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METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Debra C. Man
EXECUTIVE SECRETARY

June 25, 1996

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

From: General Manager

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

Debra C. Man

Debra C. Man

Subject: Groundwater Recovery Program for the Lower Sweetwater River Basin
Groundwater Demineralization Project, Phase I

RECOMMENDATIONS

It is recommended:

1. That your Board certify that it has reviewed and considered the Environmental Impact Report for the Lower Sweetwater River Basin Groundwater Demineralization Project, Phase I.
2. That the General Manager be authorized to execute a Groundwater Recovery Program agreement with the San Diego County Water Authority, the South Bay Irrigation District, and the Sweetwater Authority to implement the Lower Sweetwater River Basin Groundwater Demineralization Project, Phase I, consistent with the major terms and conditions in this letter in form approved by the General Counsel.

EXECUTIVE SUMMARY

The San Diego County Water Authority (SDCWA) and the Sweetwater Authority have requested financial assistance for the Lower Sweetwater River Basin Groundwater Demineralization Project, Phase I, under the principles of Metropolitan's Groundwater Recovery Program (GRP). The proposed 3,600 acre-feet per year (AFY) project will increase groundwater production by treating groundwater containing total dissolved solids (TDS) 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 for a 20-year period.

Approval of this desalter project would increase the ultimate water production under the GRP to about 34,000 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.

DETAILED REPORT

The San Diego County Water Authority (SDCWA), and the Sweetwater Authority have requested financial assistance for the Lower Sweetwater River Basin Groundwater Demineralization Project, Phase I, (Project) under the principles of Metropolitan's Groundwater Recovery Program (GRP).

The Sweetwater Authority was formed in 1972 as a Joint Powers Authority by South Bay Irrigation District and the City of National City, both member agencies of SDCWA. The Project, which will be located in the Lower Sweetwater River Basin, will increase groundwater production by treating groundwater containing total dissolved solids (TDS) in excess of drinking water standards and then serving that treated water to meet municipal needs of the Sweetwater Authority's service area. Attachment 1 describes the Project's features.

The proposed project capacity is 3,600 acre-feet per year (AFY). To deal with the inherent uncertainty in the exact amount of water produced by groundwater projects, the agreement will include financial provisions for the final project to operate at 20 percent greater than the 3,600 AFY of Project capacity. Hence, the maximum amount of water purchased by Metropolitan could be 4,320 AFY. A second project phase, which would approximately double the project capacity, is contemplated for the year 2001, but is not part of the current proposal, and would be considered for GRP assistance under a separate application.

The Project is also being designed to provide summer peaking benefits. Production would range from 260 acre-feet in a winter month to 360 acre-feet in a summer month.

Under a GRP agreement, Metropolitan's financial contribution to the Project would be adjusted annually to equal those Project costs exceeding Metropolitan's treated noninterruptible water rate, subject to a maximum program contribution set by your Board (currently \$250 per acre-foot). The agreement term would be 20 years. Metropolitan's financial contribution would be provided to Sweetwater Authority as a water sales payment through a yield-purchase arrangement similar to that used for previously approved GRP projects. During the first fiscal year of operation (1998-99), Metropolitan's contribution rate is estimated to be \$227 per acre-foot. A total contribution of approximately \$818,000 for fiscal year 1998-99 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 34,000 AFY.

Pursuant to the California Environmental Quality Act (CEQA), Sweetwater Authority, acting as the Lead Agency, has prepared and certified an Environmental Impact Report (EIR) for this Project. A copy of the Executive Summary and Table S-1 (Summary of Impacts) are attached. The Final EIR along with the Appendices are available for your review in the office of the Executive Secretary.

Metropolitan, a Responsible Agency due to its financial support of the Project, will not be responsible for implementing any of the mitigation measures associated with the Project. No further environmental documentation is necessary for you to act upon in this matter. You are required to review and consider the information contained in the EIR prior to approving Metropolitan's participation in the Project.

JFV:arb

Attachments

JV796/Board

Attachment 1

Lower Sweetwater River Basin Demineralization Project

Project Description

Overview

The Lower Sweetwater River Basin Demineralization Project, Phase I, (Project) would pump and treat brackish groundwater for municipal use from the Lower Sweetwater River Basin in southern San Diego County (see Figure 1). The Project is located along the lower Sweetwater River near National City, California. The Project will provide approximately 3,600 acre-feet per year (AFY) of treated water to Sweetwater Authority's (Sweetwater) existing potable water system for distribution to National City and the South Bay Irrigation District, which are members of the San Diego County Water Authority (SDCWA). Key project elements include extraction wells, replenishment facilities, treatment plant, neutralization tank, brine disposal, basin management plan, and pipelines. Phase II construction which would double the project capacity is a separate project being planned for the year 2001.

Extraction Wells

Four alluvial aquifer groundwater extraction wells with a collective capacity of approximately 1.3 million gallons per day (MGD) or 1,500 AFY would be constructed in the Lower Sweetwater River Basin. Alluvial well water would be conveyed to the treatment plant through an approximately 7,200-foot-long 8- and 12-inch diameter pipeline.

Six extraction/injection wells would be constructed with a capacity of 3.5 MGD or about 3,000 AFY, in the deeper San Diego Formation aquifer, which extends north to the San Diego River Valley, south to the Mexican border, and east to the La Nacion Fault. San Diego Formation water would be conveyed to the treatment plant through an approximately 2,000-foot-long 12-inch pipeline. San Diego Formation wells would also be used in an injection mode to temporarily store excess water during or immediately prior to the reservoir spilling into the San Diego Bay. Injection facilities would also provide a recharge source to help prevent seawater intrusion, if required. Reservoir water would be treated at the existing Robert Perdue Water Filtration Plant before being pumped through an in-line booster to the San Diego Formation.

TDS concentrations at the proposed wells range from 1,700 to 3,100 milligrams per liter (mg/L) in the alluvial aquifer, and from 1,200 to 2,200 mg/L in the San Diego Formation. Approximately 4,500 AFY of brackish groundwater from these aquifers would be delivered to a central treatment plant.

