



**MWD**

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

APPROVED  
By the Board of Directors of  
The Metropolitan Water District  
of Southern California  
at its meeting held

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*Debra C. Man*

EXECUTIVE SECRETARY September 29, 1998

**To:** Board of Directors (Water Planning and Resources Committee--Action)

**From:** *for* General Manager *Charles G. Man*

**Submitted by:** Debra C. Man, Chief Planning and Resources *Debra C. Man*

**Subject:** Groundwater Recovery Program for the Madrona Desalination Facility Project

**RECOMMENDATIONS**

It is recommended that the Board:

1. Authorize the General Manager to execute a Groundwater Recovery Program agreement with The City of Torrance and the Water Replenishment District of Southern California to implement the Madrona Desalination Facility Project consistent with the major terms and conditions in this letter in form approved by the General Counsel, and
2. Certify that it has reviewed and considered the Initial Findings and Mitigated Negative Declaration for the Madrona Desalination Facility Project (Project) and adopt the Lead Agency's finding related to the Project.

**EXECUTIVE SUMMARY**

The City of Torrance and the Water Replenishment District of Southern California have requested financial assistance for the Madrona Desalination Facility Project (Project) under the principles of Metropolitan's Groundwater Recovery Program (GRP). The proposed 2,400 acre-feet per year (AFY) Project will increase groundwater production by treating groundwater containing total dissolved solids (TDS) and chloride levels in excess of drinking water standards and then serving that treated water to meet municipal needs.

The proposed Project complies with established GRP criteria. Subject to the Board's approval, the proposed Project would be eligible for financial contributions adjusted annually to equal those project costs exceeding Metropolitan's treated noninterruptible water rate up to \$250 per acre-foot of production for a period of 20 years.

Assistance to the Project is consistent with the Local Resources Program (LRP) rules adopted by the Board in June of this year. The transition terms of the LRP allow groundwater recovery applications received prior to December 1, 1997 to be "grandfathered" under the existing GRP rules. The Project application was received in November 1997.

Project operation would help the region meet the year 2020 goal of 500,000 AFY for recovered groundwater and recycled water production. Currently, there is an estimated 125,000 AFY shortfall in meeting the goal.

## **DETAILED REPORT**

The City of Torrance (Torrance) and the Water Replenishment District of Southern California (WRD) have requested financial assistance for the Madrona Desalination Facility Project (Project) under the principles of Metropolitan's Groundwater Recovery Program (GRP). Torrance obtains its imported supplies directly from Metropolitan.

The proposed Project, located in Torrance, will increase regional groundwater production by treating groundwater pumped from the West Coast Basin. The groundwater contains elevated levels of total dissolved solids (TDS) and chloride that exceed drinking water standards. The treated water will be served to customers in Torrance's service area. Attachment 1 provides a description of the Project's features.

The proposed Project capacity is 2,400 acre-feet per year (AFY). Because of the inherent uncertainty in determining the exact amount of production for a groundwater project, Metropolitan's GRP agreement will include a provision to allow increased production of 20 percent greater than the Project's operating capacity of 2,400 AFY. This could yield as much as 2,880 AFY of production eligible for financial assistance.

The Project production will be in addition to the safe yield of the West Coast Basin and will require replenishment with imported supplies. Under GRP terms, the Project may be called upon to sustain production for up to three consecutive years without delivery of Metropolitan's imported replenishment supplies during drought conditions. This obligation will be met by either interruption of in-lieu replenishment administered by WRD or discontinuing delivery of water to WRD spreading operations in the Montebello Forebay.

Financial assistance would be provided under an agreement term not to exceed 20 years. Metropolitan's financial contribution would be provided to Torrance as a water sales payment through a yield-purchase arrangement similar to that used for previously approved GRP projects. The contribution would be adjusted annually based on the incurred project capital and operation and maintenance (O&M) costs which exceed Metropolitan's treated water rate. The maximum GRP contribution was set by the Board at \$250 per acre-foot. In order to reduce administrative burden for the local agency and Metropolitan, it is anticipated that the agreement will include a pre-established O&M labor factor.

During the first fiscal year of operation (1999-2000), Metropolitan's contribution rate is estimated to be \$202 per acre-foot. A corresponding total contribution of approximately \$485,963 for fiscal year 1999-2000 will be included in future Operation and Maintenance budgets. Attachment 2 is a forecast of Metropolitan's annual contribution to the Project.

Participation in the Project is consistent with the transition terms of the Local Resource Program (LRP) which allows groundwater recovery applications received prior to December 1, 1997 to be "grandfathered" under the existing GRP rules. The transition window closes on December 9, 1998 at which time the GRP agreement must be fully executed. The Project application was received in November 1997 and meets the "grandfather" requirements. The transition terms were adopted by the Board in July 1998.

