



MWD

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

7-6

May 26, 1998

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

From: *for* General Manager

Edward J. Meier III

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

Debra C. Man

Subject: Groundwater Recovery Program for the Capistrano Beach Desalter Project

RECOMMENDATIONS

It is recommended:

1. That your Board certify that it has reviewed and considered the Mitigated Negative Declaration for the Capistrano Beach Desalter Project and adopt the Lead Agency's finding related to the project.
2. That the General Manager be authorized to execute a Groundwater Recovery Program agreement with Coastal Municipal Water District, Tri-Cities Municipal Water District, and Capistrano Beach Water District to implement the Capistrano Beach Desalter Project consistent with the major terms and conditions in this letter in form approved by the General Counsel.

EXECUTIVE SUMMARY

The Coastal Municipal Water District and the Capistrano Beach Water District have requested financial assistance for the Capistrano Beach Desalter Project under the principles of Metropolitan's Groundwater Recovery Program (GRP). The proposed 1,300 acre-feet per year (AFY) project will increase groundwater production by treating groundwater containing total dissolved solids (TDS), chloride, and sulfate 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 your 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.

Approval of this desalter project would increase the ultimate water production under the GRP to about 34,300 AFY. This total is within the original 1991 GRP goal of 200,000 AFY of ultimate yield, and it is consistent with the targets identified in the 1995 Integrated Resource Plan of 40,000 AFY by the year 2000. Proceeding with GRP assistance to this project is consistent with

the Local Resource Program (LRP) principles adopted by your Board in December 1997 and the proposed LRP administrative rules submitted separately to your Board for approval this month. Participation in the Project is consistent with the transition terms of the proposed LRP, which allows groundwater recovery applications received prior to December 1, 1997, to be "grandfathered" under the existing GRP rules. The Project application was received in 1992.

DETAILED REPORT

The Coastal Municipal Water District (CMWD) and the Capistrano Beach Water District (CBWD) have requested financial assistance for the Capistrano Beach Desalter Project under the principles of Metropolitan's Groundwater Recovery Program (GRP).

The CBWD, whose service area covers Capistrano Beach and portions of Dana Point and San Clemente, is a member agency of Tri-Cities Municipal Water District (Tri-Cities). Tri-Cities obtains its imported supplies from Metropolitan through CMWD.

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

The proposed Project capacity is 1,300 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 1,300 AFY. This could yield as much as 1,560 AFY of production eligible for financial assistance.

Financial assistance would be provided under an agreement term not to exceed 20 years. Metropolitan's financial contribution would be provided to CBWD 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 your 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 estimate.

During the first year of operation (1999-2000), Metropolitan's contribution rate is estimated to be \$204 per acre-foot. A corresponding total contribution of approximately \$265,200 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.

In 1991, your Board adopted the GRP with a goal of 200,000 AFY of production by the year 2001. In January 1996, your Board approved the Integrated Resources Plan, which included groundwater recovery targets of 40,000 AFY in the year 2000 and 50,000 AFY in the year 2010.

Approval of this project will bring Metropolitan's participation in GRP projects to approximately 34,300 AFY.

Participation in the Project is consistent with the transition terms of the proposed 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 following approval by your Board. The Capistrano Beach Desalter application was received in 1992 and meets the "grandfather" requirements. These transition terms of the new LRP were approved in principal by your Board in December 1997 and are included in a separate letter sent to your Board this month regarding adoption of the final LRP rules.

Pursuant to the California Environmental Quality Act (CEQA), Capistrano Beach Water District, 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 Mitigated Negative Declaration and the Initial Study is available for your review in the office of the Executive Secretary. No further environmental documentation is necessary for you to act upon in this matter.

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Attachments

Capistrano Beach Desalter Project

Project Description

Overview

The proposed site of Capistrano Beach Water District's (CBWD) Capistrano Beach Desalter Project is located in the City of Dana Point (see Figure 1). The Project will pump and treat brackish groundwater from the San Juan Basin to augment CBWD's domestic water supply. The San Juan Basin is situated in the southern part of Orange County, California and underlies the communities of San Juan Capistrano, Mission Viejo, Dana Point, San Clemente and Capistrano Beach. Total dissolved solids (TDS) concentrations of approximately 2,200 milligrams per liter (mg/L) in the Basin are higher than the California Department of Health, Title 22 recommended level of 500 mg/L. Iron and manganese levels are well above the recommended maximum. The groundwater has radon concentrations ranging from 525 to 554 pico curies per liter (pCi/L) which are higher than the proposed EPA standard of 300 pCi/L. Other constituents in the groundwater exceeding State standards are sulfate and chloride. The proposed treatment plant will use ion exchange (IX) softening for pretreatment, reverse osmosis (RO) as the main treatment process, and a carbon dioxide (CO₂) stripper for post-treatment. The Project will provide approximately 1,300 acre-feet per year of potable water to CBWD customers.

