

RESERVOIR 1

Years Constructed:	1988 - 1990/Dedicated May 1990
Capacity:	10 million gallons
Pump Station Capacity:	9,500 gpm
Depth:	45.2 feet
Width:	131.6 feet
Length:	265 feet
Area of Reservoir Site:	40,000 square feet



History of Reservoir 1

Reservoir 1 has been in operation since the Spring of 1990. It is a 10-million gallon rectangular reservoir made from steel reinforced concrete and constructed partially below ground. The design of the Reservoir incorporates a number of unique structural features for earthquake safety.

The exterior is architecturally designed to resemble a commercial building, such as a warehouse.

Operations

Reservoirs "float" on the water system, meaning the flow into the reservoir is set at average water usage. During times of the day when system usage is low, Reservoir 1 is filled. During periods of above-average or peak use, the reservoir is emptying. Reservoirs help equalize the demand on supply facilities.

Mesa's wells produce water from the groundwater basin. System pressure fills the reservoirs. The ability to store more well water allows Mesa to maximize the use of a local, higher quality, less expensive source. The reservoir may also be filled with imported water.

In addition to daily use, the reservoir provides emergency water storage. During an emergency, the water demand may exceed the capability of local wells and available import sources. Continuous local storage helps safeguard adequate supplies for such an event.

Long-range Planning

In 1986, the District introduced a Master Plan to meet the long-term growing needs of its customers. The plan

defined ways to improve water delivery systems, create additional local storage facilities, and develop new sources of water. In 1990, the Master Plan was updated with a primary focus to "drought-proof" the service area. This is accomplished by developing additional supplies of local groundwater thereby reducing reliance on imported water.

Increasing the use of well water provides operational flexibility and local control that enables Mesa to minimize the use of imported water. Well water is higher in quality, and lower in cost than imported water. Mesa is fortunate to have access to such a reliable low-cost source of water.

Source of Water

Mesa's primary water source is groundwater. Mesa strives to provide its customers with as much groundwater as possible, which is pumped from Orange County's natural groundwater basin or aquifer via nine wells.

The groundwater basin stretches 350 square miles from the Orange County line at Seal Beach and Long Beach, along the coast, down to the 55 freeway and east to Yorba Linda.

Backup for Mesa's well water is imported water, which comes from the Colorado River. It flows through aqueducts to the Robert B. Diemer Filtration Plant in Yorba Linda.

Imported water is more costly than groundwater because of transportation and treatment costs.

Currently Mesa owns and operates two reservoirs, which have the combined capacity to store more than 28 million-gallons of water.

Groundwater Basin

Groundwater in Orange County occurs in horizontal layers of water-bearing sand, gravel or broken rock and not in underground lakes or streams. These formations, called aquifers, are separated by layers of non-water bearing materials, and make up the groundwater basin. The Orange County Water District manages the local area groundwater basin and utilizes advanced techniques for helping nature recharge the groundwater basin.

The Santa Ana River is the main contributor to the groundwater supply. Water from the Santa Ana River reaches the aquifers through a number of routes. It infiltrates the soil on the earth's surface as rainfall, or percolates through the gravel of streambeds or unlined ditches. Water is also placed in the ground artificially, through man-made percolation ponds or injection wells.

Service Area

Mesa provides water service to more than 100,000 customers in an 18-square mile area including the City of Costa Mesa, parts of Newport Beach and unincorporated Orange County, including the John Wayne Airport.