



# Arizona Riparian Council

## Fact Sheet

No. 3 • 2004

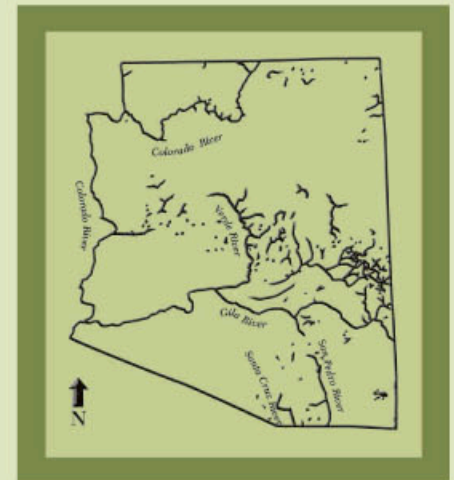


Date Creek, Yavapai County

## WATER

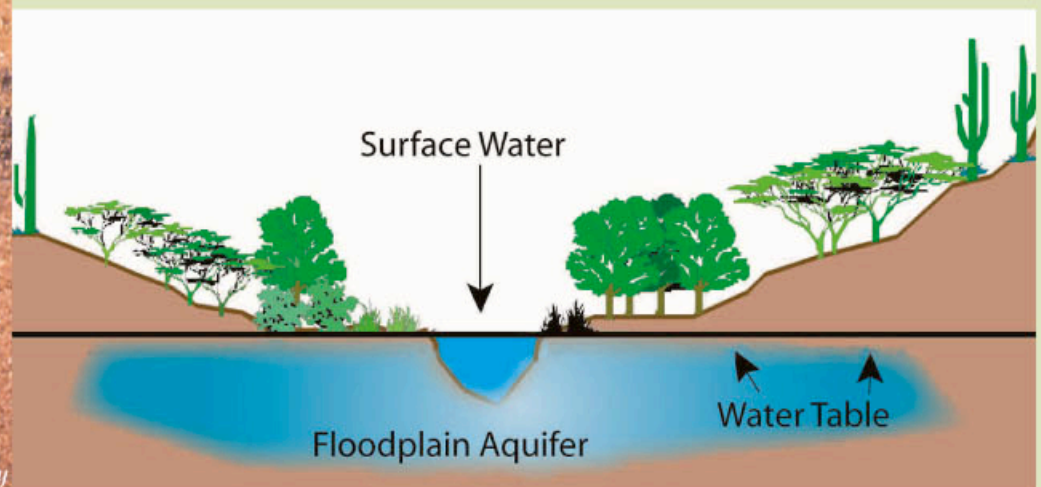
Specialized types of *habitats* called *riparian* habitats occur along rivers and streams mainly because of the additional water that is available in them. Riparian plants obtain water from a variety of sources in the riparian zone. Some plants growing near the channel absorb water directly from the stream or from that which has moved from the stream channel into stream bank soils. Many of these stream edge plants, such as cattails, require high levels of soil moisture year round.

In many rivers, the water you see in the channel is only a small part of the picture. Visualize the water in the channel extending away from the stream under the floodplain surface, and you are visualizing the *water table* (also known as *groundwater*). Many plants grow away from the channel and obtain water from the water table that lies beneath the floodplain. Some of these plants such as cottonwood and willow trees, have rela-