Treatment Facilities

A central treatment plant would be located near the Interstate 805 and State Route 54 interchange. The plant would employ reverse osmosis (RO) technology and blending to demineralize brackish water to match TDS levels of 450 to 750 mg/L in the existing Sweetwater potable system. Feed water would be a mixture of alluvial and San Diego Formation well production. To satisfy health criteria, all alluvial well water will be routed through the RO membranes.

The plant would produce approximately 3,600 AFY of product water and 900 AFY of concentrated brine. An aeration tower would be used to remove carbon dioxide. Following disinfection, the product water would be stored in a proposed neutralization tank, from where it would be booster pumped into a new 600-foot-long 16-inch-diameter pipeline connecting to the existing Sweetwater system at 30th Street for delivery to National City and South Bay Irrigation District's distribution systems (see Figure 2).

Seasonal Peaking

The Project would provide seasonal peaking benefits with production rates as low as 260 acre-feet per month in the winter (October to April), and as much as 360 acre-feet per month in the summer (May to September).

Brine Disposal

Approximately 900 AFY of concentrate (brine) would be discharged from the treatment plant to the adjacent Upper Paradise Creek flood control channel. The channel would convey the concentrate to the Sweetwater River for ultimate discharge to San Diego Bay. Concentrate flows would range between 0.1 and 0.8 MGD, depending on the operation throughout the year, with a salt concentration between 7,000 and 9,000 mg/L.

Urban Runoff Diversion System (URDS)

To reduce groundwater drawdown in the alluvial aquifer of the Lower Sweetwater River Basin caused by the Project pumping, the Project includes the construction of the second phase of an Urban Runoff Diversion System (URDS). The URDS will intercept poor quality runoff upstream of the Sweetwater Reservoir and convey it downstream to recharge the alluvial basin. The second phase URDS would add approximately 1,000 AFY of recharge to the lower basin. This, combined with 500 AFY from the existing first phase URDS which has an average salinity of 2,500 mg/L makes up the alluvial component of the brackish source to the demineralization facility. Additionally URDS has the potential to carry reclaimed water from the Otay Water District Wastewater Reclamation Plant (OWDWRP) to recharge the alluvial aquifer. The gravity URDS pipeline and the force main from the OWDWRP run parallel, 150 feet apart, for 1,200 feet. A connection will allow Sweetwater to take seasonal reject or the entire flow of the OWDWRP. The URDS Phase II would also help to protect the water quality in the

reservoir. Based on its dual functions, the cost allocation of the URDS II to this project under GRP will be prorated.

Alluvial Basin Management and Monitoring Plan

An Alluvial Basin Management Plan (Plan) will guide Project operation to avoid or minimize impacts associated with pumping and brine disposal to biological resources along the Sweetwater River. The Project would also include seven monitoring wells, three soil sensors, and three stream gages.

Points of Connection

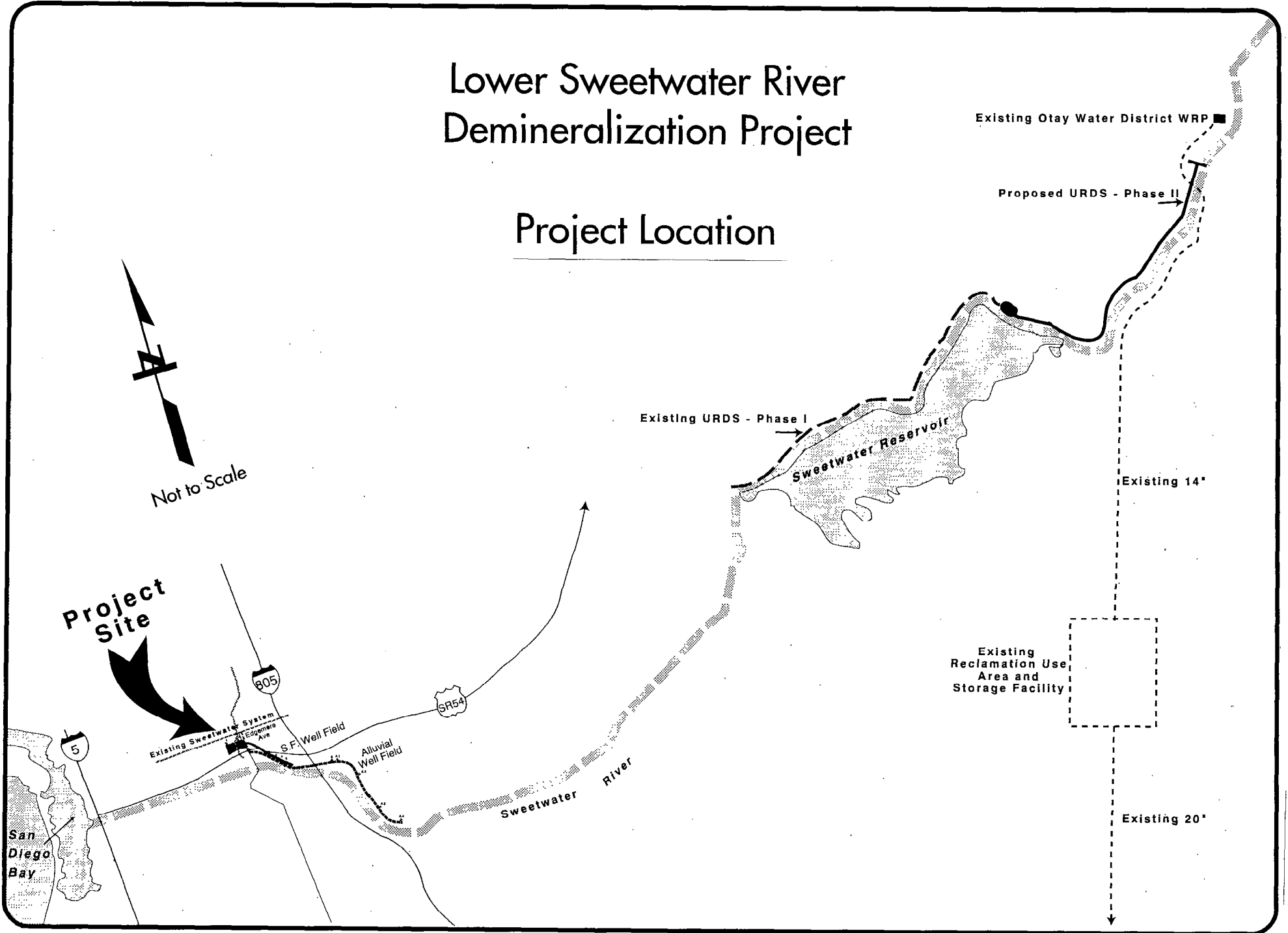
Project facilities shall terminate at the points of connection to the existing potable distribution system, and at the point of discharge of the concentrate to Upper Paradise Creek. The second phase of the URDS shall begin at the upstream end of the existing URDS Phase I, and terminate at the upstream end of the proposed seepage pipeline. URDS Phase I, the Sweetwater Dam and Reservoir, the Robert Perdue Water Filtration Plant, the OWD WR Plant and force main, and the existing Sweetwater distribution system are not part of this Project.

