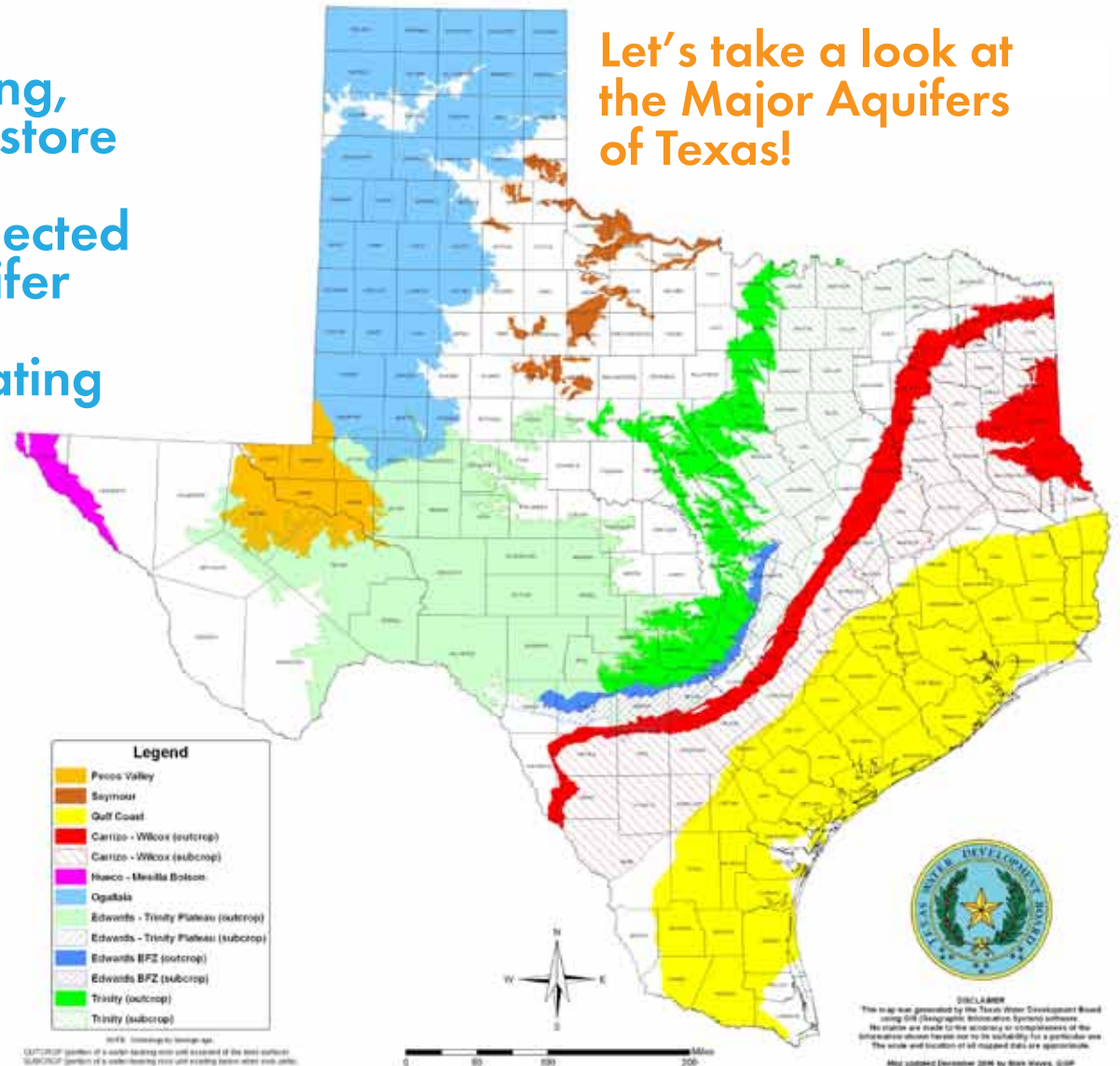


What is an Aquifer?

Aquifers are naturally occurring, underground formations that store water, almost like a saturated sponge. The water can be collected by drilling a well into the aquifer and pumping it to the surface where it can be used for irrigating crops, watering livestock and for human consumption.

Aquifers are replenished through rainfall that moves downward through layers of soil, sand, gravel and fractured rock until it reaches the aquifer. This downward movement through the earth helps clean and filter the water.

Let's take a look at the Major Aquifers of Texas!



How much water does it take?



Water is an essential ingredient in most manufacturing operations. Water is one of the main factors in getting consumer products on the shelf. Water is not only used by animals for consumption or farmers to irrigate crops, but throughout the entire manufacturing process.

