Fall 2008

Integrated Water Plan Update

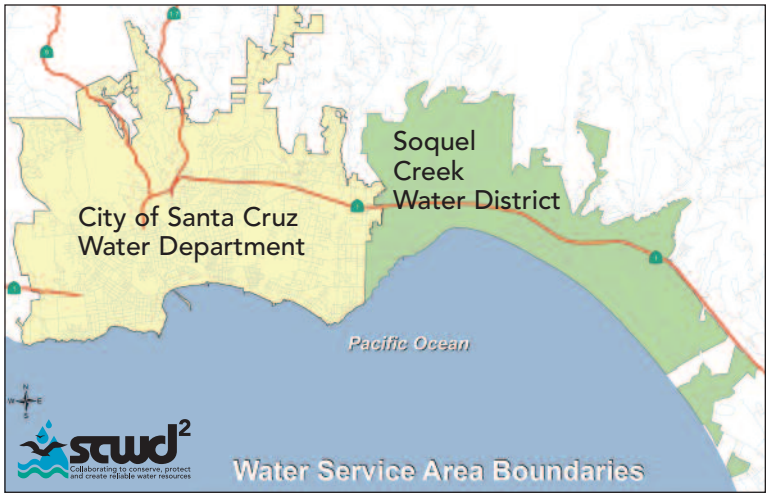
Santa Cruz Water Department and Soquel Creek Water District

scwd² Collaborating to conserve, protect and create reliable water resources

scwd² Integrated Water Plan

Our community, like most of California, is facing drought, long-term water supply issues, and impacts due to global climate change. To supplement our existing supplies and ensure we have sustainable and reliable, high-quality drinking water, the City of Santa Cruz Water Department (SCWD) and Soquel Creek Water District (SqCWD) have joined together to diversify our water portfolios and investigate seawater desalination as a supplemental water resource. Because both agencies share the same initials, this joint venture is referred to as **scwd²**.

The water supply for customers served by the SCWD and SqCWD is solely provided by local sources and comes from either surface water (North Coast Diversions, San Lorenzo River, and Loch Lomond Reservoir) or groundwater aquifers, which store water underground.



The **scwd²** Integrated Water Plan (IWP) is a flexible, phased approach for providing a reliable supply of water during a drought, preserving our coastal aquifers from saltwater intrusion, and ensuring protection of public health and safety. The **scwd²** IWP consists of four components:

- **Conservation** — Reduce customer demand for water and increase water use efficiency to obtain the greatest public benefit from available water supplies
- **Rationing** — Further reduce water use, by up to 15 percent, through temporary water restrictions during times of drought
- **Supplemental Supply** — Construction of a desalination plant is being evaluated to meet additional water needs
- **Recycled Water** — Use recycled water where feasible

Conservation and rationing are, and will continue to be, an extremely important part of the IWP. However, even with increased conservation and water restrictions imposed, there may not be enough water to meet demand during a prolonged drought. Thus, a supplemental source is vital.

Desalination would provide SCWD and SqCWD with a weather-independent and drought-proof water source and would provide the supplemental water supply we currently need.

Conservation Programs for SCWD and SqCWD

SCWD and SqCWD rely entirely on local sources for our community's drinking water supply. Because our water supplies are limited, it is important that everyone use water efficiently and wisely. We are proud that our customers average approximately 75 gallons per person per day (gpd), which is 45 percent ***less*** than California's average of 134 gpd.

SCWD and SqCWD have a long-standing commitment to water conservation and both offer a variety of programs, informational materials, and incentives to help our customers become more water efficient.

For more information on how you can improve water efficiency at your home or business, please contact:

City of Santa Cruz Water Department
Water Conservation Office at
(831) 420-5230 or visit www.ci.santa-cruz.ca.us/wt/conservation/

Soquel Creek Water District
Conservation Department at
(831) 475-8500 or visit
www.soquelcreekwater.org

What Other Alternatives Were Evaluated?

A joint desalination plant is not a "quick solution" or "silver bullet project" to solve our existing water shortages. Both the SCWD and SqCWD have been investigating new supplemental water supply for more than 20 years.

Most recently, SCWD and SqCWD have conducted exhaustive evaluations of water supply options and potential new water sources through the SCWD Integrated Water Plan (IWP, 2005) and the SqCWD Integrated Resources Plan (IRP, 2006).

Through those efforts, over 30 projects were identified, including building one or more new reservoirs, substantial use of recycled water, groundwater recharge and importing water. However, after evaluating the alternatives, both studies concluded that a desalination plant appears to be the best solution for allowing both agencies to provide a reliable water supply that meets long-term needs while ensuring protection of public health and safety.

A full-scale desalination plant has become a viable option since the plant can be used by both agencies, technological advancements have greatly reduced operating and energy costs, there are minimal environmental impacts compared to other alternatives, and it is not dependent on rainfall.

SCWD and SqCWD will continue to evaluate desalination and conduct studies related to energy, environmental impacts, and water quality in preparation of the project level Environmental Impact Report (EIR), which is required for the proposed full-scale plant.