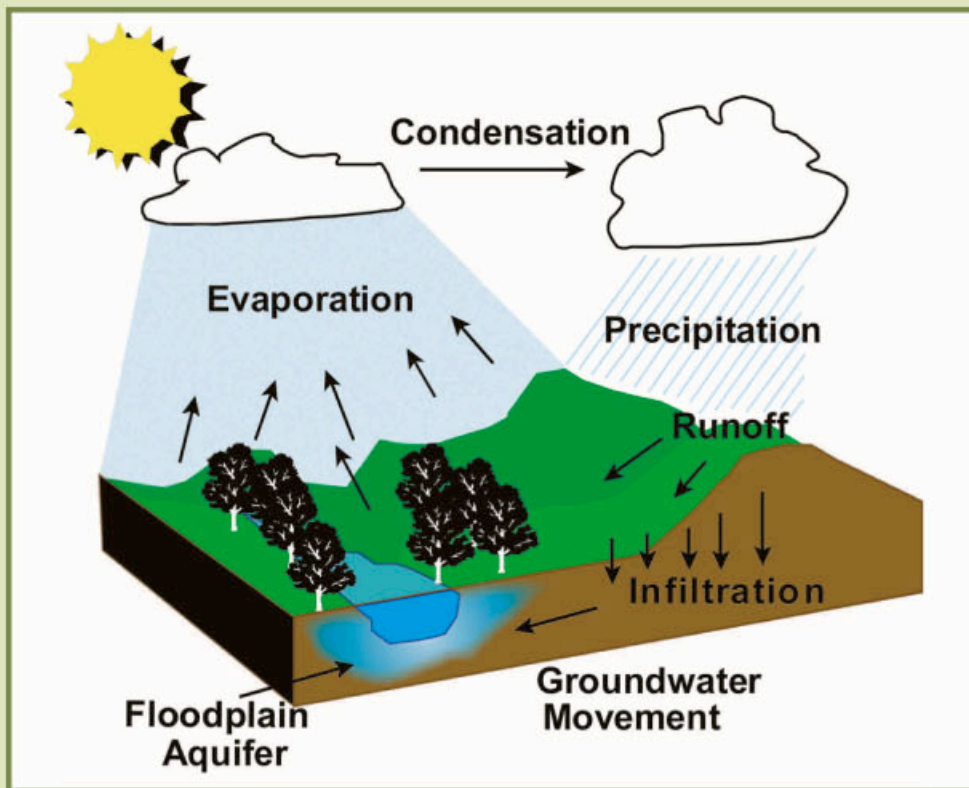


Major Arizona Waterways

tively shallow roots and depend on a high water table, i.e., near the floodplain surface. Others such as mesquite trees have deeper roots and can grow on floodplains where water is several meters below the floodplain surface. The water that lies beneath the floodplain in the spaces between the rock particles is called the *floodplain aquifer*. The floodplain







*aquifer* is a body of water that is shaped somewhat like a worm—long and narrow as it follows the stream.



Cattail

Many streams and rivers in Arizona are perennial, meaning that water is present in the channel year round. At the other extreme are *ephemeral* streams

(also known as dry washes), and rivers that carry water only during very large storm events. Some streams and rivers fall between perennial and ephemeral and are known as *intermittent*. These streams have water most of the time but go dry seasonally and during drought periods. Many rivers in Arizona that were historically perennial now flow only ephemerally, or intermittently; e.g., the Salt and Gila Rivers. This is because water has been diverted by upstream dams, or groundwater pumping has reduced the river flow and lowered water tables that supply the flow. Much less riparian vegetation occurs along these dewatered rivers.

Water is always changing from one form to another (see the **Water Cycle** illustration above). For example, rain water can become groundwater if it percolates through the soil to recharge the underlying water table. If the water does not soak into the soil and just drains by gravity it is called surface runoff. This runoff can then drain into a river and become surface water. Groundwater also can move into the channel and become surface water.

*Hydrologists* refer to a stream fed by groundwater as a “gaining stream”; whereas, when the surface water disappears underground to the groundwater, it is a “losing stream.” It is important to be aware of the connections that exist between surface water, groundwater, and hillside surface runoff. These connections mean that human activities occurring far away from a stream on the surrounding *watershed* can influence the water flow in the stream. In turn, this influences the types and amounts of plants and animals that live in the riparian zone. For example, a well located in the uplands that is pumping deep groundwater can remove water that otherwise would have flowed into the floodplain aquifer.

Riparian plants use water to grow and keep cool. Water moves from the river,



water table, or riparian soils into the plant’s roots, through its stems and leaves, and then into the atmosphere as water vapor. This process is known as *transpiration*. In years past, and even today, many riparian forests have been cleared in the erroneous belief that much water could be salvaged or saved for human use by reducing the amount



of water transpired by the riparian plants and evaporated from the soil (*evapotranspiration*). Today we are aware of the high value and importance of riparian vegetation. Riparian trees and shrubs help shade streams, thus cutting down on evaporation from the soil or water surface. Grasses and other herbaceous growth help retain moisture in the soils by stabilizing them so more water may percolate through to the groundwater.