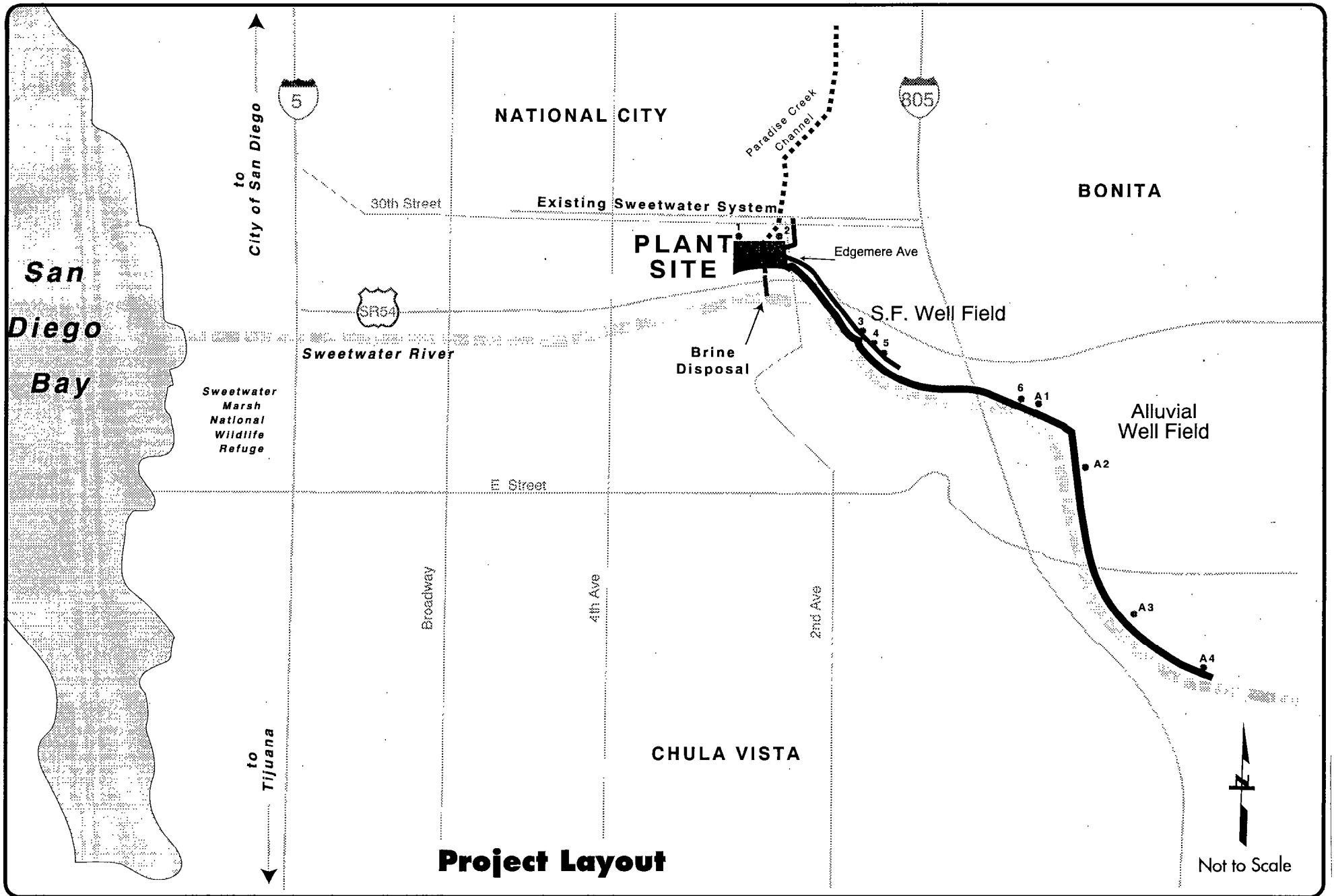
Phase II

Sweetwater plans to construct Phase II of the Lower Sweetwater River Basin Demineralization Project in the year 2001, increasing the total production to 7,200 AFY. Proposed treatment plant building, interior plumbing, and product water pipeline will be designed to final capacity during Phase I. Additional treatment train, production wells, and conveyance system to be included in Phase II are not part of this Project.

Lower Sweetwater River Demineralization Project

Project Location





Attachment 2

Metropolitan's Estimated Annual Contribution

<u>Fiscal Year</u>	<u>Annual Contribution (\$)</u>
1998-99	818,000
1999-00	806,000
2000-01	795,000
2001-02	810,000
2002-03	863,000
2003-04	900,000
2004-05	900,000
2005-06	900,000
2006-07	900,000
2007-08	900,000
2009-10	900,000
2010-11	900,000
2011-12	900,000
2012-13	900,000
2013-14	900,000
2014-15	900,000
2015-16	900,000
2016-17	900,000
2017-18	900,000
2018-19	900,000

Notice of Determination

960203

To: [X] County Clerk
County of San Diego

From: Sweetwater Authority
505 Garrett Avenue
Chula Vista, CA 91910

F I L E
Gregory J. Smith, Recorder/County Clerk

MAY 23 1996

[X] Secretary for Resources
1416 9th Street, Room 1311
Sacramento, California 95814

BY _____ DEPUTY

Subject: Filing of Notice of Determination in Compliance with Section 21108 or 21152 of the Public Resources Code.

Project Title: Lower Sweetwater River Basin Groundwater Demineralization Project (BP 93-46E)

Project Location: The southwestern portion of San Diego County, along the Lower Sweetwater River, between Sweetwater Reservoir and San Diego Bay.