The SCWD Integrated Water Plan (IWP, 2005) and the SqCWD Integrated Resources Plan (IRP, 2006) are available at:

www.scwd2desal.org/documents.html

Why Desalinated Water?

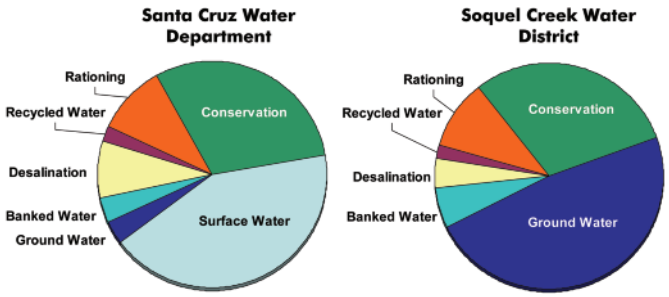
California has recently declared a statewide drought, the first such designation since 1991. Locally, our own community is facing drought, groundwater overdraft and long term water supply needs.

The Santa Cruz Water Department (SCWD) and Soquel Creek Water District (SqCWD) have been proactive in conserving our existing resources. Both have been recognized for exemplary conservation programs and customers from both agencies have been doing their part, such as installing low-flow toilets, irrigating their landscaping with drip systems, and washing their clothes in high-efficiency washers. Despite these efforts to reduce demand, SCWD and SqCWD are still in need of a supplemental supply of water to complement our existing water resources.

As proposed, the collaborative desalination project calls for the SCWD to use the water during drought periods and SqCWD to use it during non-drought periods to reduce overdraft of the groundwater basin and prevent salt-water intrusion. Both agencies would only use desalination as a supplemental source of supply in addition to existing surface water and groundwater sources.

Desalination is a weather-independent source of water since it is not affected by droughts, like surface water, and can be used when existing supplies are extremely limited. During wet years, the desalinated water would be produced in smaller amounts to help restore groundwater levels.

Desalination Would Help Supplement Existing Water Supplies



Charts illustrate the proposed diversified water portfolios for each agency during drought conditions.

Diversified water portfolios would enable us to provide a reliable supply of water during drought, preserve our coastal aquifers from salt-water intrusion, and ensure protection of public health and safety.

How to Stay Informed

scwd² is committed to educating our community about our need for a supplemental source of water, the pilot project and the proposed full-scale project. There will be ample opportunities for public input throughout the project approval process. To receive email project updates, contact melanies@soquelcreekwater.org or call (831) 475-8501x153. To learn more, visit our Web site at www.scwd2desal.org.

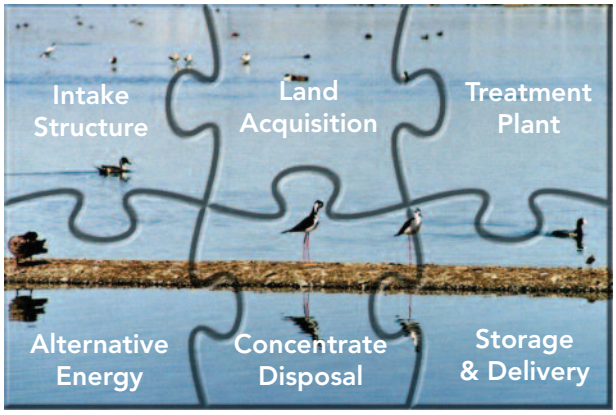
Pilot Plant Tours

The public is invited to take a tour of our Seawater Reverse Osmosis pilot plant facility located at the UCSC Long Marine Laboratory (LML) in Santa Cruz.

- On the second Wednesday of the month at 10:00 AM (free). For tour information, please call (831) 475-8501x153 or visit www.scwd2desal.org/tours.html
- Through the Seymour Center (at UCSC LML) as part of the daily grounds tour (nominal fee). For information, call (831) 459-3800
- For large groups (by special arrangement) please call (831) 475-8501 x153

What is the scwd² Desalination Program?

The Santa Cruz Water Department (SCWD) and Soquel Creek Water District (SqCWD) are investigating a supplemental source of supply to meet existing water shortages and to ensure that we can provide a reliable source of water during drought conditions.



There are numerous components to be examined before determining projected costs for the full-scale desalination plant. Capital costs (shown above) and operational costs will be equitably shared based on need and use.

In 2007, the **scwd²** Task Force, which is comprised of elected officials from SCWD and SqCWD, was created to jointly:

- Provide direction on the investigative stage of the project (including Pilot Plant Test Program, Watershed Sanitary Survey, Intake Study, permitting and environmental review);
- Oversee public outreach activities;
- Develop an operational plan; and
- Formulate a governance structure should the decision be made to proceed with a full-scale desalination plant.

We are currently in the investigative stage of the **scwd²** Desalination Program and are conducting a 12-month Seawater Reverse Osmosis (SWRO) Pilot Plant Test Program at UCSC Long Marine Laboratory next to the Seymour Discovery Center. The pilot program is required by the California Department of Public Health to confirm water quality and system performance before a full-scale desalination plant may be permitted.

