

## Quick Water Facts:



### Conversions:

A cubic foot of water (cf) = 7.48 gallons (gal)

A cubic meter of water = 264 gallons (264.1720512 gallon [US, liquid])

One gallon of water weighs 8.3 pounds, and each cubic foot of water weighs 62.4 pounds.

An acre foot (af) is enough water to cover an acre of land to a depth of one foot or 325,851 gallons of water. It is also enough to meet the needs of two averaged sized families for a year. Four to five AF would be able to irrigate an acre of cotton for a season or one golf course hole for a year.

### Individual Daily Water Usage

The US EPA estimates that the average American uses 100 gallons of water per day.

In Phoenix per capita consumption is 226 gallons, whereas in Tucson it is 160 gallons a day. In Payson, per capita consumption is closer to 70 gallons per day.

Normal water usage in a vacation home or resort is generally about 180-200 gallons per person, per day. This may seem very high, but this figure has been arrived at by numerous case studies.

Many resort guests shower an average of three times daily - once when they rise, again after swimming, golf or other activities and then prior to dinner.

### Water Collection – Examples of Rainfall Harvesting:

In a heavy rainfall of 1" inch of rain, a normal-sized home might easily accumulate 1,000 gallons of water. (1 inch rain X 1600 sq ft roof X .6233 = 1000 gal.)

More specifically, one square foot of horizontal roof, in a one inch rainfall, will receive 0.6233 gallons of water. Ergo, on a 1,000 sq ft roof area, during a 1 inch rain, 634 gallons could be collected, less evaporation, leakage, etc. Typically a collection efficiency coefficient of between 95% to 75% will reflect actual results.

### Water Production:

Every day 83.3 billion gallons of ground water are pumped in the United States. That is about 2.49 trillion gallons per month, or 29.88 trillion gallons per year.

### **Water Availability & Quality:**

Because 70% of the Earth is covered by water, it is called the 'Blue Planet'. Yet only 2.5% of the world's water is fresh, while 97.5% is ocean. And of that freshwater, only 0.3% is available from rivers, lakes and reservoirs, 30% from the groundwater, while the rest is stored in distant glaciers, ice sheets, or in the ground as permafrost or soil moisture – all places that we can hardly access.

The total water supply of planet earth is 326 million cubic miles (a cubic mile is an imaginary cube (a square box) measuring one mile on each side). A cubic mile of water equals more than one trillion gallons.

Pure water has a pH of 7.0. Normal rain is slightly acidic because carbon dioxide dissolves into it, so it has a pH of about 5.5. Milk has a Ph of 6.8, orange juice is Ph 3.0, Coca-Cola is Ph 2.53, and black coffee has a Ph of 5.0. Lemon or lime juice is about a Ph of 2.4, this level of acidity prevents most bacteria's growth.

### **The Main Pressures:**

During the past century, the world population has tripled, and water use has increased six-fold. These changes have come at great environmental cost: half the wetlands have disappeared during the 20th century, some rivers don't reach the sea anymore, and 20% of freshwater fish are endangered.

These environmental consequences also entail social and economic costs. While agriculture uses more and more water every year, to meet the food demands of a growing population, other users are competing for the same water: more people means more energy required, and more hydropower.

In many areas of the country, where there is plentiful rainfall, rainwater harvesting has the potential to mitigate, if not entirely resolve, most of these problems.

### **Rainfall & Water Facts:**

Payson enjoys an average of approximately 22 inches per year – data collected from 1940 to September, 2004. In comparison, Tucson and Phoenix areas only receive approximately 9 to 12 inches of rainfall per year.

Size of a rain drop: between 0.5 - 2.5 mm. They fall from the sky at between 13 and 30 feet per second. Ouch!

Most rain in less than an hour: Holt, Montana USA received 12 inches of rain in only 42 minutes, on the 22nd June 1947.