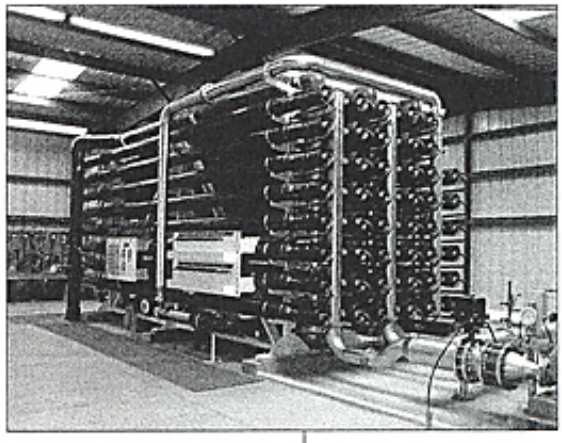
The City of Oceanside anticipates that its 6.37 mgd Mission Basin Desalter expansion will be completed by the end of the year 2002. The project will include the development of the estimated remaining "safe yield" of the basin through expansion of the existing demineralization facility. The Sweetwater Authority's planned Richard A. Reynolds Demineralization Facility 8-mgd expansion is currently in the preliminary design phase. The project will include the completion of additional extraction wells needed to supply brackish groundwater to planned demineralization facility expansion(s). The project is also expected to include an aquifer recharge component.



Current planning efforts indicate that other potential projects in the Authority's service area may also be feasible. A number of groundwater storage and recovery projects are currently being studied by the Authority and its member agencies. These groundwater project concepts will be candidates for possible inclusion in the next plan update. These studies include the San Diego Formation Aquifer Storage and Recovery Project and the Lower San Luis Rey River Valley Groundwater Storage and Recovery Project.

The City of San Diego has indicated to the Authority that they are developing plans to maximize the development of the City of San Diego's rights or interests in several groundwater basins. These plans would utilize basins for groundwater extraction and disinfection, brackish groundwater recovery, and recharge and recovery of imported and recycled water. Other Authority member agencies are also considering additional groundwater projects including the Otay Water District which is currently studying numerous groundwater development options within their service area.

4.5 SEAWATER DESALINATION

Desalinated seawater is used throughout the world as a potable water supply and is sometimes described as the ultimate solution to Southern California's water supply needs. In some areas of the world, such as the Middle East, desalinated seawater represents the primary source of potable water. Until recently, the cost of seawater desalting has limited its large-scale application in the United States. Current projects being developed in Tampa, Florida and the island of Trinidad seem to indicate that the cost of seawater desalting may have decreased to a point where it could be considered a potential resource option for coastal areas such as San Diego County. Therefore, seawater desalination should be considered in the development of any comprehensive water resources management plan for the San Diego region.

4.5.1 Description

Processes commonly used for large-scale seawater desalination fall into two general categories: (1) thermal processes and (2) membrane processes. Thermal processes

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use heat to separate salt and other impurities from seawater. Membrane processes, such as RO, use pressure to force seawater through a semi-permeable membrane. The membrane is constructed of materials that will allow water molecules, but not dissolved impurities, to pass through. Thermal facilities currently represent the largest volume of installed seawater desalination capacity. However, these facilities tend to be located in areas of the world where fuel is inexpensive. As membrane technology continues to improve, RO is gaining popularity as a less costly, more energy-efficient desalination technique.

Since 1991, the Authority has closely studied the development of seawater desalination facilities. Early studies evaluated both thermal and membrane processes and concluded that RO would be the most cost-effective desalination technology for this region. Subsequent studies focused on the construction of an RO facility in conjunction with the proposed repowering of the SDG&E South Bay Power Plant. A first year water cost of $1300/AF (1999 dollars) was estimated. Although the project was found to be technically feasible, many of the benefits anticipated from collocating the facility failed to materialize. In 1993, the study concluded that environmental, regulatory, and cost issues combined to make desalinated seawater more expensive than other available water resource options. Since 1993, the Authority has continued to monitor efforts to advance and develop seawater desalination technology into a viable, cost-effective water resource option.

4.5.2 Issues

Economic Considerations

As with other water supply projects, cost remains the primary barrier to project development. However, recent seawater desalination projects in Tampa, and Trinidad, seem to indicate that the cost of seawater desalination, in some site-specific situations, has decreased since the Authority's last seawater desalination study was completed in 1993.

Authority staff has been closely monitoring the progress of the 25 mgd seawater desalination project proposed in Tampa, Florida. The competitive proposal process for the design, construction, and operation of this project gained worldwide attention - with the best and final offer having a first-year water cost (expressed in 1999 dollars) of $560/AF and a 30 year nominal cost of water of $680/AF. The Tampa project includes several factors that contribute to the extraordinarily low water pricing, including:

- Lower feedwater salinity at 26,000 mg/l (average TDS in Tampa Bay) vs. 35,000 mg/l (normal seawater salinity).
- Interruptible power cost at slightly less than $0.04/kilowatt-hour.
- Availability of the power plant's existing cooling water canals for intake and discharge.
- Design modifications to comply with some existing permits.

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