

**Appendix K**  
**Water Supply Assessment**  
**and Water Resources Study**

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# WATER SUPPLY ASSESSMENT AND WATER SUPPLY VERIFICATION

*for the proposed*

## Hacienda at Fairview Valley Specific Plan

*prepared for*



Apple Valley Ranchos Water Company  
21760 Ottawa Road  
Apple Valley, California 92307

*prepared by*



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400 South Farrell, B-205  
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September 10, 2008

Adopted: November 19, 2008

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**RESOLUTION  
OF BOARD OF DIRECTORS OF  
APPLE VALLEY RANCHOS WATER COMPANY  
A CALIFORNIA CORPORATION**

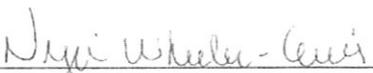
At a regularly scheduled and duly noticed meeting of the Board of Directors of Apple Valley Ranchos Water Company, held on November 19, 2008, and at which a quorum of the Directors were present, the Board passed the following Resolution:

WHEREAS, Apple Valley Ranchos Water Company (Company) has received a request under Section 10910 et seq. of the California Water Code from the Strata Equity Group for an assessment of whether existing and total planned sources of water will meet the projected water demand associated with the proposed Hacienda at Fairview Valley Specific Plan, and

WHEREAS, a Water Supply Assessment for the proposed Hacienda at Fairview Valley Specific Plan was prepared for the Company by Terra Nova Planning & Research, Inc. and has been reviewed and revised by the staff of the Company and the Company's legal counsel, and

WHEREAS, the Board of Directors has reviewed the Water Supply Assessment for the proposed Hacienda at Fairview Valley Specific Plan and acknowledges the descriptions and conclusions contained therein,

NOW THEREFORE, BE IT HEREBY RESOLVED that the Board of Directors of Apple Valley Ranchos Water Company adopts the Water Supply Assessment for the proposed Hacienda at Fairview Valley Specific Plan.

  
\_\_\_\_\_  
Nyri A. Wheeler-Lewis  
Corporate Secretary

## **1.0 EXECUTIVE SUMMARY**

This Water Supply Assessment was prepared in conjunction with the preparation of the Hacienda at Fairview Valley Specific Plan located in San Bernardino County, California. In addition to evaluating water demand for the project and the project's cumulative demand and impacts to supplies, the Water Supply Assessment also evaluates existing and future water supply sources that the local water purveyor, Apple Valley Ranchos Water Company, will use to meet future demand throughout its service area.

The Hacienda at Fairview Valley Specific Plan consists of residential, commercial, and recreational development on approximately 1,557 acres located about two miles east of the Town of Apple Valley in San Bernardino County. This project will consist of a mix of residential neighborhoods, commercial development, roadways, and open space, parks and water features. Due to the proposed project's scale, preparation of a Water Supply Assessment and a Water Supply Verification is required in accordance with Senate Bill 610 and Senate Bill 221, respectively. This combined document examines the current condition of the Alto Subarea, which serves the project area, and finds that the aquifer and its sources of supply are adequate to supply the project in accordance with California Water Code Section 10910 *et seq.* for the 22-year period from 2008 through 2030.

For the 2006-2007 water year verified production for the Alto Subarea was 99,895 acre-feet. The Watermaster for the Mojave Basin, Mojave Water Agency, calculated the total groundwater in storage for the Alto Subarea at 960,000 acre feet in 1999, with an additional available storage capacity of approximately 1.1 million acre feet. Thus, the total storage capacity for the Alto Subarea is estimated at approximately 2.1 million acre-feet.

At buildout the Specific Plan will generate demand for approximately 1,331 acre-feet of water per year or 1.3% of the current (2007) total verified production for the Alto Subarea. To meet this demand AVR will extract groundwater from the Alto Subarea of the Mojave Basin.

## **2.0 INTRODUCTION**

### **2.1 Background**

The proposed Hacienda at Fairview Valley Specific Plan (Specific Plan) project will provide entitlements for the development of up to up to 3,114 dwelling units on 1,126 acres of residential land use, 80 acres of roadways, 15 acres of commercial development, and 336 acres of open space, parks, and water features. Since this project is subject to the California Environmental Quality Act process (CEQA) an Environmental Impact Report will be prepared. The Apple Valley Ranchos Water Company (AVR), the Public Water System (PWS) for the Project, has determined that a Water Supply Assessment (WSA) is necessary to complete the Project's CEQA process and to approve the project for development since the proposed development is a "Project" as defined by Water Code Section 10912.

## **2.2 Purpose of Document**

Upon request of local government, a PWS is required by law to provide documentation regarding the water supply for new projects. The WSA is included in the CEQA documentation and it becomes information used in the approval process.

### 2.2.1 Water Supply Assessment (WSA)

Senate Bill 610 (SB 610), also known as the Water Supply Assessment, was enacted in 2001 and became effective as of January 1, 2002. SB 610 amended Section 21151.9 of the Public Resources Code, and amended Sections 10631, 10656, 10910, 10911, 10912 and 10915, repealed Section 10913, and added and amended Section 10657 of the California Water Code. It requires cities and counties to request specific information on water supplies from the PWS that would serve any project subject to CEQA and defined as a “project” in Water Code Section 10912, and to include this information into environmental review documents prepared pursuant to CEQA.

### 2.2.2 Water Supply Verification (WSV)

Senate Bill 221 (SB221) was enacted in 2001 and became effective as of January 1, 2002. SB221 amends Section 11010 of the Business and Professional Code, and Sections 66455.3, 66473.7, and 65867.5 of the Government Code. SB 221 establishes the relationship between the WSA prepared for a project and the project approval under the Subdivision Map Act. Pursuant to California Government Code Section 66473.7, the PWS must provide a written verification of sufficient water supply prior to the approval of a new subdivision.

### 2.3 Project Description and Location

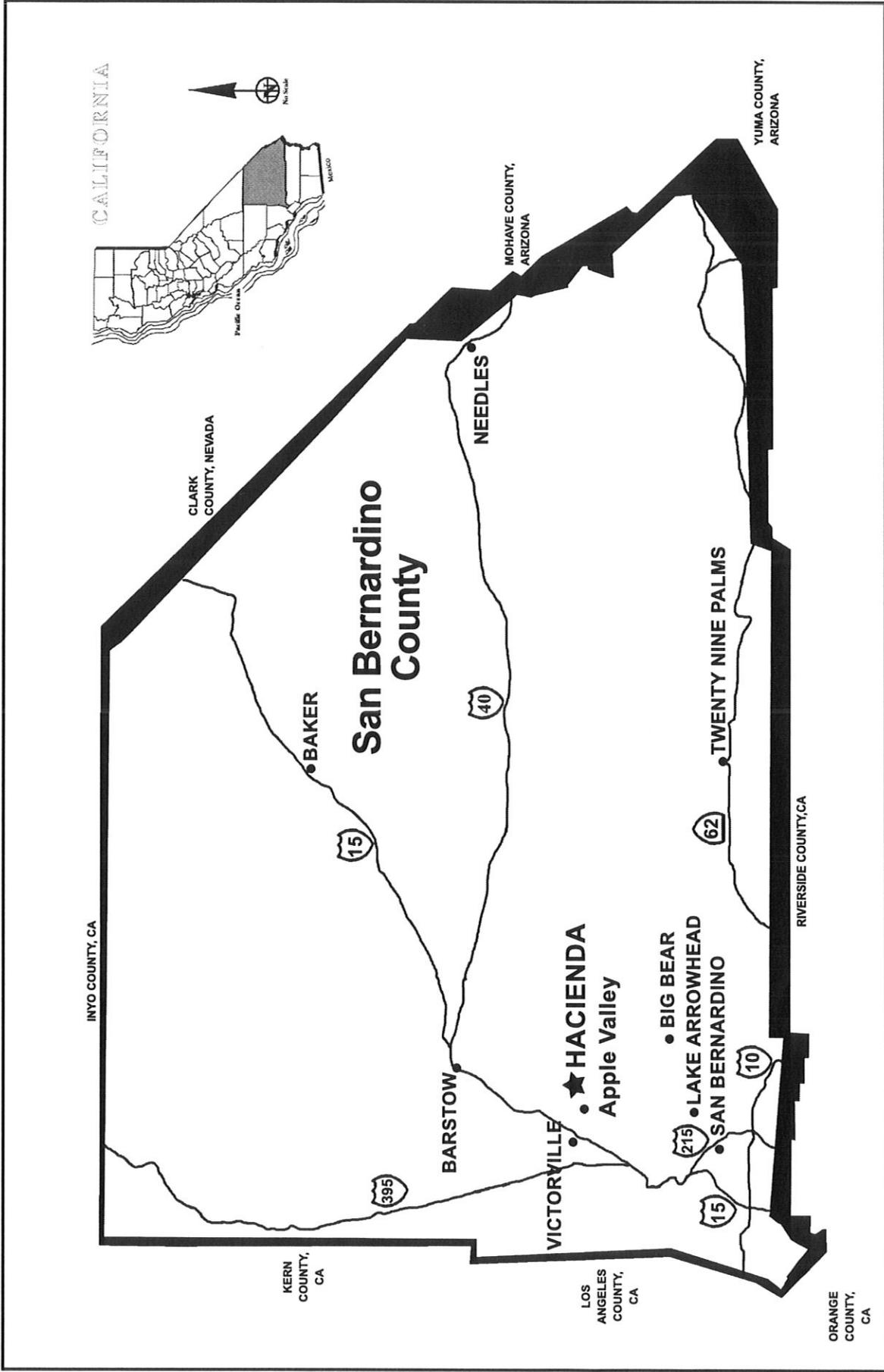
The proposed project is a Specific Plan of Land Use (Specific Plan) with residential, commercial and recreational land uses on approximately 1,557 acres in San Bernardino County, east of the Town of Apple Valley but within the Town's Sphere of Influence. The proposed project will facilitate the development of up to 1,126 acres of residential, 80 acres of roadways, 15 acres of commercial, and 336 acres of open space, parks and water feature development. Implementation of the Specific Plan will facilitate the phased development of the project. Table 1 shows the proposed acres and dwelling units or square footage of development for each land use, as applicable.

**Table 1**  
**Land Use Description**

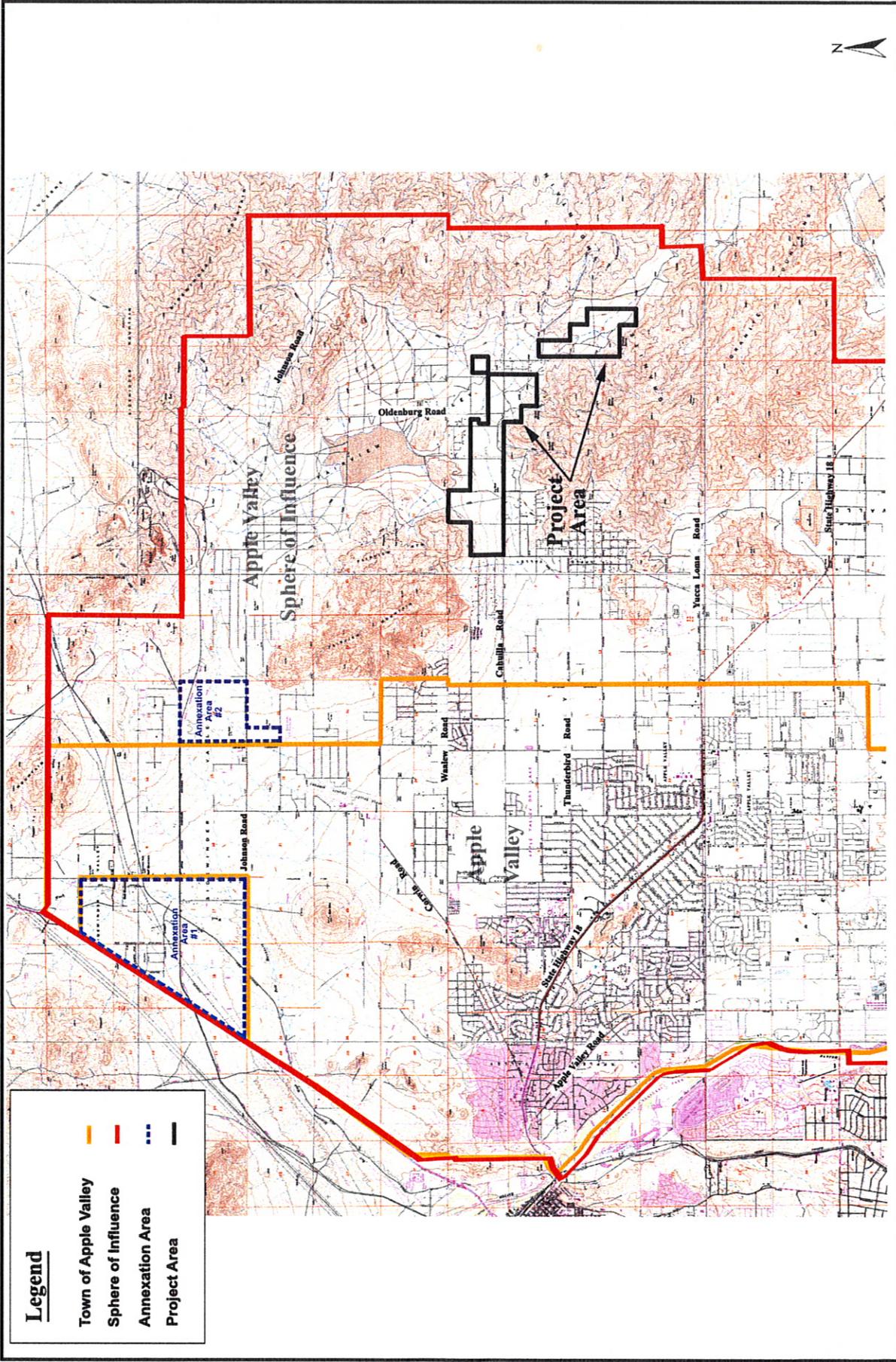
<b>Residential</b>	<b>Planned Units</b>	<b>Acres</b>
Rural Living (RL-2)	27	73
Estate (RS-1)	142	226
Equestrian (R-EQ)	30	47
Very Low (VL)	100	94
Low (L)	865	288
Low-Medium (LM)	785	196
Medium (M)	800	146
Medium-High (MH)	365	56
<b>Subtotal</b>	<b>3,114</b>	<b>1,126</b>
<b>Other Land Uses</b>	<b>Square Footage</b>	<b>Acres</b>
Commercial (CN)	200,000	15
Parks (OS-R)	33,000	38
Water Features	N/A	18
Open Space (OS-C)	N/A	280
Streets	N/A	80
<b>Subtotal</b>	<b>233,000</b>	<b>431</b>
<b>Total Acreage</b>		<b>1,557</b>

Source: "Hacienda at Fairview Valley Specific Plan – Land Use Summary Table," prepared by Strata Equity Group, October 24, 2007.

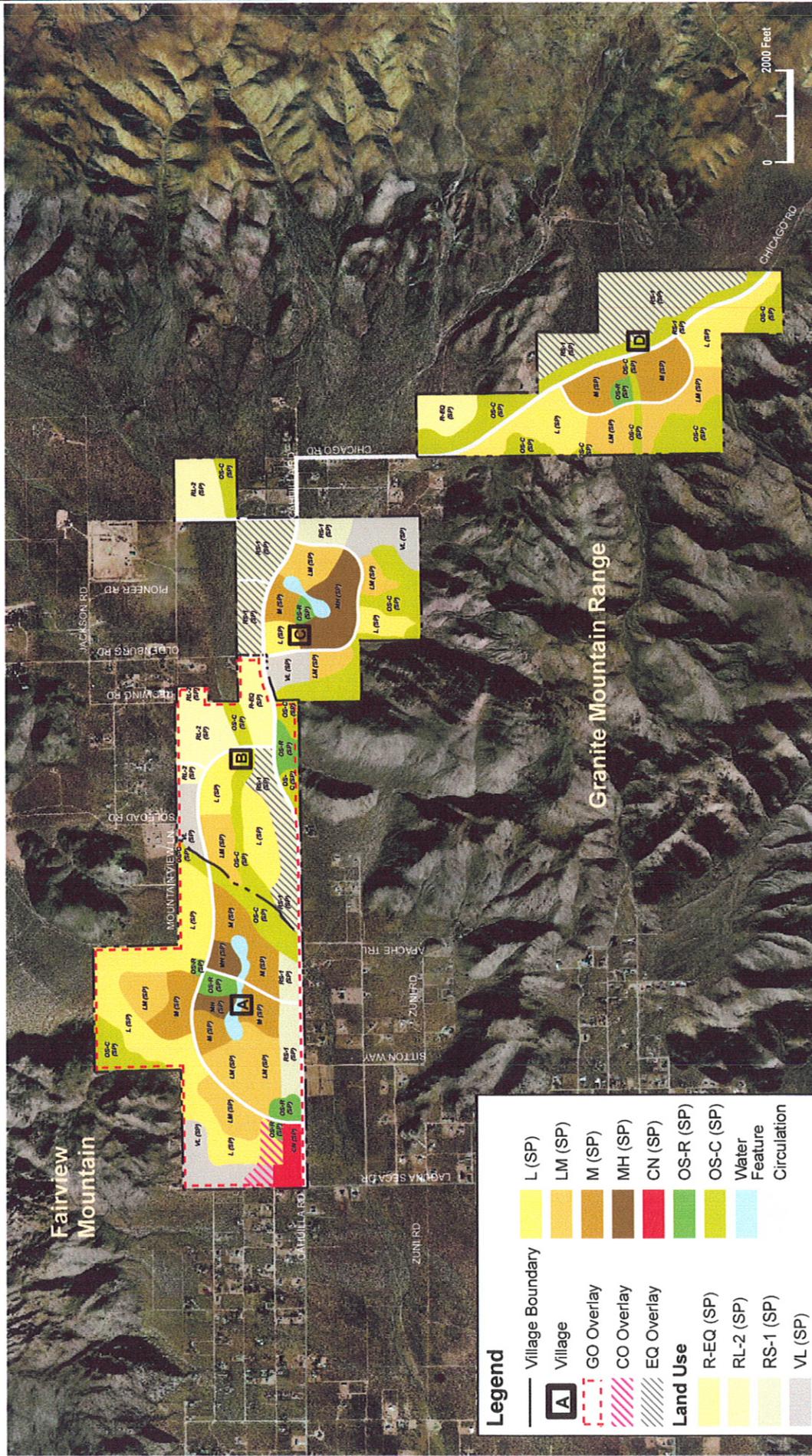
The Hacienda at Fairview Valley Specific Plan is located in the County of San Bernardino just east of the Town of Apple Valley and within the Town's Sphere of Influence. Exhibit 1 shows the regional location of the project, Exhibit 2 shows the project vicinity, and Exhibit 3 provides the proposed land use map for the Project.



Hacienda at Fairview Valley Specific Plan WSA & WSV  
Regional Location Map  
San Bernardino County, California



Hacienda at Fairview Valley Specific Plan WSA & WSV  
 Vicinity Map  
 San Bernardino County, California



**Legend**

	Village Boundary		L (SP)
	Village		LM (SP)
	GO Overlay		M (SP)
	CO Overlay		MH (SP)
	EQ Overlay		CN (SP)
<b>Land Use</b>			OS-R (SP)
			OS-C (SP)
			Water
			Feature
			Circulation
			R-EQ (SP)
			RL-2 (SP)
			RS-1 (SP)
			VL (SP)

Source: STRATA EQUITY GROUP, INC.

### 2.3.1 Applicability of a Water Supply Assessment

A WSA is required because the proposed project area would demand an amount of water greater than that required by a 500 dwelling unit project, occupies more than 40 acres of land, or may have more than 650,000 square feet of floor area (Water Code Section 10912; SB 610).

AVR's 2005 Urban Water Management Plan (UWMP) did not consider demand for the project.<sup>1</sup> However, demand projections include an annual increase in water demand that is based on population increase. In the UWMP, AVR constrained its analysis and assumptions to actual and available estimated capacity. Nonetheless, additional sources are expected to assure an adequate supply for the project. These additional supplies are discussed in sections 2.3.3, 2.3.4, and 2.3.5 below.

### 2.3.2 Applicability of a Water Supply Verification

A Water Supply Verification (WSV) is required prior to the approval of a tentative subdivision map, or a parcel map for which a tentative map was not required, or a development agreement for a subdivision of property of more than 500 dwelling units, except as specified, including the design of the subdivision or similar type of improvement. The purpose of the WSV is to provide the legislative body of a city, county or the designated advisory agency with written verification from the applicable public water purveyor that a sufficient water supply is available or, in addition, a specified finding is made by the local agency that sufficient water supplies are, or will be, available prior to completion of the project.

Therefore, a WSV is required since the Project has over 500 dwelling units and is a "Subdivision" as defined by Government Code Section 66473.7.

### 2.3.3 Water Supply and Surplus Water Contract With Jess Ranch Water Company

AVR entered into a Water Supply and Surplus Water Contract with Jess Ranch Water Company ("Jess Ranch"). Under this agreement Jess Ranch, which has a base annual production (BAP) of 7,480 acre-feet under the Judgment, has agreed to provide sufficient pumping rights to serve the Jess Ranch area, with up to 4,488 acre-feet/year of free production allowance (FPA) – the estimated demand at full buildout – for a period of 99 years.

Also under the agreement, AVR has the right to annually lease any of Jess Ranch Water Company's FPA not needed to serve the Jess Ranch area, at a 10% discount to the MWA (Mojave Water Agency) Replacement Water cost. Therefore, the agreement provides AVR, either at no cost or through annual lease, with an annual supply of 4,488 acre-feet (60% of 7,480) of FPA water, which does not have to be met by purchasing Replacement Water from MWA.

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<sup>1</sup> Pursuant to Water Code § 10910(f)(5), the groundwater basin sufficiency analysis required by SB 610 is not required if the project's water needs were accounted for in the agency's Urban Water Management Plan.

#### 2.3.4 Special Facilities Fees for Water Supply

AVR's tariffs provide for the collection of "Special Facilities Fees for Water Supply" from developers for the purpose of funding new wells. Therefore, AVR has an established source of capital to construct additional production capacity to meet the Project Water Demand. With the additional production capacity, AVR can utilize a greater amount of the "Groundwater Replacement Water purchased from MWA" which is available, according to Table 5 and 7, below.

#### 2.3.5 Groundwater Replacement Water

AVR is required to replace any groundwater that is extracted in excess of the allotted Free Production Allowance of 8,567 acre-feet per year. Groundwater replacement can be obtained by paying the Watermaster to purchase supplemental water from MWA (\$277 per acre-feet in 2007-08) and/or through transferring unused production rights from another party.

AVR constrained its assumptions of the amount of supply from "Groundwater Replacement Water purchased from MWA" in accordance with its actual and estimated well capacity (42,327 ac-ft per year or 37.8 MGD). AVR assumed that it would construct sufficient well capacity to meet the estimated demand and did not consider supply in excess of the amount that it could pump. The result is that the assumed amounts of "Groundwater Replacement Water purchased from MWA" shown in Tables 5, 8, 9, 10, 11, and 12, *infra*, of the WSA are considerably less than the amounts which MWA has available, as shown in Tables 5 and 7, below.

#### 2.3.6 Pre-purchased Claim Water

The MWA has initiated a program, The Claim Program, under which Replacement Water can be pre-purchased for future years. MWA accepts money from parties wishing to pre-purchase Replacement Water, uses that money to make current purchases of State Project Water, and "banks" that water in the basin for that party's future use by allowing the party to pump additional water beyond its pumping rights in future years. AVR has purchased over 8,000 acre-feet of water through the Claim Program, which it intends to pump over a 40 year period at 221 acre-feet per year. AVR anticipates future purchases through the Claim Program and has a Supplemental Water Acquisition Fee, approved by the CPUC in August of 2007, to fund these purchases.

#### 2.3.7 Leased Water

Over the past several years AVR has been able to acquire leased water rights that average 1,800 acre-feet per year (Watermaster Annual Report, Appendix E). These deliveries are expected to be available annually through 2030.

## 2.4 Public Water System

### 2.4.1 Description

The project is located east of the Town of Apple Valley in San Bernardino County, and is within the AVR Water Company service area; AVR is the PWS in this area. AVR was established in 1947 to protect and utilize a portion of the Alto Subarea, which is located in the southern portion of the Mojave Groundwater Basin. The AVR service area encompasses approximately 42.5 square miles (27,200 acres), most of which is located within the corporate limits of the Town of Apple Valley. The service area for AVR also includes portions of unincorporated San Bernardino County adjacent to the City of Victorville and fewer than 50 customers within the Victorville city limits. AVR provides services for domestic water and irrigation water. In 2005, AVR had a total of 18,036 metered water connections, including 16,562 residential, 1,346 commercial, 2 industrial, 52 institutional/governmental, and 73 landscape connections.<sup>2</sup>

AVR has a current (2008) groundwater production capacity of 42,327 acre-feet per year, or 37.79 million gallons per day (mgd). In 2005, AVR delivered 17,818 acre-feet (15.9 mgd), including 12,954 acre-feet for residential use, 2,843 acre-feet for commercial use, 3.0 acre-feet for industrial use, 895 acre-feet for institutional/governmental use, and 1,123 acre-feet for landscape use.<sup>3</sup>

## 2.5 Existing Water Management Plan

AVR completed the most recent Urban Water Management Plan in November 2005 for its service area. At that time AVR operated 22 domestic wells in Apple Valley with a total capacity of approximately 31.7 million gallons per day. In 2005 AVR's water system included about 350 miles of water lines and 8.6 million gallons of storage.<sup>4</sup>

AVR is located in the Mojave Basin and is therefore subject to the Mojave Basin Judgment (the Adjudication). Under the Mojave Basin Judgment, AVR is assigned a free production allowance (FPA) of 8,567 acre-feet per year. The FPA is 60% of Base Annual Production (BAP), which is defined as the producer's highest annual use verified for the five-year period from 1986 through 1990. All groundwater pumped beyond the FPA amount is subject to replacement, which can be achieved through a per acre-foot payment to the Watermaster (\$315 per acre-foot for 2007-2008), or through the transfer of unused water rights within the Alto Subarea from another party to the Judgment. For water year 2007-2008, AVR's consumption will achieve a safe yield (imports, inflows, return flows and outflows equal consumption).<sup>5</sup>

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<sup>2</sup> "Urban Water Management Plan 2005," prepared by Apple Valley Ranchos Water Company, November 2005.

<sup>3</sup> *Ibid.*

<sup>4</sup> *Ibid.*

<sup>5</sup> Under the Mojave Basin Judgment, "production safe yield" is defined as: "The highest average Annual Amount of water that can be produced from a Subarea: (1) over a sequence of years that is representative of long-term average annual natural water supply to the Subarea net of long-term average annual natural outflow from the Subarea, (2) under given patterns of Production, applied water, return flows and Consumptive Use, and (3) without resulting in a long-term net reduction of groundwater in storage in the Subarea."

The Mojave Basin Judgment provides for a possible adjustment in the base and/or free production allowance available to producers within the Mojave Basin on an annual basis. Such adjustments are made based upon all pertinent hydrological data and projections. Adverse water supply conditions could prompt a further reduction in the free production allowance.

The Mojave Water Agency serves as the Watermaster for the Adjudication and is also the State Water Project Contractor. AVR supplies are dependent upon MWA's ability to manage and balance the basin in a manner consistent with MWA's obligations to provide sufficient replacement water supplies under the Judgment and MWA's representation in its 2004 Regional Water Management Plan and its 2005 UWMP. The MWA Regional Water Management Plan (November 2005) identifies steps that will make it possible to meet future water demands in the Mojave Basin without compromising deliveries to any water users. Implementation of the plan is expected to meet 99% of future demand and achieve a safe yield (balance) to all aquifers in the Mojave Basin.

Since formulation of MWA's 2005 UWMP, multiple events have transpired placing significant constraints on the availability of water supplies throughout the State. In 2007, restrictions on State Water Project deliveries were directed pursuant to December 2007 federal court imposed interim rules to protect the delta smelt. A 2007 report of the California Department of Water Resources ("DWR") indicated that SWP deliveries may also be adversely impacted by climate change, which is altering hydrologic conditions in the State; the decline in other pelagic organisms in the Delta such as striped bass, Chinook salmon and steelhead trout; and the vulnerability of Delta levees to failure due to floods and earthquakes. (See Appendix B). California Governor Arnold Schwarzenegger also declared a statewide drought in June 2008. To date, MWA has not updated its 2005 UWMP to specifically address the foregoing and other recent developments affecting the availability of water supplies. These issues will have to be addressed in MWA's forthcoming UWMP, as AVR remains dependent on MWA's ability to manage the Basin in a manner that ensures the sufficient availability of water supplies.

It should be noted that the AVR 2005 UWMP projects water supply and demand through 2025. Discussions with AVR indicate that an update to the UWMP is in the preliminary planning phase and will extend projections through 2030. However, since UWMP projections for 2030 are not yet available this WSA has utilized data points provided for the five-year increments from 2005 through 2025 to extrapolate projected supply and demand through 2030. Details on the methodology used for this extrapolation are included in the Appendix C discussion.

### 3.0 WATER DEMANDS

#### 3.1 Project Demands

The data in this Water Supply Assessment is based on the “Year 2005 Urban Water Management Plan” prepared by AVR.

The project planning area includes a total of 1,557 acres of new development, with 1,477 acres considered for consumption and 80-acres identified for development of roads. Based on maximum water allowances for desert landscaping established for desert climates,<sup>6</sup> at buildout the project will generate a potential demand of approximately 1.19 mgd or about 1,331.2 acre-feet per year, as shown in Table 2.

**Table 2**  
**Hacienda Specific Plan**  
**Estimated Water Service Demands**

<b>Land Use Designation</b>	<b>Landscaping* (ac-ft/yr)</b>	<b>Potable* (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Residential Rural Living (RL-2)	69.2	4.2	73.4	0.07
Residential Estate (RS-1)	191.6	22.2	213.8	0.19
Residential Equestrian (R-EQ)	44.8	4.7	49.5	0.04
Residential Very Low (VL)	101.8	15.6	117.5	0.10
Residential Low (L)	165.2	80.7	245.9	0.22
Residential Low-Medium (LM)	129.9	73.3	203.2	0.18
Residential Medium (M)	107.8	74.7	182.5	0.16
Residential Medium-High (MH)	40.3	34.1	74.3	0.07
Commercial (CN)	7.1	14.0	21.1	0.02
Parks Landscape (OS-R)	55.9	0.0	55.9	0.05
Water Features	59.7	0.0	59.7	0.05
Open Space (OS-C)	33.2	1.1	34.3	0.03
Streets	0.0	0.0	0.0	0.00
<b>Total</b>	<b>1,006.6</b>	<b>324.6</b>	<b>1,331.2</b>	<b>1.19</b>

Source: “Hacienda at Fairview Valley Specific Plan Project Specific Water Demand Estimates,” prepared by Terra Nova Planning and Research, Inc., March 12, 2008. (See Appendix A to this Water Supply Assessment).

\* Accounts for 35% non-consumptive return flows into the Alto Subarea.

#### 3.2 Project-Specific Water Conservation

The Hacienda at Fairview Specific Plan incorporates Green Development Systems that support water efficiency and reduce the overall water demand for the project. The Specific Plan will accomplish this objective by:

<sup>6</sup> “Landscape and Irrigation Design Criteria” prepared by Engineering Department, Coachella Valley Water District, July 2007.