Project Description: The Lower Sweetwater River Demineralization Project would provide for the development of local water resources by Sweetwater Authority in order to reduce reliance on imported water. The project involves the following components: construction of a total of four alluvial wells, six San Diego Formation wells, a 5.0 MGD demineralization plant, brackish and product water conveyance facilities, concentrate disposal lines, and monitoring wells and sensors.

Contact Person: Troy Murphree **Area Code/Phone:** (619) 422-8395, EXT. 632

This is to advise that the Board of Directors of Sweetwater Authority has approved the above described project on May 22, 1996 and has made the following determinations regarding the above described project:

1. The project [will/ will not] have a significant effect on the environment.
2. An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
 A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [were/ were not] made a condition of approval of the project.
4. A statement of overriding considerations [was/ was not] adopted for this project.
5. Findings [were/ were not] made pursuant to the provisions of CEQA.

This is to certify that the final environmental document with comments and responses and record of project approval is available to the General Public at Sweetwater Authority, 505 Garrett Avenue, Chula Vista, CA 91910.

James J. Shylk Chief Engineer May 22, 1996
 Signature Title Date

EXECUTIVE SUMMARY

PROJECT LOCATION AND ENVIRONMENTAL SETTING

The Lower Sweetwater River Basin Demineralization Project is proposed to be located in the southwestern portion of San Diego county, near the Interstate 805 (I-805) and State Route 54 (SR 54) interchange. The demineralization plant would be located in the City of Chula Vista west of Edgemere Avenue/2nd Avenue, between 30th Street and the westbound lanes of SR 54. The production wells would be located along Plaza Bonita Road and the National City bike path on the northern levee of the Sweetwater River channel. Stream gages and monitoring wells would be located along the river and at other nearby locations.

The unchannelized Lower Sweetwater River easterly of the I-805/SR 54 interchange is characterized by disturbed to high quality riparian habitat. Adjacent land uses along this portion of the Lower Sweetwater River are residential and two golf courses. Immediately east of the I-805/SR 54 interchange is the Plaza Bonita Shopping Center. Westerly of the interchange the channelized river traverses an urban area containing commercial and high-density residential uses.

PROJECT DESCRIPTION

The objective of the Sweetwater River Demineralization Project is to reduce the Authority's reliance on imported water by utilizing local water resources. The project entails the development of water resources in the Lower Sweetwater River Basin and treatment of the water at the proposed demineralization plant to yield potable water. Components of the proposed project are described in the following discussions.

LOWER SWEETWATER RIVER BASIN GROUNDWATER EXTRACTION AND CONVEYANCE SYSTEM

Four alluvial aquifer groundwater extraction wells are proposed in the Lower Sweetwater River Basin. The water in the alluvial aquifer has salinity levels ranging from 1,700 to 3,100 mg/l total dissolved solids (TDS). The proposed project also includes the construction of six extraction/injection wells in the deeper San Diego Formation aquifer. The San Diego Formation extends north to the San Diego River Valley, south to the Mexican border, and east to the La Nacion Fault. San Diego Formation TDS concentrations range from 1,170 to 2,167 mg/l in the area where the San Diego Formation wells are proposed to be located. The alluvial wells would extract brackish groundwater at the rate of approximately 1.3 mgd (1,500 ac.ft./yr.) while the San Diego Formation wells would extract water at the rate of approximately 3.5 mgd (3,000 ac.ft./yr.). Eight- to 12-inch diameter pipelines would be constructed to carry brackish water from the alluvial and San Diego Formation wells to the proposed demineralization facilities, described below for the removal of TDS. Portions of the pipeline will be constructed within California Department of Transportation (Caltrans) rights-of-way, adjacent to the Sweetwater River channel.

SAN DIEGO FORMATION EXTRACTION/INJECTION WELLS

During extremely wet periods, it may be desirable to temporarily store excess potable or treated water in the San Diego Formation which would otherwise be lost. This temporary storage or recharge would be accomplished through the use of the proposed San Diego Formation extraction/injection wells.

DEMINERALIZATION PLANT

The secondary TDS limit for drinking water is 450 to 750 mg/l. The brackish alluvial groundwater and San Diego Formation water would be treated to match the TDS level of potable water in the Sweetwater Authority system. The plant would be constructed on two acres of a 5.39±-acre site at 3066 North Second Avenue in Chula Vista. The plant would utilize approximately 4.8 million gallons per day (MGD) of feed water to produce 4.0 MGD of product water by reverse osmosis and blending. The plant would be constructed in a manner that allows for expansion or to an ultimate size to produce 8 MGD in order to utilize future sources of water. Finished product water would be disinfected to regulatory standards in a 400,000 gallon water tank on-site and pumped to the existing Sweetwater Authority storage and distribution system via a 16-inch pipeline.

CONCENTRATE DISPOSAL

Approximately 0.8 MGD of brackish concentrate would be produced as a byproduct of the demineralization process; the TDS of the concentrate would range from 7,000 to 9,000 mg/l. For comparison, the TDS concentration in sea water is approximately 35,000 mg/l TDS, while San Diego Bay water has TDS concentrations of approximately 40,000 mg/l. Concentrate would be discharged to the Sweetwater River via the Upper Paradise Creek channel. The river would be monitored for a period of two years (one year prior to and one year after commencement of operations), and monitoring reports provided to the Regional Water Quality Control Board (RWQCB).

DEMINERALIZATION PLANT OPERATIONAL PLAN

A Demineralization Plant Operational Plan has been developed to control the: (1) rate of groundwater extraction from the alluvial basin and San Diego Formation; and (2) the nitrate level in the concentrate discharge. The plan is designed to avoid and/or minimize adverse impacts to the vegetation communities in riparian habitats and eelgrass beds as a result of the alluvial groundwater pumping and concentrate discharge. Modifications to the operational plan may be made as a result of monitoring data collected during a one-year monitoring period prior to commencement of pumping from the alluvial well field and San Diego Formation wells. Monitoring would continue for one year after the pumping operation begins, and further adjustments may be made to the plan as a result of the data collected.