How much water does it take... From Farm Gate to Your Plate?

- ❑ Producing a typical U.S. car requires more than 50 times its weight in water. Choosing a fuel-efficient model will help – it takes **44 gallons** of water to refine one gallon of crude oil and up to **1,700 gallons** of water to produce a gallon of ethanol.
- ❑ Producing one pound of bread requires **500 gallons** of water.
- ❑ Producing one cotton t-shirt requires **256 gallons** of water.
- ❑ Producing one serving (8 oz.) of milk requires **48 gallons** of water.
- ❑ Producing one serving (4.6 oz.) of oranges requires **14 gallons** of water.

Indoor Conservation

Water conservation is the most cost-effective and environmentally sound way to reduce our demand for water. The entire U.S. uses less water than it did 25 years ago, even though there are more people. Below are ways you can conserve water in your home!

Kitchen

- When washing dishes by hand, do not leave water running. Fill one sink with wash water and the other with rinse water.
- When washing hands, turn water off while lathering.
- Defrost foods in the refrigerator or microwave, not with running water.
- Clean vegetables in a filled sink or pan, not with running water from the faucet.

Bathroom

- Keep showers under 5 minutes.
- Turn off the water while brushing teeth.
- Turn off water while shaving.
- Check toilets for leaks. Put dye tablets or food coloring in the tank. If color appears in the bowl without flushing there's a leak that should be repaired. Or, install low-volume toilets.

General

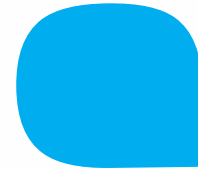
- Install aerators on all your faucets and shower heads.
- Run your washing machine and dish washer only when they are full.
- While waiting for hot water to come down the pipes, catch the flow in a watering can to use later on house plants or your garden.

Source: wateruseitwisely.com



Help Keep **YOUR** Water Clean!

- 💧 **Never over-fertilize your lawn.**
- 💧 **Pick up your dog's droppings.**
- 💧 **Have vehicles inspected regularly for fluid leaks.**
- 💧 **Wash your car on the lawn to keep dirty, soapy water from flowing into storm drains and eventually into your local streams and lakes.**
- 💧 **Clean paint brushes in the laundry sink, or in a bucket that you tip somewhere in your garden.**
- 💧 **Pick up trash and cover trash bins to prevent litter from blowing into storm drains.**



Outdoor Conservation

Water is a natural resource we all depend on. Like other natural resources, we have to take care of it in order to continue to use it. Below you will find helpful ways to take care of the water supply in your town.

- ☀ Leave grass clippings on your lawn after you mow. The clippings are a natural way to fertilize and minimize use of chemicals that could contaminate water.
- ☀ Attract birds to your home to eliminate insects and minimize use of pesticides that could enter the water supply in your town.
- ☀ Spread mulch on your garden to keep soil moist and save water.
- ☀ Fix dripping faucets. A dripping faucet can waste 10 gallons of water a day according to The Groundwater Foundation.
- ☀ Take used motor oil to an oil recycling center instead of pouring it down a storm drain.
- ☀ Manage irrigation systems (sprinklers) to efficiently water lawns and crops. This saves homeowners and farmers both water and money.
- ☀ Clean junk and litter out of rivers and lakes to improve habitat for fish and other aquatic life. Plant grass and trees on loose soil to keep the soil from washing away.

Source: United States Department of Agriculture
Natural Resources Conservation Service



What affects water level?

Surface runoff is affected by both meteorological factors and the physical geology and topography of the land. Only about a third of the precipitation that falls over land runs off into streams and rivers and is returned to the oceans. The other two-thirds is evaporated, transpired, or soaks [infiltrates] into ground water aquifers. Surface runoff can also be diverted by humans for their own uses.

Environmental Affects

- 🔥 Natural and human caused fires
- 🔥 Early settlers allowed cattle to continuously graze the abundant grass. This caused desirable grasses to decline and undesirable weeds and brush to increase.
- 🔥 Drought periods that lower the quality of perennials and quick maturing annual grasses

Physical Affects

- 🔥 Land use, ground cover, soil type
- 🔥 Urban Development
- 🔥 Drainage network patterns
- 🔥 Ponds, lakes, reservoirs, sinks, etc. in the basin, which prevent or delay runoff from continuing downstream



Meteorological Affects

- 🔥 Type of precipitation (rain, snow, sleet, etc.)
- 🔥 Rainfall amount, intensity and duration
- 🔥 Distribution of rainfall over the drainage basin
- 🔥 Precipitation that occurred earlier

Water Sources

When rain falls it either soaks into the ground or becomes runoff, which flows down hill into rivers and lakes.