- 
- requiring a minimum of 90% of all non-turf planting areas in common areas and street right of ways to utilize drought tolerant and/or native plant materials. (Refer to Specific Plan Section 5.5, Landscape Concept Plan.)
  - establishing a maximum percentage of turf grass coverage in common and residential front yards for lots  $\frac{3}{4}$  of an acre and larger (19% maximum) and less than  $\frac{3}{4}$  of an acre (28% maximum). (Refer to Specific Plan Section 5.5, Landscape Concept Plan.)
  - eliminating “non-functional” turf grass coverage allowed in recreational areas. (Refer to Specific Plan Section 5.5, Landscape Concept Plan.)
  - providing a wastewater treatment system which reuses reclaimed water to irrigate common area and street right of way landscaping. (Refer to Specific Plan Section 7, Public Facilities.)
  - requiring a micro-irrigation system for watering of plants within common areas and street right of ways. (Refer to Specific Plan Appendix D, Design Guidelines.)
  - incorporating water saving features and technologies within residential and commercial buildings. (Refer to Specific Plan Appendix D, Design Guidelines.)
  - providing community pool(s) at the community recreational areas within convenient distance from the majority of active adult homes reduces the need for private pools at individual homes thereby decreasing supplemental water requirements at individual lots. (Refer to Specific Plan Exhibit 7-3, Conceptual Village A and B Recreation Areas, and Exhibit 5-1, Conceptual Land Use Plan.)

In addition to the above mentioned mitigation measures, which are included in the Specific Plan, implementation of the following mitigation measures are expected to further facilitate development of a Specific Plan that results in reduced water consumption.

- Prior to or concurrent with County approval of any subdivision or land use permit implementing the Specific Plan project, the developer shall submit a master landscape plan, plant palette and irrigation plan, which demonstrates and quantifies irrigation demand associated with the landscape plan. Said irrigation master plan and plant palette shall be consistent with the project Specific Plan. AVR shall review and provide comments to the County on the irrigation master plan prior to issuance of water services.
- Developer will be required to pay all applicable charges pursuant to AVR’s tariffs, approved and in effect at that time, including Supplemental Water Acquisition Fees. Additional mitigation measures may be required of the developer to reduce project demand on water resources.

With the implementation of these water saving techniques it is reasonable to assume that this project will demand less water than a conventionally designed and comparable project developed in the same time frame. Water efficiency and reduced demand as a result of the above mentioned systems will aid in accomplishing AVR’s goal of a 20% reduction in per capita water use by 2020.

## **4.0 WATER SUPPLY ASSESSMENT**

### **4.1 General**

A requirement of the WSA is to identify and describe the water supply sources in the PWS that will serve the Project. Water Code Section 10910(d) requires a WSA to include an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of the quantities of water received in prior years by the PWS.

### **4.2 Identification of Water Sources**

#### 4.2.1 Primary Water Sources

The Project's proponents anticipate that the project's primary water supply will be groundwater from the Alto Subarea, which is located in the Mojave Water Basin. A description and assessment of the Alto Subarea is provided below in Section 4.3: Analysis of Water Supply. For the purposes of this report, the Alto Subarea is herein referred to as the "aquifer".

#### 4.2.2 Additional Water Sources

In addition to the free production allowance (FPA) of groundwater, AVR has additional sources of water. AVR supplements its free production allowance through annual purchases of unused FPA from other Alto producers, imported water from MWA, as well as the purchase of base annual production (BAP) water rights from other producers in the Alto Subarea. These additional sources are described in more detail in Section 4.3.2, below. These sources are also used to mitigate overdrafting of the aquifer as described in Section 4.3.1.3.

### **4.3 Analysis of Water Supply**

#### 4.3.1 Groundwater

The groundwater source for the Hacienda at Fairview Valley Specific Plan will be the Alto Subarea. Water Code Section 10910(f) requires additional information when a groundwater basin is cited as a water supply source for a project. The additional information includes a description of the basin, the rights of the PWS to use the basin, the overdraft status of the basin, any past or planned overdraft mitigation efforts, historical use of the basin by the PWS, projected use of the basin by the Project, and a sufficiency analysis of the basin to supply the Project for a period of at least 20 years.

##### 4.3.1.1 Description of the Aquifer

The Alto Subarea, which is managed by MWA Watermaster, consists of water-bearing strata underlying and paralleling a 35-mile length of the Mojave River. The Subarea generally encompasses the communities of Apple Valley, Victorville, Adelanto, Hesperia, Helendale, and Phelan.

The Subarea is generally bounded on the south by the non-water-bearing rocks of the San Bernardino Mountains, by the non-water bearing rocks of the San Gabriel Mountains to the west, and by the Helendale Fault on the northeast. To the south are the headwaters of the Mojave River, to the east (up-gradient) the Subarea merges with the Este Subarea, to the west (up-gradient) the Subarea merges with the Oeste Subarea, and to the north (down-gradient) the Subarea merges with the Centro Subarea.

The Alto Subarea is naturally recharged by snowmelt in the San Bernardino Mountains and flows within the Mojave River. Due to its proximity to the headwaters of the Mojave River, the Alto Subarea has the largest water supply in the Mojave Basin.

For the 2006-2007 water year verified production for the Alto Subarea was 99,895 acre-feet. The Watermaster for the Mojave Basin, Mojave Water Agency, calculated the total groundwater in storage for the Alto Subarea at 960,000 acre feet in 1999, with an available storage capacity of approximately 1.1 million acre feet. Thus, the total storage capacity for the Alto Subarea is estimated at approximately 2.1 million acre-feet.

The 2005 Urban Water Management Plan prepared by AVR for compliance with the California Department of Water Resources, indicates that the gross water supply available to the Alto Subarea is approximately 82,400 acre-feet, with out-flows and losses calculated at 47,700 ac-ft.<sup>7</sup> Thus the net average annual water supply in the Alto Subarea is estimated to be 34,700 ac-ft of water, plus importation of up to 75,800 ac-ft of State Water Project entitlements available to the MWA.<sup>8</sup> AVR draws all of its water from 22 deep wells in the Subarea.<sup>9</sup>

#### 4.3.1.2 Aquifer Adjudication

The adjudication process of the groundwater in the Mojave Basin began in 1990 with cross complaints filed in 1991. In 1992 numerous parties agreed to conduct good faith negotiations and by 1993 over 75 percent of the parties involved were agreed to the Stipulated Judgment, thus binding the involved parties. In 1995 a trial of the non-stipulated parties was completed. The final judgment was entered in 1996 adopting the physical solution set forth in the Stipulated Judgment. The purpose of the Stipulated Judgment was to create incentives to conserve local water, guarantee that downstream producers will not be adversely affected by upstream producers, and assess producers to obtain funding for the purchase of imported water.

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<sup>7</sup> “Year 2005 Urban Water Management Plan,” prepared by the Apple Valley Ranchos Water Company, November 2005.

<sup>8</sup> “2004 Regional Water Management Plan,” prepared by Mojave Water Agency, adopted February 24, 2005.

<sup>9</sup> The quality of water supplied by AVR is considered to be very high. AVR’s 2003-2004 Consumer Confidence Report documents the quality of AVR’s water supply. According to this report, hundreds of water samples are taken every month and analyzed to assure that all health related and aesthetic drinking water standards are met. This rigorous testing process confirmed that water provided by AVR complies with all federal and state drinking water standards. Indeed, the Regional Water Management Plan prepared by MWA concludes: “Currently, water quality does not affect water supply reliability.” (Mojave Water Agency 2004 Regional Water Management Plan, p. 4-33).

In addition, the Stipulated Judgment required that the Mojave Basin Area Watermaster generate an annual report summarizing the yearly Watermaster activities and water supply conditions for the Mojave Water Basin. As previously noted, the Mojave Water Basin includes the Alto Subarea, Baja Subarea, Centro Subarea, Este Subarea and the Oeste Subarea.

Under the Stipulated Judgment and applicable law, AVR continues to have the right to pump groundwater from the Alto Subarea. AVR shares a common groundwater source with other PWS providers including the Victor Valley Water District.<sup>10</sup> Other groundwater users include some individual residents, golf courses, businesses and commercial facilities.

#### 4.3.1.3 Overdraft Status of the Aquifer

According to AVR's 2005 Urban Water Management Plan, the Alto Subarea experienced a groundwater level decline from an elevation of 2,815 feet in 1960 to approximately 2,755 feet in 1995. Presently, overdraft conditions exist in almost all of the subareas within the Mojave Basin. The adjudication is intended to eliminate groundwater overdraft.

#### 4.3.1.4 Overdraft Mitigation Efforts

As part of the Stipulated Judgment, the average annual obligation of any Subarea to another was set equal to the estimated average annual natural flow between the Subareas over a 60 year period (water years 1930-1931 through 1989-1990). The average obligation of the Alto Subarea has been set at 23,000 acre-feet per year. If this obligation is not met, the producers in the upstream Subarea must pay the Watermaster for makeup water to be delivered to the downstream Subarea. The 2007-2008 replacement water assessment rate is \$315.00 per acre-foot.<sup>11</sup> The Alto Subarea has incurred makeup obligations eight out of the past ten years (water years 1997-1998 through 2006-2007), ranging from 2,870 acre-feet in water year 1997-1998 to 5,950 acre feet in water year 2002-2003. For water year 2006-2007, the Alto Subarea has a cumulative replacement obligation of 36,595 acre feet.<sup>12</sup>

In order to maintain a safe water balance within each Subarea, the Judgment established a Free Production Allowance (FPA) in each Subarea, which the Court reviews and adjusts on an annual basis. Each year the Watermaster takes an account of the average and minimum annual flows, which must be maintained between Subareas. The Judgment requires that all water produced in excess of any producer's share of the FPA must be replaced by the producer, which is typically in the form of payment to the Watermaster of funds sufficient to purchase an equal amount of replacement water. It should be noted that an underlying assumption of the Judgment is that sufficient water supplies will be made available to meet the needs of the basin in the future from a combination of natural supply, imported water, water conservation, water reuse, and transfers of FPA among producers.

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<sup>10</sup> "Public water system" means a system for the provision of piped water to the public for human consumption that has 3,000 or more service connections (Water Code § 10912(c); SB 610).

<sup>11</sup> "Fourteenth Annual Report of the Mojave Basin Area Water Master, Water Year 2006-07," prepared by the Mojave Basin Area Watermaster, April 2008.

<sup>12</sup> *Ibid.*

According to the MWA 2005 Urban Water Management Plan Update, as water demands increase over the next 20 years, additional projects and water management actions are needed to continue to recharge the groundwater basins to maintain groundwater levels and protect groundwater quality for municipal, agricultural, industrial, recreational, and environmental uses. If such projects are not implemented and groundwater overdraft persists or intensifies, the presiding Judge for the Mojave Basin Area Judgment could require mandatory cutbacks in production.

4.3.1.5 Historical Groundwater Use

As previously mentioned, verified groundwater production in the Alto Subarea increased to approximately 99,900 acre-feet in 2007. Since 1994, verified groundwater production in the Alto Subarea has ranged from 75,100 to 99,900 acre-feet per year, with an average of approximately 86,700 acre-feet per year, as shown on Table 3.

**Table 3**  
**Alto Subarea Verified Annual Production**  
**1994 – 2007**

<b>Year</b>	<b>Acre-Feet</b>	<b>Million Gallons</b>
1994	81,100	26,427
1995	75,100	24,471
1996	87,500	28,512
1997	88,500	28,838
1998	75,900	24,732
1999	83,300	27,143
2000	88,300	28,773
2001	82,800	26,980
2002	87,100	28,382
2003	86,700	28,251
2004	92,700	30,206
2005	88,900	28,968
2006	95,900	31,247
2007	99,900	32,561

Source: Mojave Basin Area Watermaster Annual Water Reports, 1994 – 2007 Appendix L.

Within the AVR area of benefit, since 1999 the groundwater production from the aquifer has ranged between 14,741 and 16,527 acre-feet per year, with an average of approximately 15,700 acre-feet per year, as shown on Table 4. Users within the AVR service area include residential, commercial, industrial, and golf courses.

**Table 4**  
**Apple Valley Ranchos Annual Production**  
**1999 - 2007**

Year	Acre-Feet	Million Gallons
1999	14,916	4,860
2000	16,002	5,214
2001	14,741	4,803
2002	15,853	5,166
2003	15,536	5,062
2004	16,100	5,246
2005	16,189	5,275
2006*	15,123	4,928
2007*	16,527	5,385

Source: "Urban Water Management Plan," Table 6, prepared by AVR, 2005.

\*Mojave Basin Area Water Master, Annual Reports 2007 and 2008.

The 2007 verified production in the Alto Subarea by all users amounted to approximately 99,900 ac-ft. Of the 99,900 acre-feet of verified production, pumpage within the AVR area of benefit amounted to approximately 16,527 acre-feet, which represents approximately 16.54% of the total verified water production within the Alto Subarea.

In accordance with MWA's UWMP and Regional Water Management Plan, and within the limits of annually available SWP and other water sources, MWA will continue recharging the aquifer with the intention of sustaining the Mojave Basin as a reliable source of water for the foreseeable future. Among other things, MWA has established a groundwater replenishment program for the Mojave Basin, including the Alto Subarea, the purpose of which is to reduce annual and cumulative groundwater overdraft through artificial recharge to the groundwater basin.<sup>13</sup>

To enhance water conservation, local stakeholders in and around the project area established the Alliance for Water Awareness and Conservation (AWAC) in August of 2003. The purpose of the AWAC is to "provide a vehicle to attract support for a regional water conservation program and coordinate implementation of activities by forming partnerships to obtain common measurable goals."<sup>14</sup> Goals of the AWAC include the reduction of regional water use by 10 percent gross per capita by 2010 and 15 percent gross per capita by 2015.<sup>15</sup>

<sup>13</sup> Mojave Water Agency 2004 Regional Water Management Plan, Chapter 9.

<sup>14</sup> Mojave Water Agency 2004 Regional Water Management Plan, p. 7-1.

<sup>15</sup> Mojave Water Agency 2004 Regional Water Management Plan, p. 7-1.

4.3.1.6 Groundwater Sufficiency Analysis

Tables 5, 8, 9, 10, 11, 12, and 13 show the normal, single, and multiple water year scenarios through 2030. The above referenced tables are summary tables of the detailed model presented in Appendix C of this document. Also included in Appendix C is a detailed discussion on the methodology utilized to construct the model.

Table 5 below identifies the AVR current and planned water supplies through 2030 with and without the demand associated with the proposed Hacienda at Fairview Valley Specific Plan project given normal water year conditions.

**Table 5**  
**Apple Valley Ranchos Projected Water Supply and Demand**  
**Normal Water Year 2010– 2030**  
**(acre-feet/year)**

<b>Water Demands</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030**</b>
Estimated Water Demands <sup>1</sup>	23,018	28,524	34,738	41,793	46,046
Estimated Water Conservation <sup>2</sup>	-1,151	-3,566	-6,948	-8,359	-9,209
<b>Demand Subtotal</b>	<b>21,867</b>	<b>24,959</b>	<b>27,790</b>	<b>33,434</b>	<b>36,837</b>
Estimated Project Demand <sup>3</sup>	83	499	915	1,331	1,331
<b>Water Demand Total</b>	<b>21,950</b>	<b>25,458</b>	<b>28,706</b>	<b>34,766</b>	<b>38,168</b>
<b>Water Supply Sources</b>					
Free Production Allowance <sup>4</sup>	8,567	8,567	8,567	8,567	8,567
Jess Ranch Water Supply Contract <sup>5</sup>	4,488	4,488	4,488	4,488	4,488
Pre-Purchase Claim Program <sup>6</sup>	221	221	221	221	221
Leased Water Rights <sup>7</sup>	1,800	1,800	1,800	1,800	1,800
<b>Supply Subtotal</b>	<b>15,076</b>	<b>15,076</b>	<b>15,076</b>	<b>15,076</b>	<b>15,076</b>
Replacement Water Purchased from MWA <sup>8</sup>	6,874	10,382	13,630	19,690	23,092
<b>Water Supply Total</b>	<b>21,950</b>	<b>25,458</b>	<b>28,706</b>	<b>34,766</b>	<b>38,168</b>

1 Adjusted "Year 2005 Urban Water Management Plan," Table 7 and Table 13, prepared by Apple Valley Ranchos Water Company, November 2005 to include demand from the North Apple Valley Industrial Specific Plan Amendment, April 25, 2007.

2 Conservation is estimated at 5%, 10%, and 20% of demand in 2010, 2015, and 2020 respectively. Subsequent years 2025 and 2030 recognize water conservation based on 20% of estimated water demand. Reduction will be realized through current incentive offered by MWA and programs set forth in AVR's upcoming 2010 UWMP.

3 Estimated Project Demand is based on Appendix A, which quantifies estimated water demand for the proposed project. Figures assume demand beginning in 2010 with a linear increase through buildout in 2025.

4 Free Production Allowance as determined by the Watermaster for AVR.

5 Water Supply and Surplus Water Contract, Jess Ranch Water Company & Apple Valley Ranchos Water Company.

6 Based on the annual allotment to AVR of pre-purchase claim water with deliveries through 2040 (confirm year).

7 Leased Water Rights are based on historical deliveries over the past 3 years. (Insert reference)

8 Replacement Water to be Purchased from MWA is the difference between projected demand, including water savings through conservation efforts, and all supply sources.

Note that 2030 figures are projected using the trend from 2010 through 2025. Methodology for this extrapolation is explained in Appendix C.

Ultimately, the availability of water supplies for AVR to meet the demand associated with the Specific Plan is dependant upon MWA's ability to manage the basin and to implement additional water projects and management actions necessary to continue to recharge the groundwater basin, maintain groundwater levels, and protect groundwater quality. MWA's Supplement A: 2005 Urban Water Management Plan Update concludes that adequate supplies will be available through 2030, based upon a combination of project demand management measures, increased reliance on stored groundwater, and management mechanisms implemented through the Mojave Basin Judgment, Warren Basin Judgment, and the MWA Regional Water Management Plan.<sup>16</sup>

It should be noted that the analysis conducted herein and in the UWMP inherently consider cumulative water demands and impacts to supplies. Water demand projections through 2030 include background development and population growth as set forth in Table 3 of the UWMP, and also include demand projections from the North Apple Valley Industrial Specific Plan. The proposed Hacienda at Fairview Valley Specific Plan demand projections are added to this subtotal to calculate the cumulative water demand and assess cumulative impacts to water supplies. Although development of the proposed project will contribute to the cumulative water demand within AVR's service area adequate, existing and future water supplies, and water users, will not be adversely affected. Cumulative impacts to water supplies as a result of development of the proposed project are expected to be less than significant

#### 4.3.1.7 Groundwater Conservation Efforts

AVR works closely with the County of San Bernardino to encourage conservation and institute necessary use restrictions. The County of San Bernardino has several General Plan policies that require and encourage water conservation, including the required use of drought tolerant landscaping or xeriscape, use of water efficient irrigation, and minimization of irrigated landscape in commercial areas. In addition, the County requires the use of drip irrigation systems or systems of equivalent efficiency for all landscaping at commercial facilities and all common areas of residential developments.

In December of 2005, the California Public Utilities Commission, adopted its Water Action Plan. One objective of this plan is to strengthen the water conservation programs of regulated water utilities.

In addition, AVR works closely with the Town of Apple Valley to encourage water conservation. The Town of Apple Valley adopted, via ordinance, a Water Conservation Plan that includes water regulations prohibiting wasteful water use practices, including excessive runoff of landscape irrigation water and washing driveways and walkways with water. Penalties have been established for violation of water regulations.

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<sup>16</sup> "2004 Regional Water Management Plan; Supplement A: 2005 Urban Water Management Plan Update," prepared by the Mojave Water Agency, December 8, 2005.

MWA has committed to achieving 10% municipal conservation by 2020,<sup>17</sup> and AVR has committed to achieving 20% water conservation per capita by 2020. In an effort to meet these water conservation targets the project shall follow the recently adopted County General Plan (2007), and adhere to the project-specific water conserving measures set forth in Section 3.2 of this WSA. As part of the County development policies, the project will be required by County Planning to apply efficient landscaping practices as noted above, which typically results in water savings of 15%. AVR is preparing an updated UWMP due out in 2010, which will include programs and incentives that realize a 20% per capita water savings by 2020.

#### 4.3.2 Additional Water Sources

As stated in Section 4.2.2, the aquifer is currently the primary water supply for the project and this WSA focuses on the adequacy of the aquifer to supply the project. Additional water sources are considered as a supplement to groundwater in that they are used to either recharge the aquifer or serve as a source substitution for groundwater.

MWA imports water from the California State Water project, which is discharged into the Mojave River to aid groundwater recharge and is made available for purchase. The Mojave Judgment provides a court-approved mechanism for MWA to finance and obtain supplemental water to recharge the Basin and augment water supplies for parties to the Judgment, including AVR.<sup>18</sup>

MWA reached agreement with the Metropolitan Water District (MWD) of Southern California in 2003 to store up to 75,000 (45,000 delivered to date) acre-feet for MWD in the Mojave basin. This storage is being provided in exchange for MWD's right to receive an equal amount of water in the future, through entitlement exchange, should there be a significant drought.

Additional water sources are also discussed more specifically in sections 2.3.3, 2.3.4, 2.3.5, and 2.3.6 above.

##### 4.3.2.1 Canal Water

Not applicable.

##### 4.3.2.2 State Water Project Water

MWA is one of the 29 State Water Project (SWP) contractors. AVR contracts with MWA. The SWP includes 660 miles of aqueduct and conveyance facilities extending from Lake Oroville in the north to Lake Perris in the south. The SWP is contracted to deliver 4.1 million ac-ft/yr to the 29 contracting agencies. SWP delivery reliability factors of between 69% and 77% were utilized in MWA 2005 UWMP, which yield a conservative 53,800 to 58,400 acre-feet of entitlement for MWA, as shown in Table 6A.

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<sup>17</sup> "2004 Regional Water Management Plan; Supplement A: 2005 Urban Water Management Plan Update," prepared by the Mojave Water Agency, December 8, 2005.

<sup>18</sup> Mojave Judgment, sections II(C)(9), V(B)-(C).

**Table 6A**  
**Mojave Water Agency 2005 UWMP State Water Project**  
**Available Water Supply Sources through 2030 (acre-feet/year)**

<b>Supply Type</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
Natural	65,500	65,500	65,500	65,500	65,500
State Water Project	53,800	55,300	58,400	58,400	58,400
<b>Total</b>	<b>119,300</b>	<b>120,800</b>	<b>123,900</b>	<b>123,900</b>	<b>123,900</b>

Source: Draft 2005 Urban Water Management Plan Update, Table 4-9(s): Available Water Supply Sources Through 2030, Mojave Water Agency, 2005.

Since the approval of the 2005 AVR Urban Water Management Plan and the 2005 MWA Urban Water Management Plan Update, the California Department of Water Resources has issued their updated State Water Project Delivery Reliability Report.<sup>19</sup> This report has indicated to State Water Project contractors that they can safely assume delivery of 63% of their allocations, which include water supply reductions imposed to address the needs of endangered species in the San Joaquin River Basin, as well as impacts to reliability associated with climate change. As a result, reliability factors for State Water Project water may be reduced by as much as an additional 14% compared to the 2005 figure. Table 6B, below, shows State Water Project water delivery allocations to be 63% of Table 6A allocation, which is consistent with projected deliveries set forth in the 2007 Reliability Report.

**Table 6B**  
**Desert Water Agency 2007 State Water Project**  
**Available Water Supply Sources through 2030 (acre-feet/year)**

<b>Supply Type</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
Natural	65,500	65,500	65,500	65,500	65,500
State Water Project*	33,894	34,839	36,792	36,792	36,792
<b>Total</b>	<b>99,394</b>	<b>100,339</b>	<b>102,292</b>	<b>102,292</b>	<b>102,292</b>

Source: Draft 2005 Urban Water Management Plan Update, Table 4-9(s): Available Water Supply Sources Through 2030, Mojave Water Agency, 2005.

\*Modified to account for 63% State Water Project reliability.

A copy of MWA's SWP entitlement is available for review at the MWA administrative offices. To illustrate the potential fluctuation in SWP deliveries, in December 1999, DWR's initial allocation for MWA's 2000 entitlement was only 37,900 acre-feet, which was 50% of their 75,800 acre-feet entitlement. This reduced allocation was due to then prevailing dry conditions. In contrast, the allocation approved in April 2006 was 100% of the entitlement due to increased precipitation and positive water conditions. This was the first year since 1999 that the allocation has been 100%.

<sup>19</sup> "State Water Project Delivery Reliability Report 2007 - Draft," prepared by the State of California Water Resources Agency Department of Water Resources, December 2007.

MWA has recognized the need for additional imported water in order to eliminate groundwater overdraft, and has purchased additional water from the SWP when available. Additional SWP water is not expected to be available on a regular basis in the future and should not be relied upon as the only long-term source of overdraft reduction in the Alto Subarea and the Mojave Water Basin (See Appendix B). Purchase of additional SWP water involves the purchase of water on the spot market, as opposed to the purchase of entitlement to an ongoing supply of that water. It should be noted that the spot market comes into play when all of MWA's entitlements are being imported into the basin.

In addition to spot market, on an on-going basis MWA is pursuing additional SWP entitlements when they become available. In dry years when SWP or Colorado River Supplies are reduced, MWD will have the ability to call back some of the transferred water stored in the Mojave Basin, based on the limitations of the storage agreement between MWD and MWA.

#### 4.3.2.3 Surface Water

The Mojave River is the primary source for replenishment of the Mojave Basin, with an average natural inflow of 65,500 acre-feet. The local surface inflows depend on climatic conditions and represent a small portion of the total supply. Recharge flows are often sub-surface and not available for surface water capture or treatment. Water from the State Water Project is the only other surface water that may be considered for treatment or direct use, and is limited by the variability of the supply from the delta and the amount of water MWA has available after contractual deliveries are met. Surface water is not treated or used for domestic water purposes.<sup>20</sup>

#### 4.3.2.4 Recycled Water

No recycled water is available to the project at this time. However, the Victor Valley Wastewater Reclamation Authority (VWVRA) is considering the construction of interceptors to serve the Town of Apple Valley. These facilities are expected to be constructed and in operation by 2012, at which time the project site may have access to recycled water. The capacity of VWVRA is currently 14.5 mgd, and is expected to reach over 31.0 mgd by the year 2025. AVR's Jess Ranch Irrigation system currently uses reclaimed aquaculture water to irrigate the golf course, approximately 5.1 mgd.

#### 4.3.3 Summary of Primary and Additional Water Sources

Table 7 shows the MWA and AVR existing water supply entitlements, rights, and service contracts as discussed above.

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<sup>20</sup> AVR has developed an Emergency Response and Recovery Plan to respond to major emergencies associated with natural disasters, technology incidents, and national security emergencies affecting the facilities and service areas. The goals of the Emergency Response and Recovery Plan are to rapidly restore service after an emergency; ensure adequate water service for fire suppression; minimize water or electrical damage; minimize impact and loss to customers; and provide emergency public information concerning customer service. AVR has interconnections with Southern California Water Company and Victor Valley Water District to transfer water and would utilize these resources in an emergency to continue delivering water.

**Table 7**  
**Existing Water Supply Entitlements, Water Rights, and Water Service Contracts**

Supply	Existing Supplies	Entitlement	Right	Contract	Other	Utilized
MWA Groundwater <sup>(a)</sup>	75,800	X				Yes
AVR Groundwater <sup>(b, c)</sup>	8,567		X			Yes
Water Supply Contract with Jess Ranch WC <sup>(d)</sup>	4,488			X		Yes
SWP Exchange Water	N/A					

- (a) Due to precipitation and positive water conditions, MWA was allotted 100% of their entitlement, April 2006.  
(b) Due to a groundwater shortage 65.8% (8,567 acre-feet FPA) of AVR's Base Annual Production (13,022 acre-feet BAP), is available for pumping.  
(c) AVR's FPA does not limit the production of water, but does account for a replacement requirement.  
(d) Water Supply and Surplus Water Contract, Jess Ranch Water Company & Apply Valley Ranchos Water Company.

#### 4.3.4 Single and Multiple Dry Year Scenarios

As required under Section 10910(a)(3) of the California Water Code, an assessment of the impacts of a prolonged drought ranging from three to five consecutive years was assumed and analyzed. In order to provide a conservative estimate of water consumption for the proposed Hacienda at Fairview Specific Plan, a linear growth rate was used with water demand beginning in 2010 and buildout occurring in 2025. These estimates were then compared to the planned water supplies and the AVR estimated demand. Tables 9 through 13 assume that annual supplies are reduced by 25% during a single dry year scenario and by 15% during the multiple dry year scenario. Demand projections are tempered during dry years by an additional 9.5% to account for conservation efforts and market rate impacts, which would be expected to further induce conservation.

The 2010 - 2030 supply projections set forth in Table 8 are based upon average or "normal" supply conditions for the modeling period, as discussed above and in Appendix C. Table 8 shows the estimated supply and demand given the occurrence of a single dry year occurring in any of the five year increments between 2010 and 2030. In addition, Table 8 shows the amount of replacement water purchased from MWA needed to make up the difference between projected supply and demand.

In the event of a single dry year occurring in 2030 the project demand would accounts for 3.6% of estimated water demand for AVR. In 2010, 2015, 2020, 2025, and 2030 the project represents 0.9%, 3.9%, 5.7%, 6.0%, and 5.2% respectively of the needed replacement water purchased from MWA. This demand does not constitute a substantial increase in needed supply. Therefore, water supplies are expected to be sufficient to meet demand in the event that a single dry year event were to occur at any time in the 20 year planning period between 2010 and 2030.

It should be mentioned that the Alto Subarea has an estimated groundwater storage capacity of approximately 2.1 million acre-feet,<sup>21</sup> which can serve as backup water supplies in the event that demand exceeds supplies. Water extracted from this source can be replenished during wet years or when surplus water is available.

