

siliconvalley



ADVANCED WATER  
PURIFICATION CENTER



San José-Santa Clara  
Regional Wastewater Facility

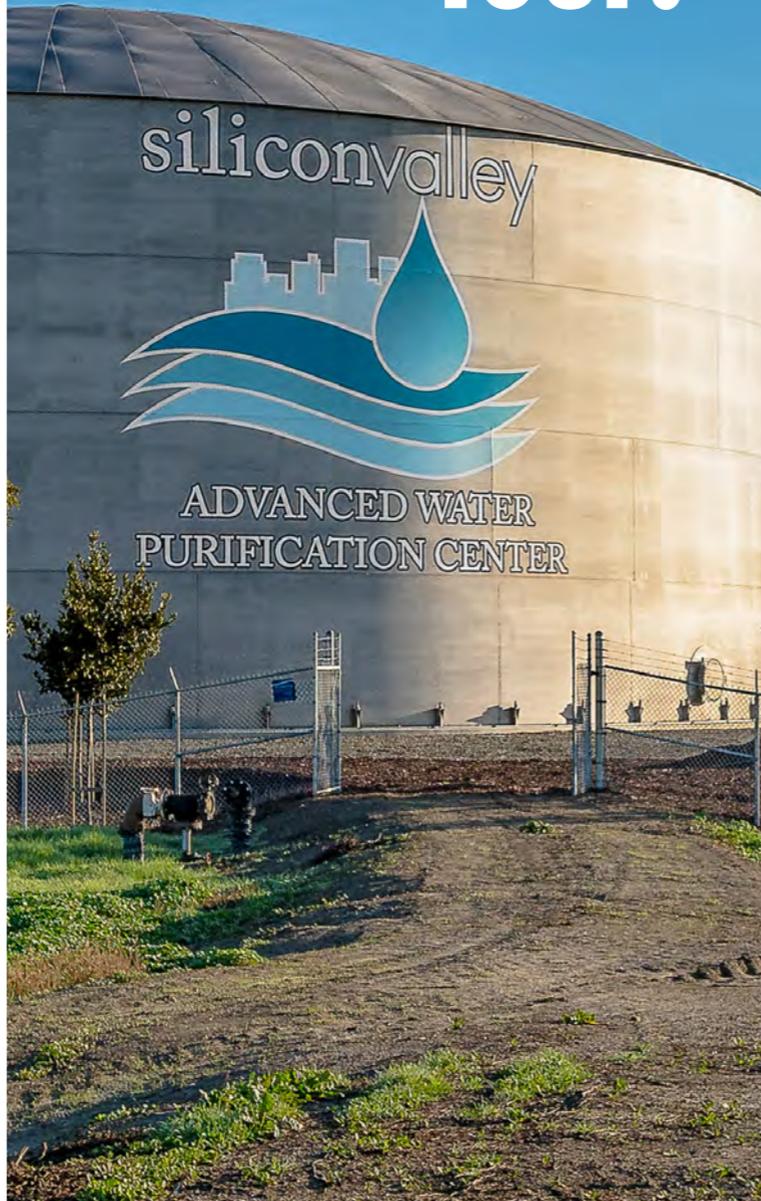
Santa Clara Valley  
Water District



For more information or to sign up for a tour, visit  
**purewaterSV.org**  
or call 408.630.3533

The Santa Clara Valley Water District manages an integrated water resources system that includes the supply of clean, safe water, flood protection and stewardship of streams on behalf of Santa Clara County's 1.9 million residents. The district effectively manages 10 dams and surface water reservoirs, three water treatment plants, one advanced water purification center, a state-of-the-art water quality laboratory, nearly 400 acres of groundwater recharge ponds and more than 275 miles of streams. We provide wholesale water and groundwater management services to local municipalities and private water retailers who deliver drinking water directly to homes and businesses throughout Santa Clara County.

# Let's Take a Tour!



## Innovation...

### For a reliable water supply

The Silicon Valley Advanced Water Purification Center, the largest advanced water purification plant in northern California, is the focal point of the Santa Clara Valley Water District's recycled and purified water expansion. The water district has partnered with cities and recycled water producers in the county to develop additional recycled and purified water supplies to help ensure an adequate and reliable supply of high quality water.

The purification center uses state-of-the-art processes—microfiltration, reverse osmosis and ultraviolet light—to purify treated wastewater. The result is 8 million gallons a day of highly purified water.

