Mesa Consolidated Water District

COLORED WATER TREATMENT FACILITY WELLS 6 & 11

Well 6

Year Drilled:	**1983**
Depth:	**1,200 feet**
Gallons per minute:	**4,000**
Area of well site:	**Southeast corner of Colored Water Treatment Facility**
Type of engine:	**Well powered by a 400 hp. electric motor**

Well 11

Year Drilled:	**2000**
Depth:	**1,200 feet**
Gallons per minute:	**4,000**
Area of well site:	**Southwest corner of Colored Water Treatment Facility**
Type of engine:	**Well powered by a 400 hp. electric motor**

History of Wells 6 & 11

In 1977, when Mesa drilled its Well 4, amber colored water was encountered. This type of water is found in deep aquifers ranging from 600 to 1,200 feet. The water is high in quality but is the color of tea, smells like sulfur or rotten eggs, and is slightly warmer than average water. The color and odor are caused by natural organic material from ancient forests or marshes of the coastal plain. The amber colored water is extremely soft, high in quality, and is superior to imported water.

In 1983, Mesa elected to drill Well 6, which tapped into the lower aquifer to a depth exceeding 1,000 feet. Well 6 encountered even darker colored water than Well 4 and was temporarily capped until further research could provide an analysis for the Colored Water Treatment Facility.

Over the next 15 years, Mesa worked in conjunction with the Orange County Water District (OCWD), which manages the groundwater basin, to conduct research and development on colored water treatment. Ozone is injected into colored water to remove the color and odor.

In the early 1990's, Mesa began exploring the possibility of developing a colored water well, which is where the Colored Water Treatment Facility is located. In 1992, Mesa and OCWD began collaborating on a test project using biofiltration; a process that removes organic materials from colored water after it has been treated with ozone. As part of the Colored Water Treatment Facility project Well 11 was drilled.

With all of the information gathered, Mesa launched a test project in 1997 to see what it would take to treat water from Well 6 and distribute it into Mesa's system. It took less than a year to determine that the Colored Water Treatment Facility was a win-win facility for Mesa and its customers.

Long-range Planning

In 1986, Mesa introduced a Master Plan designed 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, 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 source of water 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.

Colored Water

In 1984, Mesa began using a new source of water, "colored water," found in deep aquifers about 600 feet under the ground's surface.

Although safe to drink, water from these aquifers was previously unusable because of the presence of hydrogen sulfide which causes an unpleasant odor. The water also has an amber tint due in part to decomposed organic materials accumulated in the deeper aquifer years ago. Mesa is a pioneer in the use of ozone for the treatment of "colored water" which removes all traces of color and odor. Mesa is among few in the nation using this progressive technology.

State-of-the Art Facility

Mesa's Colored Water Treatment Facility is located on more than two acres of land in Costa Mesa. The facility treats five million gallons of amber colored water per day via two wells. Mesa is the first water purveyor in Orange County to treat and distribute colored water to the community. Mesa's facility is a model for area water agencies that are exploring colored water resources.

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.