Treatment Facilities

The proposed treatment plant will be located east of the San Juan Creek and north of Pacific Coast Highway on approximately 2 acres of land at the northern end of property owned by CBWD. Process equipment will be housed inside a treatment building which may be entered by an existing access from Stonehill Drive. Above-ground chemical and waste storage tanks will be located at the east side of the treatment building. All buildings will be architecturally designed to blend with the surrounding environment.

Treatment Process Design

The proposed primary treatment process is reverse osmosis (RO) with ion exchange (IX) pre-softening. Post treatment will include a carbon dioxide air stripper. Water pumped from the Stonehill Well (previously built test well is part of the Project) is split into two streams. One stream (approximately 85 percent) is delivered to the process for treatment. The second stream is bypassed to the post-treatment process, where it is blended with treated water. The expected production is 800 gallons per minute (gpm), or 1,300 acre-feet per year of product water based on a 90 percent plant utilization factor.

Pre-Treatment

IX softening as pre-treatment to the RO process will increase the recovery of the RO process by reducing the scale-forming compounds such as calcium, iron and manganese. The IX softening system will be a conventional sodium-cycle cation exchange. Raw water from the well is passed through the softener vessels, two of which are in operation while the third regenerates. The softening process reduces hardness of the raw water from about 1,150 mg/L as CaCO₃ to about 15 mg/L. After the softening process, scale inhibitor is added to the softened water to prevent scaling of the RO membranes.

RO Treatment

Pre-treated well water is then pumped through cartridge filters. Water from the cartridge filters enters vertical turbine RO feed pumps where the pressure is boosted to about 160 pounds per square inch prior to entering the membrane assemblies. The membrane assemblies (two are proposed), will each have a permeate capacity (output) of 400 gpm. The recovery is estimated to be 83 percent. The membrane assemblies will be arranged in two stages, each equipped with seven-element pressure vessels.

Post-Treatment

Permeate from the membrane system blended with raw water bypass will be introduced into a forced draft decarbonator (degassifier) to reduce the level of carbon dioxide in the water. Caustic soda will be added at a rate of 7 mg/L to raise the pH to about 7.8. Sodium hypochlorite will also be added at a rate of 1.7 mg/L for disinfection. The finished water will be retained in a clearwell (reservoir) until it is pumped to the distribution system (HGL=200') via a 12" diameter pipeline approximately 700' in length.

Concentrate Disposal

RO concentrate (reject flow) will be stored and used for regeneration of the IX resin. Because the concentrate will not have enough sodium content to adequately regenerate the resin, additional salt (sodium chloride) must be added. Waste from the IX softener regeneration process will be delivered to a waste tank for storage, from which it will be discharged to the South East Regional Reclamation Authority (SERRA) ocean outfall through a connecting Santa Margarita Water District (SMWD) land outfall. (Estimated length of brine line is 2000' of 8" pipe.)

Points of Connection

Project facilities shall terminate at the points of connection to CBWD's existing 10-inch potable water line and at the point of connection to the existing SMWD land outfall along the east side of the San Juan Creek Channel.



NOT TO SCALE

Santa Margarita
Water District
Land Outfall

San Diego Fwy



Proposed Treatment
Plant Site
& Stonehill Well

Product
Water Pipe

Concentrate
Disposal
Pipe

Stonehill
Dr.

To CBWD
Distribution
System
(200' HGL)

10-Inch
CBWD
Water Main

Victoria Blvd.