### Highly purified water

Highly purified water is filtered, disinfected and purified to very high quality and verified through monitoring to meet all California primary and secondary drinking water standards. The highly purified water can be used for various purposes, including potentially expanding Silicon Valley's future drinking water supplies, by adding purified water into our percolation ponds for groundwater replenishment or blending it with other water sources.

## Around the world ... Water reuse for drinking





## Intake pumps

At the purification center, the 8 million gallons of water start their journey at the intake pumps. Three basic processes happen at the intake pumps area: Pressurization, disinfection and straining. This water has already gone through two levels of treatment at the neighboring San José-Santa Clara Regional Wastewater Facility before arriving at the purification center. There are four 200 horsepower pumps (including one back up pump) that move the incoming, secondary treated water from the wastewater plant.



## Microfiltration process

In this initial process, water is forced through filtration membrane modules made up of thousands of hollow fibers, similar to straws. These fibers have microscopic pores that are about 1/3,000th the width of a human hair.

As the water is drawn through the pores into the center of the fibers, solids, bacteria, protozoa and some viruses are filtered out of the water.



## Inter-process tank and transfer pumps

The filtered water from microfiltration system is conveyed to a 250,000 gallon stainless steel tank.

From here, the water flows to the reverse osmosis (RO) transfer pumps, where it is pumped through cartridge filters as a pre-treatment step before going to the RO feed pumps.



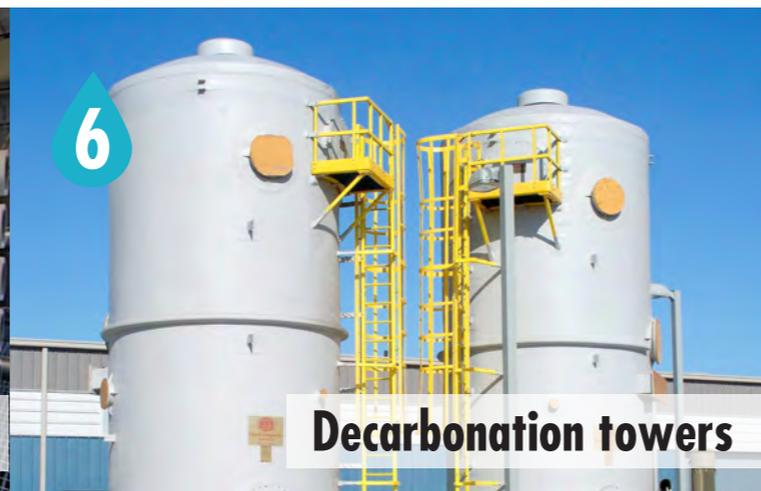
## Reverse osmosis feed pumps

The center has three 500 horsepower RO feed pumps that boost the pressure and push the water to the next phase of the reverse osmosis purification process. Before entering the RO system, two chemicals are added to eliminate scaling, or the buildup of minerals, and protect the RO membranes.



## Reverse osmosis process

High pressure forces the treated water through tightly wound sheets of thin membranes with pores so small that most substances larger than a water molecule cannot pass through. RO removes contaminants, viruses, pesticides, salts and other materials from the water, producing highly purified water. This is the same process that is used by some bottled water companies and baby food manufacturers and for kidney dialysis.



## Decarbonation towers

The water produced by reverse osmosis process contains a lot of carbon dioxide (CO<sub>2</sub>), which would make the water corrosive to the pipelines. Decarbonation removes carbon dioxide and raises the pH of the water, reducing corrosion in downstream facilities, including the distribution pipelines. Water cascades from the top of the tanks and the air blowers, adjacent to each tower, provide an upwards airflow, which removes excess CO<sub>2</sub>.



## Ultraviolet light disinfection process

Now the water is very clean. But as a further safety back-up step, the water is disinfected using ultraviolet (UV) lights. There are six UV trains, each consisting of a pair of UV vessels. Each vessel holds 40 high-intensity UV lamp bulbs, similar to extremely concentrated sunlight. This technique is often used to sterilize medicines, food and fruit juices. Hospitals and dental offices use it to sterilize instruments.



## Highly purified water storage tank

After ultraviolet light disinfection, the highly purified water is sent to a 2.25 million gallon stainless steel product water storage tank.

From the storage tank, the purified water is sent to the Transmission Pump Station, where it is blended with tertiary-treated recycled water. From here the improved recycled water is sent to the South Bay Water Recycling distribution system and on to more than 800 customers, that use recycled water for non-potable uses such as landscaping and industrial processes.