

Appendix

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Appendix I:

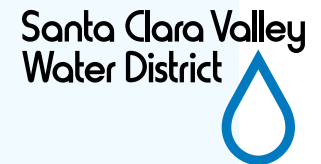
Open House Exhibit Boards



BAY AREA REGIONAL Desalination Project

Welcome

A partnership between:



How to Participate

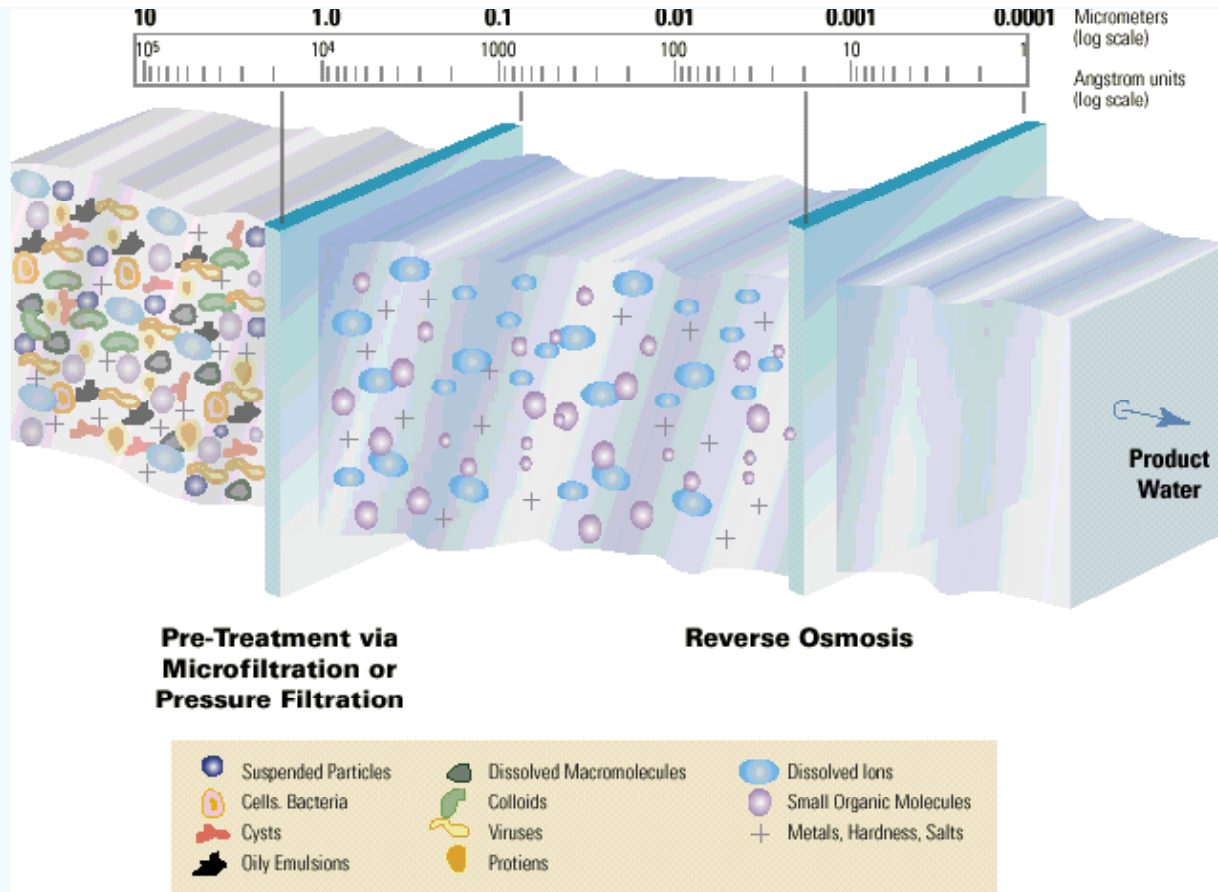
- ◆ **Talk to Staff**
- ◆ **Write Down Your Comments**
- ◆ **Visit Our Website:** www.RegionalDesal.com
- ◆ **Email Us:** info@RegionalDesal.com



What is Desalination?

Some Facts:

- Removes salts from the ocean or brackish water to produce fresh water through distillation or filtration
- NOT a new technology!
- 1,500 plants in the USA
- Over 15,000 plants worldwide
- 60% are seawater desalination plants



How Does Reverse Osmosis Work?

Reverse osmosis (RO) is a water treatment process in which seawater or brackish water is forced through a semi-permeable membrane that has very small holes.

The membrane blocks impurities, including salts, that are too big to pass, thereby creating freshwater.