Project operation would help the region meet the Year 2020 goal of 500,000 AFY for recovered groundwater and recycled water production. Currently, there is an estimated 125,000 AFY shortfall in meeting the goal.

Pursuant to the California Environmental Quality Act (CEQA), the Water Replenishment District of Southern California, acting as the Lead Agency, has prepared and approved a Mitigated Negative Declaration for the Project. Metropolitan will not be responsible for implementing any of the mitigation measures associated with the Project. Metropolitan, as a Responsible Agency due to its financial participation in the project, is required to review and consider the information provided in the Mitigated Negative Declaration prior to reaching a decision on the project. A copy of the Initial Study and Mitigated Negative Declaration is available for review in the office of the Executive Secretary. No further environmental documentation is necessary to act upon this matter.

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Attachments

## Madrona Desalination Facility Project

### Project Description

#### Overview

The proposed site of the Madrona Desalination Facility Project (Project) is located in the City of Torrance (Torrance). The Project will pump and treat brackish groundwater from the West Coast Basin to augment the domestic water supply of Torrance. The West Coast Basin is situated in the westerly part of Los Angeles County, California and underlies Torrance. Total dissolved solids (TDS) concentrations of about 3,780 milligrams per liter (mg/L) in this part of the West Coast Basin are higher than the California Department of Health, Title 22 recommended level of 500 mg/L. Chloride concentrations of about 2,100 mg/L are higher than the California Department of Health, Title 22 recommended level of 250 mg/L. The proposed treatment plant will use reverse osmosis (RO) with anti-scalant pre-treatment and decarbonation post-treatment process as the main treatment process; bypass untreated blending groundwater; and pH adjustment and disinfection of blended product water. The Project will provide about 2,400 acre-feet per year of potable water to Torrance customers.

#### Groundwater Production Facilities

Approximately two wells will be constructed on the maintenance yard site and at a nearby park (see Figure 1) to produce about 3,200 acre-feet per year of groundwater to be treated by the project which will yield about 2,400 acre-feet per year of water for delivery to Torrance's potable water distribution system.

#### Treatment Facilities

The proposed treatment plant will be located near the intersection of West Spencer Street and Madrona Avenue adjacent to Torrance's Public Works maintenance yard on land owned by Torrance. Process equipment will be housed inside a treatment building (about 6,000 square feet) with access from Madrona Avenue (see Figure 1). Separate facilities will be constructed to store chemicals in an area with secondary containment.

#### Treatment Process Design

Water pumped from the wells will be split into two streams. One stream (approximately 93 percent) will be pre-treated with an anti-scalant, delivered to the RO process and receive decarbonation post-treatment. The second stream will bypass the RO treatment process without treatment. The blended product from both streams will be stabilized for pH and chlorinated prior to delivery to Torrance's potable distribution system. The expected production will be about 1,470 gallons per minute (gpm), or 2,400 acre-feet per year of product water using a 90 percent utilization factor.

### RO Pre-Treatment

Preconditioning includes addition of an anti-scalant compound to control scaling of membranes by soluble compounds.

### RO Treatment

Pre-treated well water is pumped through cartridge filters to remove colloidal particles and other impurities. Water from the cartridge filters enters RO feed pumps where the pressure is boosted prior to entering the membrane assemblies. The membrane assemblies will have a permeate capacity (output) of 1,340 gpm. The recovery is estimated to be 75 percent.

### RO Post-treatment

Post-treatment includes decarbonation to reduce carbon dioxide from the RO product water prior to blending.

### Bypass (Blending) Water

About 130 gpm of untreated groundwater will bypass the RO treatment process and be blended with water from the RO treatment process.

### Post-Treatment

Blended product water from the RO and bypass processes will be stabilized for pH and chlorinated prior to direct delivery to Torrance's potable water distribution system (hydraulic grade line of 310 feet) via a 12-inch diameter pipeline approximately 960 feet in length.