Pacific Coast Hwy

CITY OF
DANA
POINT

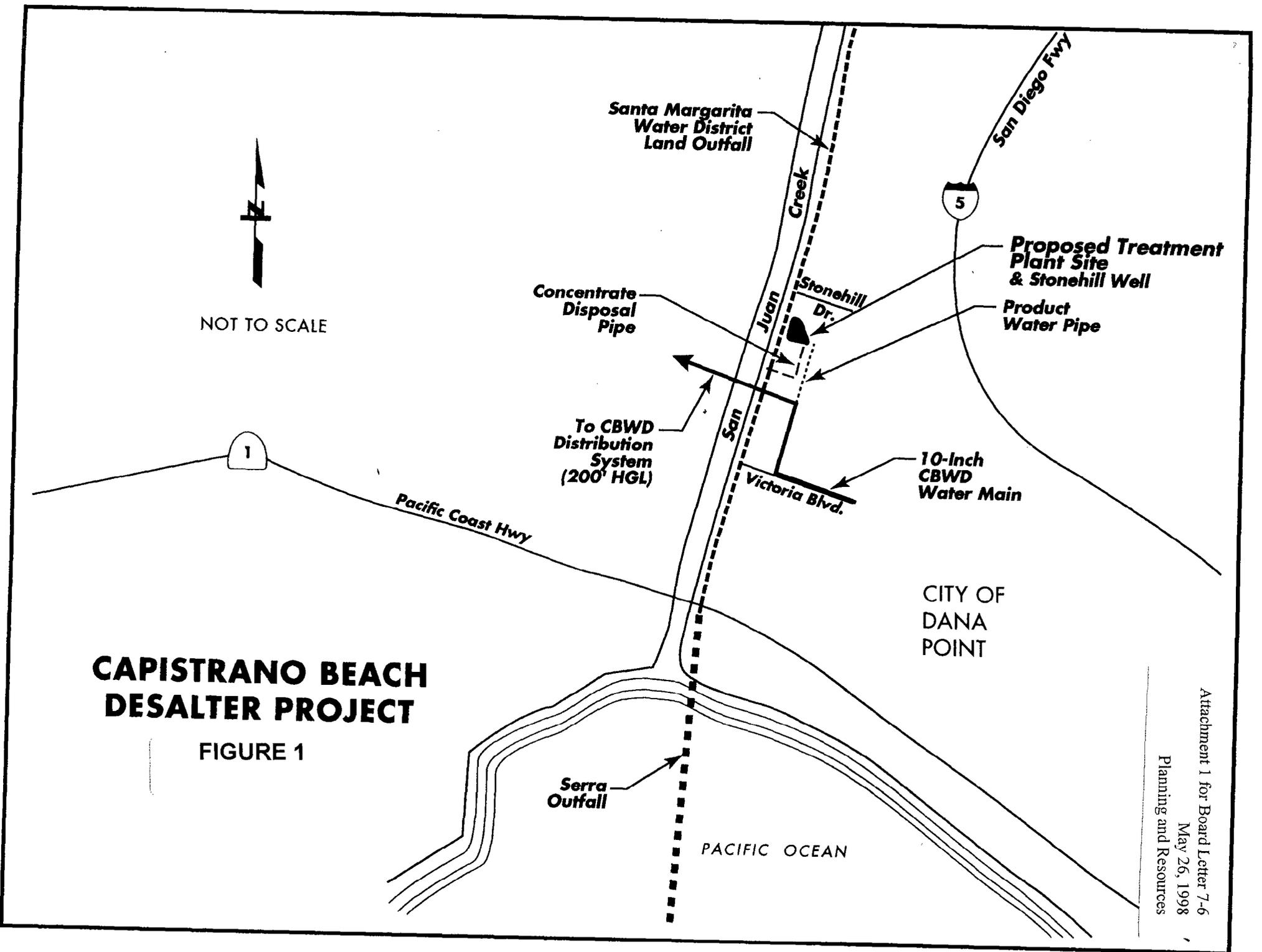
CAPISTRANO BEACH DESALTER PROJECT

FIGURE 1

Serra
Outfall

PACIFIC OCEAN

Attachment 1 for Board Letter 7-6
May 26, 1998
Planning and Resources



Metropolitan's Estimated Contribution

<u>Fiscal Year</u>	<u>Annual Contribution (\$)</u>
1999-2000	265,200
2000-2001	278,200
2001-2002	292,500
2002-2003	302,900
2003-2004	314,600
2004-2005	325,000
2005-2006	325,000
2006-2007	325,000
2007-2008	325,000
2008-2009	325,000
2009-2010	325,000
2010-2011	325,000
2011-2012	325,000
2012-2013	325,000
2013-2014	325,000
2014-2015	325,000
2015-2016	325,000
2016-2017	325,000
2017-2018	325,000
2018-2019	325,000