Brine, the concentrated salt water that is left behind, is diluted and discharged.



Water Quality

Desalination produces high quality drinking water

- Intake screening protects fish and removes large particles
- Pretreatment filtration removes sediments, bacteria and viruses
- Solids are sent to a landfill
- Reverse osmosis (RO) desalination removes salts and other dissolved contaminants
 - First pass RO removes 99.6%
 - Second pass RO removes 99.9%
- Post treatment adds minerals to match the taste of existing water
- Approximately 100 compounds require monitoring per State and Federal regulations
- Tests show desalinated water exceeds State and Federal water quality requirements



Project Description

- **The Bay Area's four largest water agencies** — the Contra Costa Water District, the East Bay Municipal Utility District, the San Francisco Public Utilities Commission, and the Santa Clara Valley Water District — are jointly exploring a regional desalination project that would provide an additional water source, diversify the area's water supply, and foster long-term regional sustainability
- **The Bay Area Regional Desalination project** could consist of one or more desalination facilities, with an ultimate total capacity of up to 65 million gallons per day
- **The four partner agencies** are focusing on optimizing technologies that minimize power requirements and environmental effects



Goals and Benefits

- ◆ **Provide additional sources of water** during emergencies such as earthquakes or levee failures
- ◆ **Provide a supplemental water supply** source during extended droughts
- ◆ **Allow other major facilities**, such as treatment plants, water pipelines, and pump stations, to be taken out of service for maintenance or repairs
- ◆ **Reduce costs and minimize environmental impacts** by leveraging existing water infrastructure as a regional partnership



Potential Issues

💧 **Water Rights**

- Challenges and cost to establish new or modify existing rights
- Complexities in facilitating partner exchanges and transfers

💧 **CEQA/Permitting Issues**

- Wide range of studies and permits, potentially high mitigation costs

💧 **Power Costs**

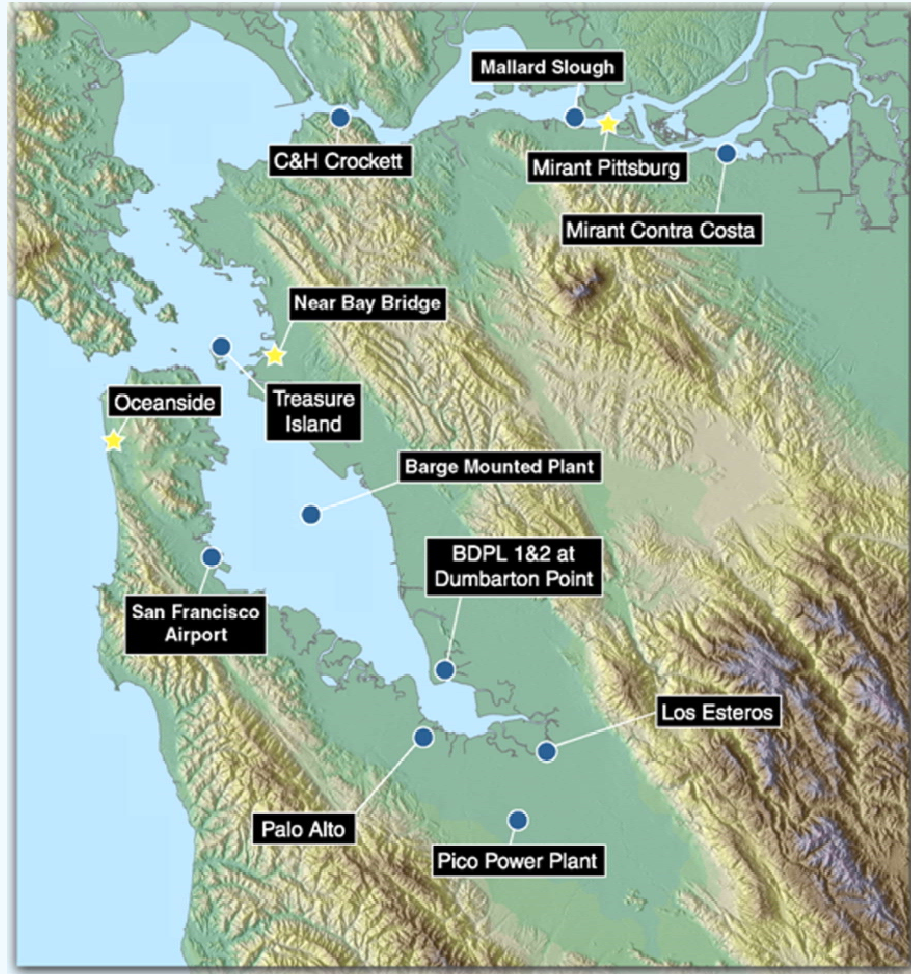
- Rising energy costs could reduce desalination appeal