The operational plan includes seven alluvial monitoring wells, four soil moisture sensors, six San Diego Formation monitoring wells, three stream gages, and borings to obtain additional information concerning the relationship between alluvial pumping and upper alluvial

groundwater fluctuations, and to determine the extent and thickness of the clay layer (or lens) at the well field. The monitoring wells, soil moisture sensors, and stream gages would be equipped with instrumentation to provide continuous water level recording.

An **Alluvial Basin Management and Monitoring Plan** is included in the Operational Plan to detect and predict the potential risk of adverse impacts to the vegetation communities along the Sweetwater River, and to adjust the plant operation to avoid and/or minimize such impacts. Groundwater monitoring would commence one year prior to initiating operation of the demineralization plant to obtain baseline information. Monitoring would continue after the plant commences operation, and further adjustments would be made, as required.

A **Concentrate Monitoring Plan** would monitor the salinity, Total Kjeldahl Nitrogen (TKN), nitrate, and chlorophyll A levels in the Sweetwater River commencing one-year prior to the construction of the demineralization plant. Monitoring would occur at five locations downstream of the demineralization plant. This monitoring would establish baseline conditions total dissolved solids (TDS), Total Kjeldahl Nitrogen (TKN), nitrate, and chlorophyll A levels. The demineralization plant's concentrate would also be monitored after the commencement of plant operations.

PLANT OPERATION ADJUSTMENTS

The project has been designed with the flexibility to extract water from two independent water sources - the Lower Sweetwater River Basin alluvium and the San Diego Formation. The relative water extraction volumes (rates) would vary seasonally. During dry months, groundwater withdrawals from the alluvial aquifer could be reduced when drawdowns could affect the southern arroyo willow riparian woodland and southern willow scrub along the Sweetwater River.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Table S-1 provides a summary of potential environmental impacts arising from the project. The table also describes mitigation measures that would be required.

**TABLE S.1
SUMMARY OF IMPACTS AND MITIGATION FOR THE PROPOSED PROJECT**

Issue	Impacts	Mitigation Measures
<p>A. Geotechnical</p>	<p>The potential for liquefaction caused by intensive seismic shaking.</p>	<p>4.1.4.a Liquefaction¹: The design of the demineralization plant building, storage tanks, and the associated water lines shall incorporate design features to prevent severe damage and settling of the structures due to liquefaction.</p>
	<p>Excavations below 5 to 10 feet at the demineralization plant site will likely encounter groundwater seepage and possibly caving.</p>	<p>4.1.4.b Dewatering: The design plans for the plant shall include provisions for dewatering of deep excavations, and laying back, or shoring, of temporary excavation walls.</p>
		<p>4.1.4.c Dewatering: Regional Water Quality Control Board (RWQCB) standards will be met. If the volume of discharged water is small enough to percolate into the soil on the demineralization plant site, it would be allowed to do so. The water can be discharged on to a relatively flat area bounded by temporary dikes high enough to contain all the discharged water. No temporary dewatering water discharge would be allowed to leave the spreading area.</p> <p>If the volume of discharge water is too large to percolate into the soil without leaving the site, a detention basin or basins shall be constructed to hold the water until the suspended particulate matter has settled out. Clean water may be discharged from the detention basin into the Upper Paradise Creek Flood Control Channel.</p>
		<p>4.1.4.d Running Sand: The trench walls for the brackish water line shall be shored or laid back at an inclination of approximately 1:1 to avoid collapse of the trench walls.</p>
		<p>4.1.4.e General: A detailed geotechnical investigation shall be prepared during the preparation of final design plans for the project.</p>

¹ Mitigation measures are numbered according to their location in the EIR (e.g., Mitigation Measure 4.1.4.a is located in the geotechnical section (section 4.1.4) of the EIR.

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**TABLE S.1
SUMMARY OF IMPACTS AND MITIGATION FOR THE PROPOSED PROJECT (CONTINUED)**

Issue	Impacts	Mitigation
B Water Resources/ Water Quality	Alluvial Aquifer: No significant groundwater resource impacts would occur because pumping 1,500 ac.ft./yr. would not exceed the safe yield of the basin, result in salt water intrusion, nor cause the average salinity (TDS) level in the aquifer to exceed 2,500 mg/l.	None required.
	San Diego Formation: Preliminary modeling shows that pumping at the extraction rate of 3,000 ac.ft./yr. for 100 years would result in minimal to no degradation of water quality at any existing well sites as the result of seawater intrusion. The proposed well facilities include the capability for injection of potable water as a preventative measure to minimize seawater intrusion.	None required.
	Concentrate Disposal: No significant adverse water quality impacts are expected to occur; however, if the nitrate levels are determined to be deleterious, the Authority will follow the recommendation of the RWQCB in implementing one or more of the recommended mitigation measures.	<p>4.2.4.a Cooperative Action: A cooperative action with other nitrate contributors, such as the National City Golf Course, to reduce their nitrate loading of the Sweetwater River upstream of the demineralization plant.</p> <p>4.2.4.b Watershed Education Program: Expanding the existing "Watershed Education Program" that encourages residents to reduce the level of nitrate production through limiting the use of garden toxics, chemical fertilizers, composting of yard trimmings, etc.</p> <p>4.2.4.c Brackish Marsh: The construction of a brackish water marsh or other technology to reduce the nitrate level of the concentrate before discharging it into the Sweetwater River.</p>

TABLE S.1
SUMMARY OF IMPACTS AND MITIGATION FOR THE PROPOSED PROJECT (CONTINUED)

