

TEACHER BACKGROUND INFORMATION

Discover Our Water (grades 4-5)



**ORO VALLEY
WATER UTILITY**



Developed by:
Environmental Education Exchange
www.eeexchange.org

Oro Valley's inhabitants live in a delicate balance with water. Here in the Sonoran Desert, we receive only 10-12 inches (25.4-30.5 cm) of rain each year and have no perennial (continuously flowing) rivers nearby. Our population has grown from 1,200 in 1974 to over 45,000 in 2019. In addition to our extraordinary population growth, and lifestyle amenities such as swimming pools, outdoor landscaping, and daily showers have resulted in a rapid depletion of our **groundwater**. In 1875, residents could dig just 25 feet (7.5 m) underground to access water, and the local Santa Cruz River flowed perennially. Today the river is dry and we may have to drill up to 700 feet (213 m) down in order to reach the aquifer.

By the 1900's, the water table was dropping in some areas at a rate of five feet or greater per year, so Oro Valley began to accept water from a second major source, the Colorado River. In 2012, Oro Valley began using groundwater blended with **Colorado River water** that was pumped 336 miles (541 km) from Lake Havasu via the Central Arizona Project (CAP) canal. There are fourteen pumping stations along the CAP to help move the water from lower to higher elevations, with a gain of nearly 3,000 feet (914 m). The CAP is the largest single user of electricity in Arizona. After the Colorado River water travels through the CAP, it is recharged into large basins west of the Tucson Mountains, where it percolates down to the water table before it is pumped up and into Tucson and ultimately Oro Valley. Currently, Oro Valley gets over 40% of its drinking water from the Colorado River.

A third source of water in the Oro Valley area is **reclaimed (or recycled) water**. After our water is used, it travels in pipes to the Water Reclamation Treatment Plant where the wastewater, or effluent, goes through a process that mechanically and chemically cleans it. This recycled water is treated to a standard that can be used for landscaping at parks, schoolyards, and golf courses. Some places are already recycling their water for drinking (for example: Disneyland, International Space Station, and Orange County Water District in California).

Even though we now have three sources of water, the practice of conserving water in Oro Valley is as important as ever. Oro Valley has been affected by drought and higher temperatures resulting from global climate change, and the Colorado River is not a limitless supply of water. In addition, Oro Valley's population continues to grow. Practicing **water conservation** includes taking shorter showers; turning off the faucet when brushing teeth, washing hands, and washing dishes; installing low-flow showerheads, faucet aerators, and toilets; doing full loads of laundry; using drip irrigation and desert landscaping; harvesting rainwater; and more!

Oro Valley's outreach education program promotes a water-conscious culture by fostering a deeper understanding of our relationship with water in the desert. The **Discover Our Water** program seeks to provide students in 1st through 3rd grades with a fun learning experience that will raise their appreciation of water and generate enthusiasm for water-saving practices. To schedule classroom presentations and learn more about related lessons, go to www.eeexchange.org/ovdow.

Discover Our Water Vocabulary

(Note: Use this vocabulary list as appropriate for your grade level students.)

aquifer the underground layers of rock, sand, and gravel where water is stored over millions of years

Cañada del Oro (CDO) Wash a riverbed that flows through the town of Oro Valley and feeds into the Santa Cruz River; it is usually dry most of the year and only flows after significant rains

Central Arizona Project the 336-mile (541 km) canal that transports Colorado River water to Phoenix and Tucson

Colorado River the largest river in the western United States (which flows through many states, including Arizona)

condensation occurs when water vapor cools and becomes liquid; clouds are formed through this process (could be considered the opposite of evaporation)

desert a dry region of the world that receives less than 12 inches (30.5 cm) of rainwater each year

evaporation occurs when liquid water changes into water vapor, a gas (could be considered the opposite of condensation)

groundwater water that exists beneath the Earth's surface in an aquifer

natural resource any resource that we use or take from the natural environment; can include both materials and energy (examples: water, trees, soil, natural gas, oil, or minerals)

non-renewable resource material considered finite in amount (examples: petroleum, coal, copper), or exhaustible because of scarcity, the great length of time required to form, or rapid depletion

percolation the downward movement of water through soil

precipitation water falling, in a liquid or solid state, from the atmosphere to the Earth (examples: rain, snow, hail, sleet)

recharge the addition of water, usually from rain and snowmelt, into the aquifer; may be artificially done by humans

recycled water (reclaimed water) wastewater cleaned to government standards to be reused for many purposes

renewable resource material that can be renewed, restored, or regenerated by natural ecological cycles or sound management practices (examples: plants, animals and sunlight; water is considered renewable through precipitation and recharge, but in the Oro Valley/Tucson area, it is a limited renewable resource)

resource source, ability, or supply from which we draw in time of need

runoff water from rain or snowmelt flowing downhill into washes, streams, and rivers

Santa Cruz River the largest river in Tucson, which is now dry most of the year and only flows after significant rains

transpiration the evaporation of water from plants; occurs primarily through the leaves

water table the uppermost surface of groundwater in the aquifer

well a hole dug or drilled down into the aquifer to locate and obtain water (deep water is usually brought up to the surface with a pump)