💧 **Brine Discharge**

- Potential for outfall, permitting and environmental issues



Locations Identified in Pre-Feasibility Studies



Possible Sites Evaluated Further

Oceanside

Pros:

- Existing outfall structure
- May be easiest to permit

Cons:

- Source water quality most saline
- Need to construct intake structure
- No near economical energy source

Cost: \$2700/acre-ft

Oakland Bay Bridge

Pros:

- Large site
- Existing outfall structure
- Close to EBMUD transmission facilities

Cons:

- Need to construct intake structure
- Not near economical energy source
- Source water quality more saline

Cost: \$2500/acre-ft

East Contra Costa

Pros:

- Large site
- Existing intake and outfall structures at power plants
- Low salinity source water
- Economical energy source
- Close to CCWD and EBMUD transmission facilities

Cons:

- Need water rights for consumptive use
- More stringent discharge standards in Delta

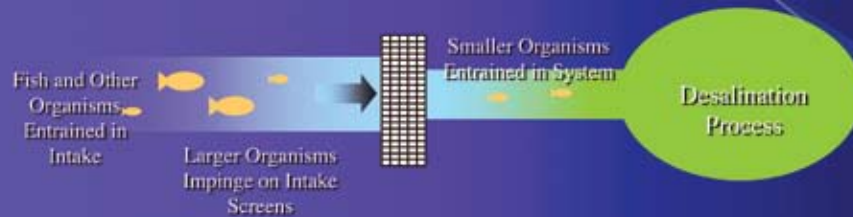
Cost: \$500–\$1200/acre-ft



Environmental Issues

Source Water Intake Issues

- Intake of water removes small organisms (entrainment)
- Suction at intake can pin fish to the screen (impingement)
- Protective screens installed near intake can minimize these impacts



Brine Discharge Issues

- Concentrated saltwater called brine is a by-product of desalination
- 40–50% of intake water becomes brine
- Brine is usually discharged back into receiving water through an existing industrial or wastewater outfall, where it is mixed with the existing outfall's water
- This results in water with similar salinity to the receiving water but fewer contaminants such as heavy metals that are removed during pretreatment
- Testing is conducted on the brine mixture to determine what effects, if any, it could have on the quality of the receiving water and on the aquatic life in that water



Schedule

We are here ⇨

- | | |
|-------------------------|-------------|
| Pre-Feasibility Studies | 2003 – 2005 |
| Feasibility Study | 2005 – 2006 |
| Pilot Testing | 2007 – 2008 |
| Environmental Study | 2009 |
| Design | 2010 |
| Plant Construction | 2012 |



Funding and Costs

- The pre-feasibility studies were funded by the four partner agencies with costs shared equally (split four ways)
- The feasibility study is being funded by a grant administered by the California Department of Water Resources (DWR) through Proposition 50 — the Water Security, Clean Drinking Water, Coastal and Beach Protection Act passed by voters in 2002
- The feasibility study costs \$500,000, and the DWR grant represents 50% of the study estimate. In June 2006, the agencies were awarded an additional grant for close to \$1 million for a pilot study
- The complete pilot study is estimated to cost about \$2 million



Possible Cost Scenarios

Plant Configuration	East Contra Costa Site (ECC)				Near Bay Bridge Site (NBB)		Oceanside Site	
	All Year Operation		Dry-Years Operation Only		Dry-Years Operation Only		Dry-Years Operation Only	
	Wet Year	Dry Year	Wet Year	Dry Year	Wet Year	Dry Year	Wet Year	Dry Year
10MGD ECC all years, 55 MGD ECC dry years only	\$486	\$586	\$0	\$1,179				
25MGD ECC dry years only, 40 MGD NBB dry years only			\$0	\$1,303	\$0	\$2,527		
35MGD ECC dry years only, 30 MGD Oceanside dry years only			\$0	\$1,266			\$0	\$2,694



Appendix II:

Open House Notification Materials

public meeting

title

**San Francisco Bay Regional
Desalination Project Feasibility Study**

who

Santa Clara Valley Water District

what

Public Open House

when

Wednesday, October 11, 2006 7p.m.-8:30 p.m.

where

Santa Clara Valley Water District Board Room
5700 Almaden Expressway
San Jose , CA 95118

why

Santa Clara Valley Water District, San Francisco Public Utilities Commission, East Bay Municipal Utilities District and Contra Costa Water District invite you to a meeting regarding the feasibility of a proposed regional desalination facility to serve the San Francisco Bay area. These four agencies serve over 5.4 million Bay Area residents and businesses. The goal and benefits of the San Francisco Bay Area Regional Desalination Project are to provide an additional source of water during emergencies such as earthquakes or levee failures, provide a supplemental water supply source during extended droughts, allow other major facilities, such as treatment plants, water pipelines, and pump stations, to be taken out of service for maintenance or repairs, and to increase supply reliability. The agencies welcome your thoughts about the feasibility of a regional desalination facility. Public input is very important and will be reviewed and considered as we move forward.