Issue	Impacts	Mitigation
C. Biological Resources Aquatic & marsh habitat where depth-to-groundwater is zero to three feet	The Alluvial Basin Management and Monitoring Plan would ensure that potentially significant impacts would be avoided (see Project Description, Section 3.1).	None Required.
Wildlife	No impacts.	None required.
Southern willow scrub	Loss of 0.50-acre of degraded southern willow scrub at the plant site is a less than significant impact.	None required.
Dewatering effluent	Potentially significant impact to downstream habitat as a result of dewatering sedimentation resulting from demineralization plant construction activities will be avoided by compliance with the National Pollutant Discharge Elimination System Permit (NPDES) provision and implementation of Mitigation Measure 4.3.4.a.	<p>4.3.4.a Discharge of dewatering effluent: The significant impact to biological resources resulting from the discharge of dewatering effluent will be avoided by the following measures.</p> <p>(1) If the volume of discharged water is small enough to percolate into the soil on the demineralization plant site, it would be allowed to do so. The water can be discharged on to a relatively flat area bounded by temporary dikes high enough to contain all the discharged water. No temporary dewatering water discharge water would be allowed to leave the spreading area.</p> <p>(2) If the volume of discharge water is too large to percolate into the soil without leaving the site, a detention basin or basins would be constructed to hold the water until the suspended particulate matter has settled out. A portion of the water is expected to percolate into the soil column. Clean water may be discharged from the detention basin into the Upper Paradise Creek Flood Control Channel.</p>
Perching and foraging habitat	Incremental loss of perching and foraging habitat is a less than significant impact.	None required.
Sweetwater River channel wetland areas	Potentially significant impact to wetlands along Sweetwater River as a result of pipeline trenching soil stockpile erosion and downstream sedimentation will be avoided by implementation of mitigation measure 4.3.4.b..	<p>4.3.4.b Discharge of eroded soil: Erosion of stockpiled soils directly or indirectly into the Sweetwater River shall be avoided by tarping soil stockpiles if precipitation occurs or is likely to occur. Soils be stockpiled on the side of the trench furthest from the river canal whenever possible. In addition, silt fences shall be installed in a manner that would prevent the movement of eroded soils directly or indirectly into the Sweetwater River.</p>

TABLE S.1
SUMMARY OF IMPACTS AND MITIGATION FOR THE PROPOSED PROJECT (CONTINUED)

ISSUE	IMPACTS	MITIGATION
<p>C. Biological Resources Light-footed clapper rail</p>	<p>Potential short-term significant noise impact during breeding season will be reduced to a less than significant level by implementation of mitigation measure 4.3.4.c.</p>	<p>4.3.4.c Construction Noise: Construction of the conveyance facilities should be scheduled during the light-footed clapper rail non-nesting season (August to February). If construction cannot be scheduled to avoid the nesting season the following procedures shall be followed:</p> <ol style="list-style-type: none"> (1) Light-footed clapper rail surveys along the Sweetwater River Channel between Plaza Bonita Shopping Center and the downstream edge of the marsh habitat shall be initiated at least two weeks prior to the nesting season, and the surveys shall be conducted on a bi-weekly schedule. (2) Pre-construction noise level data shall be developed using an acoustical array system designed to cover all areas adjacent to the conveyance facilities alignment where clapper rail activity is detected during the bi-weekly surveys. (3) Sound contours for ambient conditions and expected construction conditions shall be developed. Analysis of the acoustical data would be used to determine the level of noise that initiates significant changes, if any, in rail behavior. This analysis permits the consulting biologist to determine which activities may continue without disturbance to the species. (4) A qualified consulting biologist shall be present during all construction activities adjacent to the rail habitat to observe rail behavior. (5) If light-footed clapper rails are present, a determination of their behavior and/or use patterns shall be made for the affected area. Behaviors of concern include, but are not be limited to, foraging, territorial display, nest building, and incubation. (6) If the biologist observes nesting behavior or other activities that indicate nesting may occur, acoustical and biological observations shall continue during the construction period. If no activities are observed indicating that nesting is occurring or may occur, no further acoustical monitoring would be required. (7) If the biologist determines that rails are significantly changing breeding behavior as a result of increased construction noise and/or activity, the biologist would inform the Authority's construction inspector which construction activities must cease. (8) In the event that construction activities are stopped, the biologist would continue observations to determine when construction may resume without causing harassment to the species. Since light-footed clapper rails may nest more than once during the breeding season, construction could be postponed until the end of July. (9) Rail observations may be discontinued when construction is completed adjacent to clapper rail habitat. This decision shall be made by the monitoring biologist. All data shall be made available to the Service within 30 working days following the last day of data collection.

TABLE S.1
SUMMARY OF IMPACTS AND MITIGATION FOR THE PROPOSED PROJECT (CONTINUED)

Issue	Impacts	Mitigation
C. Biological Resources Sweetwater Marsh NWR	No salinity impacts resulting from concentrate discharge.	None required.
Brackish marsh and intertidal mudflats	No salinity impacts resulting from concentrate discharge.	None required.
Phytoplankton, vascular vegetation, microalgae	Potentially significant nitrate impact avoided and/or minimized by Concentrate Monitoring Plan.	None required.
Eelgrass, marsh, mudflats	Short-term nutrient enrichment impact is a less than significant impact.	None required.
Eelgrass	Potential long-term significant nutrient enrichment impact to eelgrass and other seagrasses, if phytoplankton levels increase significantly, will be avoided by implementation of mitigation measures 4.3.4.d, 4.3.4.f, 4.3.4.g, and 4.3.4.i.	<p>TIER 1: BASELINE MONITORING</p> <p>4.3.4.d Establish Nitrate Loading and Source Baseline: Surface water grab samples shall be collected at baseline monitoring stations located at:</p> <ul style="list-style-type: none"> • At an open water point immediately above the Reach 3 intertidal channel shown on Figure 4.3.4; • At the Sweetwater River confluence with the Upper Paradise Creek Diversion channel; • At the National City Boulevard Bridge Crossing; • At the Santa Fe Railroad Bridge Crossing; and • Off the southwestern-most corner of the 24th Street Channel Wharf. <p>After the demineralization plant commences operation, the concentrate shall also be sampled at its discharge point.</p> <p>The water quality monitoring procedures shall be as follows:</p> <ol style="list-style-type: none"> (1) Nitrate, TKN, and chlorophyll A levels shall be monitored on a monthly basis to determine baseline nutrient and phytoplankton levels. (2) Samples shall be taken at the low ebb tidal stage near a perigean (spring) tide series. This would tend to flush out areas of still water and provide the greatest ability to discern true contributions of the various nutrient source areas. (3) Establish input source water flow rates of the Sweetwater River, Upper and Lower Paradise Creek Channels as shown on Figure 4.3.9.