### Concentrate Disposal

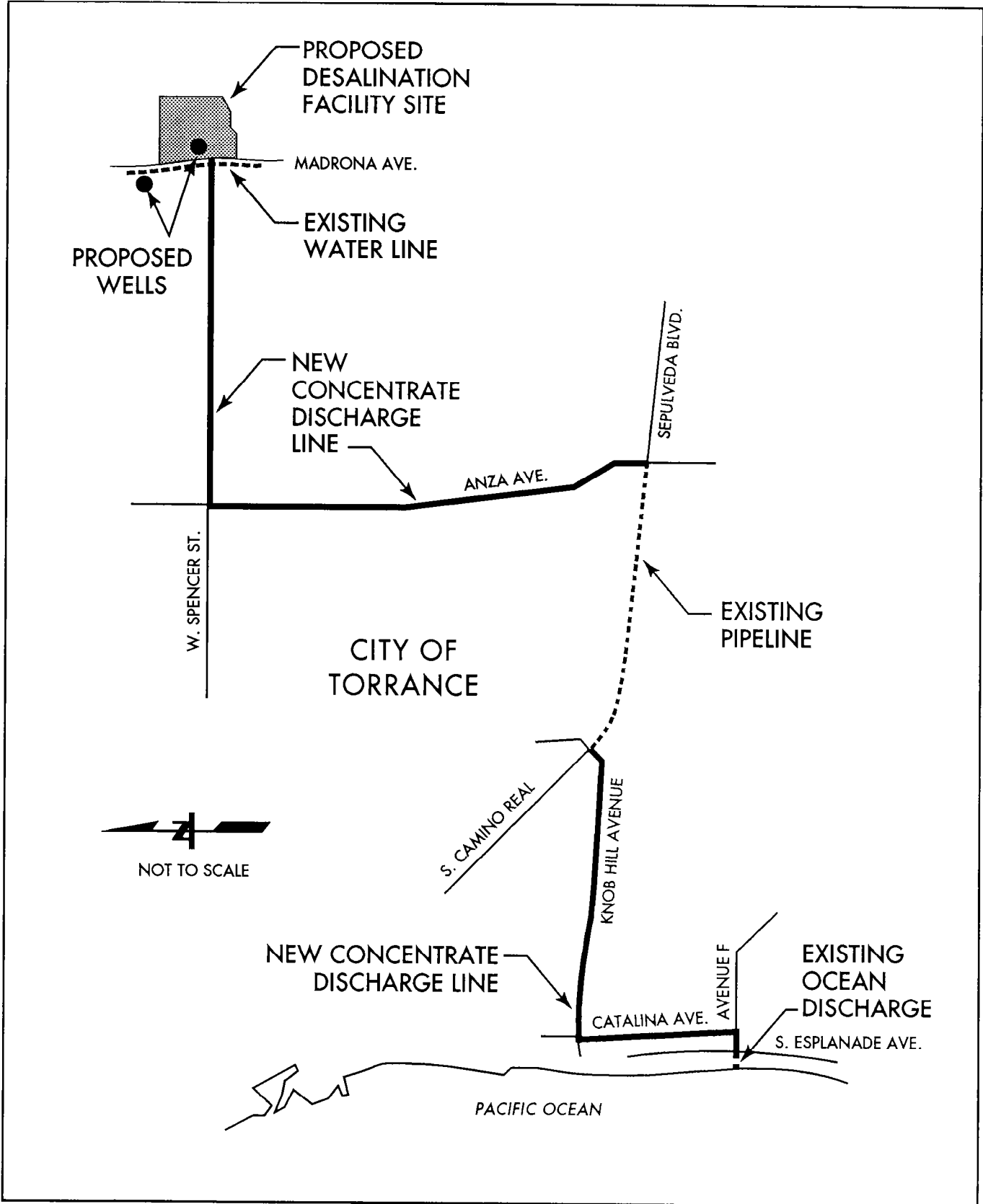
RO concentrate (reject flow) will be discharged to a new 12-inch discharge pipeline that will convey concentrate to a discharge line being developed for the Sepulveda Desalination Facility Project and subsequently disposed of through an ocean outfall. Estimated length of new brine line dedicated to this project is 1,200 feet of 12-inch pipe; the proposed discharge line for the Sepulveda Desalination Facility Project requires 7,400 feet of new 10-inch pipe.

### Points of Connection

Project facilities shall terminate at the points of connection to Torrance's existing 12-inch potable water line beneath Madrona Avenue and at the point of connection to the existing storm drain that discharges into the ocean.

Metropolitan's Estimated Contribution

<u>Fiscal Year</u>	<u>Annual Contribution (\$)</u>
2000	\$484,963
2001	\$510,048
2002	\$530,960
2003	\$550,115
2004	\$545,929
2005	\$542,418
2006	\$551,599
2007	\$561,490
2008	\$572,108
2009	\$583,472
2010	\$583,600
2011	\$584,511
2012	\$586,224
2013	\$588,761
2014	\$592,141
2015	\$600,000
2016	\$600,000
2017	\$600,000
2018	\$600,000
2019	\$600,000



**Figure 1**  
**Madrona Desalination Facility Project**