**Table 8**  
**Projected Water Supply and Demand**  
**Single Dry Year with Project**  
**(acre-feet/year)**

<b>Water Demands</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030*</b>
Estimated Water Demands <sup>1</sup>	20,831	25,814	31,438	37,823	41,672
Estimated Water Conservation <sup>2</sup>	1,042	3,227	6,288	7,565	8,334
<b>Demand Subtotal</b>	<b>19,789</b>	<b>22,587</b>	<b>25,150</b>	<b>30,258</b>	<b>33,338</b>
Estimated Project Demand <sup>3</sup>	75	452	828	1,205	1,205
<b>Water Demand Total</b>	<b>19,865</b>	<b>23,039</b>	<b>25,978</b>	<b>31,463</b>	<b>34,543</b>
<b>Water Supply Sources</b>					
Free Production Allowance <sup>4</sup>	6,425	6,425	6,425	6,425	6,425
Jess Ranch Water Supply Contract <sup>5</sup>	3,366	3,366	3,366	3,366	3,366
Pre-Purchase Claim Program <sup>6</sup>	221	221	221	221	221
Leased Water Rights <sup>7</sup>	1,350	1,350	1,350	1,350	1,350
<b>Supply Subtotal</b>	<b>11,362</b>	<b>11,362</b>	<b>11,362</b>	<b>11,362</b>	<b>11,362</b>
Replacement Water Purchased from MWA <sup>8</sup>	8,503	11,677	14,616	20,101	23,181
<b>Total Supply</b>	<b>19,865</b>	<b>23,039</b>	<b>25,978</b>	<b>31,463</b>	<b>34,543</b>
Source: "Water Supply and Demand Projections: Appendix C of the WSA," prepared by Terra Nova Planning & Research, July 25, 2008. 1 Adjusted "Year 2005 Urban Water Management Plan," Table 7 and Table 13, prepared by Apple Valley Ranchos Water Company, November 2005 to include demand from the "Updated Water Supply Assessment for the proposed North Apple Valley Industrial Specific Plan," prepared by Terra Nova planning & Research on April 25, 2007. Includes a 9.5% reduction in demand. 2 Water Savings are 5%, 12.5%, and 20% of estimated water demands for years 2010, 2015, and 2020 respectively. Years 2025 and 2030 also assume a water savings of 20%. 3 Estimated Project Demand is based on Appendix A, which quantifies estimated water demand for the proposed project. Figures assume demand beginning in 2010 with a linear increase through buildout in 2025. A 9.5% reduction in demand is assumed for single dry years. 4 Free Production Allowance as determined by the Watermaster for AVR is 8,567 ac-ft/yr. To account for potential reductions in available supply, a 25% reduction factor is assumed for dry years. 5 Water Supply and Surplus Water Contract, Jess Ranch Water Company & Apple Valley Ranchos Water Company have an agreement that provides AVR with 4,488 ac-ft/yr. To account for potential reductions in available supply, a 25% reduction factor is assumed for dry years. 6 Based on the annual allotment to AVR of pre-purchase claim water with deliveries through 2040 (confirm year). This amount is presumed to be fixed and will not fluctuate during single or multiple dry years. 7 Leased Water Rights are based on historical deliveries over the past 3 years. (Insert reference). To account for potential reductions in available supply, a 25% reduction factor is assumed for dry years. 8 Replacement Water Purchased from MWA is the difference between projected demands, including water savings through conservation efforts, and all supply sources. * 2030 figures are projected using the trend from 2010 through 2025. Methodology is explained in Appendix C.					

<sup>21</sup> "California's Groundwater Bulletin 118: South Lahontan Hydrologic Region Upper Mohave River Valley Groundwater Basin," prepared by Department of Water Resources, February 27, 2004.

For the multiple year drought scenario from 2006 through 2010, the project demand accounts for 0.38% of the total estimated water demand for AVR. In 2010 the project represents 1.1% of the needed replacement water purchased from MWA. This demand does not constitute a substantial increase in needed supply. Therefore, water supplies are sufficient to meet demand in the event that a three year drought were to occur from 2008 through 2010. It should be mentioned that the Alto Subarea has an estimated groundwater storage capacity of approximately 2.1 million acre-feet, which can serve as backup water supplies in the event that demand exceeds supplies. Water extracted from this source can be replenished during wet years or when surplus water is available.

**Table 9**  
**Projected Water Supply and Demand**  
**Multiple Dry Years 2008 - 2010 with Project**  
**(acre-feet/year)**

<b>Water Demands</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Estimated Water Demands <sup>1</sup>	19,531	20,156	20,831
Estimated Water Conservation <sup>2</sup>	0	0	1,042
<b>Water Demand Subtotal</b>	<b>19,531</b>	<b>20,156</b>	<b>19,789</b>
Estimated Project Demand <sup>3</sup>	0	0	75
<b>Water Demand Total</b>	<b>19,531</b>	<b>20,156</b>	<b>19,865</b>
<b>Water Supply Sources</b>			
Free Production Allowance <sup>4</sup>	7,282	7,282	7,282
Jess Ranch Water Supply Contract <sup>5</sup>	3,815	3,815	3,815
Pre-Purchase Claim Program <sup>6</sup>	221	221	221
Leased Water Rights <sup>7</sup>	1,530	1,530	1,530
<b>Supply Subtotal</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>
Replacement Water Purchased from MWA <sup>8</sup>	6,683	7,308	7,017
<b>Supply Total</b>	<b>19,531</b>	<b>20,156</b>	<b>19,865</b>

Source: "Water Supply and Demand Projections: Appendix C of the WSA," Table 7C prepared by Terra Nova Planning & Research, July 25, 2008.

1 Adjusted "Year 2005 Urban Water Management Plan," Table 7 and Table 13, prepared by Apple Valley Ranchos Water Company, November 2005 to include demand from the "Updated Water Supply Assessment for the proposed North Apple Valley Industrial Specific Plan," prepared by Terra Nova planning & Research on April 25, 2007. Includes a 9.5% reduction in demand.

2 Water Savings during dry years are projected to be realized beginning in 2010 and will approximate 5% of estimated water demand.

3 Estimated Project Demand is based on Appendix A, which quantifies estimated water demand for the proposed project. Figures assume demand beginning in 2010 with a linear increase through buildout in 2025. A 9.5% reduction in demand is assumed for single dry years.

4 Free Production Allowance as determined by the Watermaster for AVR is 8,567 ac-ft/yr. To account for potential reductions in available supply, a 15% reduction factor is assumed for multiple dry years.

5 Water Supply and Surplus Water Contract, Jess Ranch Water Company & Apple Valley Ranchos Water Company have an agreement that provides AVR with 4,488 ac-ft/yr. To account for potential reductions in available supply, a 15% reduction factor is assumed for dry years.

6 Based on the annual allotment to AVR of pre-purchase claim water with deliveries through 2040 (confirm year). This amount is presumed to be fixed and will not fluctuate during single or multiple dry years.

7 Leased Water Rights are based on historical deliveries over the past 3 years. (Insert reference). To account for potential reductions in available supply, a 15% reduction factor is assumed for dry years.

8 Replacement Water Purchased from MWA is the difference between projected demand, including water savings through conservation efforts, and all supply sources.

For the multiple (five) year drought scenario from 2011 through 2015, sufficient water supplies are expected to be available to meet demands. In 2015 project demands account for 2.0% of AVR total estimated water demands and 4.4% of needed replacement water purchased from MWA. This demand does not constitute a substantial increase in needed supply. Therefore, water supplies are expected to be sufficient to meet demand in the event that a multiple dry year event were to occur from 2011 through 2015. It should be mentioned that the Alto Subarea has an estimated groundwater storage capacity of approximately 2.1 million acre-feet, which can serve as backup water supplies in the event that demand exceeds supplies. Water extracted from this source can be replenished during wet years or when surplus water is available.

**Table 10**  
**Projected Water Supply and Demand**  
**Multiple Dry Years 2011 – 2015 with Project**  
**(acre-feet/year)**

<b>Water Demands</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Estimated Water Demands <sup>1</sup>	21,828	22,824	23,821	24,818	25,814
Estimated Water Conservation <sup>2</sup>	1,419	1,826	2,263	2,730	3,227
<b>Water Demand Subtotal</b>	<b>20,409</b>	<b>20,998</b>	<b>21,558</b>	<b>22,088</b>	<b>22,587</b>
Estimated Project Demand <sup>3</sup>	151	226	301	376	452
<b>Water Demand Total</b>	<b>20,560</b>	<b>21,224</b>	<b>21,859</b>	<b>22,464</b>	<b>23,039</b>
<b>Water Supply Sources</b>					
Free Production Allowance <sup>4</sup>	7,282	7,282	7,282	7,282	7,282
Jess Ranch Water Supply Contract <sup>5</sup>	3,815	3,815	3,815	3,815	3,815
Pre-Purchase Claim Program <sup>6</sup>	221	221	221	221	221
Leased Water Rights <sup>7</sup>	1,530	1,530	1,530	1,530	1,530
<b>Supply Subtotal</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>
Replacement Water Purchased from MWA <sup>8</sup>	7,712	8,376	9,011	9,616	10,191
<b>Supply Total</b>	<b>20,560</b>	<b>21,224</b>	<b>21,859</b>	<b>22,464</b>	<b>23,039</b>

Source: "Water Supply and Demand Projections: Appendix C of the WSA," Table 8C prepared by Terra Nova Planning & Research, July 25, 2008.

1 Adjusted "Year 2005 Urban Water Management Plan," Table 7 and Table 13, prepared by Apple Valley Ranchos Water Company, November 2005 to include demand from the "Updated Water Supply Assessment for the proposed North Apple Valley Industrial Specific Plan," prepared by Terra Nova planning & Research on April 25, 2007. Includes a 9.5% reduction in demand.

2 Water Savings in 2011 are 6.5% of estimated water demand and increase by 1.5% per year through 2015 with an annual water savings of 12.5%.

3 Estimated Project Demand is based on Appendix A, which quantifies estimated water demand for the proposed project. Figures assume demand beginning in 2010 with a linear increase through buildout in 2025. A 9.5% reduction in demand is assumed for single dry years.

4 Free Production Allowance as determined by the Watermaster for AVR is 8,567 ac-ft/yr. To account for potential reductions in available supply, a 15% reduction factor is assumed for multiple dry years.

5 Water Supply and Surplus Water Contract, Jess Ranch Water Company & Apple Valley Ranchos Water Company have an agreement that provides AVR with 4,488 ac-ft/yr. To account for potential reductions in available supply, a 15% reduction factor is assumed for dry years.

6 Based on the annual allotment to AVR of pre-purchase claim water with deliveries through 2040 (confirm year). This amount is presumed to be fixed and will not fluctuate during single or multiple dry years.

7 Leased Water Rights are based on historical deliveries over the past 3 years. (Insert reference). To account for potential reductions in available supply, a 15% reduction factor is assumed for dry years.

8 Replacement Water to be Purchased from MWA is the difference between projected demand, including water savings through conservation efforts, and all supply sources.

For the multiple (five) year drought scenario from 2016 through 2020 sufficient water supplies are expected to be available to meet demands. In 2020 project demands account for 3.2% of estimated water demands for AVR and represent 6.3% of needed replacement water purchased from MWA. This demand does not constitute a substantial increase in needed supply. Therefore, water supplies are expected to be sufficient to meet demand in the event that a multiple dry year event were to occur from 2016 through 2020. It should be mentioned that the Alto Subarea has an estimated groundwater storage capacity of approximately 2.1 million acre-feet, which can serve as backup water supplies in the event that demand exceeds supplies. Water extracted from this source can be replenished during wet years or when surplus water is available.

**Table 11**  
**Projected Water Supply and Demand**  
**Multiple Dry Years 2016 – 2020 with Project**  
**(acre-feet/year)**

<b>Water Demands</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Estimated Water Demands <sup>1</sup>	26,939	28,064	29,188	30,313	31,438
Estimated Water Conservation <sup>2</sup>	3,771	4,350	4,962	5,608	6,288
<b>Water Demand Subtotal</b>	<b>23,168</b>	<b>23,714</b>	<b>24,226</b>	<b>24,705</b>	<b>25,150</b>
Estimated Project Demand <sup>3</sup>	527	602	678	753	828
<b>Water Demand Total</b>	<b>23,695</b>	<b>24,316</b>	<b>24,904</b>	<b>25,458</b>	<b>25,978</b>
<b>Water Supply Sources</b>					
Free Production Allowance <sup>4</sup>	7,282	7,282	7,282	7,282	7,282
Jess Ranch Water Supply Contract <sup>5</sup>	3,815	3,815	3,815	3,815	3,815
Pre-Purchase Claim Program <sup>6</sup>	212	212	212	212	212
Leased Water Rights <sup>7</sup>	1,530	1,530	1,530	1,530	1,530
<b>Supply Subtotal</b>	<b>12,839</b>	<b>12,839</b>	<b>12,839</b>	<b>12,839</b>	<b>12,839</b>
Replacement Water Purchased from MWA <sup>8</sup>	10,856	11,477	12,065	12,619	13,139
<b>Total Supply</b>	<b>23,695</b>	<b>24,316</b>	<b>24,904</b>	<b>25,458</b>	<b>25,978</b>

Source: "Water Supply and Demand Projections: Appendix C of the WSA," Table 8C prepared by Terra Nova Planning & Research, July 25, 2008.

1 Adjusted "Year 2005 Urban Water Management Plan," Table 7 and Table 13, prepared by Apple Valley Ranchos Water Company, November 2005 to include demand from the "Updated Water Supply Assessment for the proposed North Apple Valley Industrial Specific Plan," prepared by Terra Nova planning & Research on April 25, 2007. Includes a 9.5% reduction in demand.

2 Water Savings in 2016 are 14% of estimated water demand and increase by 1.5% per year through 2020, which has an annual water savings of 20%.

3 Estimated Project Demand is based on Appendix A, which quantifies estimated water demand for the proposed project. Figures assume demand beginning in 2010 with a linear increase through buildout in 2025. A 9.5% reduction in demand is assumed for single dry years.

4 Free Production Allowance as determined by the Watermaster for AVR is 8,567 ac-ft/yr. To account for potential reductions in available supply, a 15% reduction factor is assumed for multiple dry years.

5 Water Supply and Surplus Water Contract, Jess Ranch Water Company & Apple Valley Ranchos Water Company have an agreement that provides AVR with 4,488 ac-ft/yr. To account for potential reductions in available supply, a 15% reduction factor is assumed for dry years.

6 Based on the annual allotment to AVR of pre-purchase claim water with deliveries through 2040 (confirm year). This amount is presumed to be fixed and will not fluctuate during single or multiple dry years.

7 Leased Water Rights are based on historical deliveries over the past 3 years. (Insert reference). To account for potential reductions in available supply, a 15% reduction factor is assumed for dry years.

8 Replacement Water to be Purchased from MWA is the difference between projected demand, including water savings through conservation efforts, and all supply sources.

For the multiple (five) year drought scenario from 2021 through 2025 sufficient water supplies are expected to be available to meet demands. In 2025 project demands account for 4.0% of AVR total estimated water demands and represent 6.4% of needed replacement water purchased from MWA. This demand does not constitute a substantial increase in needed supply. Therefore, water supplies are expected to be sufficient to meet demand in the event that a multiple dry year event were to occur from 2021 through 2025. It should be mentioned that the Alto Subarea has an estimated groundwater storage capacity of approximately 2.1 million acre-feet, which can serve as backup water supplies in the event that demand exceeds supplies. Water extracted from this source can be replenished during wet years or when surplus water is available.

**Table 12**  
**Projected Water Supply and Demand**  
**Multiple Dry Years 2021 - 2025 with Project**  
**(acre-feet/year)**

<b>Water Demands</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
Estimated Water Demands <sup>1</sup>	32,715	33,992	35,269	36,546	37,823
Estimated Water Conservation <sup>2</sup>	6,543	6,798	7,054	7,309	7,565
<b>Water Demand Subtotal</b>	<b>26,172</b>	<b>27,194</b>	<b>28,215</b>	<b>29,237</b>	<b>30,258</b>
Estimated Project Demand <sup>3</sup>	904	979	1,054	1,129	1,205
<b>Water Demand Total</b>	<b>27,076</b>	<b>28,173</b>	<b>29,269</b>	<b>30,366</b>	<b>31,463</b>
<b>Water Supply Sources</b>					
Free Production Allowance <sup>4</sup>	7,282	7,282	7,282	7,282	7,282
Jess Ranch Water Supply Contract <sup>5</sup>	3,815	3,815	3,815	3,815	3,815
Pre-Purchase Claim Program <sup>6</sup>	221	221	221	221	221
Leased Water Rights <sup>7</sup>	1,530	1,530	1,530	1,530	1,530
<b>Supply Subtotal</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>
Replacement Water Purchased from MWA <sup>8</sup>	14,228	15,325	16,421	17,518	18,615
<b>Supply Total</b>	<b>27,076</b>	<b>28,173</b>	<b>29,269</b>	<b>30,366</b>	<b>31,463</b>

Source: "Water Supply and Demand Projections: Appendix C of the WSA," Table 10C prepared by Terra Nova Planning & Research, July 25, 2008.

1 Adjusted "Year 2005 Urban Water Management Plan," Table 7 and Table 13, prepared by Apple Valley Ranchos Water Company, November 2005 to include demand from the "Updated Water Supply Assessment for the proposed North Apple Valley Industrial Specific Plan," prepared by Terra Nova planning & Research on April 25, 2007. Includes a 9.5% reduction in demand.

2 Water Savings are expected to be 20% annually beginning in 2020.

3 Estimated Project Demand is based on Appendix A, which quantifies estimated water demand for the proposed project. Figures assume demand beginning in 2010 with a linear increase through buildout in 2025. A 9.5% reduction in demand is assumed for single dry years.

4 Free Production Allowance as determined by the Watermaster for AVR is 8,567 ac-ft/yr. To account for potential reductions in available supply, a 15% reduction factor is assumed for multiple dry years.

5 Water Supply and Surplus Water Contract, Jess Ranch Water Company & Apple Valley Ranchos Water Company have an agreement that provides AVR with 4,488 ac-ft/yr. To account for potential reductions in available supply, a 15% reduction factor is assumed for dry years.

6 Based on the annual allotment to AVR of pre-purchase claim water with deliveries through 2040 (confirm year). This amount is presumed to be fixed and will not fluctuate during single or multiple dry years.

7 Leased Water Rights are based on historical deliveries over the past 3 years. (Insert reference). To account for potential reductions in available supply, a 15% reduction factor is assumed for dry years.

8 Replacement Water to be Purchased from MWA is the difference between projected demand, including water savings through conservation efforts, and all supply sources.

For the multiple (five) year drought scenario from 2026 through 2030 sufficient water supplies are expected to be available to meet demands. In 2030 project demands account for 3.6% of estimated water demands for AVR, and represent 5.6% of needed replacement water purchased from MWA. This demand does not constitute a substantial increase in needed supply. Therefore, water supplies are expected to be sufficient to meet demand in the event that a multiple dry year event were to occur from 2026 through 2030. It should be mentioned that the Alto Subarea has an estimated groundwater storage capacity of approximately 2.1 million acre-feet, which serves as backup water supplies in the event that demand exceeds supplies. Water extracted from this source can be replenished during wet years or when surplus water is available.

**Table 13**  
**Projected Water Supply and Demand**  
**Multiple Dry Years 2026 - 2030 with Project**  
**(acre-feet/year)**

<b>Water Demands</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>
Estimated Water Demands <sup>1</sup>	38,592	39,362	40,132	40,902	41,672
Estimated Water Conservation <sup>2</sup>	7,718	7,872	8,026	8,180	8,334
<b>Water Demand Subtotal</b>	<b>30,874</b>	<b>31,490</b>	<b>32,106</b>	<b>32,722</b>	<b>33,338</b>
Estimated Project Demand <sup>3</sup>	1,205	1,205	1,205	1,205	1,205
<b>Water Demand Total</b>	<b>32,079</b>	<b>32,695</b>	<b>33,311</b>	<b>33,927</b>	<b>34,543</b>
<b>Water Supply Sources</b>					
Free Production Allowance <sup>4</sup>	7,282	7,282	7,282	7,282	7,282
Jess Ranch Water Supply Contract <sup>5</sup>	3,815	3,815	3,815	3,815	3,815
Pre-Purchase Claim Program <sup>6</sup>	221	221	221	221	221
Leased Water Rights <sup>7</sup>	1,530	1,530	1,530	1,530	1,530
<b>Supply Subtotal</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>
Replacement Water Purchased from MWA <sup>8</sup>	19,231	19,847	20,463	21,079	21,695
<b>Total Supply</b>	<b>32,079</b>	<b>32,695</b>	<b>33,311</b>	<b>33,927</b>	<b>34,543</b>

Source: "Water Supply and Demand Projections: Appendix C of the WSA," Table 10C prepared by Terra Nova Planning & Research, July 25, 2008.

1 Adjusted "Year 2005 Urban Water Management Plan," Table 7 and Table 13, prepared by Apple Valley Ranchos Water Company, November 2005 to include demand from the "Updated Water Supply Assessment for the proposed North Apple Valley Industrial Specific Plan," prepared by Terra Nova planning & Research on April 25, 2007. Includes a 9.5% reduction in demand.

2 Water Savings are expected to be 20% annually beginning in 2020.

3 Estimated Project Demand is based on Appendix A, which quantifies estimated water demand for the proposed project. Figures assume demand beginning in 2010 with a linear increase through buildout in 2025. A 9.5% reduction in demand is assumed for single dry years.

4 Free Production Allowance as determined by the Watermaster for AVR is 8,567 ac-ft/yr. To account for potential reductions in available supply, a 15% reduction factor is assumed for multiple dry years.

5 Water Supply and Surplus Water Contract, Jess Ranch Water Company & Apple Valley Ranchos Water Company have an agreement that provides AVR with 4,488 ac-ft/yr. To account for potential reductions in available supply, a 15% reduction factor is assumed for dry years.

6 Based on the annual allotment to AVR of pre-purchase claim water with deliveries through 2040 (confirm year). This amount is presumed to be fixed and will not fluctuate during single or multiple dry years.

7 Leased Water Rights are based on historical deliveries over the past 3 years. (Insert reference). To account for potential reductions in available supply, a 15% reduction factor is assumed for dry years.

8 Replacement Water to be Purchased from MWA is the difference between projected demand, including water savings through conservation efforts, and all supply sources.

#### 4.3.5 Conclusions

Based on the information and findings documented in this WSA, there is substantial evidence to support a determination that there will be sufficient water supplies to meet the demands of the Project during all scenarios included in this assessment through the year 2030. AVR will meet future demand through a combination of its existing water rights after judgment, supplies secured through additional production capacity and facilities, regional conservation and groundwater replenishment programs, the purchase or transfer of unused FPA from other parties to the Judgment, the purchase of BAP water rights from other parties to the Judgment, and water purchases from MWA. AVR has committed capital resources and planned investments in various water programs and facilities to serve all of its existing and planned customers.

Although AVR's 2005 Urban Water Management Plan did not specifically address demand for the Project, it did account for population increases, some of which may be attributed to the proposed Specific Plan. Nonetheless, the model assumes that demand associated with the Specific Plan is in addition to demand projected in the 2005 UWMP. Further, the analysis considers cumulative demands in that existing user and proposed development are accounted for as AVR's total demand and are added to the proposed project's demand to obtain a near-term and long-term view of water supplies and demands in AVR's service area.

Based on the analysis conducted there appears to be sufficient water sources to provide a secure and reliable water supply for the Project. These sources include the Water Supply and Surplus Water Contract between AVR and Jess Ranch Water Company (JRWC), whereby JRWC agreed to provide sufficient pumping rights to serve the AVR area in an amount up to 4,488 acre-feet/year of FPA, the estimated demand at full buildout, for a period of 99 years.<sup>22</sup> AVR plans to construct additional production capacity as needed to deliver the Replacement Water Purchased from MWA; AVR's tariffs provide for the collection of "Special Facilities Fees" from developers for the purpose of funding new wells. AVR's projected additional purchases from MWA, are notably less than the amount that MWA has available, as seen in Tables 6 and 7.<sup>23</sup>

AVR relies on MWA to satisfy its obligations under the Judgment through the implementation of management measures and replacement water purchases to ensure the sufficient availability of water supplies as represented in MWA's 2004 Regional Water Management Plan and its 2005 UWMP. As previously mentioned, the AVR's UWMP projects supply and demand through 2025. As required, this WSA analyzes cumulative impacts for a 20 year period.

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<sup>22</sup> AVR, under the agreement, has the right to annually lease any of JRWC's FPA that is not necessary to serve the Jess Ranch area. This provides AVR, either at no cost or through annual lease, with an annual supply of 4,488 acre-feet, which does not have to be met by purchasing Replacement Water from MWA.

No shortages are anticipated within AVR's service area through 2030 for any of the scenarios analyzed. It should be noted that no shortage analysis scenario was performed as it relates to water quality, and water quality may be a limiting factor for supply (Santa Clara River v. Castaic Lake Water Agency 123 Cal. App. 4th 1, 2004). Sufficient supply has been historically available within the Alto Subarea. During the 1987 to 1991 shortage, AVR's customers were not affected by the dry conditions because the groundwater basin provided adequate supply. In a multiple year drought, the groundwater basin would be pumped to meet demands. As previously mentioned, the Alto Subarea contains approximately 960,000 acre-feet of water and has a storage capacity of approximately 2.1 million acre-feet. Therefore, the Subarea has sufficient capacity to bank surplus water during wet years for use during dry periods.

## **5.0 WATER SUPPLY VERIFICATION**

### **5.1 General**

As discussed previously, this Project is subject to a Water Supply Verification (WSV) as outlined in Government Code Section 66473.7.

### **5.2 Water Source**

Water supplies for the proposed project will be provided from groundwater stored in the Alto Subarea.

### **5.3 Supporting Documentation**

Government Code Section 66473.7 (c) permits the use of an UWMP, the Project's WSA, and other acceptable water supply reliability information in support of the WSV.

This WSV relies on AVR UWMP, MWA RWMP, Water System Backup Facilities Charge Study, the MWARWP, as well as additional sources regarding current and future water supplies and restrictions as discussed throughout the WSA.

## **5.4 FACTORS OF RELIABILITY**

### 5.4.1 General

Government Code Section 66473.7(a) requires that all of the following factors be considered: (1) The availability of the supply over the last 20 years; (2) the applicability of an urban water shortage contingency found in the UWMP; (3) the reduction of water supply to a specific user by ordinance or resolution; and (4) the reasonable amount of water that can be relied upon from specified supply projects such as SWP and Colorado River agreements.

### 5.4.2 Historical Availability of Supply

As discussed in Section 4.3 of the WSA, the AVR service area has been primarily dependent on groundwater as the source of domestic water supply. SWP water has also been utilized. In 2005 MWA received 75,800 acre-feet of SWP water; as previously mentioned and illustrated in Table 6B this amount is expected to decline.

### 5.4.3 Water Shortage Contingency

AVR's 2005 UWMP Section 8: Water Shortage Contingency Plan, discusses actions to be taken in response to water supply shortages of up to 50 percent. The contingency plan identifies four water supply shortage stages ranging from voluntary reductions to critical rationing depending on the severity of the drought conditions. Prior to implementing any mandatory reductions, AVR must obtain approval from the California Public Utilities Commission (CPUC).

### 5.4.4 Reduction of Water Supply

There will not be a reduction of water supply to any user due to this Project's use of water resources, or due to AVR's ongoing management of water resources and planning for growth within their service area, which is illustrated in the UWMP.

#### 5.4.5 State Water Project Water

Water delivered from the State Water Project is used to recharge the Aquifer via the Mojave River. Bolstered by the various agreements, the Aquifer has sufficient storage to meet future demands. Based on the information provided in Section 4.0 of this document, and subject to the condition and qualification stated therein, adequate water supplies will be available to meet AVR's needs with the demand generated from the proposed project for a 20-year period. In the event that additional conservation and/or limitations are necessary, the Project would adhere to any and all limitations associated with potential reductions in supply.

### **5.5 IMPACTS ON OTHER PROJECTS**

This Project incorporates water conservation and water efficient design and therefore is consistent with the objectives of AVR Water Company. This Project will not have a significant impact on agricultural, potable, or industrial water users. Neither will this Project affect the water supply for any lower-income housing projects.

Through project-specific design and mitigation measures that reduce water demand and encourage water conservation, it is expected that the proposed project will require less than the average water demand of similar projects throughout the AVR service area. Although not considered in the model, the Project's groundwater demand is expected to be somewhat reduced through the use of recycled water for common area landscape irrigation as proposed in the Specific Plan. The combination of all of these actions results in the impact of the Project on the groundwater basin being fully mitigated.

### **5.6 RIGHTS TO GROUNDWATER**

As previously noted, the Aquifer has been adjudicated. The MWA acts as the Watermaster for the adjudicated basin. AVR has the right to extract groundwater equal to the FPA as determined by the Watermaster. Any groundwater that AVR extracts beyond the FPA is subject to replacement, which can be achieved through a per acre-foot payment to the Watermaster, or through the transfer of unused water rights within the Alto Subarea from another party to the Judgment. The adjudication does not limit AVR's pumping beyond the SWP water deliveries to the MWA.

### **5.7 VERIFICATION**

This document verifies the water supply for the Project as required by California Government Code 66473.7 is available.

## **LIST OF APPENDICES**

### **APPENDIX A**

“Project Specific Water Demand Estimates for the Hacienda at Fairview Valley Specific Plan,” prepared by Terra Nova Planning & Research Inc., September 8, 2008.

### **APPENDIX B**

“Water Resource Litigation and Other Actions”, prepared by Terra Nova Planning & Research Inc., September 8, 2008.

### **APPENDIX C**

“Water Supply and Demand Projections”, prepared by Terra Nova Planning & Research Inc., September 8, 2008.

## List of Supporting Documentation

A variety of supporting documentation was used in preparing this assessment. These include the following:

- Year 2005 Urban Water Management Plan, prepared by the Apple Valley Ranchos Water Company, November 2005.
- 2004 Regional Water Management Plan, prepared by the Mojave Water Agency, adopted February 24, 2005.
- 2004 Regional Water Management Plan, Supplement A: 2005 Urban Water Management Plan Update, prepared by the Mojave Water Agency, December 8, 2005.
- 2003-2004 Consumer Confidence Report, prepared by Apple Valley Ranchos Water Company.
- California's Groundwater Bulletin 118: South Lahontan Hydrologic Region Upper Mohave River Valley Groundwater Basin, prepared by Department of Water Resources, February 27, 2004.
- Hacienda at Fairview Valley Administrative Draft Specific Plan, for the Strata Equity Group, Inc., October 2007.
- Judgment After Trial, Mojave Basin Area Adjudication, City of Barstow, et al V. City of Adelanto, et al, Riverside County Superior Court Case No. 208568, prepared by the Superior Court State of California, County of Riverside, January 1996.
- Mojave Basin Area Water Master, Summary Report, Subsurface Flow Between Subareas, prepared by Robert C. Wagner, P.E., Webmaster Engineer, February 2006.
- Watermaster Annual Reports, for Water Years 1993 – 2007, prepared by the Mojave Basin Area Water Master, 1995 – 2008.
- Notice to State Water Project Contracts, No. 99-10, 2000 State Water Project Allocation, prepared by the California Department of Water Resources, November 1999.
- Notice to State Water Project Contracts, No. 06-04, 2006 State Water Project Allocation, prepared by the California Department of Water Resources, April 2006.
- The State Water Project Delivery Reliability Report, 2002 Final, prepared by the California Department of Water Resources, Bay-Delta Office, 2002.
- Victor Valley Wastewater Subregional Facilities Draft Program EIR/EIS, prepared by the Victor Valley Wastewater Reclamation Authority, 2004.
- Water Supply and Surplus Water Contract, between Apple Valley Ranchos Water Company and Jess Ranch Water Company, July 1994.

## LIST OF ACRONYMS

ac	Acre
ac-ft	Acre Feet
ac-ft/yr	Acre-Feet per Year
ac-ft/ac/yr	Acre-Feet per Acre per Year
AVR	Apple Valley Ranchos Water Company
BAP	Base Annual Production
CEQA	California Environmental Quality Act
DWR	Department of Water Resources
EIR	Environmental Impact Report
FPA	Free Production Allowance
MGD	Million Gallons per Day
MWA	Mojave Water Agency
MWD	Metropolitan Water District of Southern California
PWS	Public Water System
RWMP	Regional Water Management Plan
SB 221	Senate Bill 221: Water Supply Verification
SB 610	Senate Bill 610: Water Supply Assessment
SCAG	Southern California Association of Governments
SWP	State Water Project
UWMP	Urban Water Management Plan
WSA	Water Supply Assessment
WSV	Water Supply Verification

# APPENDIX A

## **Project-Specific Water Demand Estimates for the Hacienda at Fairview Valley Specific Plan**

**Prepared in Support of the  
Hacienda at Fairview Valley Specific Plan  
Water Supply Assessment**

Prepared by



Terra Nova Planning and Research, Inc.<sup>®</sup>  
400 S. Farrell Dr., Suite B-205  
Palm Springs, CA 92262

September 8, 2008

## **Estimated Water Demand Methodology**

The following describes the methodology, techniques, and assumptions that were utilized in quantifying water demand estimates for all proposed land uses described in the Hacienda Specific Plan. The analysis considers landscape and potable water demand for all land uses and includes a 35% return flows factor to total demand.

