

Southwest The Resource for Semi-Arid Hydrology  
**HYDROLOGY**

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**Desalination**

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# Southwest The Resource for Semi-Arid Hydrology HYDROLOGY

A bimonthly trade magazine for hydrologists, water managers, and other professionals working with water issues.



From the Editor

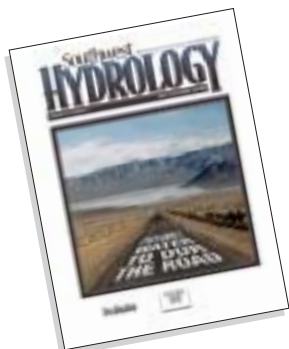
*This issue marks the beginning of Southwest Hydrology's second year of publication, and the beginning of its distribution by paid subscription only. Thanks to all of you who have shown your support for, and interest in, the magazine by sending in your subscription. We hope you will encourage others to subscribe as well, for that is what will keep this magazine in production.*

*In this issue, we look at desalination as a new source of water to supplement our existing – and dwindling – resources in the Southwest. While ocean water is often the first source that comes to mind for desalination, other sources, including river water, brackish groundwater, recycled water, and oil- and gas-produced water, all are candidates. Desalination research and technology development, and even use, are well underway in every state in the Southwest. The cost of the technology has fallen in recent years, making it worthy of consideration in areas where local sources are depleted and the cost of importing water is high. However, the issues of waste disposal – particularly in inland areas – and inefficiencies of the process still make it an expensive alternative. The final article in the feature proposes where this technology might go in the future. We thank all of our feature authors for their contributions to this issue.*

*As we begin this second year of production, we'd like to reinforce our intent that this magazine be not only for you, our readers, but also by you. As travel and meeting budgets are cut, it is still important to communicate with each other about what's working, what's not, and in general, what's new. This magazine is an inexpensive, yet effective, forum for communication, and we strongly encourage your contributions.*

*We'd like to recognize all the contributors to this issue, listed on the opposite page. We'll look forward to your news, comments, and suggestions for upcoming issues.*

Betsy Woodhouse  
Editor



*Composite photograph created to illustrate brackish water resources in the Southwest, which may be under consideration for desalination operations. Image was composed from photographs taken at Death Valley National Park by John Crossley (visit [www.americansouthwest.net](http://www.americansouthwest.net)). However, no implication that desalination is being considered in the Death Valley region is intended.*



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Editorial Contribution

Southwest Hydrology welcomes contributions of news, project summaries, product announcements and items for The Calendar. Send submissions to Southwest Hydrology, PO Box 65690, Tucson, AZ 85728; or email to [mail@swhydro.com](mailto:mail@swhydro.com). Visit [www.swhydro.com](http://www.swhydro.com) for additional guidelines for submissions.

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Southwest Hydrology was founded with the generous support of the Bunny Clutch.



# Will Desalination Provide the Water Supply of the Future?

As local water supplies become depleted and demand for water in the Southwest continues to rise, municipalities have begun considering other sources of water – brackish groundwater, recycled water, and seawater, made potable through desalination. The cost of desalination technology has come down in recent years, although it is still not competitive with treatment of fresh water. However, when local freshwater sources are no longer available and the costs of importing water are factored in, desalination may become economically feasible in some areas. Several desalination plants were built in the Southwest in the early 1990s, but an end to the drought that prevailed at that time resulted in those plants having never been used. Given the current drought, as well as an increased demand for water resources, their operation is again being considered, and many more are in the planning or construction phase.

## 12 Desalination Today

*Lisa Henthorne*

Desalination processes now are producing more than 8 billion gallons of high quality water per day worldwide. Thermal processes remain the workhorse for large-scale production in the Middle East, but membrane technologies are the choice for most new applications and account for the majority of U.S. production.

## 14 Desalination – A Texas Perspective

*Hari Krishna, Ph.D., P.E.*

While the Texas population is expected to double in the next 50 years, existing water sources are predicted to diminish by 19 percent. Currently, 100 desalination plants produce about 40 million gallons per day from brackish sources, but the governor is paving the way to large-scale seawater desalination.

## 16 Bridging the Gap: Desalination of Recycled, Brackish, and Ocean Water

*Darryl Miller*

A Southern California utility already produces more than 27,000 acre-feet of desalinated water per year from brackish and waste water sources, and is looking toward the ocean as the ultimate reservoir to provide fresh water for the community.

## 18 Desalination of Inland Brackish Water

*Mike Hightower*

Inland applications of desalination technology have lagged behind seawater processing due to waste-disposal, efficiency, and cost issues. However, the scarcity of new water sources for many areas of the Southwest is making desalination cost-competitive with importing fresh water from remote locations.

## 20 The Yuma Desalting Plant: 2003

*Edward Lohman, P.E.*

The salinity of the Colorado River is about 50 ppm at its source high in the Rocky Mountains, but reaches concentrations as high as 1,200 ppm near the Mexico border. The Yuma Desalting Plant was built to address that problem, but has never been put into use.

## 22 The Future of Water Development in the Southwest

*Thomas E. Hinkebein, Ph.D.*

Business as usual? Or a renewed national commitment to developing technology to assure a sustainable water supply? Desalination experts map out a route to address our water supply challenges.