

AFFORDABLE DESALINATION COALITION, CALIFORNIA

Affordable Desalination Demonstration Project

HIGHLIGHTS

Developed testing protocols for non-profit desalination coalition.

Provided independent review of record low-energy consumption desalination process.

Carollo served as the independent reviewer and developed testing protocols for the Affordable Desalination Demonstration Project (ADDP), which was funded by the Affordable Desalination Coalition (ADC), California. The ADC is a non-profit organization that includes industrial and municipal interests that contributed funds and resources to evaluate new technology and demonstrate an energy consumption rates for conversion of seawater to potable water of 6.6 kW-hr/kgal. This energy consumption rate represents a new record low, approximately three times less than any previous design used to desalinate seawater.

The ADDP was hosted and staffed by the Naval Desalination Research Facility in Port Hueneme, California. Design of the ADDP seawater desalination system included the use of:

- ▶ Low energy, high rejection seawater RO membrane.
- ▶ High efficiency positive displacement pump and motor.
- ▶ Pressure exchanger energy recovery device.

Goals for the ADDP included:

- ▶ Demonstrating record low energy consumption using design concepts and technology.
- ▶ Achieving acceptable TDS and boron removal rates in a single pass.
- ▶ Determine the optimum design conditions for reducing energy and lifecycle costs.



The ADC facility will demonstrate Pacific Ocean desalination at energy consumption rates three times lower than thought possible.

Carollo's test protocol included evaluation of three different seawater RO membranes at three fluxes, and three recovery rates. The optimum design consisted of the use of a low energy, high rejection membrane at a flux of 6 gfd, and a recovery rate of 40 percent.