### Landscape Water Demand Methodology

Landscape water demand was calculated using the estimated landscape coverage area for residential, commercial, and open space land uses. The average landscaping square footage was derived by applying an estimated landscape area percentage factor to the total parcel square footage, which accounts for impervious surfaces for each parcel based on the designated land use. The total estimated square footage that will require irrigation for landscaping purposes was then multiplied by the Maximum Water Allowance (MWA) factor.

The water demand factor for Project landscaping is based on the MWA for Zone 3B as defined in the Coachella Valley Water District's (CVWD) Landscape Ordinance 1302.1. Several evapotranspiration (ETo) zones, including Zone 3B are defined for the Coachella Valley and account for differences in transpiration rates for plants depending on the location within the Valley floor. For example, transpiration rates in coves adjacent to hillsides, along the valley's margins have a lower ETo compared to transpiration rates on the valley floor since the former tend to be better shaded and are protected from high winds. Zone 3B was selected for use in Fairview Valley since it is defined as open desert with moderate prevailing winds. Although approximately 70 miles separate Fairview Valley from the Coachella Valley, the MWA estimate is considered applicable since both valleys have similar climatic and environmental conditions.

The total demand for landscaping is calculated using the appropriate MWA factor: moderate desert landscaping; or turf. Although the majority of the landscaping throughout the project site is designated (in general terms) as "desert landscaping," portions of open space recreational areas will contain turf. The MWA for moderate desert landscaping is 1,589 CCF (3.65 ac-ft/ac/yr) and for turf areas the MWA is 2,224 CCF (5.106 ac-ft/ac/yr). It should be noted that a total of 18 acres of the site will be developed as a water feature (lake), and although the water feature may not generate a demand for water since it may be maintained by runoff and/or treated wastewater, a demand factor of 5.106 acre feet per acre per year was applied to the water feature to provide a conservative estimate of overall demand.

To account for infiltration and percolation that will occur onsite as a result of outdoor irrigation, a 35% return flows factor was applied to the landscaping total demand. This factor assumes that 35% of the water used for irrigation onsite will be returned to the underlying aquifer via natural percolation.

Based on these estimates and the consideration of the return flows, a total of 1,006.6 acre-feet per year would be required for landscaping throughout the Project.

### Potable Water Demand Methodology

Potable water demand was calculated for all indoor uses based on estimates from the American Water Works Association Research Foundation (AWWARF). For residential land uses the number of planned dwelling units was multiplied by the expected household population for each residential type. The total population was then multiplied by the AWWARF per capita factor for indoor use: 69.3 gallons per day per person.<sup>1</sup>

Indoor potable demand for non-residential land uses were multiplied by the appropriate average per square-foot AWWARF water demand factor. Where square-footages of buildings were provided, the appropriate floor area ratio was applied to the land use acreage in order to estimate the potential building square-footage, which was then multiplied by the appropriate average per square-foot AWWARF water demand factor.<sup>2</sup>

Total potable demand was reduced by 35% to account for return flows. As described in the Specific Plan, the project will include the development of several wastewater treatment plants that will treat effluent which will then be used for irrigation throughout the project. Although it is likely that nearly 100% of effluent could be reclaimed, the 35% return flow factor is used to provide a conservative estimate and account for consumptive uses. As a result of these estimates, a total of 324.6 acre-feet per year would be required for potable water throughout the Project.

### Total Water Demand

The total water demand for the Project at buildout, including the 35% return flow for non-consumptive use, is estimated at 1,331.1 acre-feet per year or 1.19 million gallons per day.

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<sup>1</sup> Project #241A, Residential End Uses of Water, AWWARF, Winter 1999/2000

<sup>2</sup> Project #241B, Commercial and Industrial End Uses of Water, AWWARF, Summer 2000.

**Hacienda at Fairview Valley  
Terra Nova Planning and Research**

**Landscape Water Demand**

Table A-1

Land Use	Acres	Planned DUs	Average Sqft/Parcel	Impervious Area	Open Space Area/Parcel	Irrigated Landscaped Area/Parcel	Irrigated Landscaped Ac/Parcel	MWA (AF/Y)	Irrigated AF/Y/DU	Total Demand Less 35% Return Flows (AF/Y)
Rural Living (RL-2)	73	27	98,010	20%	78,408.0	60%	47,044.80	3.650	3.94	69.18
Estate (RS-1)	226	142	54,450	30%	38,115.0	65%	24,774.75	3.650	2.08	191.61
Equestrian (R-EQ)	47	30	65,340	30%	45,738.0	60%	27,442.80	3.650	2.30	44.84
Very Low (VL)	94	100	38,160	30%	26,712.0	70%	18,698.40	3.650	1.57	101.84
Low (L)	288	865	7,500	45%	4,125.0	85%	3,506.25	3.650	0.29	165.19
Low-Medium (LM)	196	785	6,500	45%	3,575.0	85%	3,038.75	3.650	0.25	129.92
Medium (M)	146	800	5,500	50%	2,750.0	90%	2,475.00	3.650	0.21	107.84
Medium-High (MH)	56	365	4,500	50%	2,250.0	90%	2,025.00	3.650	0.17	40.26
									<b>Subtotal</b>	<b>850.68</b>

MWA: Typical desert landscaping Maximum Water Allowance.

Land Use	Acres	Irrigated Landscaped Ac	Irrigated Landscaped Ac	MWA (AF/Y)	Total Demand Less 35% Return Flows (AF/Y)
Commercial (CN)	15	20%	3.0	3.65	7.12
				<b>Subtotal</b>	<b>7.12</b>

Land Use	Acres	Irrigated Landscaped Ac	Irrigated Landscaped Ac	MWA (AF/Y)	Total Demand Less 35% Return Flows (AF/Y)
Parks Landscape (OS-R)	38	20%	7.6	3.65	18.03
Parks - Rec Turf (OS-R)	38	30%	11.4	5.106	37.84
Water Feature	18	100%	18.0	5.106	59.74
Open Space (OS-C)	280	5%	14.0	3.65	33.22
				<b>Subtotal</b>	<b>148.82</b>

**Total Irrigated Landscape Demand (AF/Y) | 1,006.62**

**Hacienda at Fairview Valley  
Terra Nova Planning and Research**

**Potable Water Demand**

Table A-2

Land Use	Acres	Planned DUs	Persons/Unit	Gallons/Person/Day	Total Demand Less 35% Return Flows (AF/Y)
Rural Living (RL-2)	73	27	3.1	69.3	4.22
Estate (RS-1)	226	142	3.1	69.3	22.21
Equestrian (R-EQ)	47	30	3.1	69.3	4.69
Very Low (VL)	94	100	3.1	69.3	15.64
Low (L)	288	865	1.85	69.3	80.74
Low-Medium (LM)	196	785	1.85	69.3	73.28
Medium (M)	146	800	1.85	69.3	74.68
Medium-High (MH)	56	365	1.85	69.3	34.07
				<b>Subtotal</b>	<b>309.53</b>

Land Use	Acres	% Dev Ac	SQFT	GPD/SQFT	Total Demand Less 35% Return Flows (AF/Y)
Retail Commercial	15	30.6%	200,000	35	13.96
				<b>Subtotal</b>	<b>13.96</b>

Land Use	Acres	% Dev Ac	SQFT	GPD/SQFT	Total Demand Less 35% Return Flows (AF/Y)
Open Space Recreation	38	2%	33,000	16	1.053
				<b>Subtotal</b>	<b>1.053</b>

**Total Potable Demand (AF/Y) 324.55**

**TOTAL PROJECT WATER DEMAND (AF/Y) 1,331.17**

**Table A-3  
Hacienda Specific Plan  
Estimated Project Water Service Demands**

<b>SP Land Use Designation</b>	<b>Landscaping* (ac-ft/yr)</b>	<b>Potable* (ac-ft/yr)</b>	<b>Demand (ac-ft/yr)</b>	<b>Demand (mgd)</b>
Residential Rural Living (RL-2)	69.2	4.2	73.4	0.07
Residential Estate (RS-1)	191.6	22.2	213.8	0.19
Residential Equestrian (R-EQ)	44.8	4.7	49.5	0.04
Residential Very Low (VL)	101.8	15.6	117.5	0.10
Residential Low (L)	165.2	80.7	245.9	0.22
Residential Low-Medium (LM)	129.9	73.3	203.2	0.18
Residential Medium (M)	107.8	74.7	182.5	0.16
Residential Medium-High (MH)	40.3	34.1	74.3	0.07
Commercial	7.1	14.0	21.1	0.02
Parks Landscape (OS-R)	55.8	0.0	55.8	0.05
Water Features	59.7	0.0	59.7	0.05
Open Space (OS-C)	33.2	1.1	34.3	0.03
Streets	0.0	0.0	0.0	0.00
<b>Total</b>	<b>1,006.6</b>	<b>324.6</b>	<b>1,331.1</b>	<b>1.19</b>

Source: "Hacienda at Fairview Valley Specific Plan Project Specific Water Demand Estimates," prepared by Terra Nova Planning and Research, September 8, 2008. (Appendix A to this Water Supply Assessment)

\* Accounts for 35% non-consumptive return flows in the Alto Subbasin.

# **APPENDIX B**

## **Water Resource Litigation and Other Actions**

**Prepared in Support of the  
Hacienda at Fairview Valley Specific Plan  
Water Supply Assessment and Verification**

Prepared by



Terra Nova Planning and Research, Inc.  
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September 8, 2008

## Water Resource Litigation and Other Actions

The following is a summary of background information that is to support the Hacienda at Fairview Water Supply Assessment for the Apple Valley Ranchos Water Company. This information includes pertinent legal actions and other actions that may impact the reliability of water resources in Southern California and Fairview Valley.

### Protection of the Delta Smelt and the Longfin Smelt

The delta smelt is a small fish with a typical adult size of 2-3 inches that is found only in the Sacramento-San Joaquin Estuary. The delta smelt was listed as a threatened species by the U.S. Fish and Wildlife Service and by CDFG 1993. The delta smelt population is affected by the amount of outflow from the estuary. Biological studies suggest that the decline of the delta smelt may be the result of toxics, exotic species and/or freshwater exports out of the delta by the state and federally operated water projects since 2001.<sup>1</sup> On August 31, 2007, U.S. District Court Judge Wanger ruled in the case of NRDC vs. Kempthorne, that the 2005 delta smelt biological opinion was invalid and that the US Fish and Wildlife Service shall prepare a new opinion (expected in late 2008).

As a result, the judge issued a prohibitory injunction against the US Bureau of Reclamation (USBR) and DWR to operate the SWP/Central Valley Project in the interim, and any operations must be consistent with the suite of actions the judge ordered based upon proposals submitted by the parties. Those actions include enhanced surveys and monitoring, as well as operational constraints from late December 2007 through June 2008. Actual water supply reductions will depend on fish, weather and flow conditions in the Delta and how reductions are divided between the state and federal projects.

The operational constraints of the judge's decision include a series of restrictions on state and federal water project operations in the Sacramento San Joaquin Delta selected from remedies submitted by environmental groups as well as state and federal resource agencies. Based on initial estimates supplied by the state, the Metropolitan Water District of Southern California and water purveyors supplying southern California stand to lose as much as 30 percent of their supplies during a normal water year (with smaller cuts during dry years) from northern California next year and possibly longer, under the preliminary ruling.<sup>2</sup> This ruling will reduce Table A allocations in 2008, and depending on the biological opinion due in June 2008 water restrictions could continue beyond 2008.

However, the judge reserved to DWR and USBR "the right on reasonable notice to deviate from the prescriptive remedies, if necessary to protect public health, safety and the human environment." During the hearing, the judge had indicated that public health, safety and human environment concerns were not necessarily limited to the maintenance of emergency water supplies for schools, hospitals or fire departments, but could include, depending upon the circumstances, significant effects related to

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<sup>1</sup> "Judge Throws Out Biological Opinion for Delta Smelt," Press Release, Natural Resources Defense Council, May 2007.

<sup>2</sup> "Metropolitan Water District of Southern California News Release," prepared by the Metropolitan Water District of Southern California, August 31, 2007.

agricultural land fallowing and/or subsidence from increased groundwater pumping necessitated by the absence of project water.

On October 22, 2007 the opposing parties provided the judge with drafts of the final order, including findings of fact and conclusions of law. The judge is currently reviewing these draft documents and is expected to make a final ruling on the case in early 2008.

As a result of the judge's decision SWP deliveries, which have averaged 77.3% per year, will be substantially cut for the next year and possibly longer. The percentage of SWP Table A water allocated to MWA that may actually be delivered in future years is currently unclear until the new Operating Criteria and Plan (OCAP) process is completed.

The longfin smelt is a close relative to the delta smelt that lives in the San Francisco Bay-Delta and is believed to be impacted by water exports from the San Joaquin River Delta.<sup>3</sup> In February 2008, the California Fish and Game Commission accepted the long fin smelt as a candidate species for listing under the California Endangered Species Act (ESA). Under the California ESA, when a species is accepted as a candidate species it has the same level of protection as if it was a listed threatened or endangered species. Therefore, the Commission adopted regulations meant to protect this species that may impact the SWP deliveries. Preliminary estimates of the possible impacts of Long Fin Smelt protection on SWP deliveries are between 0 and 400,000 acre feet per year.

The Department of Water Resources has issued a draft 2007 SWP Reliability Report that includes provisions for water supply reductions as a result of the delta smelt and other environmental issues. This is further discussed in the WSA and Appendix C.

In response to the potential impacts to the delta and reductions of water deliveries to southern California, the Delta Vision Blue Ribbon Task Force was developed by the Governor's office in order to provide a sustainable management program for the Sacramento-San Joaquin Bay Delta. The Delta Vision Task Force is a seven-member independent panel whose recommendations are non-binding but could be used by the Governor in crafting a new policy for the delta. The Task Force is currently drafting a report due out in 2008 that identifies \$5.9 billion for a comprehensive water plan, which includes \$1 billion for delta restoration and a new system for diverting water around the San Joaquin delta and considers the construction of new reservoirs and rock dams to further protect sensitive species as well as provide reliable water supplies to southern California.<sup>4</sup>

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<sup>3</sup> "Petition to List the San Francisco Bay-Delta Population of Longfin Smelt as Endangered Under the Endangered Species Act," prepared by The Bay Institute, Center for Biological Diversity, and the Natural Resources Defense Council, August 8, 2007.

<sup>4</sup> "Preliminary Visions Recommendations Report," prepared by the Delta Vision Stakeholder Coordination Group, August 2007.

Pacific Coast Federation of Fishermen's Association (PCFFA) vs. Gutierrez

On October 3, 2007, Judge Wanger reviewed the merits of a companion lawsuit to the NRDC vs. Kempthorne, in which the Pacific Coast Federation of Fishermen's Association (PCFFA) vs. Gutierrez challenged the salmon and steelhead biological opinion issued by the National Marine Fisheries Service in 2004. The plaintiffs allege similar types of deficiencies with this biological opinion, with an emphasis on the potential adverse impacts to species and habitat caused by changes to cold-water temperatures due to the reduction in water levels in the Sacramento River, and related changes in the methodology of species management.

The judgment on this case is still pending. However, similar to NRDC vs. Kempthorne, this case also contends that reductions of local waters in the San Joaquin River impact endangered species.

## **APPENDIX C**

### **Water Supply and Demand Projections Hacienda at Fairview Valley Specific Plan**

**Prepared in Support of the  
Hacienda at Fairview Valley Specific Plan  
Water Supply Assessment**

Prepared by



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September 8, 2008

## Water Supply and Demand Projection Methodology

The following describes the methodology utilized in developing water supply and demand projections for the normal, single, and multiple dry years analyzed in the Hacienda at Fairview Specific Plan Project (Project) Water Supply Assessment. This technical appendix is intended to support the conclusions made in the WSA and provide additional detail on the assumptions of the model as cited in the footnotes.

### Normal Water Year (Table 1C)

Table 1C shows the projected supply and demand for the Apple Valley Ranchos (AVR) Water Company from 2008 through 2030. Data included therein is modified based on available data from the AVR 2005 Urban Water Management Plan, which provides projections through 2025 in five year increments for supply and demand (AVR Water Use). Supply and demand sources are discussed further below.

#### Linear Proration

In order to analyze impacts to supply and demand through 2030, the linear trend provided for the five year increments and beginning in 2005 through 2025 was extrapolated using the least squares method to acquire a projection for 2030, which calculates a straight line projection that best fits the data. Therefore, the projected 2030 supply and demand figures are based on the values given in the previous five year increments; these projections also assume continued acquisition of additional water supplies at the rate represented in the given values from 2005 through 2025. The 2030 figure is applicable for this WSA only and should be considered accordingly.

In order to create annual estimates for supply and demand for years in between the given five-year increments, an annual incremental increase was assumed within each five year period. The model calculates the average difference between each five-year increment and adds that figure to the previous year in order to determine the consecutive year. This method was conducted independently for each five-year period and assumes a fixed incremental increase within each five year period.

### Data Sources for Demand

Demand sources include AVR Water Use and Hacienda Specific Plan (water) use. Water savings are factored in as percentage of AVR Water Use beginning in 2010 at 5% and increase by 1.5% annually to 20% through 2020. Water savings are not a demand, but serve to discount AVR Water Use.

AVR Water Use: Water use is derived from AVR's 2005 UWMP and is modified to show the impact of projected demand associated with development of the North Apple Valley Industrial Specific Plan (NAVISP) on available supply. Therefore, the values given are the sum of demand projection from the AVR 2005 UWMP and demand from the NAVISP as calculated in the NAVISP WSA. NAVISP is projected to begin development in 2010, so figures from 2005 through 2010 do not include the demand associated with the NAVISP, which is projected to buildout in 2025 with a maximum annual demand of 6,200 acre-feet per year. Therefore, values between 2025 and 2030 assume a demand factor of 6,200 acre-feet per year associated with the NAVISP. The application of the NAVISP demand projections to overall demand projected for the period starting in 2010 tempers the WSA water demand projections and may overstate demand in the years following 2010. The WSA's 20-year demand projections average an annual increase in demand of 2.5%, including the projected demand from the buildout of the NAVISP between 2010 and 2030.

As previously mentioned, the AVR 2005 UWMP includes data through 2025 and the least squares methodology was utilized to extend the linear trend to 2030.

Water Savings: Conservation efforts currently being initiated within AVR's service boundary are considered as Water Savings. It is expected that by 2010 water savings will represent 5% of projected AVR water use. An additional 1.5% water savings will be achieved annually beginning in 2011 through year 2020 when water savings will reach 20% of AVR's total projected water use. Subsequent years 2021 through 2030 also reflect an annual water savings of 20%. Water savings will be realized through conservation efforts, water saving programs, and market influences. Water saving strategies will be further described in the 2010 update to the UWMP for AVR.

Hacienda Specific Plan Use: Water demand for the Hacienda Specific Plan is based on Tables A1-A3 included in Appendix A, which show the estimated water consumption for all land uses associated with the project. Water demand for the Specific Plan is expected to initiate in 2010, and represent a water demand of 83.2 acre-feet. Assuming linear development and an annual increase in water demand of 83.2 acre-feet, buildout for the Hacienda Specific Plan would occur in 2025 with a maximum annual water consumption of 1,331 acre-feet. Total estimated water demand for the project, 1,311 acre-feet, was applied for each year from 2026 through 2030. It should be noted that although not accounted for in the model, the Project's groundwater demand at buildout is expected to be reduced through the use of recycled water for common area landscape irrigation as required by the Specific Plan.

### **Data Sources for Supply**

For some of the supply sources, such as the AVR Free Production Allowance (FPA), Jess Ranch Water Contract, Pre-Purchased Claim Rights, and Leased Water Rights, values are assumed to be constant under normal year condition over the 20 year model period. Replacement water purchased from MWA increases proportionally as demand increases.

AVR FPA: The Free Production Allowance (FPA) is taken directly from the AVR 2005 UWMP and is based on the Watermaster's targeted reduction to the Base Annual Production (BAP) figure by 60% by 2005-2006. For AVR the original base production was set at 13,022 acre-feet per year and was reduced to 8,567 acre-feet per year. This adjustment in the BAP was conducted in order to assure safe yield from the water basin, where imports, inflows, and consumption are balanced. The FPA was not further modified, although it was assumed that the safe yield figure would remain constant through 2030 during normal water year conditions.

Jess Ranch Water Contract: Water from this source is not included in the AVR 2005 UWMP; rather, it is based on the adopted contract. The terms of the contract allow AVR access to 4,488 acre-feet per year through 2030, as described in Section 2.3.3 of the Water Supply Assessment.

Pre-Purchased Claim Rights: AVR expects to receive an average of 221 acre-feet of water annually. This supply source is based on MWA's resolution No. 826-06, adopted on June 22, 2006, which allows for the sale of previously stored water within the adjudicated Mojave Basin Area.

Leased Water Rights: Based on historic deliveries of water available for lease, it is anticipated that AVR will have access to 1,800 acre-feet per year through 2030.

Replacement Water Purchased from MWA: Replacement water is the difference between supply and demand. This is amount of water beyond the FPA that will be purchased from MWA to meet demand.

### **Single Dry Year (Table 2C-6C)**

Tables 2C through 6C analyze the impacts to the water supply as a result of a single dry year occurring in each of the five year increments from 2010 through 2030. Other than the highlighted target year in which the single dry year event was to occur, all data inputs are identical to the normal year scenario. The inputs for the single dry year scenarios assume a 25% reduction in all supply sources for that year and a 9.5% reduction in AVR Water Use and Hacienda Specific Plan Use components in addition to Water Savings. Water savings and conservation are realized from AVR efforts and market pressures during drought conditions.

### **Multiple Dry Years (Table 7C-11C)**

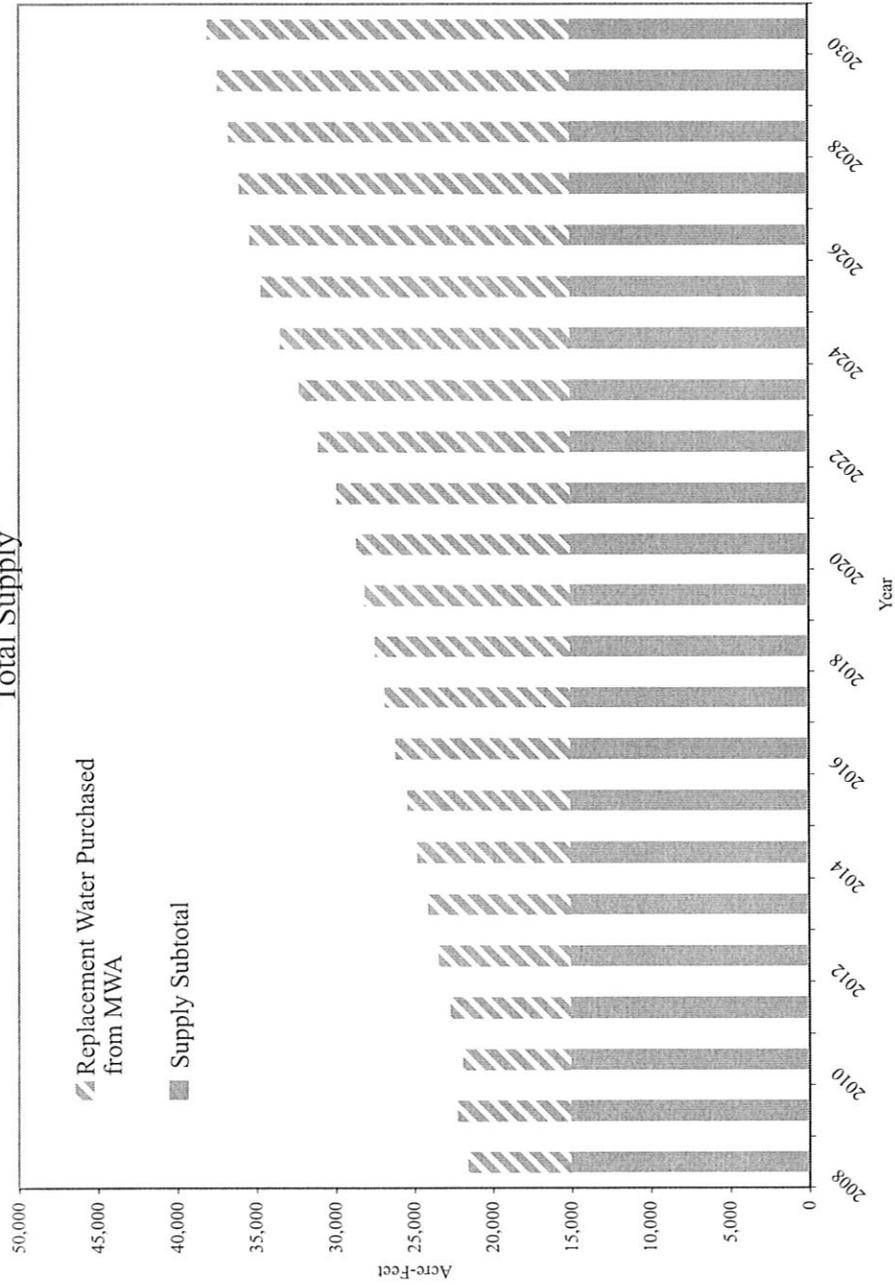
Tables 7C through 11C show the impacts to the water supply when subjected to multiple (five) years of drought conditions. Other than the highlighted target years in which the multiple dry year event were to occur, all data inputs are identical to the normal year scenario. The inputs for the multiple dry year scenarios assume a 15% reduction in all supply sources and a 9.5% reduction AVR Water Use and Hacienda Specific Plan Use to account for anticipated conservation from AVR efforts and market pressures during drought conditions.

**Table 1C**  
**WSA Normal Water Year**  
**Supply and Demand Projections**

Year	Demand				Supply						
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	Purchased MWA Water as Percent of Supply
2008	21,582	0	0	21,582	8,567	4,488	221	1,800	15,076	6,506	30%
2009	22,272	0	0	22,272	8,567	4,488	221	1,800	15,076	7,196	32%
<b>2010</b>	<b>23,018</b>	<b>1,151</b>	<b>83</b>	<b>21,950</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>6,874</b>	<b>31%</b>
2011	24,119	1,568	166	22,718	8,567	4,488	221	1,800	15,076	7,642	34%
2012	25,220	2,018	250	23,452	8,567	4,488	221	1,800	15,076	8,376	36%
2013	26,322	2,501	333	24,154	8,567	4,488	221	1,800	15,076	9,078	38%
2014	27,423	3,017	416	24,822	8,567	4,488	221	1,800	15,076	9,746	39%
<b>2015</b>	<b>28,524</b>	<b>3,566</b>	<b>499</b>	<b>25,458</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>10,382</b>	<b>41%</b>
2016	29,767	4,167	582	26,182	8,567	4,488	221	1,800	15,076	11,106	42%
2017	31,010	4,806	666	26,869	8,567	4,488	221	1,800	15,076	11,793	44%
2018	32,252	5,483	749	27,518	8,567	4,488	221	1,800	15,076	12,442	45%
2019	33,495	6,197	832	28,131	8,567	4,488	221	1,800	15,076	13,055	46%
<b>2020</b>	<b>34,738</b>	<b>6,948</b>	<b>915</b>	<b>28,706</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>13,630</b>	<b>47%</b>
2021	36,149	7,230	998	29,918	8,567	4,488	221	1,800	15,076	14,842	50%
2022	37,560	7,512	1,082	31,130	8,567	4,488	221	1,800	15,076	16,054	52%
2023	38,971	7,794	1,165	32,342	8,567	4,488	221	1,800	15,076	17,266	53%
2024	40,382	8,076	1,248	33,554	8,567	4,488	221	1,800	15,076	18,478	55%
<b>2025</b>	<b>41,793</b>	<b>8,359</b>	<b>1,331</b>	<b>34,766</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>19,690</b>	<b>57%</b>
2026	42,644	8,529	1,331	35,446	8,567	4,488	221	1,800	15,076	20,370	57%
2027	43,494	8,699	1,331	36,127	8,567	4,488	221	1,800	15,076	21,051	58%
2028	44,345	8,869	1,331	36,807	8,567	4,488	221	1,800	15,076	21,731	59%
2029	45,195	9,039	1,331	37,488	8,567	4,488	221	1,800	15,076	22,412	60%
<b>2030</b>	<b>46,046</b>	<b>9,209</b>	<b>1,331</b>	<b>38,168</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>23,092</b>	<b>61%</b>

Note: Footnotes are provided at the end of Appendix C.