TABLE S.1
SUMMARY OF IMPACTS AND MITIGATION FOR THE PROPOSED PROJECT (CONTINUED)

Issue	Impacts	Mitigation
C. Biological Resources Eelgrass	Potential long-term significant nutrient enrichment impact to eelgrass and other seagrasses, if phytoplankton levels increase significantly, will be avoided by implementation of mitigation measures 4.3.4.d, 4.3.4.f, 4.3.4.g, and 4.3.4.i.	(4) A seasonal nitrogen mass loading model shall be developed for the lower Sweetwater River with a specific focus on inputs below the proposed discharge point. From this model, distribution of sampling locations, intervals, and effort shall be re-evaluated and protocols adjusted to allow the best degree of segregation of inputs as would be practical during operational phases. It is anticipated that some sampling stations utilized in the baseline data collection phase would not be required in the operational monitoring phase.
Marsh & Mudflat (Macroalgae)	Potential long-term significant nutrient enrichment impact to sheet algae will be avoided by implementation of mitigation measures 4.3.4.e. and 4.3.4.h.	<p>4.3.4.e Macroalgal Monitoring: The baseline characteristics and distribution of macroalgae within intertidal areas and the marsh complex shall be assessed by evaluating seasonal pre-construction and post-operational changes to macroalgae abundance and distribution. Trends in distribution relative to nitrate sources and gradients shall be evaluated.</p> <p>A suggested methodology for this monitoring is contained in Appendix D-2. Sweetwater Authority will review a monitoring methodology with the resource agencies prior to the commencement of the monitoring program. The methodology will be adjusted to incorporate the comments received from the agencies.</p>
Eelgrass	Potential long-term significant nutrient enrichment impact to eelgrass and other seagrasses will be avoided by implementation of mitigation measures 4.3.4.d, 4.3.4.f, 4.3.4.g, and 4.3.4.i.	<p>4.3.4.f Eelgrass Distribution and Compensation Depth: The ambient conditions of the area's eelgrass resources shall be established by:</p> <p>(1) Conducting a one time baseline mapping effort to identify the specific distribution of eelgrass within and adjacent to the mouth of the Sweetwater River Channel (Figure 4.3.9).</p> <p>(2) Monitoring transects on a quarterly basis, and on a monthly basis for the months of August, September, and October. A profile of eelgrass compensation depths as a function of distance from the interior portions of the Sweetwater Channel shall be developed.</p>

**TABLE S.1
SUMMARY OF IMPACTS AND MITIGATION FOR THE PROPOSED PROJECT (CONTINUED)**

Biological Issue	Impacts	Mitigation
Eelgrass	Potential long-term significant nutrient enrichment impact to eelgrass and other seagrasses will be avoided by implementation of mitigation measures 4.3.4.d, 4.3.4.f, 4.3.4.g, and 4.3.4.i.	<p>TIER 2: PLANT OPERATIONS MONITORING 4.3.4.g Nitrate Loading and Source Baseline: The operational period nitrogen loading conditions shall be established by:</p> <ul style="list-style-type: none"> (1) Determining the nitrate, TKN, and chlorophyll A levels on a monthly basis for the first operational year at the following locations (Figure 4.3.9): <ul style="list-style-type: none"> (a) At an open water point immediately above the Reach 3 intertidal channel shown on Figure 4.3.4; (b) At the Sweetwater River confluence with the Upper Paradise Creek Diversion Channel; (c) At the National City Bridge Crossing; (d) At the Santa Fe Railroad Bridge Crossing; (e) Off the southwestern-most corner of the 24th Street Channel Wharf; and (f) Within the plant concentrate discharge stream. (2) Sampling at the low ebb tidal stage near a perigean (spring) tide series. This will tend to flush out areas of still water and provide the greatest ability to discern true contributions of the various nutrient source areas. (3) Determining the input source water flow rates of the Sweetwater River, Upper and Lower Paradise Creek Channels, and the concentrate discharge stream. (4) Developing a seasonal nitrogen mass loading model for the Lower Sweetwater River with a specific focus on inputs below the proposed discharge point.
Marsh & Mudflat (Macroalgae)	Potential long-term significant nutrient enrichment impact to sheet algae will be avoided by implementation of mitigation measures 4.3.4.e. and 4.3.4.h.	<p>4.3.4.h Macroalgal Monitoring: Macroalgae monitoring shall Evaluate seasonal, pre-construction, and post-construction operational changes to macroalgae abundance and distribution. Trends in distribution relative to nitrate sources and gradients shall be determined.</p> <p>A suggested methodology for this monitoring is contained in Appendix D-2. Sweetwater Authority will review a monitoring methodology with the resource agencies prior to the commencement of the monitoring program. The methodology will be adjusted to incorporate the comments received from the agencies.</p>

TABLE S.1 SUMMARY OF IMPACTS AND MITIGATION FOR THE PROPOSED PROJECT (CONTINUED)		
Issue	Impacts	Mitigation
C. Biological Resources		
Eelgrass	Potential long-term significant nutrient enrichment impact to eelgrass and other seagrasses, if phytoplankton levels increase significantly, will be avoided by implementation of mitigation measures 4.3.4.d, 4.3.4.f, 4.3.4.g, and 4.3.4.i.	<p>TIER 3: SUBSEQUENT MONITORING (IF NEEDED)</p> <p>4.3.4.i Eelgrass Monitoring: After the demineralization plant is placed in operation eelgrass monitoring would be required only if the lower level monitoring tiers show a significant increase in phytoplankton, as measured by chlorophyll A, as a result of project operations.</p> <p>A suggested methodology for this monitoring is contained in Appendix D-2. Sweetwater Authority will review a monitoring methodology with the resource agencies prior to the commencement of the monitoring program. The methodology will be adjusted to incorporate the comments received from the agencies.</p>

TABLE S.1
SUMMARY OF IMPACTS AND MITIGATION FOR THE PROPOSED PROJECT (CONTINUED)

Issue	Impacts	Mitigation
D. Land Use	The project would not adversely affect existing or planned land uses, recreational facilities, or open space uses. Land Use impacts are not considered to be significant. A Conditional Use Permit and Design Review by the city of Chula Vista would be required prior to the issuance of grading and building permits.	No mitigation measures are required.
E. Risk of Upset	The storage and use of chemicals at the demineralization plant are not considered significantly adverse because of the safety features included in the demineralization plant design, and the safety requirements that will be included in the business plan for the plant.	No mitigation measures are required.
F. Aesthetics	The project would not result in significant visual impacts.	No mitigation measures are required.
G. Cultural Resources	Construction of the proposed wells, demineralization plant and conveyance facilities would not significantly impact cultural resources.	No mitigation measures are required.
H. Cumulative Effects	No cumulatively adverse impacts are expected to result from the construction of the demineralization facilities and related projects.	No mitigation measures are required.