Water is a scarce resource in the arid Southwest. Because so many streams have been diverted, pumped, or dammed, it is important to make sure that our remaining rivers have sufficient amounts of *instream flow* to support a healthy, functioning, riparian ecosystem. We can help to ensure this by recycling water and by reducing the amount of water we use.



Granite Creek, Prescott, Arizona



Wet Beaver Creek, Arizona

Printing and design courtesy of



[www.PrescottCreeks.org](http://www.PrescottCreeks.org)

## WHAT YOU CAN DO TO GET INVOLVED

Water is important to all living things—humans, wildlife, and plants. There are so many things that you can do to help conserve this precious resource. A few are listed below.

- Reduce your consumption of water by landscaping with native plant species suitable for your area. For example, don't plant a cottonwood in the middle of a desert landscape. Native desert species have adapted to natural climatic conditions and don't require water in addition to that received from rainfall.
- If you do provide supplemental water to your landscape, use drip irrigation to help reduce evaporation losses. Also, maintain your irrigation system so you don't waste water through leaks.
- If you live near a flowing stream, become active in your community to keep it flowing, e.g. Prescott Creeks Preservation Association.
- In your home, use low-flow shower heads and toilets.
- Turn off your faucet when brushing your teeth, don't just let the water go down the drain.



Black River



## GLOSSARY

### Ephemeral

Lasting only a short time.

### Evapotranspiration

The process of transpiration by plants occurring in conjunction with evaporation of water from soil or plant surfaces.

### Floodplain aquifer

An aquifer is a water-bearing layer of rock, sand, or gravel that is porous enough to allow water to pass through it. A floodplain aquifer is an aquifer that is along the stream channel.

### Groundwater

Water within the earth that supplies wells and springs; water in the ground that is entirely saturated.

### Habitat

The type of site where a plant or animal naturally or normally lives.

### Hydrologist

Scientist who studies the properties, distribution, and circulation of water on land, in soil, and underlying rock, and in the atmosphere.

### Instream flow

This is the water that occurs in the channel of the stream. It is dependent on surface runoff, groundwater, and other sources.

### Intermittent

Coming and going at intervals, not continuous.

### Riparian

Vegetation, habitats, or ecosystems that are associated with bodies of water (streams or lakes) or are dependent on the existence of perennial, intermittent, or ephemeral surface or subsurface water drainage.

### Transpiration

The passage of water vapor from a living body through a membrane or pores.

### Water table

The upper limit of the portion of the ground wholly saturated with water.

### Watershed

A region or area whose water drains through surface runoff and groundwater ultimately to a particular watercourse or body of water.

The Arizona Riparian Council was formed in 1986 by individuals interested in the conservation of riparian areas in Arizona and throughout the West. Its members are from various academic, private, and state and federal agencies. Anyone interested in helping preserve and protect Arizona's riparian areas is invited to become a member.

## OTHER AVAILABLE FACT SHEETS

Call the Arizona Riparian Council at (480) 965-2490 or write to us at:

Arizona Riparian Council  
Center for Environmental Studies  
Arizona State University  
Box 873211  
Tempe, AZ 85287-3211  
<http://azriparian.asu.edu>

Please feel free to copy these materials for educational purposes. Funding for these materials has been provided in part by the USDA Forest Service, Rocky Mountain Station, Fort Collins, CO, and the Center for Environmental Studies, Arizona State University. Reprinting funded by the Arizona Water Protection Fund Commission (Grant # 04-122). All of the views within are those of Arizona Riparian Council &/or Prescott Creeks, and not necessarily those of the Commission, the State, or the Arizona Department of Water Resources.

Photos courtesy of Walt Anderson © 2004, except Black River by George Andrejko.



*Ramsey Canyon, Cochise County*