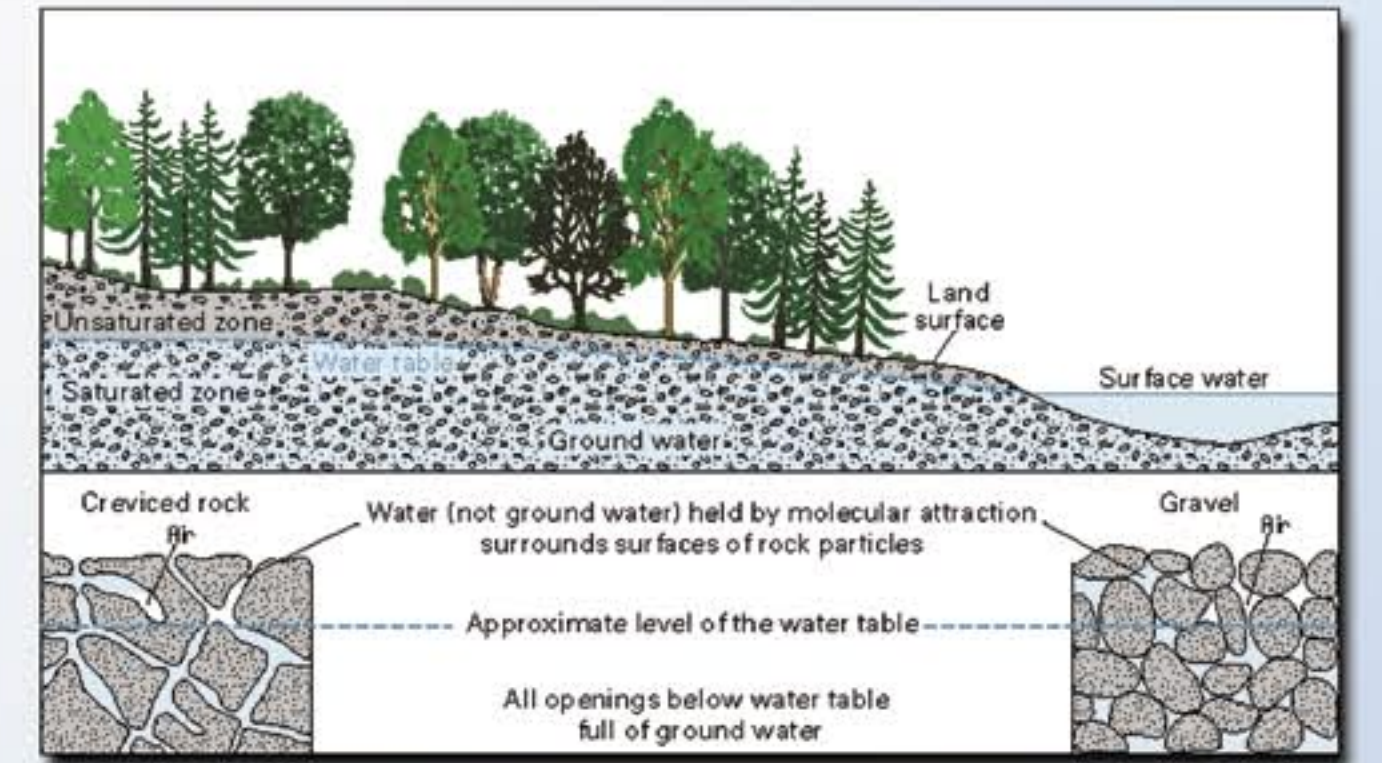
- Maintain your well and test the water quality annually.
- Keep household chemicals, paint and motor oil away from your well and dispose of them properly by taking them to a recycling center or household hazardous waste collection site.
- Limit the use of pesticides and fertilizers.
- Install a well cap and keep it clear of leaves, mulch, dirt, snow and other materials.
- Use caution when mowing around your well so you don't damage the well casing. Inspect the well casing for any cracks or damage.
- Practice water conservation measures in your home. Shut off the faucet while brushing your teeth, fix leaky faucets, take shorter showers and install low water use appliances.

It is important that unused wells be decommissioned. Unused wells are direct paths for contaminants to reach an aquifer.

To keep your well safe, you must be sure possible sources of contamination are not close by. Experts suggest the following distances as a minimum for protection (further distances are better).

For further information contact the U.S. Environmental Protection Agency

How groundwater occurs...



From U.S. Geological Survey/General Interest Publication "Ground Water"

It is difficult to visualize water underground. Some people believe that ground water collects in underground lakes or flows in underground rivers. In fact, ground water is simply the subsurface water that fully saturates pores or cracks in soils and rocks. Imagine pouring a glass of water onto a pile of sand. Where does the water go? The water moves into the spaces between the particles of sand. When rain falls to the ground, the water does not stop moving. Some of it flows along the surface to streams or lakes, some of it is used by plants, some evaporates and returns to the atmosphere, and some sinks into the ground. Between the land surface and the aquifer water is a zone that hydrologists call the unsaturated zone, there usually is at least a little water, mostly in smaller openings of the soil and rock; the larger openings usually contain air instead of water. After a significant rain, the zone may be almost saturated; after a long dry spell, it may be almost dry. Some water is held in the unsaturated zone by molecular attraction, and it will not flow toward or enter a well.

Similar forces will hold enough water in a wet towel to make it feel damp after it has stopped dripping. After the water requirements for plants and soil are satisfied, any excess water will infiltrate to the water table.

TERMS

Groundwater: water found in the spaces between soil particles and cracks in rocks underground; groundwater is a natural resource that is used for drinking, industry, and growing crops.

Aquifer: an underground geological formation able to store and yield water.

Unsaturated Zone: a subsurface zone above the water table where the pore spaces may contain a combination of air and water.

Saturation Zone: the portion below the earth's surface that is saturated with water. The upper surface of this zone, open to atmospheric pressure, is known as the water table.

Molecular Attraction: attraction produced by or existing between the smallest particle of an element or compound that can exist in the free state and still retain the characteristics of the element or compound.

Water Table: the top of an unconfined aquifer; indicates level below which soil and rock are saturated with water.

Impermeable Layer: A layer of material such as clay in an aquifer that water can not pass through (also called a confining layer).

Confined Aquifer: Groundwater between two layers of impermeable clay or rock.

Unconfined Aquifer: An aquifer containing groundwater that has an impermeable layer below but not above.

WATER FACTS

- Groundwater is a natural resource that is used for drinking, recreation, industry, and irrigation.
- The average American uses 100 gallons of water each day.
- There is the same amount of water on Earth today as there was when the Earth was formed.
- Groundwater is renewed once every 1400 years.
- Water makes up almost two-thirds of the human body, and seventy percent of the brain.
- Nearly three-quarters of the water that comes to our homes goes down the drain.
- Of all the earth's water that's useable by humans, 98% is groundwater.
- Americans drink more than one billion gallons of tap water per day.
- What is poured on the ground today can end up in our drinking water many years later.
- We all have the responsibility to protect groundwater.

According to the U.S. Geological Survey (USGS), groundwater provides an estimated:

- 22% of all freshwater withdrawals
- 37% of agricultural use (mostly for irrigation)
- 37% of the public water supply withdrawals
- 51% of all drinking water for the total population
- 99% of drinking water for the rural population