Chart 1C  
Normal Water Year  
Total Supply

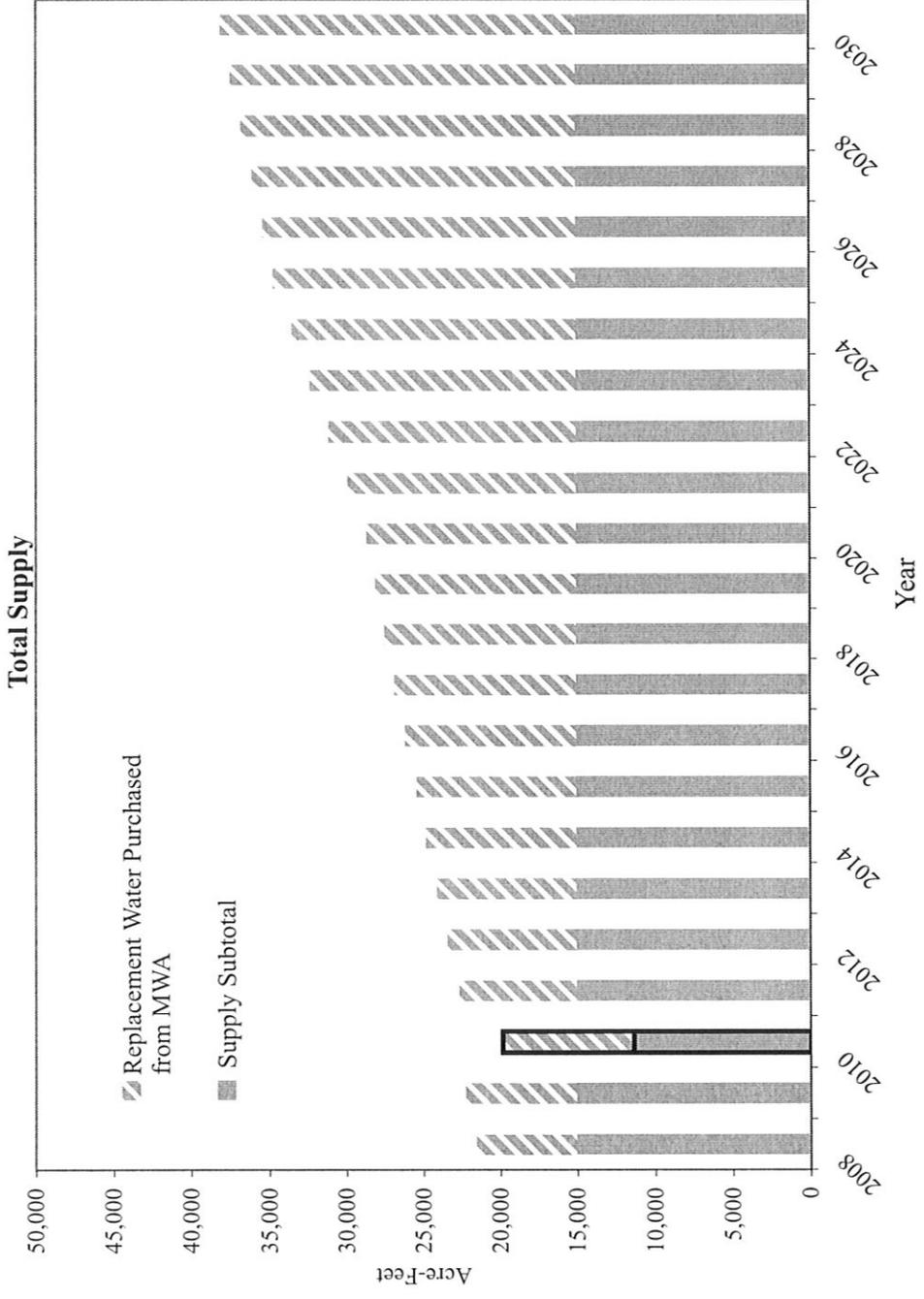


**Table 2C**  
**WSA Single Dry Year 2010**  
**Supply and Demand Projections**

Year	Demand				Supply						
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	Purchased MWA Water as Percent of Supply
2008	21,582	0	0	21,582	8,567	4,488	221	1,800	15,076	6,506	30%
2009	22,272	0	0	22,272	8,567	4,488	221	1,800	15,076	7,196	32%
<b>2010</b>	<b>20,831</b>	<b>1,042</b>	<b>75</b>	<b>19,865</b>	<b>6,425</b>	<b>3,366</b>	<b>221</b>	<b>1,350</b>	<b>11,362</b>	<b>8,503</b>	<b>43%</b>
2011	24,119	1,568	166	22,718	8,567	4,488	221	1,800	15,076	7,642	34%
2012	25,220	2,018	250	23,452	8,567	4,488	221	1,800	15,076	8,376	36%
2013	26,322	2,501	333	24,154	8,567	4,488	221	1,800	15,076	9,078	38%
2014	27,423	3,017	416	24,822	8,567	4,488	221	1,800	15,076	9,746	39%
<b>2015</b>	<b>28,524</b>	<b>3,566</b>	<b>499</b>	<b>25,458</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>10,382</b>	<b>41%</b>
2016	29,767	4,167	582	26,182	8,567	4,488	221	1,800	15,076	11,106	42%
2017	31,010	4,806	666	26,869	8,567	4,488	221	1,800	15,076	11,793	44%
2018	32,252	5,483	749	27,518	8,567	4,488	221	1,800	15,076	12,442	45%
2019	33,495	6,197	832	28,131	8,567	4,488	221	1,800	15,076	13,055	46%
<b>2020</b>	<b>34,738</b>	<b>6,948</b>	<b>915</b>	<b>28,706</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>13,630</b>	<b>47%</b>
2021	36,149	7,230	998	29,918	8,567	4,488	221	1,800	15,076	14,842	50%
2022	37,560	7,512	1,082	31,130	8,567	4,488	221	1,800	15,076	16,054	52%
2023	38,971	7,794	1,165	32,342	8,567	4,488	221	1,800	15,076	17,266	53%
2024	40,382	8,076	1,248	33,554	8,567	4,488	221	1,800	15,076	18,478	55%
<b>2025</b>	<b>41,793</b>	<b>8,359</b>	<b>1,331</b>	<b>34,766</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>19,690</b>	<b>57%</b>
2026	42,644	8,529	1,331	35,446	8,567	4,488	221	1,800	15,076	20,370	57%
2027	43,494	8,699	1,331	36,127	8,567	4,488	221	1,800	15,076	21,051	58%
2028	44,345	8,869	1,331	36,807	8,567	4,488	221	1,800	15,076	21,731	59%
2029	45,195	9,039	1,331	37,488	8,567	4,488	221	1,800	15,076	22,412	60%
<b>2030</b>	<b>46,046</b>	<b>9,209</b>	<b>1,331</b>	<b>38,168</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>23,092</b>	<b>61%</b>

Note: Footnotes are provided at the end of Appendix C.

**Chart 1C**  
**Single Dry Water Year 2010**  
**Total Supply**

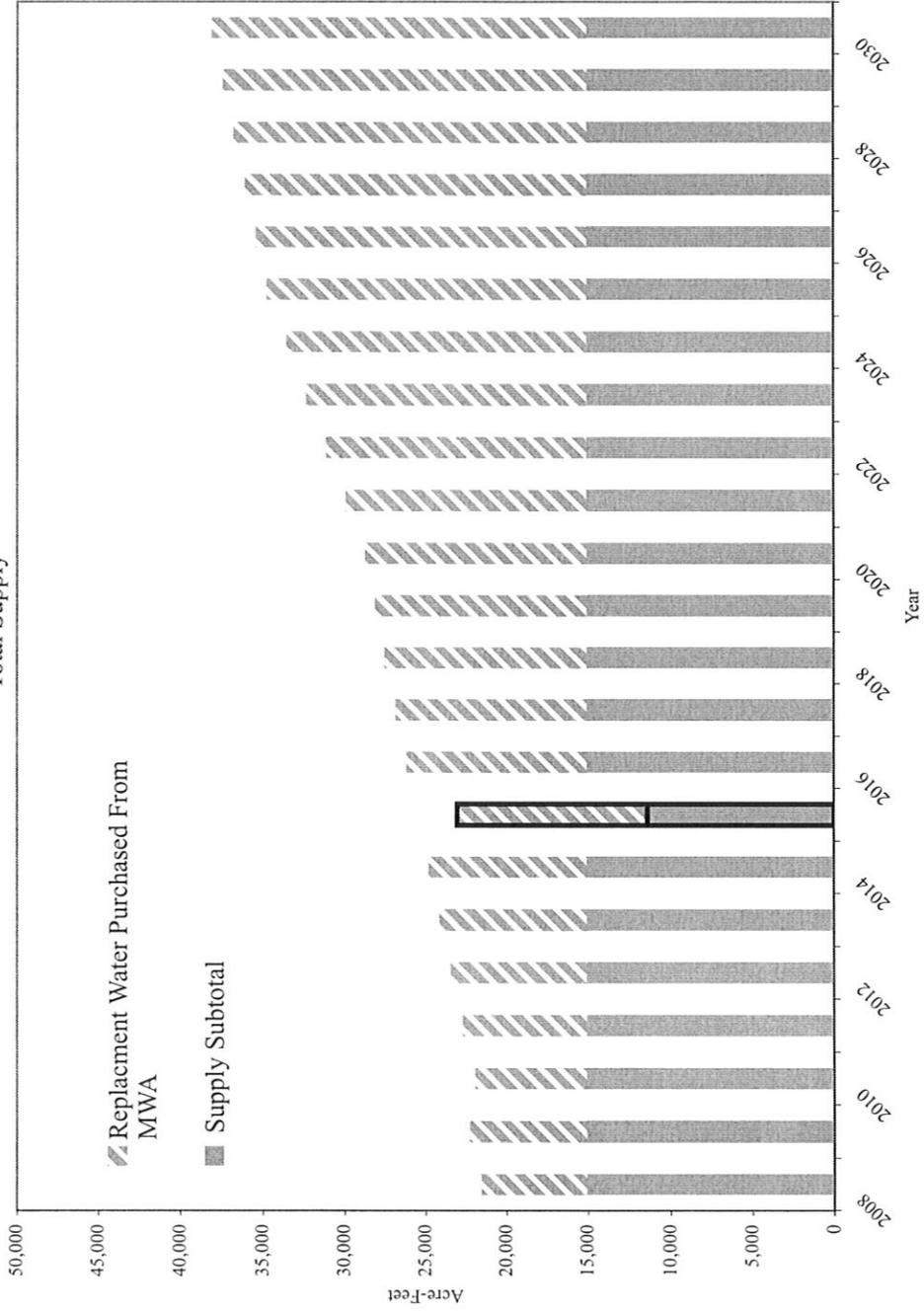


**Table 3C  
WSA Single Dry Year 2015  
Supply and Demand Projections**

Year	Demand				Supply						
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	Purchased MWA Water as Percent of Supply
2008	21,582	0	0	21,582	8,567	4,488	221	1,800	15,076	6,506	30%
2009	22,272	0	0	22,272	8,567	4,488	221	1,800	15,076	7,196	32%
<b>2010</b>	<b>23,018</b>	<b>1,151</b>	<b>75</b>	<b>21,942</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>6,866</b>	<b>31%</b>
2011	24,119	1,568	166	22,718	8,567	4,488	221	1,800	15,076	7,642	34%
2012	25,220	2,018	250	23,452	8,567	4,488	221	1,800	15,076	8,376	36%
2013	26,322	2,501	333	24,154	8,567	4,488	221	1,800	15,076	9,078	38%
2014	27,423	3,017	416	24,822	8,567	4,488	221	1,800	15,076	9,746	39%
<b>2015</b>	<b>25,814</b>	<b>3,227</b>	<b>452</b>	<b>23,039</b>	<b>6,425</b>	<b>3,366</b>	<b>221</b>	<b>1,350</b>	<b>11,362</b>	<b>11,677</b>	<b>51%</b>
2016	29,767	4,167	582	26,182	8,567	4,488	221	1,800	15,076	11,106	42%
2017	31,010	4,806	666	26,869	8,567	4,488	221	1,800	15,076	11,793	44%
2018	32,252	5,483	749	27,518	8,567	4,488	221	1,800	15,076	12,442	45%
2019	33,495	6,197	832	28,131	8,567	4,488	221	1,800	15,076	13,055	46%
<b>2020</b>	<b>34,738</b>	<b>6,948</b>	<b>915</b>	<b>28,706</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>13,630</b>	<b>47%</b>
2021	36,149	7,230	998	29,918	8,567	4,488	221	1,800	15,076	14,842	50%
2022	37,560	7,512	1,082	31,130	8,567	4,488	221	1,800	15,076	16,054	52%
2023	38,971	7,794	1,165	32,342	8,567	4,488	221	1,800	15,076	17,266	53%
2024	40,382	8,076	1,248	33,554	8,567	4,488	221	1,800	15,076	18,478	55%
<b>2025</b>	<b>41,793</b>	<b>8,359</b>	<b>1,331</b>	<b>34,766</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>19,690</b>	<b>57%</b>
2026	42,644	8,529	1,331	35,446	8,567	4,488	221	1,800	15,076	20,370	57%
2027	43,494	8,699	1,331	36,127	8,567	4,488	221	1,800	15,076	21,051	58%
2028	44,345	8,869	1,331	36,807	8,567	4,488	221	1,800	15,076	21,731	59%
2029	45,195	9,039	1,331	37,488	8,567	4,488	221	1,800	15,076	22,412	60%
<b>2030</b>	<b>46,046</b>	<b>9,209</b>	<b>1,331</b>	<b>38,168</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>23,092</b>	<b>61%</b>

Note: Footnotes are provided at the end of Appendix C.

Chart 3C  
 Single Dry Year 2015  
 Total Supply

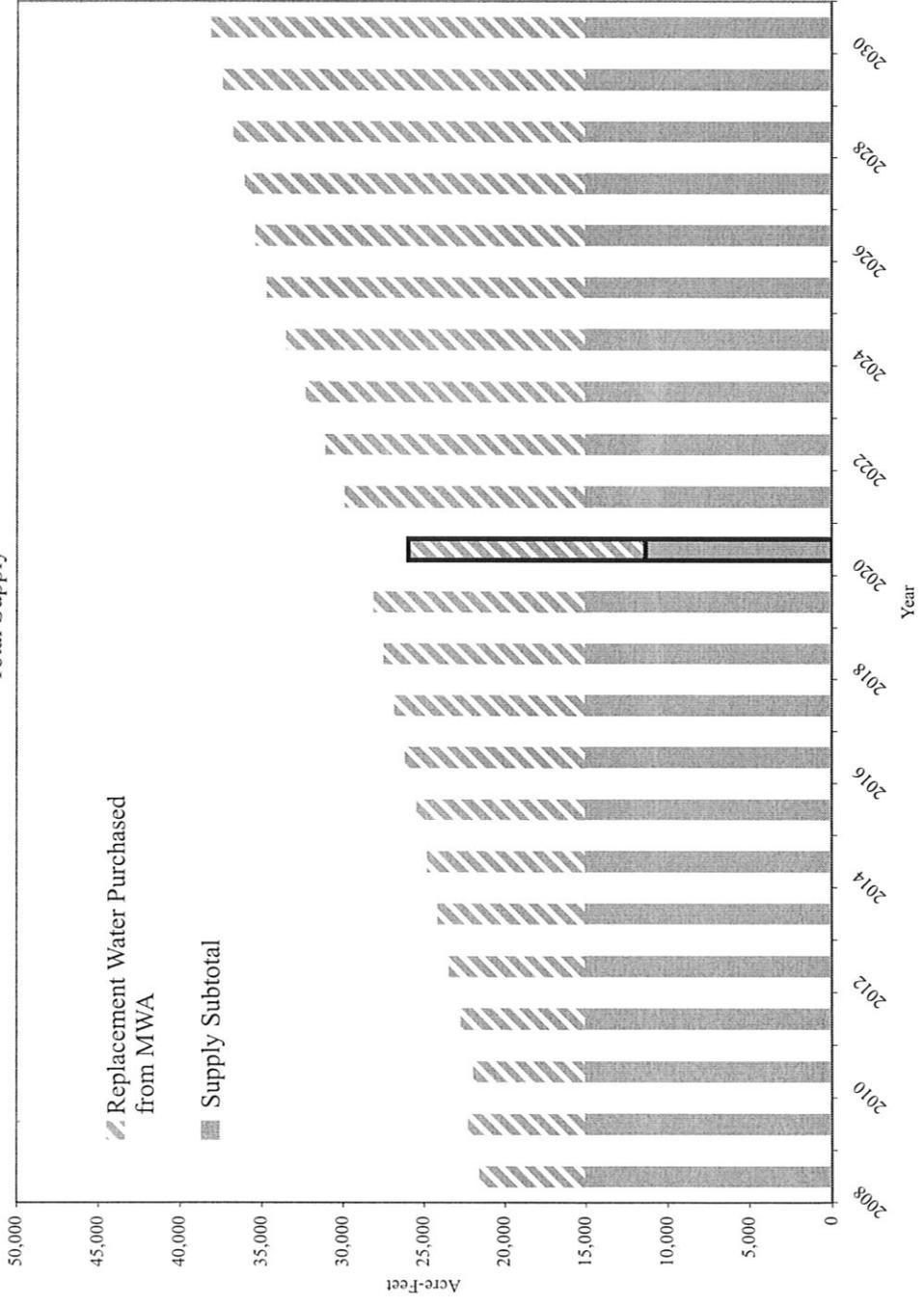


**Table 4C**  
**Single Dry Year 2020**  
**Supply and Demand Projections**

Year	Demand					Supply					
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	Purchased MWA Water as Percent of Supply
2008	21,582	0	0	21,582	8,567	4,488	221	1,800	15,076	6,506	30%
2009	22,272	0	0	22,272	8,567	4,488	221	1,800	15,076	7,196	32%
<b>2010</b>	<b>23,018</b>	<b>1,151</b>	<b>75</b>	<b>21,942</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>6,866</b>	<b>31%</b>
2011	24,119	1,568	166	22,718	8,567	4,488	221	1,800	15,076	7,642	34%
2012	25,220	2,018	250	23,452	8,567	4,488	221	1,800	15,076	8,376	36%
2013	26,322	2,501	333	24,154	8,567	4,488	221	1,800	15,076	9,078	38%
2014	27,423	3,017	416	24,822	8,567	4,488	221	1,800	15,076	9,746	39%
<b>2015</b>	<b>28,524</b>	<b>3,566</b>	<b>499</b>	<b>25,458</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>10,382</b>	<b>41%</b>
2016	29,767	4,167	582	26,182	8,567	4,488	221	1,800	15,076	11,106	42%
2017	31,010	4,806	666	26,869	8,567	4,488	221	1,800	15,076	11,793	44%
2018	32,252	5,483	749	27,518	8,567	4,488	221	1,800	15,076	12,442	45%
2019	33,495	6,197	832	28,131	8,567	4,488	221	1,800	15,076	13,055	46%
<b>2020</b>	<b>31,438</b>	<b>6,288</b>	<b>828</b>	<b>25,979</b>	<b>6,425</b>	<b>3,366</b>	<b>221</b>	<b>1,350</b>	<b>11,362</b>	<b>14,616</b>	<b>56%</b>
2021	36,149	7,230	998	29,918	8,567	4,488	221	1,800	15,076	14,842	50%
2022	37,560	7,512	1,082	31,130	8,567	4,488	221	1,800	15,076	16,054	52%
2023	38,971	7,794	1,165	32,342	8,567	4,488	221	1,800	15,076	17,266	53%
2024	40,382	8,076	1,248	33,554	8,567	4,488	221	1,800	15,076	18,478	55%
<b>2025</b>	<b>41,793</b>	<b>8,359</b>	<b>1,331</b>	<b>34,766</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>19,690</b>	<b>57%</b>
2026	42,644	8,529	1,331	35,446	8,567	4,488	221	1,800	15,076	20,370	57%
2027	43,494	8,699	1,331	36,127	8,567	4,488	221	1,800	15,076	21,051	58%
2028	44,345	8,869	1,331	36,807	8,567	4,488	221	1,800	15,076	21,731	59%
2029	45,195	9,039	1,331	37,488	8,567	4,488	221	1,800	15,076	22,412	60%
<b>2030</b>	<b>46,046</b>	<b>9,209</b>	<b>1,331</b>	<b>38,168</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>23,092</b>	<b>61%</b>

Note: Footnotes are provided at the end of Appendix C.

Chart 4C  
 Single Dry Year 2020  
 Total Supply

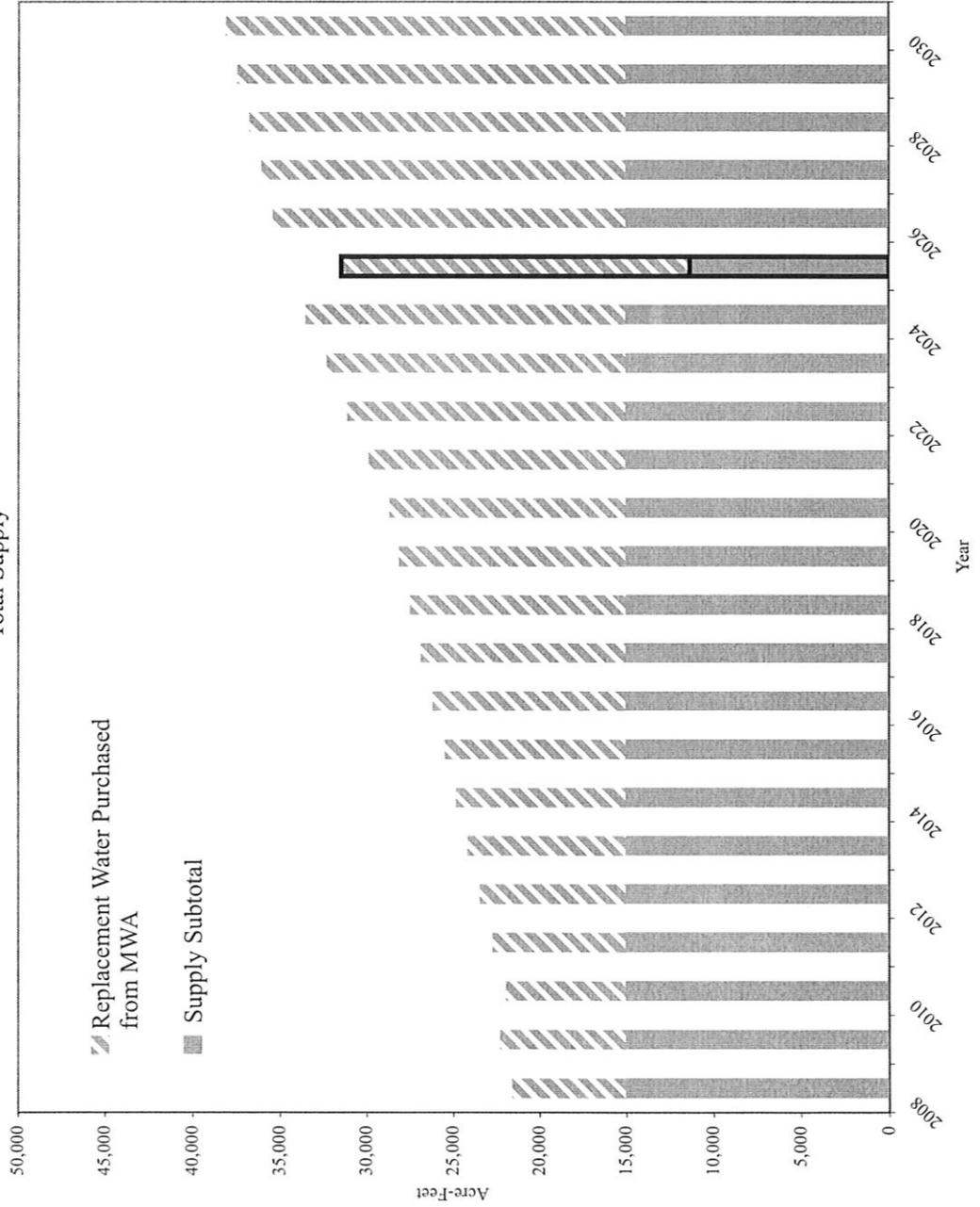


**Table 5C**  
**Single Dry Year 2025**  
**Supply and Demand Projections**

Year	Demand				Supply						
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	Purchased MWA Water as Percent of Supply
2008	21,582	0	0	21,582	8,567	4,488	221	1,800	15,076	6,506	30%
2009	22,272	0	0	22,272	8,567	4,488	221	1,800	15,076	7,196	32%
<b>2010</b>	<b>23,018</b>	<b>1,151</b>	<b>75</b>	<b>21,942</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>6,866</b>	<b>31%</b>
2011	24,119	1,568	166	22,718	8,567	4,488	221	1,800	15,076	7,642	34%
2012	25,220	2,018	250	23,452	8,567	4,488	221	1,800	15,076	8,376	36%
2013	26,322	2,501	333	24,154	8,567	4,488	221	1,800	15,076	9,078	38%
2014	27,423	3,017	416	24,822	8,567	4,488	221	1,800	15,076	9,746	39%
<b>2015</b>	<b>28,524</b>	<b>3,566</b>	<b>499</b>	<b>25,458</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>10,382</b>	<b>41%</b>
2016	29,767	4,167	582	26,182	8,567	4,488	221	1,800	15,076	11,106	42%
2017	31,010	4,806	666	26,869	8,567	4,488	221	1,800	15,076	11,793	44%
2018	32,252	5,483	749	27,518	8,567	4,488	221	1,800	15,076	12,442	45%
2019	33,495	6,197	832	28,131	8,567	4,488	221	1,800	15,076	13,055	46%
<b>2020</b>	<b>34,738</b>	<b>6,948</b>	<b>915</b>	<b>28,706</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>13,630</b>	<b>47%</b>
2021	36,149	7,230	998	29,918	8,567	4,488	221	1,800	15,076	14,842	50%
2022	37,560	7,512	1,082	31,130	8,567	4,488	221	1,800	15,076	16,054	52%
2023	38,971	7,794	1,165	32,342	8,567	4,488	221	1,800	15,076	17,266	53%
2024	40,382	8,076	1,248	33,554	8,567	4,488	221	1,800	15,076	18,478	55%
<b>2025</b>	<b>37,823</b>	<b>7,565</b>	<b>1,205</b>	<b>31,463</b>	<b>6,425</b>	<b>3,366</b>	<b>221</b>	<b>1,350</b>	<b>11,362</b>	<b>20,101</b>	<b>64%</b>
2026	42,644	8,529	1,331	35,446	8,567	4,488	221	1,800	15,076	20,370	57%
2027	43,494	8,699	1,331	36,127	8,567	4,488	221	1,800	15,076	21,051	58%
2028	44,345	8,869	1,331	36,807	8,567	4,488	221	1,800	15,076	21,731	59%
2029	45,195	9,039	1,331	37,488	8,567	4,488	221	1,800	15,076	22,412	60%
<b>2030</b>	<b>46,046</b>	<b>9,209</b>	<b>1,331</b>	<b>38,168</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>23,092</b>	<b>61%</b>

Note: Footnotes are provided at the end of Appendix C.

Chart 5C  
Single Dry Year 2025  
Total Supply

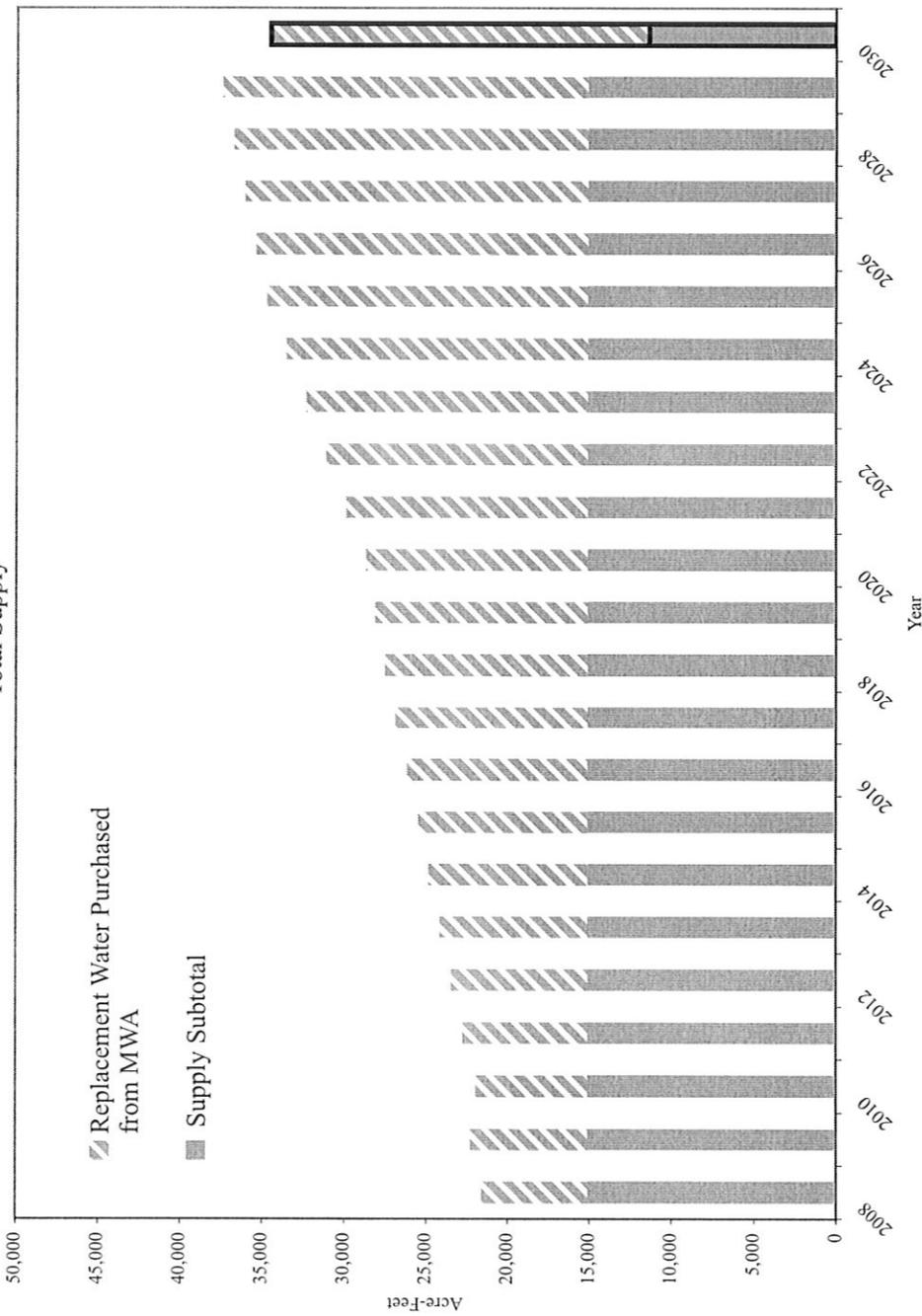


**Table 6C**  
**Single Dry Year 2030**  
**Supply and Demand Projections**

Year	Demand					Supply					Purchased MWA Water as Percent of Supply
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	
2008	21,582	0	0	21,582	8,567	4,488	221	1,800	15,076	6,506	30%
2009	22,272	0	0	22,272	8,567	4,488	221	1,800	15,076	7,196	32%
<b>2010</b>	<b>23,018</b>	<b>1,151</b>	<b>75</b>	<b>21,942</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>6,866</b>	<b>31%</b>
2011	24,119	1,568	166	22,718	8,567	4,488	221	1,800	15,076	7,642	34%
2012	25,220	2,018	250	23,452	8,567	4,488	221	1,800	15,076	8,376	36%
2013	26,322	2,501	333	24,154	8,567	4,488	221	1,800	15,076	9,078	38%
2014	27,423	3,017	416	24,822	8,567	4,488	221	1,800	15,076	9,746	39%
<b>2015</b>	<b>28,524</b>	<b>3,566</b>	<b>499</b>	<b>25,458</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>10,382</b>	<b>41%</b>
2016	29,767	4,167	582	26,182	8,567	4,488	221	1,800	15,076	11,106	42%
2017	31,010	4,806	666	26,869	8,567	4,488	221	1,800	15,076	11,793	44%
2018	32,252	5,483	749	27,518	8,567	4,488	221	1,800	15,076	12,442	45%
2019	33,495	6,197	832	28,131	8,567	4,488	221	1,800	15,076	13,055	46%
<b>2020</b>	<b>34,738</b>	<b>6,948</b>	<b>915</b>	<b>28,706</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>13,630</b>	<b>47%</b>
2021	36,149	7,230	998	29,918	8,567	4,488	221	1,800	15,076	14,842	50%
2022	37,560	7,512	1,082	31,130	8,567	4,488	221	1,800	15,076	16,054	52%
2023	38,971	7,794	1,165	32,342	8,567	4,488	221	1,800	15,076	17,266	53%
2024	40,382	8,076	1,248	33,554	8,567	4,488	221	1,800	15,076	18,478	55%
<b>2025</b>	<b>41,793</b>	<b>8,359</b>	<b>1,331</b>	<b>34,766</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>19,690</b>	<b>57%</b>
2026	42,644	8,529	1,331	35,446	8,567	4,488	221	1,800	15,076	20,370	57%
2027	43,494	8,699	1,331	36,127	8,567	4,488	221	1,800	15,076	21,051	58%
2028	44,345	8,869	1,331	36,807	8,567	4,488	221	1,800	15,076	21,731	59%
2029	45,195	9,039	1,331	37,488	8,567	4,488	221	1,800	15,076	22,412	60%
<b>2030</b>	<b>41,672</b>	<b>8,334</b>	<b>1,205</b>	<b>34,542</b>	<b>6,425</b>	<b>3,366</b>	<b>221</b>	<b>1,350</b>	<b>11,362</b>	<b>23,180</b>	<b>67%</b>

Note: Footnotes are provided at the end of Appendix C.