For more information about this meeting or this project, contact Project Manager and Senior Engineer Pam John at (408) 265-2607, ext. 3003.

www.RegionalDesal.com

**Santa Clara Valley
Water District**
SM





BAY AREA REGIONAL Desalination Project

You are invited to attend an upcoming public forum to learn about the Bay Area Regional Desalination Project.

The Bay Area's four largest water agencies, Contra Costa Water District, East Bay Municipal Utility District, San Francisco Public Utilities Commission, and Santa Clara Valley Water District, are jointly exploring regional desalination facilities that would benefit the 5.4 million Bay Area residents and businesses served by these agencies.

The goal and benefits of the San Francisco Bay Area Regional Desalination Project are to provide an additional source of water during emergencies such as earthquakes or levee failures, provide a supplemental water supply source during extended droughts, allow other major facilities, such as treatment plants, water pipelines, and pump stations, to be taken out of service for maintenance or repairs, and to increase supply reliability.

The partner agencies welcome your thoughts about the feasibility of a regional desalination facility. We encourage you and other representatives from your organization to attend either of the following meetings:

Public Open House

Wednesday, October 11, 2006

7pm – 8:30pm

Santa Clara Valley Water District Board Room

5700 Almaden Expressway, San Jose

Presentation at the Bay Area Water Forum Meeting

Monday, October 30, 2006 (*note change from tentative date of Oct. 23*)

10:30am – 1:30pm (presentation at 11am)

Harris State Office Building, 1515 Clay St., Oakland

Please visit our project web site, www.RegionalDesal.com, for more information and dates of future public forums. If you have any questions or comments, please email info@RegionalDesal.com.

Santa Clara Valley Water District MEDIA ADVISORY

- What:** Public open house meeting on the feasibility of a four-county water-desalination plant project
- When:** 7-8:30 p.m., Wednesday, Oct. 11
- Where:** Santa Clara Valley Water District, 5700 Almaden Expressway (one block south of Blossom Hill Road), San Jose
- Why:** To inform the community of the feasibility project currently under way, and to solicit community reaction and ideas
- Contact:** Mike Di Marco, (408) 314-0559

Regional desalination plant eyed as potential emergency source of water for Santa Clara County

SAN JOSE — The Santa Clara Valley Water District is participating in a regional study to determine whether building a desalination plant in the Bay Area could keep water taps flowing in Santa Clara County during an emergency.

The California Department of Water Resources has awarded a \$250,000 grant to a regional consortium comprised of the Santa Clara Valley Water District, San Francisco Public Utilities Commission, East Bay Municipal Utility District and Contra Costa Water District to evaluate the feasibility of a regional desalination facility in the Bay Area. The grant represents half the cost of the feasibility study.

The Department of Water Resources has also notified the four-agency partnership that it will grant almost \$1 million towards building a \$1.9 million small-scale desalination pilot plant.

The partnership is evaluating desalination as an additional source of water during emergencies, such as earthquakes or levee failures. In addition, desalination is being evaluated as a potential supplemental source of water during extended droughts and for its ability to increase water supply reliability.

The regional desalination facility could supplement the water needs of more than 5 million households and businesses served by the consortium.

Pooling the four agencies' resources and leveraging their existing water infrastructure is expected to reduce potential environmental effects of a desalination plant and reduce

energy demands that would be required for four separate desalination projects within a small geographic area.

Over the past three years, the four agencies conducted a pre-feasibility study to rule out any environmental or technical flaws that could doom a regional plant. The pre-feasibility study concluded that there are at least three locations in the Bay Area suitable for a regional desalination plant.

The Santa Clara Valley Water District manages Santa Clara County's wholesale drinking water resources, coordinates flood protection for its 1.7 million residents and provides stewardship for the county's 10 reservoirs and more than 800 miles of streams.

www.valleywater.org

Appendix III:
Open House Photos

Bay Area Regional Desalination Project
Open House Photos
October 11, 2006