Surface Water

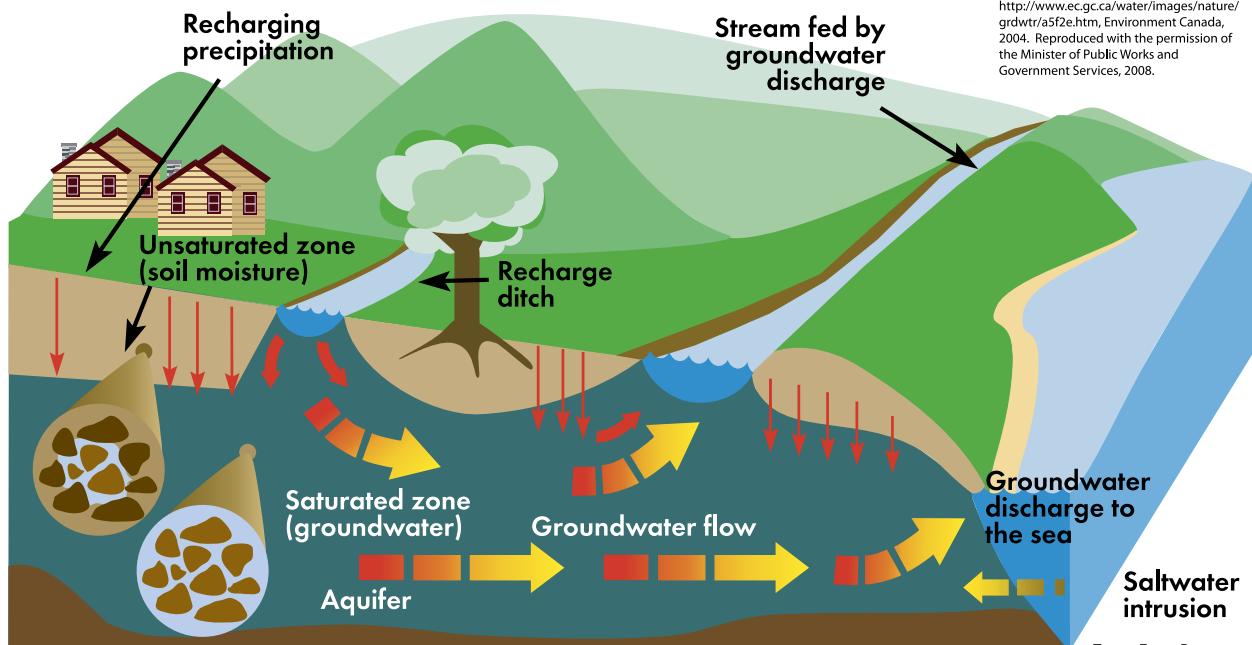
- When rain hits saturated or impervious ground it becomes surface water and begins to flow overland downhill. Surface water flows through creeks, streams and rivers on its journey to lakes and ultimately ending up in the ocean.

Ground water

- Some of the precipitation that falls onto the land infiltrates into the ground to become ground water. Ground water is a major contributor to flow in many streams and rivers and has a strong influence on river and wetland habitats for plants and animals. Ground water is recharged by rainwater falling on the soil and percolating down through the soil and rock fractures into the aquifer.
- The main uses of ground water include irrigation, drinking-water and other public uses, and water wells, which supply domestic water to people who do not receive public-supply.



Groundwater Flow



Source: Groundwater Flow, <http://www.ec.gc.ca/water/images/nature/grdwtr/asf2e.htm>, Environment Canada, 2004. Reproduced with the permission of the Minister of Public Works and Government Services, 2008.

What is a Watershed?

A watershed is the land that water flows across or under on its way to a stream, river, or lake. Watersheds can have hills or mountains or be nearly flat. They can have farmland, rangeland, small towns and big cities. Parts of your watershed may be so rough, rocky or marshy that they're suited only for certain trees, plants and wildlife.

How do watersheds work?

The landscape is made up of many interconnected basins, or watersheds. Within each watershed, all water runs to the lowest point – a stream, river or lake. On its way, water travels over the surface and across the farm fields, forest land, suburban lawns, and city streets, or it seeps into the soil and travels as ground water. Large watersheds like the ones for the Mississippi River, Columbia River and Chesapeake Bay are made up of many smaller watersheds across several states.