Chart 6C  
Single Dry Year 2030  
Total Supply

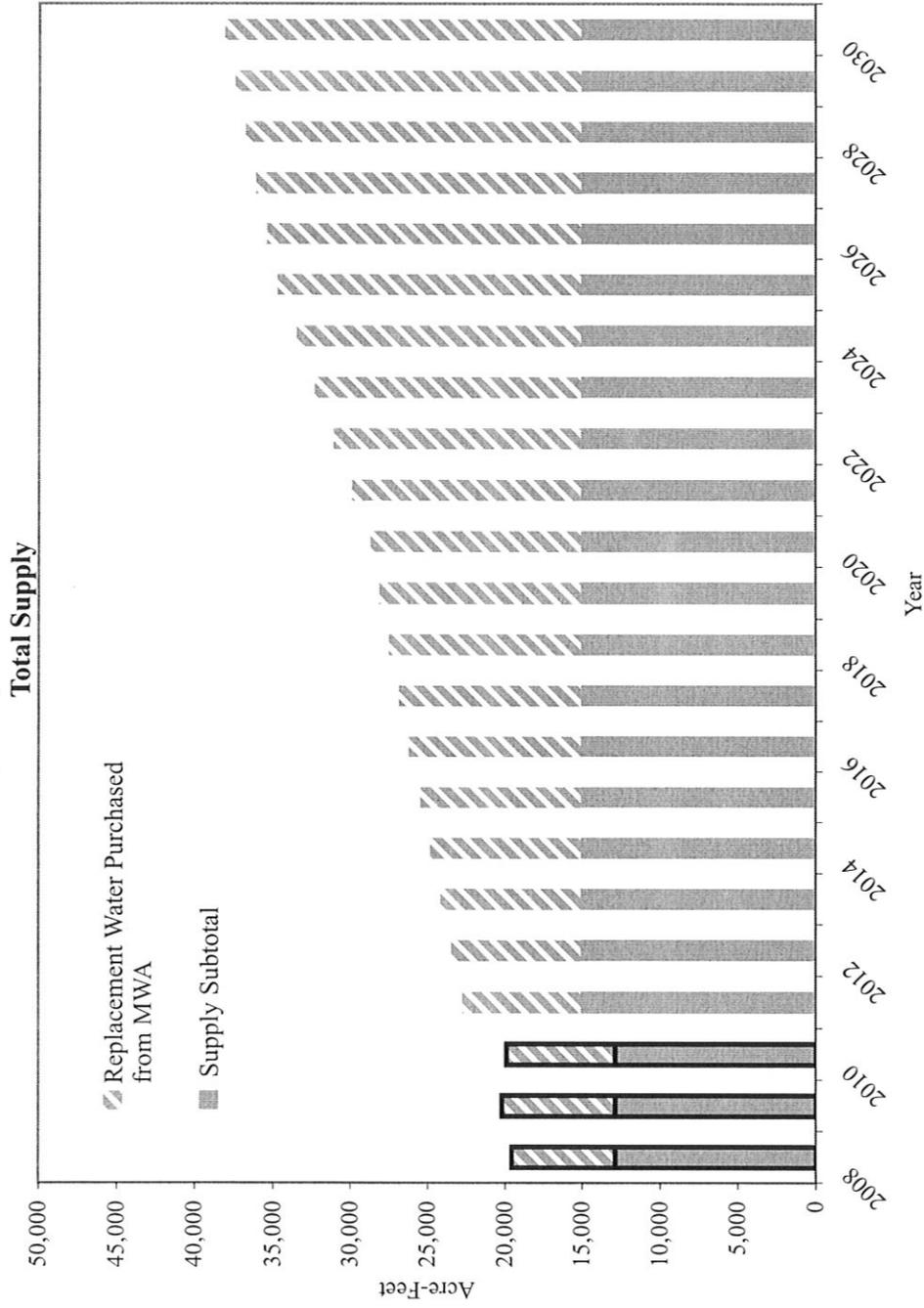


**Table 7C  
WSA Multiple Dry Years 2008-2010  
Supply and Demand Projections**

Year	Demand					Supply						
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	Purchased MWA Water as Percent of Supply	
2008	19,531	0	0	19,531	7,282	3,815	221	1,530	12,848	6,684	34%	
2009	20,156	0	0	20,156	7,282	3,815	221	1,530	12,848	7,308	36%	
<b>2010</b>	<b>20,831</b>	<b>1,042</b>	<b>68</b>	<b>19,858</b>	<b>7,282</b>	<b>3,815</b>	<b>221</b>	<b>1,530</b>	<b>12,848</b>	<b>7,010</b>	<b>35%</b>	
2011	24,119	1,568	166	22,718	8,567	4,488	221	1,800	15,076	7,642	34%	
2012	25,220	2,018	250	23,452	8,567	4,488	221	1,800	15,076	8,376	36%	
2013	26,322	2,501	333	24,154	8,567	4,488	221	1,800	15,076	9,078	38%	
2014	27,423	3,017	416	24,822	8,567	4,488	221	1,800	15,076	9,746	39%	
<b>2015</b>	<b>28,524</b>	<b>3,566</b>	<b>499</b>	<b>25,458</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>10,382</b>	<b>41%</b>	
2016	29,767	4,167	582	26,182	8,567	4,488	221	1,800	15,076	11,106	42%	
2017	31,010	4,806	666	26,869	8,567	4,488	221	1,800	15,076	11,793	44%	
2018	32,252	5,483	749	27,518	8,567	4,488	221	1,800	15,076	12,442	45%	
2019	33,495	6,197	832	28,131	8,567	4,488	221	1,800	15,076	13,055	46%	
<b>2020</b>	<b>34,738</b>	<b>6,948</b>	<b>915</b>	<b>28,706</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>13,630</b>	<b>47%</b>	
2021	36,149	7,230	998	29,918	8,567	4,488	221	1,800	15,076	14,842	50%	
2022	37,560	7,512	1,082	31,130	8,567	4,488	221	1,800	15,076	16,054	52%	
2023	38,971	7,794	1,165	32,342	8,567	4,488	221	1,800	15,076	17,266	53%	
2024	40,382	8,076	1,248	33,554	8,567	4,488	221	1,800	15,076	18,478	55%	
<b>2025</b>	<b>41,793</b>	<b>8,359</b>	<b>1,331</b>	<b>34,766</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>19,690</b>	<b>57%</b>	
2026	42,644	8,529	1,331	35,446	8,567	4,488	221	1,800	15,076	20,370	57%	
2027	43,494	8,699	1,331	36,127	8,567	4,488	221	1,800	15,076	21,051	58%	
2028	44,345	8,869	1,331	36,807	8,567	4,488	221	1,800	15,076	21,731	59%	
2029	45,195	9,039	1,331	37,488	8,567	4,488	221	1,800	15,076	22,412	60%	
<b>2030</b>	<b>46,046</b>	<b>9,209</b>	<b>1,331</b>	<b>38,168</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>23,092</b>	<b>61%</b>	

Note: Footnotes are provided at the end of Appendix C.

**Chart 7C**  
**Multiple Dry Water Years 2008-2010**

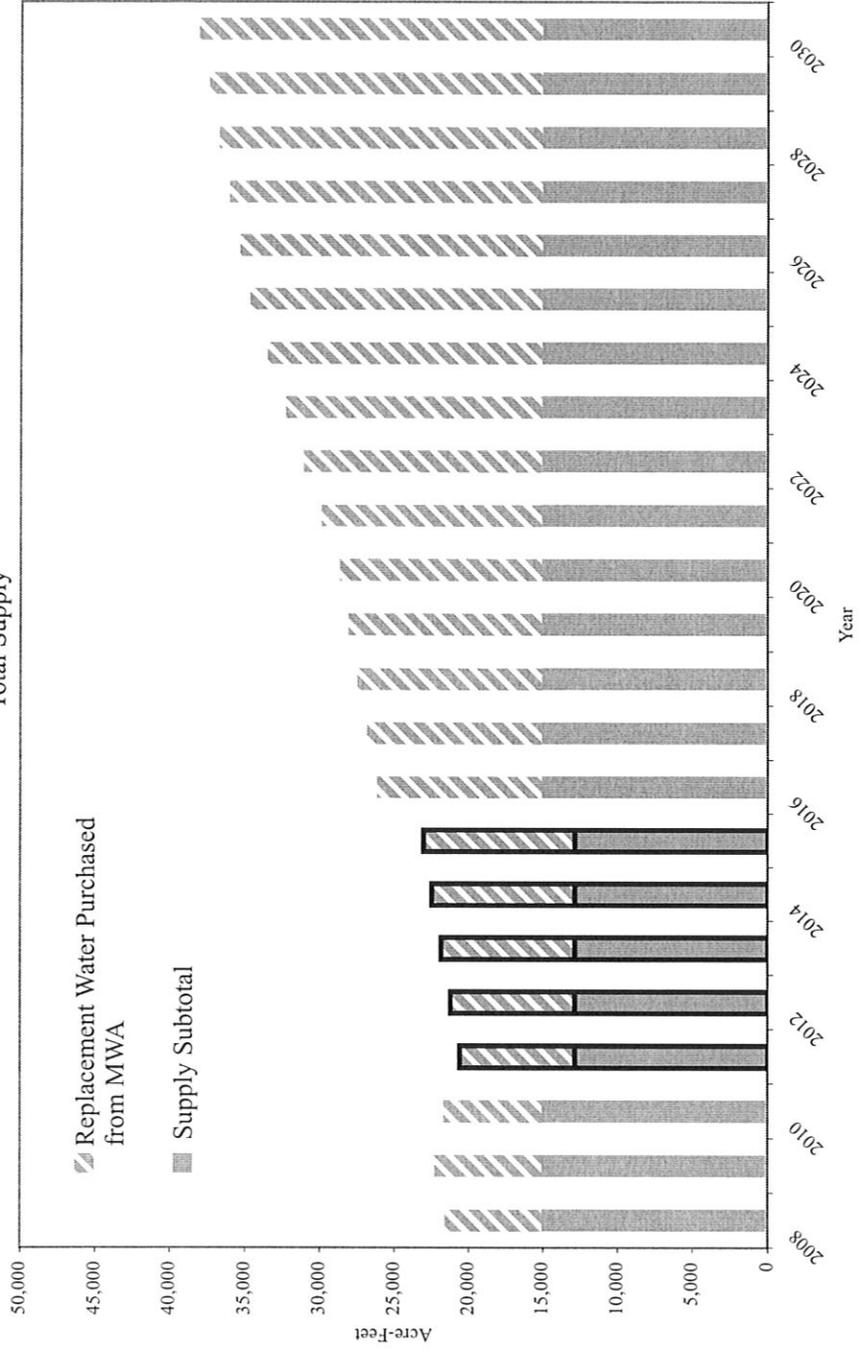


**Table 8C**  
**WSA Multiple Dry Years 2011-2015**  
**Supply and Demand Projections**

Year	Demand				Supply						
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	Purchased MWA Water as Percent of Supply
2008	21,582	0	0	21,582	8,567	4,488	221	1,800	15,076	6,506	30%
2009	22,272	0	0	22,272	8,567	4,488	221	1,800	15,076	7,196	32%
<b>2010</b>	<b>23,018</b>	<b>1,151</b>	<b>75</b>	<b>21,674</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>6,598</b>	<b>30%</b>
2011	21,828	1,419	151	20,560	7,282	3,815	221	1,530	12,848	7,712	38%
2012	22,824	1,826	226	21,224	7,282	3,815	221	1,530	12,848	8,377	39%
2013	23,821	2,263	301	21,859	7,282	3,815	221	1,530	12,848	9,011	41%
2014	24,818	2,730	376	22,464	7,282	3,815	221	1,530	12,848	9,616	43%
<b>2015</b>	<b>25,814</b>	<b>3,227</b>	<b>452</b>	<b>23,039</b>	<b>7,282</b>	<b>3,815</b>	<b>221</b>	<b>1,530</b>	<b>12,848</b>	<b>10,191</b>	<b>44%</b>
2016	29,767	4,167	582	26,182	8,567	4,488	221	1,800	15,076	11,106	42%
2017	31,010	4,806	666	26,869	8,567	4,488	221	1,800	15,076	11,793	44%
2018	32,252	5,483	749	27,518	8,567	4,488	221	1,800	15,076	12,442	45%
2019	33,495	6,197	832	28,131	8,567	4,488	221	1,800	15,076	13,055	46%
<b>2020</b>	<b>34,738</b>	<b>6,948</b>	<b>915</b>	<b>28,706</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>13,630</b>	<b>47%</b>
2021	36,149	7,230	998	29,918	8,567	4,488	221	1,800	15,076	14,842	50%
2022	37,560	7,512	1,082	31,130	8,567	4,488	221	1,800	15,076	16,054	52%
2023	38,971	7,794	1,165	32,342	8,567	4,488	221	1,800	15,076	17,266	53%
2024	40,382	8,076	1,248	33,554	8,567	4,488	221	1,800	15,076	18,478	55%
<b>2025</b>	<b>41,793</b>	<b>8,359</b>	<b>1,331</b>	<b>34,766</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>19,690</b>	<b>57%</b>
2026	42,644	8,529	1,331	35,446	8,567	4,488	221	1,800	15,076	20,370	57%
2027	43,494	8,699	1,331	36,127	8,567	4,488	221	1,800	15,076	21,051	58%
2028	44,345	8,869	1,331	36,807	8,567	4,488	221	1,800	15,076	21,731	59%
2029	45,195	9,039	1,331	37,488	8,567	4,488	221	1,800	15,076	22,412	60%
<b>2030</b>	<b>46,046</b>	<b>9,209</b>	<b>1,331</b>	<b>38,168</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>23,092</b>	<b>61%</b>

Note: Footnotes are provided at the end of Appendix C.

Chart 8C  
Multiple Dry Water Years 2011-2015  
Total Supply

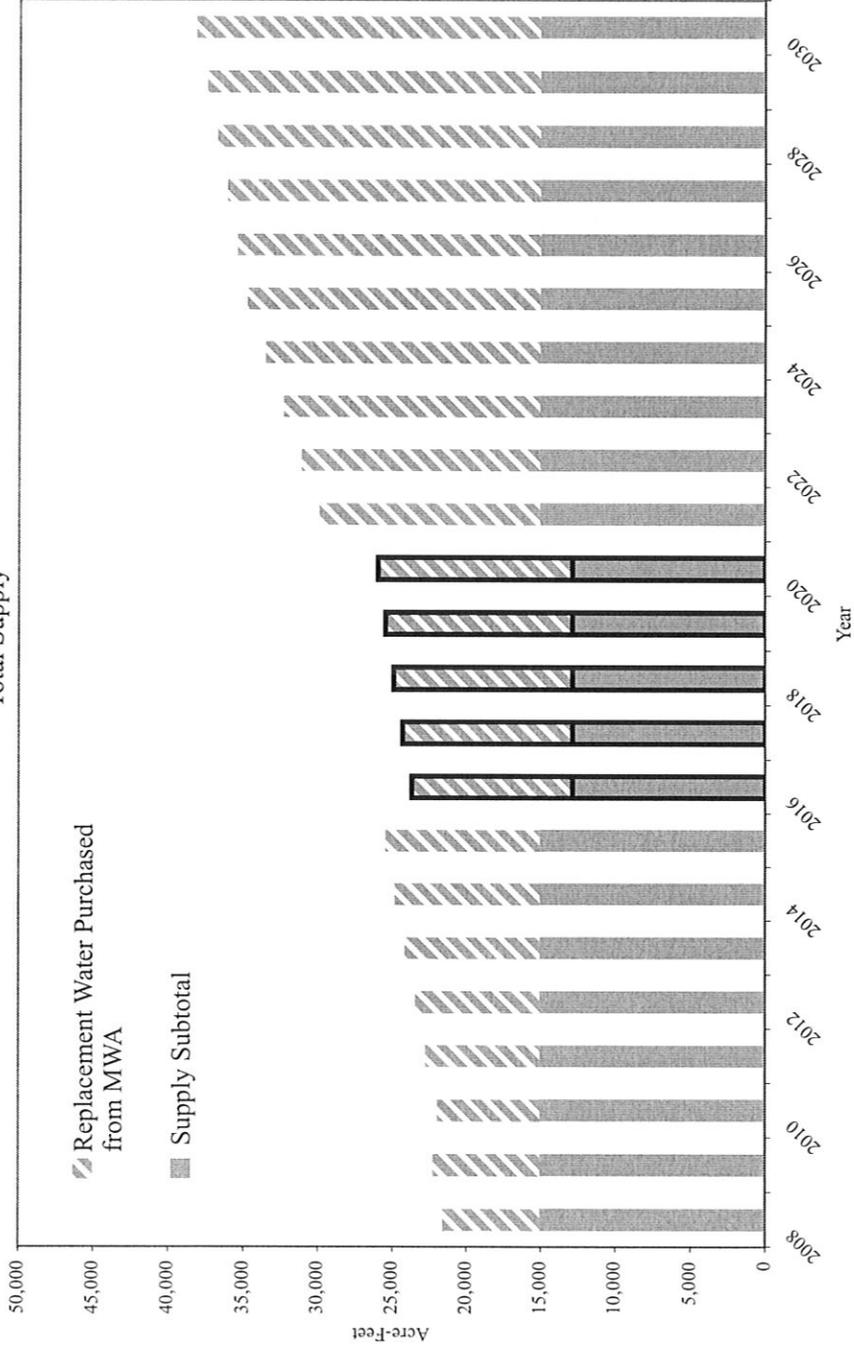


**Table 9C**  
**WSA Multiple Dry Years 2016-2020**  
**Supply and Demand Projections**

Year	Demand				Supply						
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	Purchased MWA Water as Percent of Supply
2008	21,582	0	0	21,582	8,567	4,488	221	1,800	15,076	6,506	30%
2009	22,272	0	0	22,272	8,567	4,488	221	1,800	15,076	7,196	32%
<b>2010</b>	<b>23,018</b>	<b>1,151</b>	<b>75</b>	<b>21,942</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>6,866</b>	<b>31%</b>
2011	24,119	1,568	166	22,718	8,567	4,488	221	1,800	15,076	7,642	34%
2012	25,220	2,018	250	23,452	8,567	4,488	221	1,800	15,076	8,376	36%
2013	26,322	2,501	333	24,154	8,567	4,488	221	1,800	15,076	9,078	38%
2014	27,423	3,017	416	24,822	8,567	4,488	221	1,800	15,076	9,746	39%
<b>2015</b>	<b>28,524</b>	<b>3,566</b>	<b>499</b>	<b>25,458</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>10,382</b>	<b>41%</b>
2016	26,939	3,771	527	23,695	7,282	3,815	221	1,530	12,848	10,847	46%
2017	28,064	4,350	602	24,316	7,282	3,815	221	1,530	12,848	11,468	47%
2018	29,188	4,962	678	24,904	7,282	3,815	221	1,530	12,848	12,056	48%
2019	30,313	5,608	753	25,458	7,282	3,815	221	1,530	12,848	12,610	50%
<b>2020</b>	<b>31,438</b>	<b>6,288</b>	<b>828</b>	<b>25,979</b>	<b>7,282</b>	<b>3,815</b>	<b>221</b>	<b>1,530</b>	<b>12,848</b>	<b>13,131</b>	<b>51%</b>
2021	36,149	7,230	998	29,918	8,567	4,488	221	1,800	15,076	14,842	50%
2022	37,560	7,512	1,082	31,130	8,567	4,488	221	1,800	15,076	16,054	52%
2023	38,971	7,794	1,165	32,342	8,567	4,488	221	1,800	15,076	17,266	53%
2024	40,382	8,076	1,248	33,554	8,567	4,488	221	1,800	15,076	18,478	55%
<b>2025</b>	<b>41,793</b>	<b>8,359</b>	<b>1,331</b>	<b>34,766</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>19,690</b>	<b>57%</b>
2026	42,644	8,529	1,331	35,446	8,567	4,488	221	1,800	15,076	20,370	57%
2027	43,494	8,699	1,331	36,127	8,567	4,488	221	1,800	15,076	21,051	58%
2028	44,345	8,869	1,331	36,807	8,567	4,488	221	1,800	15,076	21,731	59%
2029	45,195	9,039	1,331	37,488	8,567	4,488	221	1,800	15,076	22,412	60%
<b>2030</b>	<b>46,046</b>	<b>9,209</b>	<b>1,331</b>	<b>38,168</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>23,092</b>	<b>61%</b>

Notc: Footnotes are provided at the end of Appendix C.

Chart 9C  
 Multiple Dry Water Years 2016-2020  
 Total Supply

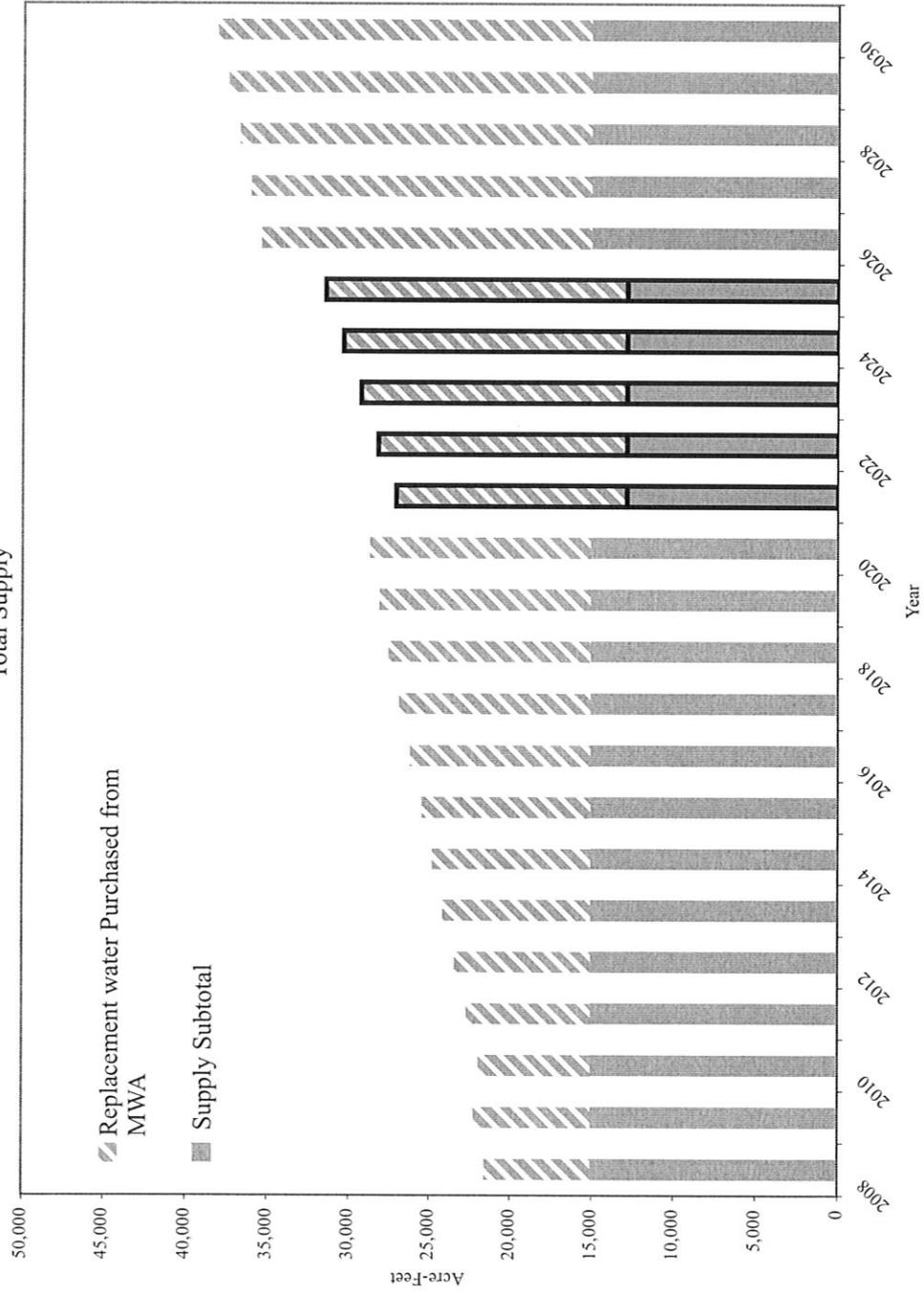


**Table 10C**  
**WSA Multiple Dry Years 2021-2025**  
**Supply and Demand Projections**

Year	Demand					Supply					
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	Purchased MWA Water as Percent of Supply
2008	21,582	0	0	21,582	8,567	4,488	221	1,800	15,076	6,506	30%
2009	22,272	0	0	22,272	8,567	4,488	221	1,800	15,076	7,196	32%
<b>2010</b>	<b>23,018</b>	<b>1,151</b>	<b>75</b>	<b>21,942</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>6,866</b>	<b>31%</b>
2011	24,119	1,568	166	22,718	8,567	4,488	221	1,800	15,076	7,642	34%
2012	25,220	2,018	250	23,452	8,567	4,488	221	1,800	15,076	8,376	36%
2013	26,322	2,501	333	24,154	8,567	4,488	221	1,800	15,076	9,078	38%
2014	27,423	3,017	416	24,822	8,567	4,488	221	1,800	15,076	9,746	39%
<b>2015</b>	<b>28,524</b>	<b>3,566</b>	<b>499</b>	<b>25,458</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>10,382</b>	<b>41%</b>
2016	29,767	4,167	582	26,182	8,567	4,488	221	1,800	15,076	11,106	42%
2017	31,010	4,806	666	26,869	8,567	4,488	221	1,800	15,076	11,793	44%
2018	32,252	5,483	749	27,518	8,567	4,488	221	1,800	15,076	12,442	45%
2019	33,495	6,197	832	28,131	8,567	4,488	221	1,800	15,076	13,055	46%
<b>2020</b>	<b>34,738</b>	<b>6,948</b>	<b>915</b>	<b>28,706</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>13,630</b>	<b>47%</b>
2021	32,715	6,543	904	27,075	7,282	3,815	221	1,530	12,848	14,228	53%
2022	33,992	6,798	979	28,172	7,282	3,815	221	1,530	12,848	15,325	54%
2023	35,269	7,054	1,054	29,269	7,282	3,815	221	1,530	12,848	16,421	56%
2024	36,546	7,309	1,129	30,366	7,282	3,815	221	1,530	12,848	17,518	58%
<b>2025</b>	<b>37,823</b>	<b>7,565</b>	<b>1,205</b>	<b>31,463</b>	<b>7,282</b>	<b>3,815</b>	<b>221</b>	<b>1,530</b>	<b>12,848</b>	<b>18,615</b>	<b>59%</b>
2026	42,644	8,529	1,331	35,446	8,567	4,488	221	1,800	15,076	20,370	57%
2027	43,494	8,699	1,331	36,127	8,567	4,488	221	1,800	15,076	21,051	58%
2028	44,345	8,869	1,331	36,807	8,567	4,488	221	1,800	15,076	21,731	59%
2029	45,195	9,039	1,331	37,488	8,567	4,488	221	1,800	15,076	22,412	60%
<b>2030</b>	<b>46,046</b>	<b>9,209</b>	<b>1,331</b>	<b>38,168</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>23,092</b>	<b>61%</b>

Note: Footnotes are provided at the end of Appendix C.

Chart 10C  
 Multiple Dry Water Years 2021-2025  
 Total Supply



**Table 11C**  
**WSA Multiple Dry Years 2026-2030**  
**Supply and Demand Projections**

Year	Demand					Supply					
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	Purchased MWA Water as Percent of Supply
2008	21,582	0	0	21,582	8,567	4,488	221	1,800	15,076	6,506	30%
2009	22,272	0	0	22,272	8,567	4,488	221	1,800	15,076	7,196	32%
<b>2010</b>	<b>23,018</b>	<b>1,151</b>	<b>75</b>	<b>21,942</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>6,866</b>	<b>31%</b>
2011	24,119	1,568	166	22,718	8,567	4,488	221	1,800	15,076	7,642	34%
2012	25,220	2,018	250	23,452	8,567	4,488	221	1,800	15,076	8,376	36%
2013	26,322	2,501	333	24,154	8,567	4,488	221	1,800	15,076	9,078	38%
2014	27,423	3,017	416	24,822	8,567	4,488	221	1,800	15,076	9,746	39%
<b>2015</b>	<b>28,524</b>	<b>3,566</b>	<b>499</b>	<b>25,458</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>10,382</b>	<b>41%</b>
2016	29,767	4,167	582	26,182	8,567	4,488	221	1,800	15,076	11,106	42%
2017	31,010	4,806	666	26,869	8,567	4,488	221	1,800	15,076	11,793	44%
2018	32,252	5,483	749	27,518	8,567	4,488	221	1,800	15,076	12,442	45%
2019	33,495	6,197	832	28,131	8,567	4,488	221	1,800	15,076	13,055	46%
<b>2020</b>	<b>34,738</b>	<b>6,948</b>	<b>915</b>	<b>28,706</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>13,630</b>	<b>47%</b>
2021	36,149	7,230	998	29,918	8,567	4,488	221	1,800	15,076	14,842	50%
2022	37,560	7,512	1,082	31,130	8,567	4,488	221	1,800	15,076	16,054	52%
2023	38,971	7,794	1,165	32,342	8,567	4,488	221	1,800	15,076	17,266	53%
2024	40,382	8,076	1,248	33,554	8,567	4,488	221	1,800	15,076	18,478	55%
<b>2025</b>	<b>41,793</b>	<b>8,359</b>	<b>1,331</b>	<b>34,766</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>19,690</b>	<b>57%</b>
2026	38,592	7,718	1,205	32,079	7,282	3,815	221	1,530	12,848	19,231	60%
2027	39,362	7,872	1,205	32,695	7,282	3,815	221	1,530	12,848	19,847	61%
2028	40,132	8,026	1,205	33,310	7,282	3,815	221	1,530	12,848	20,463	61%
2029	40,902	8,180	1,205	33,926	7,282	3,815	221	1,530	12,848	21,078	62%
<b>2030</b>	<b>41,672</b>	<b>8,334</b>	<b>1,205</b>	<b>34,542</b>	<b>7,282</b>	<b>3,815</b>	<b>221</b>	<b>1,530</b>	<b>12,848</b>	<b>21,694</b>	<b>63%</b>

Note: Footnotes are provided at the end of Appendix C.

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**RESOLUTION  
OF BOARD OF DIRECTORS OF  
APPLE VALLEY RANCHOS WATER COMPANY  
A CALIFORNIA CORPORATION**

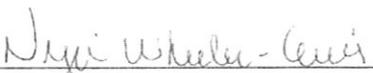
At a regularly scheduled and duly noticed meeting of the Board of Directors of Apple Valley Ranchos Water Company, held on November 19, 2008, and at which a quorum of the Directors were present, the Board passed the following Resolution:

WHEREAS, Apple Valley Ranchos Water Company (Company) has received a request under Section 10910 et seq. of the California Water Code from the Strata Equity Group for an assessment of whether existing and total planned sources of water will meet the projected water demand associated with the proposed Hacienda at Fairview Valley Specific Plan, and

WHEREAS, a Water Supply Assessment for the proposed Hacienda at Fairview Valley Specific Plan was prepared for the Company by Terra Nova Planning & Research, Inc. and has been reviewed and revised by the staff of the Company and the Company's legal counsel, and

WHEREAS, the Board of Directors has reviewed the Water Supply Assessment for the proposed Hacienda at Fairview Valley Specific Plan and acknowledges the descriptions and conclusions contained therein,

NOW THEREFORE, BE IT HEREBY RESOLVED that the Board of Directors of Apple Valley Ranchos Water Company adopts the Water Supply Assessment for the proposed Hacienda at Fairview Valley Specific Plan.

