Water

Apache

Fresh water is a precious and limited resource. We minimize our use by using nonfresh sources when possible, employing recycling technologies, and by reducing the overall amount of water required for our operations.

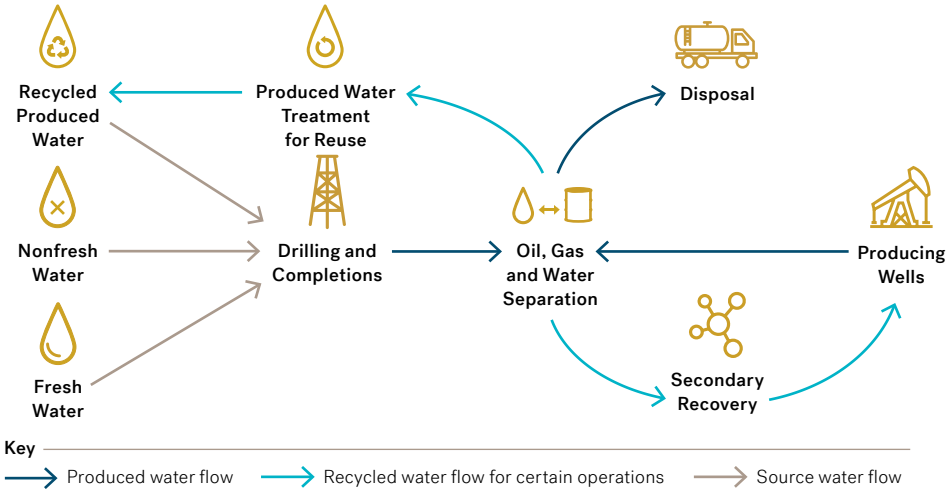
We seek to use nonfreshwater sources for our operations whenever possible. We also are focused on water recycling efforts which help reduce the liklihood that our activities will compete with other needs for fresh water. We also follow comprehensive procedures for safeguarding water quality and for handling produced water responsibly.

Prior to beginning operations in a new area, we test and obtain baseline water-quality data. We also conduct **post-drilling, water-quality monitoring**. These tests include pH, salinity and total petroleum hydrocarbons among others.

WATER USE AND WITHDRAWALS

Drilling, completions and production operations are our primary uses of water, which we source from water recycling operations, groundwater aquifers, surface waters and municipal water.

Over the past five years, we have primarily **decreased our freshwater consumption** by increasing our reuse of produced water, which includes produced water from secondary recovery and hydraulic fracturing operations.



KEY DATA

80% of the total water consumed for operations since 2015 has been recycled or reused water

63% of the water used in our U.S. hydraulic fracturing operations in 2019 was nonfresh or recycled produced water

95% of the water consumed for our operations in 2019 was nonfresh water

284% increase in our use of recycled produced water for hydraulic fracturing since 2015

Apache also **protects aquifers** by ensuring the integrity of our wells. We take great care when planning and performing operations to minimize the chances of a well failure. Our team designs our well drilling plans and completion programs through a detailed and extensive review of local geologic knowledge and previous operational conditions for the entire depth to which each well will be drilled. In addition, we consider the potential for impacts to adjacent wells or faults and include mitigation plans.

We carefully design the surface casings for our wells to protect usable groundwater intervals. We monitor and record essential data from cement jobs and perform evaluations to ensure adequate isolation of producing intervals, including zonal isolation for protected water resources. We use **industry best practices for our cement testing methods**, including cement bond logs, ultrasonic testing and temperature logging.

Last updated November 2020.