ALTERNATIVES

Table S-2 summarizes the significant impacts associated with the proposed project at the Edgemere site and the alternative Plaza Bonita site. The Plaza Bonita site would require alternative routings of the brackish and product water lines.

PLAZA BONITA PLANT SITE

The Plaza Bonita site alternative location for the demineralization plant is within a 15-acre parcel owned by the City of National City Parking Authority. Access to the plant site would be obtained directly from Plaza Bonita Road. This parcel is bounded on the north and west by SR 54 and I-805, respectively. To the east the parcel is bounded by Sweetwater Road and single-family homes located immediately east of the road. To the south is Plaza Bonita Road and Plaza Bonita Shopping Center.

This parcel is designated as Open Space Reserve (OSR) by the National City General Plan. The OSR General Plan designation is an "Institutional" category that allows limited passive recreational and educational uses. Uses permitted in the OSR zone include open space, recreational activities, and utility easements. The site is also located in an area included in a "Cooperation Agreement between the City of National City, the Parking Authority of the City of National City, and the County of San Diego".

If the Plaza Bonita site is selected as the location of the demineralization plant, a General Plan Amendment would be required to change the existing open space designation of the property. A designation of Light Industrial (ML) would be an appropriate designation. Encroachment permits for placing wells and the brackish water line within city streets would be required.

"NO PROJECT" ALTERNATIVE

Under the "No Project" alternative a demineralization plant would not be constructed, nor would the alluvial and San Diego Formation wells drilled. Thus, the goal of reducing Sweetwater Authority's reliance on imported water would not be met. Increasing the use of local water resources would reduce, to some degree, the adverse environmental effects (e.g., Bay Delta releases) associated with water conveyance systems in other areas. No significant environmental impacts would result from not constructing the demineralization project.

ALTERNATIVE ROUTING OF BRACKISH AND PRODUCT WATER LINES

If the Plaza Bonita alternative plant site is chosen for the demineralization plant, the brackish and product water lines would have to be rerouted accordingly. Table S-3 summarizes the potential impacts associated with conveyance facilities for both of the demineralization plant site locations.

TABLE S.2 DEMINERALIZATION PLANT ALTERNATIVES			
Issue	Proposed Project	Plaza Bonita Site	No Project
Project Description	Construction of 4.8 mgd demineralization plant.	Construction of 4.8 mgd demineralization plant.	No construction of a demineralization plant.
Geotechnical	Significant, but mitigable, liquefaction and dewatering impacts.	Significant, but mitigable, liquefaction dewatering impacts.	No impacts
Water Resources Water Quality	No significant impacts expected; however, if nitrate levels are deleterious SWA will follow RWQCB recommendations.	No significant impacts expected; however, if nitrate levels are deleterious SWA will follow RWQCB recommendations.	No impacts. More imported water required.
Biological Resources	Loss of 0.50 acres of degraded southern willow scrub.	Loss of unquantified amount of southern willow scrub.	No impacts.
	Potential downstream and wetland impacts from sedimentation and pipeline construction.	Potential downstream and wetland impacts from sedimentation and pipeline construction.	No impacts.
	Loss of roosting and foraging habitat for red-shouldered hawks.	Possible loss of small population of San Diego sunflower and desert encilia.	No impacts.
	Potential short-term noise impact to light-footed clapper rail.	Potential short-term noise impact to light-footed clapper rail.	No impacts.
	Potential long-term nutrient enrichment impact to eelgrass and other sea grasses.	Potential long-term nutrient enrichment impact to eelgrass and other sea grasses.	No impacts.
Land Use	No significant impacts.	General Plan Amendment and open space easement modification required. Significant, and unmitigable open space impact.	No impacts.
Risk of Upset (Human Health)	No significant impacts.	No significant impacts.	No impacts.
Aesthetics	No significant impacts.	Significant, but mitigable, visual impact.	No impacts.
Cultural Resources	No significant impacts.	No significant impacts.	No impacts.

TABLE S.3			
BRACKISH AND PRODUCT WATER LINE ALTERNATIVES			
Issue	Proposed Project	Plaza Bonita Site	No Project
Project Description	Brackish line (7,200') S.D. Formation Line (2,000') Product line (600')	Brackish line (4,500') S.D. Formation line (4,800') Product line (400')	No lines constructed.
Geotechnical	No significant impacts.	No significant impacts.	No significant impacts.
Water Resources/Water Quality	No significant impacts.	No significant impacts.	No significant impacts.
Biological Resources	No significant impacts if light-footed clapper rail nestings season avoided, or if noise control measures are implemented, and if erosion control measures are taken to prevent erosion of soils during trenching operation.	No significant impacts if light-footed clapper rail nesting season avoided, or if noise control measures are implemented, and if erosion control measures are taken to prevent erosion of soils during trenching operation.	No significant impacts.
Land Use	No significant impacts.	No significant impacts.	No significant impacts.
Risk of Upset (Human Health)	No significant impacts.	No significant impacts.	No significant impacts.
Aesthetics	No significant impacts.	No significant impacts.	No significant impacts.
Cultural Resources	No significant impacts.	No significant impacts.	No significant impacts.

ALTERNATIVES CONSIDERED, BUT REJECTED

Locating the demineralization plant on the "Special Study Area" (Mross) site located south of the Sweetwater River was rejected because of land use compatibility conflicts and impacts associated with placing conveyance lines under the Sweetwater River. This site is now committed to another use and is no longer available to the Sweetwater Authority.

Alternative considered, but rejected, for the disposal of concentrate include: (1) discharging to the sewer system; (2) discharging to the Sweetwater Marsh National Wildlife Refuge; and (3) discharging to the Chula Vista Midbayfront Project. The first alternative was determined to be financially infeasible. The second alternative was rejected because of the high cost involved in constructing the pipeline and the potential to result in significantly adverse water quality impacts to the marsh. The final alternative was rejected because there is no assurance that the approved Midbayfront project will actually be constructed, or that the lagoons would be available to the Authority.