  
\_\_\_\_\_  
Nyri A. Wheeler-Lewis  
Corporate Secretary

## **1.0 EXECUTIVE SUMMARY**

This Water Supply Assessment was prepared in conjunction with the preparation of the Hacienda at Fairview Valley Specific Plan located in San Bernardino County, California. In addition to evaluating water demand for the project and the project's cumulative demand and impacts to supplies, the Water Supply Assessment also evaluates existing and future water supply sources that the local water purveyor, Apple Valley Ranchos Water Company, will use to meet future demand throughout its service area.

The Hacienda at Fairview Valley Specific Plan consists of residential, commercial, and recreational development on approximately 1,557 acres located about two miles east of the Town of Apple Valley in San Bernardino County. This project will consist of a mix of residential neighborhoods, commercial development, roadways, and open space, parks and water features. Due to the proposed project's scale, preparation of a Water Supply Assessment and a Water Supply Verification is required in accordance with Senate Bill 610 and Senate Bill 221, respectively. This combined document examines the current condition of the Alto Subarea, which serves the project area, and finds that the aquifer and its sources of supply are adequate to supply the project in accordance with California Water Code Section 10910 *et seq.* for the 22-year period from 2008 through 2030.

For the 2006-2007 water year verified production for the Alto Subarea was 99,895 acre-feet. The Watermaster for the Mojave Basin, Mojave Water Agency, calculated the total groundwater in storage for the Alto Subarea at 960,000 acre feet in 1999, with an additional available storage capacity of approximately 1.1 million acre feet. Thus, the total storage capacity for the Alto Subarea is estimated at approximately 2.1 million acre-feet.

At buildout the Specific Plan will generate demand for approximately 1,331 acre-feet of water per year or 1.3% of the current (2007) total verified production for the Alto Subarea. To meet this demand AVR will extract groundwater from the Alto Subarea of the Mojave Basin.

## **2.0 INTRODUCTION**

### **2.1 Background**

The proposed Hacienda at Fairview Valley Specific Plan (Specific Plan) project will provide entitlements for the development of up to up to 3,114 dwelling units on 1,126 acres of residential land use, 80 acres of roadways, 15 acres of commercial development, and 336 acres of open space, parks, and water features. Since this project is subject to the California Environmental Quality Act process (CEQA) an Environmental Impact Report will be prepared. The Apple Valley Ranchos Water Company (AVR), the Public Water System (PWS) for the Project, has determined that a Water Supply Assessment (WSA) is necessary to complete the Project's CEQA process and to approve the project for development since the proposed development is a "Project" as defined by Water Code Section 10912.

## **2.2 Purpose of Document**

Upon request of local government, a PWS is required by law to provide documentation regarding the water supply for new projects. The WSA is included in the CEQA documentation and it becomes information used in the approval process.

### 2.2.1 Water Supply Assessment (WSA)

Senate Bill 610 (SB 610), also known as the Water Supply Assessment, was enacted in 2001 and became effective as of January 1, 2002. SB 610 amended Section 21151.9 of the Public Resources Code, and amended Sections 10631, 10656, 10910, 10911, 10912 and 10915, repealed Section 10913, and added and amended Section 10657 of the California Water Code. It requires cities and counties to request specific information on water supplies from the PWS that would serve any project subject to CEQA and defined as a “project” in Water Code Section 10912, and to include this information into environmental review documents prepared pursuant to CEQA.

### 2.2.2 Water Supply Verification (WSV)

Senate Bill 221 (SB221) was enacted in 2001 and became effective as of January 1, 2002. SB221 amends Section 11010 of the Business and Professional Code, and Sections 66455.3, 66473.7, and 65867.5 of the Government Code. SB 221 establishes the relationship between the WSA prepared for a project and the project approval under the Subdivision Map Act. Pursuant to California Government Code Section 66473.7, the PWS must provide a written verification of sufficient water supply prior to the approval of a new subdivision.

### 2.3 Project Description and Location

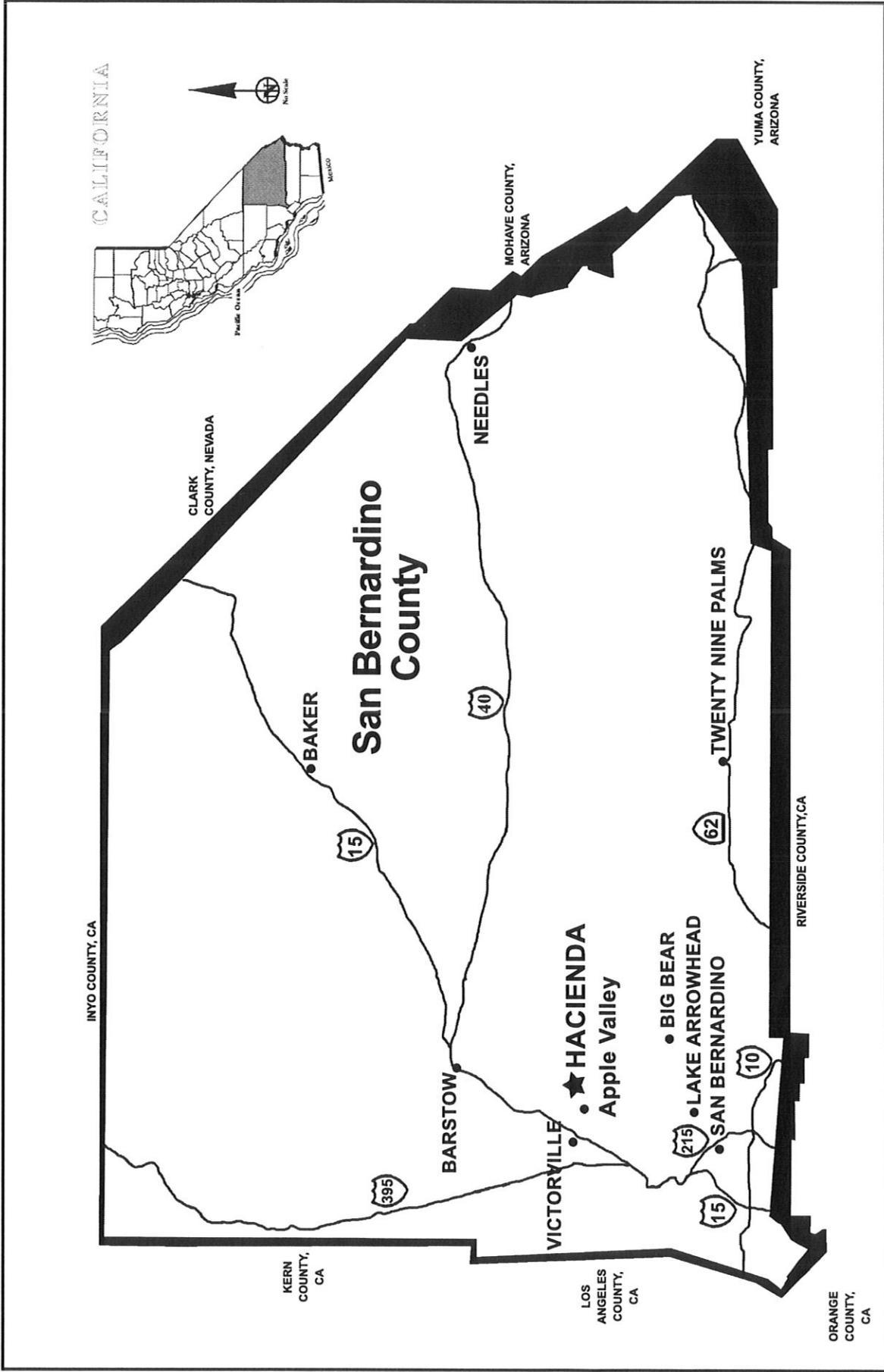
The proposed project is a Specific Plan of Land Use (Specific Plan) with residential, commercial and recreational land uses on approximately 1,557 acres in San Bernardino County, east of the Town of Apple Valley but within the Town's Sphere of Influence. The proposed project will facilitate the development of up to 1,126 acres of residential, 80 acres of roadways, 15 acres of commercial, and 336 acres of open space, parks and water feature development. Implementation of the Specific Plan will facilitate the phased development of the project. Table 1 shows the proposed acres and dwelling units or square footage of development for each land use, as applicable.

**Table 1**  
**Land Use Description**

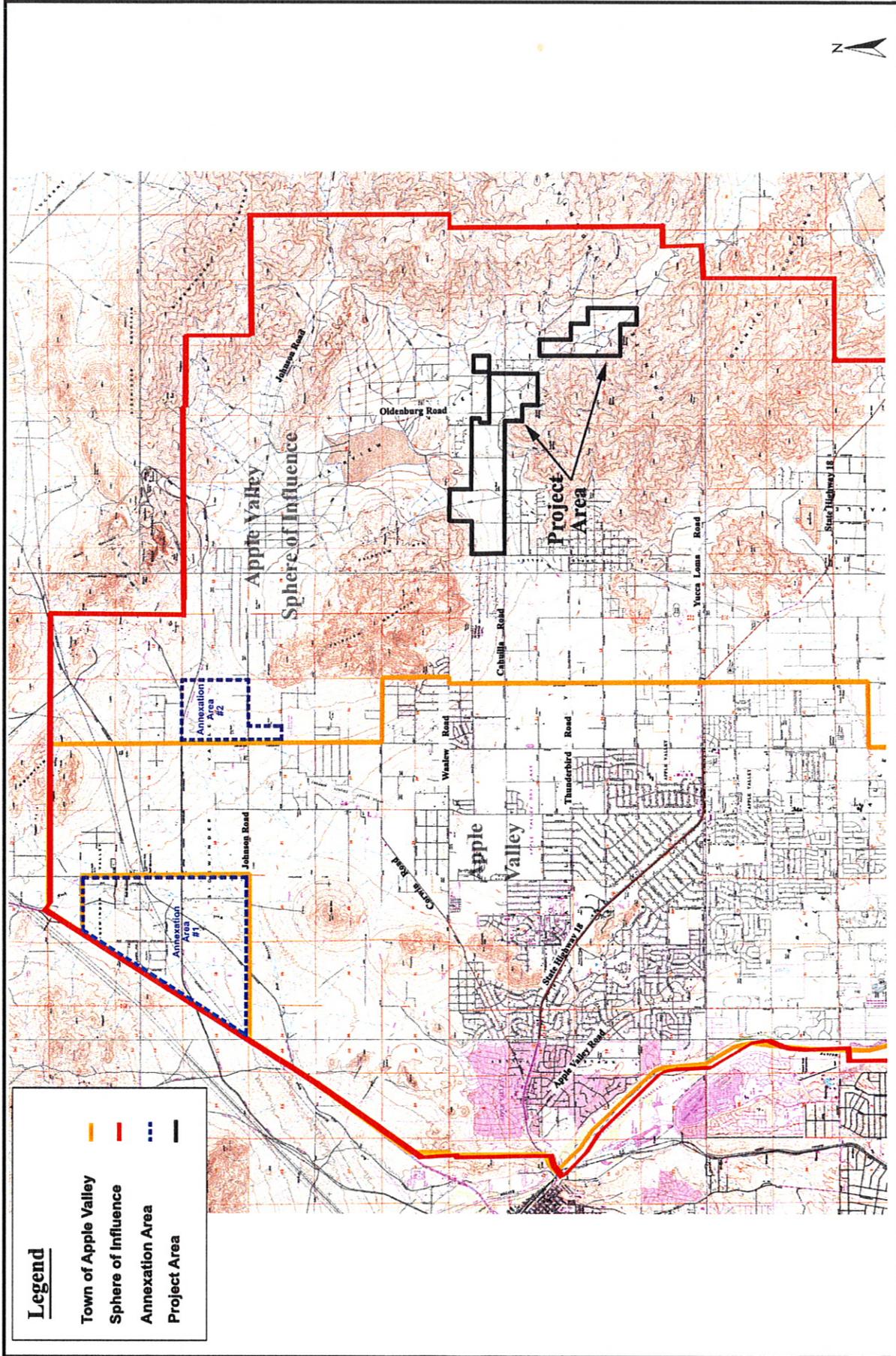
<b>Residential</b>	<b>Planned Units</b>	<b>Acres</b>
Rural Living (RL-2)	27	73
Estate (RS-1)	142	226
Equestrian (R-EQ)	30	47
Very Low (VL)	100	94
Low (L)	865	288
Low-Medium (LM)	785	196
Medium (M)	800	146
Medium-High (MH)	365	56
<b>Subtotal</b>	<b>3,114</b>	<b>1,126</b>
<b>Other Land Uses</b>	<b>Square Footage</b>	<b>Acres</b>
Commercial (CN)	200,000	15
Parks (OS-R)	33,000	38
Water Features	N/A	18
Open Space (OS-C)	N/A	280
Streets	N/A	80
<b>Subtotal</b>	<b>233,000</b>	<b>431</b>
<b>Total Acreage</b>		<b>1,557</b>

Source: "Hacienda at Fairview Valley Specific Plan – Land Use Summary Table," prepared by Strata Equity Group, October 24, 2007.

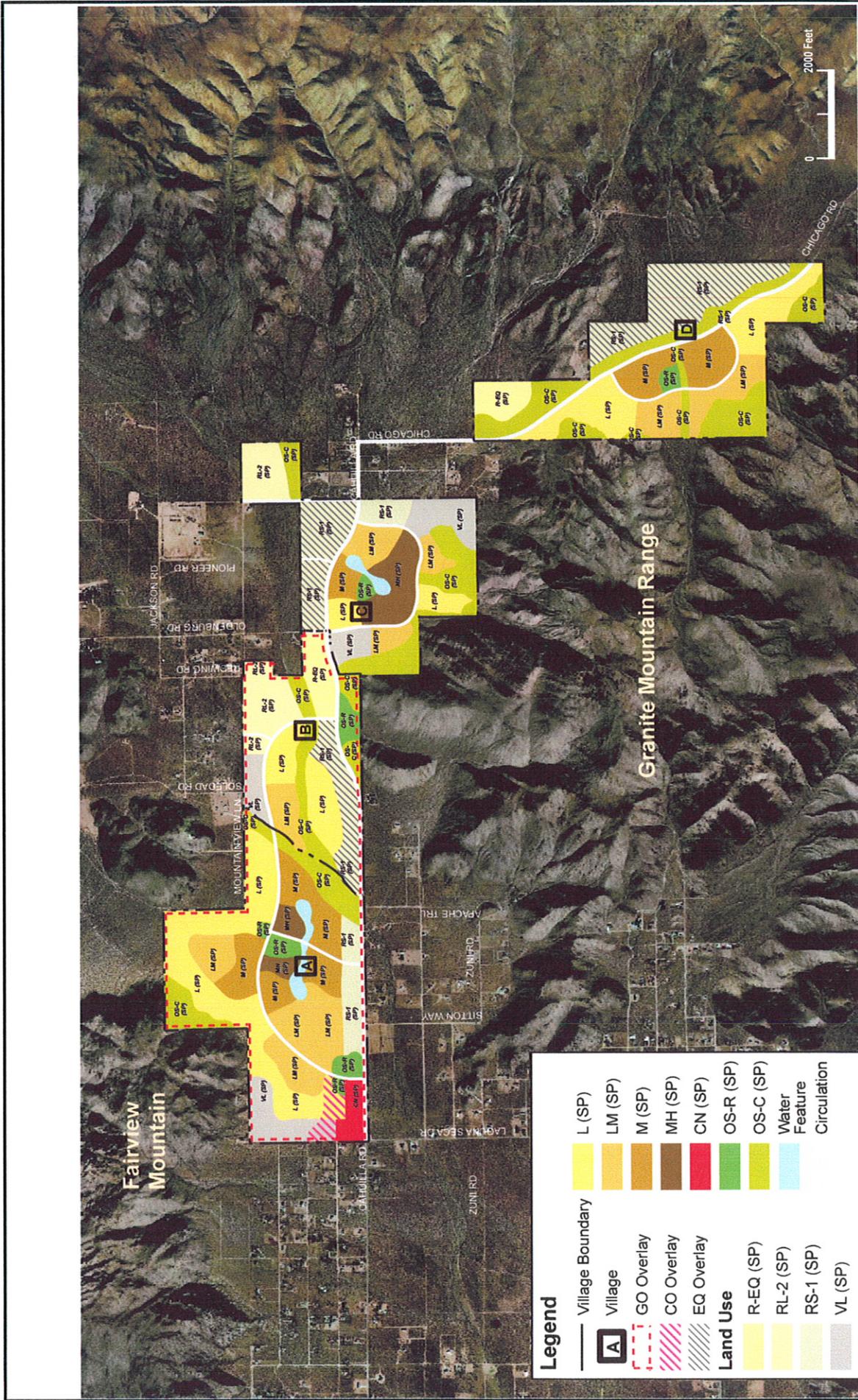
The Hacienda at Fairview Valley Specific Plan is located in the County of San Bernardino just east of the Town of Apple Valley and within the Town's Sphere of Influence. Exhibit 1 shows the regional location of the project, Exhibit 2 shows the project vicinity, and Exhibit 3 provides the proposed land use map for the Project.



Hacienda at Fairview Valley Specific Plan WSA & WSV  
 Regional Location Map  
 San Bernardino County, California



Hacienda at Fairview Valley Specific Plan WSA & WSV  
Vicinity Map  
San Bernardino County, California



Source: STRATA EQUITY GROUP, INC.

**TERRA NOVA**<sup>®</sup>  
 Planning & Research, Inc.

**Hacienda at Fairview Valley Specific Plan WSA & WSV  
 Land Use Plan  
 San Bernardino County, California**

Exhibit

### 2.3.1 Applicability of a Water Supply Assessment

A WSA is required because the proposed project area would demand an amount of water greater than that required by a 500 dwelling unit project, occupies more than 40 acres of land, or may have more than 650,000 square feet of floor area (Water Code Section 10912; SB 610).

AVR's 2005 Urban Water Management Plan (UWMP) did not consider demand for the project.<sup>1</sup> However, demand projections include an annual increase in water demand that is based on population increase. In the UWMP, AVR constrained its analysis and assumptions to actual and available estimated capacity. Nonetheless, additional sources are expected to assure an adequate supply for the project. These additional supplies are discussed in sections 2.3.3, 2.3.4, and 2.3.5 below.

### 2.3.2 Applicability of a Water Supply Verification

A Water Supply Verification (WSV) is required prior to the approval of a tentative subdivision map, or a parcel map for which a tentative map was not required, or a development agreement for a subdivision of property of more than 500 dwelling units, except as specified, including the design of the subdivision or similar type of improvement. The purpose of the WSV is to provide the legislative body of a city, county or the designated advisory agency with written verification from the applicable public water purveyor that a sufficient water supply is available or, in addition, a specified finding is made by the local agency that sufficient water supplies are, or will be, available prior to completion of the project.

Therefore, a WSV is required since the Project has over 500 dwelling units and is a "Subdivision" as defined by Government Code Section 66473.7.

### 2.3.3 Water Supply and Surplus Water Contract With Jess Ranch Water Company

AVR entered into a Water Supply and Surplus Water Contract with Jess Ranch Water Company ("Jess Ranch"). Under this agreement Jess Ranch, which has a base annual production (BAP) of 7,480 acre-feet under the Judgment, has agreed to provide sufficient pumping rights to serve the Jess Ranch area, with up to 4,488 acre-feet/year of free production allowance (FPA) – the estimated demand at full buildout – for a period of 99 years.

Also under the agreement, AVR has the right to annually lease any of Jess Ranch Water Company's FPA not needed to serve the Jess Ranch area, at a 10% discount to the MWA (Mojave Water Agency) Replacement Water cost. Therefore, the agreement provides AVR, either at no cost or through annual lease, with an annual supply of 4,488 acre-feet (60% of 7,480) of FPA water, which does not have to be met by purchasing Replacement Water from MWA.

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<sup>1</sup> Pursuant to Water Code § 10910(f)(5), the groundwater basin sufficiency analysis required by SB 610 is not required if the project's water needs were accounted for in the agency's Urban Water Management Plan.

#### 2.3.4 Special Facilities Fees for Water Supply

AVR's tariffs provide for the collection of "Special Facilities Fees for Water Supply" from developers for the purpose of funding new wells. Therefore, AVR has an established source of capital to construct additional production capacity to meet the Project Water Demand. With the additional production capacity, AVR can utilize a greater amount of the "Groundwater Replacement Water purchased from MWA" which is available, according to Table 5 and 7, below.

#### 2.3.5 Groundwater Replacement Water

AVR is required to replace any groundwater that is extracted in excess of the allotted Free Production Allowance of 8,567 acre-feet per year. Groundwater replacement can be obtained by paying the Watermaster to purchase supplemental water from MWA (\$277 per acre-feet in 2007-08) and/or through transferring unused production rights from another party.

AVR constrained its assumptions of the amount of supply from "Groundwater Replacement Water purchased from MWA" in accordance with its actual and estimated well capacity (42,327 ac-ft per year or 37.8 MGD). AVR assumed that it would construct sufficient well capacity to meet the estimated demand and did not consider supply in excess of the amount that it could pump. The result is that the assumed amounts of "Groundwater Replacement Water purchased from MWA" shown in Tables 5, 8, 9, 10, 11, and 12, *infra*, of the WSA are considerably less than the amounts which MWA has available, as shown in Tables 5 and 7, below.

#### 2.3.6 Pre-purchased Claim Water

The MWA has initiated a program, The Claim Program, under which Replacement Water can be pre-purchased for future years. MWA accepts money from parties wishing to pre-purchase Replacement Water, uses that money to make current purchases of State Project Water, and "banks" that water in the basin for that party's future use by allowing the party to pump additional water beyond its pumping rights in future years. AVR has purchased over 8,000 acre-feet of water through the Claim Program, which it intends to pump over a 40 year period at 221 acre-feet per year. AVR anticipates future purchases through the Claim Program and has a Supplemental Water Acquisition Fee, approved by the CPUC in August of 2007, to fund these purchases.

#### 2.3.7 Leased Water

Over the past several years AVR has been able to acquire leased water rights that average 1,800 acre-feet per year (Watermaster Annual Report, Appendix E). These deliveries are expected to be available annually through 2030.

## 2.4 Public Water System

### 2.4.1 Description

The project is located east of the Town of Apple Valley in San Bernardino County, and is within the AVR Water Company service area; AVR is the PWS in this area. AVR was established in 1947 to protect and utilize a portion of the Alto Subarea, which is located in the southern portion of the Mojave Groundwater Basin. The AVR service area encompasses approximately 42.5 square miles (27,200 acres), most of which is located within the corporate limits of the Town of Apple Valley. The service area for AVR also includes portions of unincorporated San Bernardino County adjacent to the City of Victorville and fewer than 50 customers within the Victorville city limits. AVR provides services for domestic water and irrigation water. In 2005, AVR had a total of 18,036 metered water connections, including 16,562 residential, 1,346 commercial, 2 industrial, 52 institutional/governmental, and 73 landscape connections.<sup>2</sup>

AVR has a current (2008) groundwater production capacity of 42,327 acre-feet per year, or 37.79 million gallons per day (mgd). In 2005, AVR delivered 17,818 acre-feet (15.9 mgd), including 12,954 acre-feet for residential use, 2,843 acre-feet for commercial use, 3.0 acre-feet for industrial use, 895 acre-feet for institutional/governmental use, and 1,123 acre-feet for landscape use.<sup>3</sup>

## 2.5 Existing Water Management Plan

AVR completed the most recent Urban Water Management Plan in November 2005 for its service area. At that time AVR operated 22 domestic wells in Apple Valley with a total capacity of approximately 31.7 million gallons per day. In 2005 AVR's water system included about 350 miles of water lines and 8.6 million gallons of storage.<sup>4</sup>

AVR is located in the Mojave Basin and is therefore subject to the Mojave Basin Judgment (the Adjudication). Under the Mojave Basin Judgment, AVR is assigned a free production allowance (FPA) of 8,567 acre-feet per year. The FPA is 60% of Base Annual Production (BAP), which is defined as the producer's highest annual use verified for the five-year period from 1986 through 1990. All groundwater pumped beyond the FPA amount is subject to replacement, which can be achieved through a per acre-foot payment to the Watermaster (\$315 per acre-foot for 2007-2008), or through the transfer of unused water rights within the Alto Subarea from another party to the Judgment. For water year 2007-2008, AVR's consumption will achieve a safe yield (imports, inflows, return flows and outflows equal consumption).<sup>5</sup>

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<sup>2</sup> "Urban Water Management Plan 2005," prepared by Apple Valley Ranchos Water Company, November 2005.

<sup>3</sup> *Ibid.*

<sup>4</sup> *Ibid.*

<sup>5</sup> Under the Mojave Basin Judgment, "production safe yield" is defined as: "The highest average Annual Amount of water that can be produced from a Subarea: (1) over a sequence of years that is representative of long-term average annual natural water supply to the Subarea net of long-term average annual natural outflow from the Subarea, (2) under given patterns of Production, applied water, return flows and Consumptive Use, and (3) without resulting in a long-term net reduction of groundwater in storage in the Subarea."

The Mojave Basin Judgment provides for a possible adjustment in the base and/or free production allowance available to producers within the Mojave Basin on an annual basis. Such adjustments are made based upon all pertinent hydrological data and projections. Adverse water supply conditions could prompt a further reduction in the free production allowance.

The Mojave Water Agency serves as the Watermaster for the Adjudication and is also the State Water Project Contractor. AVR supplies are dependent upon MWA's ability to manage and balance the basin in a manner consistent with MWA's obligations to provide sufficient replacement water supplies under the Judgment and MWA's representation in its 2004 Regional Water Management Plan and its 2005 UWMP. The MWA Regional Water Management Plan (November 2005) identifies steps that will make it possible to meet future water demands in the Mojave Basin without compromising deliveries to any water users. Implementation of the plan is expected to meet 99% of future demand and achieve a safe yield (balance) to all aquifers in the Mojave Basin.

Since formulation of MWA's 2005 UWMP, multiple events have transpired placing significant constraints on the availability of water supplies throughout the State. In 2007, restrictions on State Water Project deliveries were directed pursuant to December 2007 federal court imposed interim rules to protect the delta smelt. A 2007 report of the California Department of Water Resources ("DWR") indicated that SWP deliveries may also be adversely impacted by climate change, which is altering hydrologic conditions in the State; the decline in other pelagic organisms in the Delta such as striped bass, Chinook salmon and steelhead trout; and the vulnerability of Delta levees to failure due to floods and earthquakes. (See Appendix B). California Governor Arnold Schwarzenegger also declared a statewide drought in June 2008. To date, MWA has not updated its 2005 UWMP to specifically address the foregoing and other recent developments affecting the availability of water supplies. These issues will have to be addressed in MWA's forthcoming UWMP, as AVR remains dependent on MWA's ability to manage the Basin in a manner that ensures the sufficient availability of water supplies.

It should be noted that the AVR 2005 UWMP projects water supply and demand through 2025. Discussions with AVR indicate that an update to the UWMP is in the preliminary planning phase and will extend projections through 2030. However, since UWMP projections for 2030 are not yet available this WSA has utilized data points provided for the five-year increments from 2005 through 2025 to extrapolate projected supply and demand through 2030. Details on the methodology used for this extrapolation are included in the Appendix C discussion.

### 3.0 WATER DEMANDS

#### 3.1 Project Demands

The data in this Water Supply Assessment is based on the “Year 2005 Urban Water Management Plan” prepared by AVR.

The project planning area includes a total of 1,557 acres of new development, with 1,477 acres considered for consumption and 80-acres identified for development of roads. Based on maximum water allowances for desert landscaping established for desert climates,<sup>6</sup> at buildout the project will generate a potential demand of approximately 1.19 mgd or about 1,331.2 acre-feet per year, as shown in Table 2.

**Table 2**  
**Hacienda Specific Plan**  
**Estimated Water Service Demands**

<b>Land Use Designation</b>	<b>Landscaping* (ac-ft/yr)</b>	<b>Potable* (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Residential Rural Living (RL-2)	69.2	4.2	73.4	0.07
Residential Estate (RS-1)	191.6	22.2	213.8	0.19
Residential Equestrian (R-EQ)	44.8	4.7	49.5	0.04
Residential Very Low (VL)	101.8	15.6	117.5	0.10
Residential Low (L)	165.2	80.7	245.9	0.22
Residential Low-Medium (LM)	129.9	73.3	203.2	0.18
Residential Medium (M)	107.8	74.7	182.5	0.16
Residential Medium-High (MH)	40.3	34.1	74.3	0.07
Commercial (CN)	7.1	14.0	21.1	0.02
Parks Landscape (OS-R)	55.9	0.0	55.9	0.05
Water Features	59.7	0.0	59.7	0.05
Open Space (OS-C)	33.2	1.1	34.3	0.03
Streets	0.0	0.0	0.0	0.00
<b>Total</b>	<b>1,006.6</b>	<b>324.6</b>	<b>1,331.2</b>	<b>1.19</b>

Source: “Hacienda at Fairview Valley Specific Plan Project Specific Water Demand Estimates,” prepared by Terra Nova Planning and Research, Inc., March 12, 2008. (See Appendix A to this Water Supply Assessment).

\* Accounts for 35% non-consumptive return flows into the Alto Subarea.

#### 3.2 Project-Specific Water Conservation

The Hacienda at Fairview Specific Plan incorporates Green Development Systems that support water efficiency and reduce the overall water demand for the project. The Specific Plan will accomplish this objective by:

<sup>6</sup> “Landscape and Irrigation Design Criteria” prepared by Engineering Department, Coachella Valley Water District, July 2007.

- 
- requiring a minimum of 90% of all non-turf planting areas in common areas and street right of ways to utilize drought tolerant and/or native plant materials. (Refer to Specific Plan Section 5.5, Landscape Concept Plan.)
  - establishing a maximum percentage of turf grass coverage in common and residential front yards for lots  $\frac{3}{4}$  of an acre and larger (19% maximum) and less than  $\frac{3}{4}$  of an acre (28% maximum). (Refer to Specific Plan Section 5.5, Landscape Concept Plan.)
  - eliminating “non-functional” turf grass coverage allowed in recreational areas. (Refer to Specific Plan Section 5.5, Landscape Concept Plan.)
  - providing a wastewater treatment system which reuses reclaimed water to irrigate common area and street right of way landscaping. (Refer to Specific Plan Section 7, Public Facilities.)
  - requiring a micro-irrigation system for watering of plants within common areas and street right of ways. (Refer to Specific Plan Appendix D, Design Guidelines.)
  - incorporating water saving features and technologies within residential and commercial buildings. (Refer to Specific Plan Appendix D, Design Guidelines.)
  - providing community pool(s) at the community recreational areas within convenient distance from the majority of active adult homes reduces the need for private pools at individual homes thereby decreasing supplemental water requirements at individual lots. (Refer to Specific Plan Exhibit 7-3, Conceptual Village A and B Recreation Areas, and Exhibit 5-1, Conceptual Land Use Plan.)

In addition to the above mentioned mitigation measures, which are included in the Specific Plan, implementation of the following mitigation measures are expected to further facilitate development of a Specific Plan that results in reduced water consumption.

- Prior to or concurrent with County approval of any subdivision or land use permit implementing the Specific Plan project, the developer shall submit a master landscape plan, plant palette and irrigation plan, which demonstrates and quantifies irrigation demand associated with the landscape plan. Said irrigation master plan and plant palette shall be consistent with the project Specific Plan. AVR shall review and provide comments to the County on the irrigation master plan prior to issuance of water services.
- Developer will be required to pay all applicable charges pursuant to AVR’s tariffs, approved and in effect at that time, including Supplemental Water Acquisition Fees. Additional mitigation measures may be required of the developer to reduce project demand on water resources.

