

# Desalination Program

Eastern Municipal Water District's (EMWD) Desalination Program produces potable (drinking) water from otherwise unusable brackish (salty) groundwater in Perris and Menifee. Two reverse osmosis desalters, located in Menifee, provide drinking water for up to 14,500 families annually. A third desalter unit is currently in the design process and will be located in Perris.

EMWD's Desalination Program will ultimately remove up to 50,000 tons of salt from the groundwater basin each year and will generate more than 13,000 acre-feet per year of potable water—enough to supply 24,500 families.

In addition to reducing demand for imported water from the Sacramento-San Joaquin Delta and the Colorado River, EMWD's Desalination Program assists with salinity management in the area to allow for the expansion of water recycling and the protection of high-quality groundwater.

EMWD's Desalination Program is one of several strategies EMWD is pursuing to become less reliant on imported water and move toward the goal of drought-proofing the region and providing reliability and flexibility to the area's water supply.

## What is desalination?

Desalination is the process of separating salt from water. There are two methods of desalination: distillation and membrane treatment.

Distillation uses heat energy to evaporate water and recondense pure water, which is similar to what happens in nature through the hydrologic cycle. In nature, the sun evaporates water from lakes, oceans, streams, etc. The evaporated water (water vapor) eventually reaches cooler air, where it condenses into clouds and returns to the ground as dew or rain.

Membrane treatments include reverse osmosis, electrodialysis, membrane softening, and nanofiltration. EMWD uses the reverse osmosis process for brackish (salty) water collected from desalter system wells. This process essentially reverses the natural flow of water across a permeable membrane to remove impurities—such as excess amounts of salt—from the water.



## QUICK FACTS

EMWD is located in the semi-arid inland region of Southern California and provides water, wastewater and recycled water services to more than 816,000 people living and working within a 555-square mile service area in western Riverside County.

EMWD imports approximately 49 percent of its total water supply from the Sacramento-San Joaquin Delta and the Colorado River through The Metropolitan Water District of Southern California.

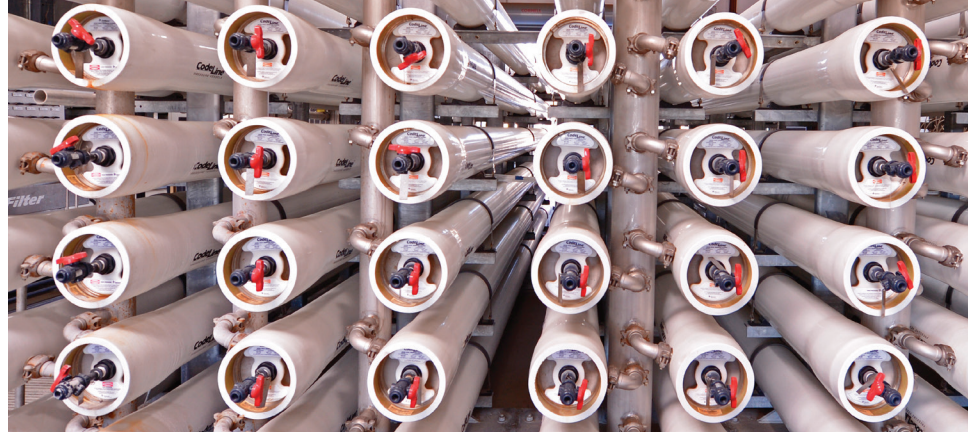
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Desalinated water is then blended with other fresh water sources before it is delivered to customers.

## What happens to the salt that is removed from the water?

The salt and other impurities are called concentrate and can be disposed to surface water bodies, evaporation ponds, or to wastewater treatment plants. In some instances, the concentrate can also be utilized beneficially for industrial processes. EMWD disposes concentrate through brine pipelines to the ocean.

## How Salty is Salty?

The level of salinity in water is measured in total dissolved solids (TDS). In a reverse-osmosis system, the greater the TDS concentration of the water, the higher the pressure needed for the pumps to push water through the membranes, and consequently, the higher the energy costs.

<u>Water Source</u> .....	<u>TDS (mg/L)</u>
Distilled Water .....	0
Bottled Water .....	30-200
Mountain "Spring" Water .....	100
San Jacinto Groundwater .....	190-300
State Water Project Water (Northern CA) .....	250-350
<b>EPA "Recommended" Limit for Potable (Drinking) Water .....</b>	<b>500</b>
Lake Skinner Water .....	600-700
Colorado River Water .....	650-750
EMWD Recycled Water .....	500-800
<b>EPA Maximum Contaminant Level (Long-Term) .....</b>	<b>1000</b>
<b>EPA Maximum Contaminant Level (Short-Term) .....</b>	<b>1500</b>
<b>Agricultural Use Limit .....</b>	<b>1000-2000</b>
Menifee and Perris Desalters Feed Water .....	2000-3000
Menifee and Perris Desalters Brine Concentrate .....	15,000
Ocean .....	34,000