Approximately $2 million has been awarded for the pilot project through the Proposition 50 Desalination Grants administered by the Department of Water Resources, and $611,000 in grant money was awarded for an intake study through the Proposition 50 Integrated Regional Water Management Program Grants administered by the State Water Resources Control Board.

Project expenses will be evaluated to determine the equitable share of costs between SCWD and SqCWD, based on needs and use of the potential full-scale plant.

A potential full-scale desalination plant that could produce up to 2.5 million gallons of drinking water per day will depend on successful completion of the pilot program, technical review of the data collected, and environmental approval and permitting.

Additional studies will investigate the proposed full-scale plant's ocean water intake and brine discharge systems and will focus on water quality, biological issues, and energy requirements to ensure that the plant would not have an adverse impact on the environment.

Proposed Project Timeline

February 2008-2009	Pilot Plant Testing
2009-2012	Full-Scale Plant Environmental Impact Report Preparation and Certification
2010-2012	Full-Scale Plant Design
2012-2015	Full-Scale Plant Construction

Where is Desalination Used?

According to the International Desalination Association, there are 13,080 desalination plants worldwide; many are located in the Middle East.

Desalination plants are now in use in over 120 countries including Australia, Japan, China, Saudi Arabia, Greece, Portugal, Spain and the United States. Desalted water is often used on islands (such as the Caribbean and our nearby Catalina Island), naval vessels, and commercial cruise ships.

Locally, there are three desalination plants in operation around the Monterey Bay: Duke Power Plant in Moss Landing, Marina Coast Water District in Marina and at the Monterey Bay Aquarium. Proposed desalination projects within California have increased over the last few years as the state continues to face the ongoing challenges of drought and water availability.

Benefits of Desalination

Provides the City of Santa Cruz and Soquel Creek Water District with a secure and reliable supplemental water supply

Provides needed water supply, in conjunction with water conservation and rationing during droughts

Protects groundwater aquifers from seawater intrusion by reducing groundwater pumping from wells

Provides high quality drinking water that will compare favorably with existing water supplies

Diversifying With Recycled Water

Like desalination, recycled water use is another example of diversifying a water supply portfolio. Quite simply, it is a process that reuses treated wastewater for beneficial purposes such as agricultural and landscape irrigation, and industrial processes.

The Santa Cruz Wastewater Treatment Plant currently uses recycled water inside the plant to meet its major process water needs. SCWD is pursuing the use of additional recycled water by partnering with Scotts Valley Water District to irrigate Pasatiempo Golf Course. This project is in its preliminary stages and specifics regarding jurisdictional boundaries, additional infrastructure (pipes), and costs have not been determined.

To diversify its water supply, SqCWD is also investigating recycled water use. They are studying the feasibility of constructing and operating a Satellite Reclamation Plant (SRP) and have preselected Seascape Golf Course, Seascape Resort, Seascape Greens subdivision and Polo Grounds Park as potential candidates for the use of recycled water for landscape irrigation.

The State Water Resources Control Board recently awarded SqCWD a grant to conduct this study, which will evaluate economic and environmental factors, as well as customer interest. It will take approximately one year to complete. A successful project could save between 150 and 260 acre feet per year (up to 85 million gallons) of groundwater.

Minimizing Environmental Impacts

Santa Cruz County residents are passionate about the environment and our community. There are a number of studies and investigations that will be conducted as part of the **scwd²** Desalination Program to minimize any adverse environmental impacts from the potential full-scale plant.

A project-level environmental impact report (EIR) will be required for the full-scale plant and will address:

- safe disposal of concentrated salty water produced from the desalination process
- preventing marine life from being trapped or injured by seawater intake pipes (impingement and entrainment)
- using energy-efficient technologies to minimize greenhouse gas emissions
- preventing population growth-inducing impacts that could be possible by creating a new water source

scwd² will continue to work with all of the regulatory agencies that oversee potable water resources and the Monterey Bay including, but not limited to, California Department of Public Health, Regional Water Quality Control Board, California Coastal Commission, Monterey Bay National Marine Sanctuary, and California Department of Fish & Game.

Energy Efficiency

SCWD and SqCWD recognize that energy use and greenhouse gas emissions are a major concern regarding desalination. There have been many advances in desalination technologies over the past two decades, which have greatly reduced the energy required to desalt water. Advancements in reverse osmosis materials and energy recovery devices have reduced the energy usage for desalination by more than 75 percent.

scwd² is a member of the Affordable Desalination Collaboration, which is working to reduce the energy required by the desalination process. Currently, the energy to desalt water for a typical household in the Santa Cruz area is equal to a single 100-watt light bulb.

The full-scale plant would incorporate as much advanced technology as possible to improve energy efficiency, reduce greenhouse gas emissions and reduce operating costs.

Additionally, an Energy Minimization and Greenhouse Gas Reduction Plan will evaluate current energy use by both agencies in operations other than desalination, impacts of seawater reverse osmosis, and strategies to lower or eliminate these impacts through green building, energy recovery devices, local energy projects (solar panels, turbines, etc.) and carbon credits.

The Santa Cruz Water Department utilizes solar energy that offsets energy used by the **scwd²** *pilot plant.*

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