With the implementation of these water saving techniques it is reasonable to assume that this project will demand less water than a conventionally designed and comparable project developed in the same time frame. Water efficiency and reduced demand as a result of the above mentioned systems will aid in accomplishing AVR’s goal of a 20% reduction in per capita water use by 2020.

## **4.0 WATER SUPPLY ASSESSMENT**

### **4.1 General**

A requirement of the WSA is to identify and describe the water supply sources in the PWS that will serve the Project. Water Code Section 10910(d) requires a WSA to include an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of the quantities of water received in prior years by the PWS.

### **4.2 Identification of Water Sources**

#### 4.2.1 Primary Water Sources

The Project's proponents anticipate that the project's primary water supply will be groundwater from the Alto Subarea, which is located in the Mojave Water Basin. A description and assessment of the Alto Subarea is provided below in Section 4.3: Analysis of Water Supply. For the purposes of this report, the Alto Subarea is herein referred to as the "aquifer".

#### 4.2.2 Additional Water Sources

In addition to the free production allowance (FPA) of groundwater, AVR has additional sources of water. AVR supplements its free production allowance through annual purchases of unused FPA from other Alto producers, imported water from MWA, as well as the purchase of base annual production (BAP) water rights from other producers in the Alto Subarea. These additional sources are described in more detail in Section 4.3.2, below. These sources are also used to mitigate overdrafting of the aquifer as described in Section 4.3.1.3.

### **4.3 Analysis of Water Supply**

#### 4.3.1 Groundwater

The groundwater source for the Hacienda at Fairview Valley Specific Plan will be the Alto Subarea. Water Code Section 10910(f) requires additional information when a groundwater basin is cited as a water supply source for a project. The additional information includes a description of the basin, the rights of the PWS to use the basin, the overdraft status of the basin, any past or planned overdraft mitigation efforts, historical use of the basin by the PWS, projected use of the basin by the Project, and a sufficiency analysis of the basin to supply the Project for a period of at least 20 years.

##### 4.3.1.1 Description of the Aquifer

The Alto Subarea, which is managed by MWA Watermaster, consists of water-bearing strata underlying and paralleling a 35-mile length of the Mojave River. The Subarea generally encompasses the communities of Apple Valley, Victorville, Adelanto, Hesperia, Helendale, and Phelan.

The Subarea is generally bounded on the south by the non-water-bearing rocks of the San Bernardino Mountains, by the non-water bearing rocks of the San Gabriel Mountains to the west, and by the Helendale Fault on the northeast. To the south are the headwaters of the Mojave River, to the east (up-gradient) the Subarea merges with the Este Subarea, to the west (up-gradient) the Subarea merges with the Oeste Subarea, and to the north (down-gradient) the Subarea merges with the Centro Subarea.

The Alto Subarea is naturally recharged by snowmelt in the San Bernardino Mountains and flows within the Mojave River. Due to its proximity to the headwaters of the Mojave River, the Alto Subarea has the largest water supply in the Mojave Basin.

For the 2006-2007 water year verified production for the Alto Subarea was 99,895 acre-feet. The Watermaster for the Mojave Basin, Mojave Water Agency, calculated the total groundwater in storage for the Alto Subarea at 960,000 acre feet in 1999, with an available storage capacity of approximately 1.1 million acre feet. Thus, the total storage capacity for the Alto Subarea is estimated at approximately 2.1 million acre-feet.

The 2005 Urban Water Management Plan prepared by AVR for compliance with the California Department of Water Resources, indicates that the gross water supply available to the Alto Subarea is approximately 82,400 acre-feet, with out-flows and losses calculated at 47,700 ac-ft.<sup>7</sup> Thus the net average annual water supply in the Alto Subarea is estimated to be 34,700 ac-ft of water, plus importation of up to 75,800 ac-ft of State Water Project entitlements available to the MWA.<sup>8</sup> AVR draws all of its water from 22 deep wells in the Subarea.<sup>9</sup>

#### 4.3.1.2 Aquifer Adjudication

The adjudication process of the groundwater in the Mojave Basin began in 1990 with cross complaints filed in 1991. In 1992 numerous parties agreed to conduct good faith negotiations and by 1993 over 75 percent of the parties involved were agreed to the Stipulated Judgment, thus binding the involved parties. In 1995 a trial of the non-stipulated parties was completed. The final judgment was entered in 1996 adopting the physical solution set forth in the Stipulated Judgment. The purpose of the Stipulated Judgment was to create incentives to conserve local water, guarantee that downstream producers will not be adversely affected by upstream producers, and assess producers to obtain funding for the purchase of imported water.

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<sup>7</sup> “Year 2005 Urban Water Management Plan,” prepared by the Apple Valley Ranchos Water Company, November 2005.

<sup>8</sup> “2004 Regional Water Management Plan,” prepared by Mojave Water Agency, adopted February 24, 2005.

<sup>9</sup> The quality of water supplied by AVR is considered to be very high. AVR’s 2003-2004 Consumer Confidence Report documents the quality of AVR’s water supply. According to this report, hundreds of water samples are taken every month and analyzed to assure that all health related and aesthetic drinking water standards are met. This rigorous testing process confirmed that water provided by AVR complies with all federal and state drinking water standards. Indeed, the Regional Water Management Plan prepared by MWA concludes: “Currently, water quality does not affect water supply reliability.” (Mojave Water Agency 2004 Regional Water Management Plan, p. 4-33).

In addition, the Stipulated Judgment required that the Mojave Basin Area Watermaster generate an annual report summarizing the yearly Watermaster activities and water supply conditions for the Mojave Water Basin. As previously noted, the Mojave Water Basin includes the Alto Subarea, Baja Subarea, Centro Subarea, Este Subarea and the Oeste Subarea.

Under the Stipulated Judgment and applicable law, AVR continues to have the right to pump groundwater from the Alto Subarea. AVR shares a common groundwater source with other PWS providers including the Victor Valley Water District.<sup>10</sup> Other groundwater users include some individual residents, golf courses, businesses and commercial facilities.

#### 4.3.1.3 Overdraft Status of the Aquifer

According to AVR's 2005 Urban Water Management Plan, the Alto Subarea experienced a groundwater level decline from an elevation of 2,815 feet in 1960 to approximately 2,755 feet in 1995. Presently, overdraft conditions exist in almost all of the subareas within the Mojave Basin. The adjudication is intended to eliminate groundwater overdraft.

#### 4.3.1.4 Overdraft Mitigation Efforts

As part of the Stipulated Judgment, the average annual obligation of any Subarea to another was set equal to the estimated average annual natural flow between the Subareas over a 60 year period (water years 1930-1931 through 1989-1990). The average obligation of the Alto Subarea has been set at 23,000 acre-feet per year. If this obligation is not met, the producers in the upstream Subarea must pay the Watermaster for makeup water to be delivered to the downstream Subarea. The 2007-2008 replacement water assessment rate is \$315.00 per acre-foot.<sup>11</sup> The Alto Subarea has incurred makeup obligations eight out of the past ten years (water years 1997-1998 through 2006-2007), ranging from 2,870 acre-feet in water year 1997-1998 to 5,950 acre feet in water year 2002-2003. For water year 2006-2007, the Alto Subarea has a cumulative replacement obligation of 36,595 acre feet.<sup>12</sup>

In order to maintain a safe water balance within each Subarea, the Judgment established a Free Production Allowance (FPA) in each Subarea, which the Court reviews and adjusts on an annual basis. Each year the Watermaster takes an account of the average and minimum annual flows, which must be maintained between Subareas. The Judgment requires that all water produced in excess of any producer's share of the FPA must be replaced by the producer, which is typically in the form of payment to the Watermaster of funds sufficient to purchase an equal amount of replacement water. It should be noted that an underlying assumption of the Judgment is that sufficient water supplies will be made available to meet the needs of the basin in the future from a combination of natural supply, imported water, water conservation, water reuse, and transfers of FPA among producers.

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<sup>10</sup> "Public water system" means a system for the provision of piped water to the public for human consumption that has 3,000 or more service connections (Water Code § 10912(c); SB 610).

<sup>11</sup> "Fourteenth Annual Report of the Mojave Basin Area Water Master, Water Year 2006-07," prepared by the Mojave Basin Area Watermaster, April 2008.

<sup>12</sup> *Ibid.*

According to the MWA 2005 Urban Water Management Plan Update, as water demands increase over the next 20 years, additional projects and water management actions are needed to continue to recharge the groundwater basins to maintain groundwater levels and protect groundwater quality for municipal, agricultural, industrial, recreational, and environmental uses. If such projects are not implemented and groundwater overdraft persists or intensifies, the presiding Judge for the Mojave Basin Area Judgment could require mandatory cutbacks in production.

4.3.1.5 Historical Groundwater Use

As previously mentioned, verified groundwater production in the Alto Subarea increased to approximately 99,900 acre-feet in 2007. Since 1994, verified groundwater production in the Alto Subarea has ranged from 75,100 to 99,900 acre-feet per year, with an average of approximately 86,700 acre-feet per year, as shown on Table 3.

**Table 3**  
**Alto Subarea Verified Annual Production**  
**1994 – 2007**

<b>Year</b>	<b>Acre-Feet</b>	<b>Million Gallons</b>
1994	81,100	26,427
1995	75,100	24,471
1996	87,500	28,512
1997	88,500	28,838
1998	75,900	24,732
1999	83,300	27,143
2000	88,300	28,773
2001	82,800	26,980
2002	87,100	28,382
2003	86,700	28,251
2004	92,700	30,206
2005	88,900	28,968
2006	95,900	31,247
2007	99,900	32,561

Source: Mojave Basin Area Watermaster Annual Water Reports, 1994 – 2007 Appendix L.

Within the AVR area of benefit, since 1999 the groundwater production from the aquifer has ranged between 14,741 and 16,527 acre-feet per year, with an average of approximately 15,700 acre-feet per year, as shown on Table 4. Users within the AVR service area include residential, commercial, industrial, and golf courses.

**Table 4**  
**Apple Valley Ranchos Annual Production**  
**1999 - 2007**

Year	Acre-Feet	Million Gallons
1999	14,916	4,860
2000	16,002	5,214
2001	14,741	4,803
2002	15,853	5,166
2003	15,536	5,062
2004	16,100	5,246
2005	16,189	5,275
2006*	15,123	4,928
2007*	16,527	5,385

Source: "Urban Water Management Plan," Table 6, prepared by AVR, 2005.

\*Mojave Basin Area Water Master, Annual Reports 2007 and 2008.

The 2007 verified production in the Alto Subarea by all users amounted to approximately 99,900 ac-ft. Of the 99,900 acre-feet of verified production, pumpage within the AVR area of benefit amounted to approximately 16,527 acre-feet, which represents approximately 16.54% of the total verified water production within the Alto Subarea.

In accordance with MWA's UWMP and Regional Water Management Plan, and within the limits of annually available SWP and other water sources, MWA will continue recharging the aquifer with the intention of sustaining the Mojave Basin as a reliable source of water for the foreseeable future. Among other things, MWA has established a groundwater replenishment program for the Mojave Basin, including the Alto Subarea, the purpose of which is to reduce annual and cumulative groundwater overdraft through artificial recharge to the groundwater basin.<sup>13</sup>

To enhance water conservation, local stakeholders in and around the project area established the Alliance for Water Awareness and Conservation (AWAC) in August of 2003. The purpose of the AWAC is to "provide a vehicle to attract support for a regional water conservation program and coordinate implementation of activities by forming partnerships to obtain common measurable goals."<sup>14</sup> Goals of the AWAC include the reduction of regional water use by 10 percent gross per capita by 2010 and 15 percent gross per capita by 2015.<sup>15</sup>

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<sup>13</sup> Mojave Water Agency 2004 Regional Water Management Plan, Chapter 9.

<sup>14</sup> Mojave Water Agency 2004 Regional Water Management Plan, p. 7-1.

<sup>15</sup> Mojave Water Agency 2004 Regional Water Management Plan, p. 7-1.

4.3.1.6 Groundwater Sufficiency Analysis

Tables 5, 8, 9, 10, 11, 12, and 13 show the normal, single, and multiple water year scenarios through 2030. The above referenced tables are summary tables of the detailed model presented in Appendix C of this document. Also included in Appendix C is a detailed discussion on the methodology utilized to construct the model.

Table 5 below identifies the AVR current and planned water supplies through 2030 with and without the demand associated with the proposed Hacienda at Fairview Valley Specific Plan project given normal water year conditions.

**Table 5**  
**Apple Valley Ranchos Projected Water Supply and Demand**  
**Normal Water Year 2010– 2030**  
**(acre-feet/year)**

<b>Water Demands</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030**</b>
Estimated Water Demands <sup>1</sup>	23,018	28,524	34,738	41,793	46,046
Estimated Water Conservation <sup>2</sup>	-1,151	-3,566	-6,948	-8,359	-9,209
<b>Demand Subtotal</b>	<b>21,867</b>	<b>24,959</b>	<b>27,790</b>	<b>33,434</b>	<b>36,837</b>
Estimated Project Demand <sup>3</sup>	83	499	915	1,331	1,331
<b>Water Demand Total</b>	<b>21,950</b>	<b>25,458</b>	<b>28,706</b>	<b>34,766</b>	<b>38,168</b>
<b>Water Supply Sources</b>					
Free Production Allowance <sup>4</sup>	8,567	8,567	8,567	8,567	8,567
Jess Ranch Water Supply Contract <sup>5</sup>	4,488	4,488	4,488	4,488	4,488
Pre-Purchase Claim Program <sup>6</sup>	221	221	221	221	221
Leased Water Rights <sup>7</sup>	1,800	1,800	1,800	1,800	1,800
<b>Supply Subtotal</b>	<b>15,076</b>	<b>15,076</b>	<b>15,076</b>	<b>15,076</b>	<b>15,076</b>
Replacement Water Purchased from MWA <sup>8</sup>	6,874	10,382	13,630	19,690	23,092
<b>Water Supply Total</b>	<b>21,950</b>	<b>25,458</b>	<b>28,706</b>	<b>34,766</b>	<b>38,168</b>

1 Adjusted "Year 2005 Urban Water Management Plan," Table 7 and Table 13, prepared by Apple Valley Ranchos Water Company, November 2005 to include demand from the North Apple Valley Industrial Specific Plan Amendment, April 25, 2007.

2 Conservation is estimated at 5%, 10%, and 20% of demand in 2010, 2015, and 2020 respectively. Subsequent years 2025 and 2030 recognize water conservation based on 20% of estimated water demand. Reduction will be realized through current incentive offered by MWA and programs set forth in AVR's upcoming 2010 UWMP.

3 Estimated Project Demand is based on Appendix A, which quantifies estimated water demand for the proposed project. Figures assume demand beginning in 2010 with a linear increase through buildout in 2025.

4 Free Production Allowance as determined by the Watermaster for AVR.

5 Water Supply and Surplus Water Contract, Jess Ranch Water Company & Apple Valley Ranchos Water Company.

6 Based on the annual allotment to AVR of pre-purchase claim water with deliveries through 2040 (confirm year).

7 Leased Water Rights are based on historical deliveries over the past 3 years. (Insert reference)

8 Replacement Water to be Purchased from MWA is the difference between projected demand, including water savings through conservation efforts, and all supply sources.

Note that 2030 figures are projected using the trend from 2010 through 2025. Methodology for this extrapolation is explained in Appendix C.

Ultimately, the availability of water supplies for AVR to meet the demand associated with the Specific Plan is dependant upon MWA's ability to manage the basin and to implement additional water projects and management actions necessary to continue to recharge the groundwater basin, maintain groundwater levels, and protect groundwater quality. MWA's Supplement A: 2005 Urban Water Management Plan Update concludes that adequate supplies will be available through 2030, based upon a combination of project demand management measures, increased reliance on stored groundwater, and management mechanisms implemented through the Mojave Basin Judgment, Warren Basin Judgment, and the MWA Regional Water Management Plan.<sup>16</sup>

It should be noted that the analysis conducted herein and in the UWMP inherently consider cumulative water demands and impacts to supplies. Water demand projections through 2030 include background development and population growth as set forth in Table 3 of the UWMP, and also include demand projections from the North Apple Valley Industrial Specific Plan. The proposed Hacienda at Fairview Valley Specific Plan demand projections are added to this subtotal to calculate the cumulative water demand and assess cumulative impacts to water supplies. Although development of the proposed project will contribute to the cumulative water demand within AVR's service area adequate, existing and future water supplies, and water users, will not be adversely affected. Cumulative impacts to water supplies as a result of development of the proposed project are expected to be less than significant

#### 4.3.1.7 Groundwater Conservation Efforts

AVR works closely with the County of San Bernardino to encourage conservation and institute necessary use restrictions. The County of San Bernardino has several General Plan policies that require and encourage water conservation, including the required use of drought tolerant landscaping or xeriscape, use of water efficient irrigation, and minimization of irrigated landscape in commercial areas. In addition, the County requires the use of drip irrigation systems or systems of equivalent efficiency for all landscaping at commercial facilities and all common areas of residential developments.

In December of 2005, the California Public Utilities Commission, adopted its Water Action Plan. One objective of this plan is to strengthen the water conservation programs of regulated water utilities.

In addition, AVR works closely with the Town of Apple Valley to encourage water conservation. The Town of Apple Valley adopted, via ordinance, a Water Conservation Plan that includes water regulations prohibiting wasteful water use practices, including excessive runoff of landscape irrigation water and washing driveways and walkways with water. Penalties have been established for violation of water regulations.

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<sup>16</sup> "2004 Regional Water Management Plan; Supplement A: 2005 Urban Water Management Plan Update," prepared by the Mojave Water Agency, December 8, 2005.

MWA has committed to achieving 10% municipal conservation by 2020,<sup>17</sup> and AVR has committed to achieving 20% water conservation per capita by 2020. In an effort to meet these water conservation targets the project shall follow the recently adopted County General Plan (2007), and adhere to the project-specific water conserving measures set forth in Section 3.2 of this WSA. As part of the County development policies, the project will be required by County Planning to apply efficient landscaping practices as noted above, which typically results in water savings of 15%. AVR is preparing an updated UWMP due out in 2010, which will include programs and incentives that realize a 20% per capita water savings by 2020.

#### 4.3.2 Additional Water Sources

As stated in Section 4.2.2, the aquifer is currently the primary water supply for the project and this WSA focuses on the adequacy of the aquifer to supply the project. Additional water sources are considered as a supplement to groundwater in that they are used to either recharge the aquifer or serve as a source substitution for groundwater.

MWA imports water from the California State Water project, which is discharged into the Mojave River to aid groundwater recharge and is made available for purchase. The Mojave Judgment provides a court-approved mechanism for MWA to finance and obtain supplemental water to recharge the Basin and augment water supplies for parties to the Judgment, including AVR.<sup>18</sup>

MWA reached agreement with the Metropolitan Water District (MWD) of Southern California in 2003 to store up to 75,000 (45,000 delivered to date) acre-feet for MWD in the Mojave basin. This storage is being provided in exchange for MWD's right to receive an equal amount of water in the future, through entitlement exchange, should there be a significant drought.

Additional water sources are also discussed more specifically in sections 2.3.3, 2.3.4, 2.3.5, and 2.3.6 above.

##### 4.3.2.1 Canal Water

Not applicable.

##### 4.3.2.2 State Water Project Water

MWA is one of the 29 State Water Project (SWP) contractors. AVR contracts with MWA. The SWP includes 660 miles of aqueduct and conveyance facilities extending from Lake Oroville in the north to Lake Perris in the south. The SWP is contracted to deliver 4.1 million ac-ft/yr to the 29 contracting agencies. SWP delivery reliability factors of between 69% and 77% were utilized in MWA 2005 UWMP, which yield a conservative 53,800 to 58,400 acre-feet of entitlement for MWA, as shown in Table 6A.

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<sup>17</sup> "2004 Regional Water Management Plan; Supplement A: 2005 Urban Water Management Plan Update," prepared by the Mojave Water Agency, December 8, 2005.

<sup>18</sup> Mojave Judgment, sections II(C)(9), V(B)-(C).

**Table 6A**  
**Mojave Water Agency 2005 UWMP State Water Project**  
**Available Water Supply Sources through 2030 (acre-feet/year)**

<b>Supply Type</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
Natural	65,500	65,500	65,500	65,500	65,500
State Water Project	53,800	55,300	58,400	58,400	58,400
<b>Total</b>	<b>119,300</b>	<b>120,800</b>	<b>123,900</b>	<b>123,900</b>	<b>123,900</b>

Source: Draft 2005 Urban Water Management Plan Update, Table 4-9(s): Available Water Supply Sources Through 2030, Mojave Water Agency, 2005.

Since the approval of the 2005 AVR Urban Water Management Plan and the 2005 MWA Urban Water Management Plan Update, the California Department of Water Resources has issued their updated State Water Project Delivery Reliability Report.<sup>19</sup> This report has indicated to State Water Project contractors that they can safely assume delivery of 63% of their allocations, which include water supply reductions imposed to address the needs of endangered species in the San Joaquin River Basin, as well as impacts to reliability associated with climate change. As a result, reliability factors for State Water Project water may be reduced by as much as an additional 14% compared to the 2005 figure. Table 6B, below, shows State Water Project water delivery allocations to be 63% of Table 6A allocation, which is consistent with projected deliveries set forth in the 2007 Reliability Report.

**Table 6B**  
**Desert Water Agency 2007 State Water Project**  
**Available Water Supply Sources through 2030 (acre-feet/year)**

<b>Supply Type</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
Natural	65,500	65,500	65,500	65,500	65,500
State Water Project*	33,894	34,839	36,792	36,792	36,792
<b>Total</b>	<b>99,394</b>	<b>100,339</b>	<b>102,292</b>	<b>102,292</b>	<b>102,292</b>

Source: Draft 2005 Urban Water Management Plan Update, Table 4-9(s): Available Water Supply Sources Through 2030, Mojave Water Agency, 2005.  
\*Modified to account for 63% State Water Project reliability.

A copy of MWA's SWP entitlement is available for review at the MWA administrative offices. To illustrate the potential fluctuation in SWP deliveries, in December 1999, DWR's initial allocation for MWA's 2000 entitlement was only 37,900 acre-feet, which was 50% of their 75,800 acre-feet entitlement. This reduced allocation was due to then prevailing dry conditions. In contrast, the allocation approved in April 2006 was 100% of the entitlement due to increased precipitation and positive water conditions. This was the first year since 1999 that the allocation has been 100%.

<sup>19</sup> "State Water Project Delivery Reliability Report 2007 - Draft," prepared by the State of California Water Resources Agency Department of Water Resources, December 2007.

MWA has recognized the need for additional imported water in order to eliminate groundwater overdraft, and has purchased additional water from the SWP when available. Additional SWP water is not expected to be available on a regular basis in the future and should not be relied upon as the only long-term source of overdraft reduction in the Alto Subarea and the Mojave Water Basin (See Appendix B). Purchase of additional SWP water involves the purchase of water on the spot market, as opposed to the purchase of entitlement to an ongoing supply of that water. It should be noted that the spot market comes into play when all of MWA's entitlements are being imported into the basin.

In addition to spot market, on an on-going basis MWA is pursuing additional SWP entitlements when they become available. In dry years when SWP or Colorado River Supplies are reduced, MWD will have the ability to call back some of the transferred water stored in the Mojave Basin, based on the limitations of the storage agreement between MWD and MWA.

#### 4.3.2.3 Surface Water

The Mojave River is the primary source for replenishment of the Mojave Basin, with an average natural inflow of 65,500 acre-feet. The local surface inflows depend on climatic conditions and represent a small portion of the total supply. Recharge flows are often sub-surface and not available for surface water capture or treatment. Water from the State Water Project is the only other surface water that may be considered for treatment or direct use, and is limited by the variability of the supply from the delta and the amount of water MWA has available after contractual deliveries are met. Surface water is not treated or used for domestic water purposes.<sup>20</sup>

#### 4.3.2.4 Recycled Water

No recycled water is available to the project at this time. However, the Victor Valley Wastewater Reclamation Authority (VWVRA) is considering the construction of interceptors to serve the Town of Apple Valley. These facilities are expected to be constructed and in operation by 2012, at which time the project site may have access to recycled water. The capacity of VWVRA is currently 14.5 mgd, and is expected to reach over 31.0 mgd by the year 2025. AVR's Jess Ranch Irrigation system currently uses reclaimed aquaculture water to irrigate the golf course, approximately 5.1 mgd.

#### 4.3.3 Summary of Primary and Additional Water Sources

Table 7 shows the MWA and AVR existing water supply entitlements, rights, and service contracts as discussed above.

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<sup>20</sup> AVR has developed an Emergency Response and Recovery Plan to respond to major emergencies associated with natural disasters, technology incidents, and national security emergencies affecting the facilities and service areas. The goals of the Emergency Response and Recovery Plan are to rapidly restore service after an emergency; ensure adequate water service for fire suppression; minimize water or electrical damage; minimize impact and loss to customers; and provide emergency public information concerning customer service. AVR has interconnections with Southern California Water Company and Victor Valley Water District to transfer water and would utilize these resources in an emergency to continue delivering water.

**Table 7**  
**Existing Water Supply Entitlements, Water Rights, and Water Service Contracts**

Supply	Existing Supplies	Entitlement	Right	Contract	Other	Utilized
MWA Groundwater <sup>(a)</sup>	75,800	X				Yes
AVR Groundwater <sup>(b, c)</sup>	8,567		X			Yes
Water Supply Contract with Jess Ranch WC <sup>(d)</sup>	4,488			X		Yes
SWP Exchange Water	N/A					

- (a) Due to precipitation and positive water conditions, MWA was allotted 100% of their entitlement, April 2006.  
(b) Due to a groundwater shortage 65.8% (8,567 acre-feet FPA) of AVR's Base Annual Production (13,022 acre-feet BAP), is available for pumping.  
(c) AVR's FPA does not limit the production of water, but does account for a replacement requirement.  
(d) Water Supply and Surplus Water Contract, Jess Ranch Water Company & Apply Valley Ranchos Water Company.

#### 4.3.4 Single and Multiple Dry Year Scenarios

As required under Section 10910(a)(3) of the California Water Code, an assessment of the impacts of a prolonged drought ranging from three to five consecutive years was assumed and analyzed. In order to provide a conservative estimate of water consumption for the proposed Hacienda at Fairview Specific Plan, a linear growth rate was used with water demand beginning in 2010 and buildout occurring in 2025. These estimates were then compared to the planned water supplies and the AVR estimated demand. Tables 9 through 13 assume that annual supplies are reduced by 25% during a single dry year scenario and by 15% during the multiple dry year scenario. Demand projections are tempered during dry years by an additional 9.5% to account for conservation efforts and market rate impacts, which would be expected to further induce conservation.

The 2010 - 2030 supply projections set forth in Table 8 are based upon average or "normal" supply conditions for the modeling period, as discussed above and in Appendix C. Table 8 shows the estimated supply and demand given the occurrence of a single dry year occurring in any of the five year increments between 2010 and 2030. In addition, Table 8 shows the amount of replacement water purchased from MWA needed to make up the difference between projected supply and demand.

In the event of a single dry year occurring in 2030 the project demand would accounts for 3.6% of estimated water demand for AVR. In 2010, 2015, 2020, 2025, and 2030 the project represents 0.9%, 3.9%, 5.7%, 6.0%, and 5.2% respectively of the needed replacement water purchased from MWA. This demand does not constitute a substantial increase in needed supply. Therefore, water supplies are expected to be sufficient to meet demand in the event that a single dry year event were to occur at any time in the 20 year planning period between 2010 and 2030.

It should be mentioned that the Alto Subarea has an estimated groundwater storage capacity of approximately 2.1 million acre-feet,<sup>21</sup> which can serve as backup water supplies in the event that demand exceeds supplies. Water extracted from this source can be replenished during wet years or when surplus water is available.

**Table 8**  
**Projected Water Supply and Demand**  
**Single Dry Year with Project**  
**(acre-feet/year)**

<b>Water Demands</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030*</b>
Estimated Water Demands <sup>1</sup>	20,831	25,814	31,438	37,823	41,672
Estimated Water Conservation <sup>2</sup>	1,042	3,227	6,288	7,565	8,334
<b>Demand Subtotal</b>	<b>19,789</b>	<b>22,587</b>	<b>25,150</b>	<b>30,258</b>	<b>33,338</b>
Estimated Project Demand <sup>3</sup>	75	452	828	1,205	1,205
<b>Water Demand Total</b>	<b>19,865</b>	<b>23,039</b>	<b>25,978</b>	<b>31,463</b>	<b>34,543</b>
<b>Water Supply Sources</b>					
Free Production Allowance <sup>4</sup>	6,425	6,425	6,425	6,425	6,425
Jess Ranch Water Supply Contract <sup>5</sup>	3,366	3,366	3,366	3,366	3,366
Pre-Purchase Claim Program <sup>6</sup>	221	221	221	221	221
Leased Water Rights <sup>7</sup>	1,350	1,350	1,350	1,350	1,350
<b>Supply Subtotal</b>	<b>11,362</b>	<b>11,362</b>	<b>11,362</b>	<b>11,362</b>	<b>11,362</b>
Replacement Water Purchased from MWA <sup>8</sup>	8,503	11,677	14,616	20,101	23,181
<b>Total Supply</b>	<b>19,865</b>	<b>23,039</b>	<b>25,978</b>	<b>31,463</b>	<b>34,543</b>
Source: "Water Supply and Demand Projections: Appendix C of the WSA," prepared by Terra Nova Planning & Research, July 25, 2008. 1 Adjusted "Year 2005 Urban Water Management Plan," Table 7 and Table 13, prepared by Apple Valley Ranchos Water Company, November 2005 to include demand from the "Updated Water Supply Assessment for the proposed North Apple Valley Industrial Specific Plan," prepared by Terra Nova planning & Research on April 25, 2007. Includes a 9.5% reduction in demand. 2 Water Savings are 5%, 12.5%, and 20% of estimated water demands for years 2010, 2015, and 2020 respectively. Years 2025 and 2030 also assume a water savings of 20%. 3 Estimated Project Demand is based on Appendix A, which quantifies estimated water demand for the proposed project. Figures assume demand beginning in 2010 with a linear increase through buildout in 2025. A 9.5% reduction in demand is assumed for single dry years. 4 Free Production Allowance as determined by the Watermaster for AVR is 8,567 ac-ft/yr. To account for potential reductions in available supply, a 25% reduction factor is assumed for dry years. 5 Water Supply and Surplus Water Contract, Jess Ranch Water Company & Apple Valley Ranchos Water Company have an agreement that provides AVR with 4,488 ac-ft/yr. To account for potential reductions in available supply, a 25% reduction factor is assumed for dry years. 6 Based on the annual allotment to AVR of pre-purchase claim water with deliveries through 2040 (confirm year). This amount is presumed to be fixed and will not fluctuate during single or multiple dry years. 7 Leased Water Rights are based on historical deliveries over the past 3 years. (Insert reference). To account for potential reductions in available supply, a 25% reduction factor is assumed for dry years. 8 Replacement Water Purchased from MWA is the difference between projected demands, including water savings through conservation efforts, and all supply sources. * 2030 figures are projected using the trend from 2010 through 2025. Methodology is explained in Appendix C.					

<sup>21</sup> "California's Groundwater Bulletin 118: South Lahontan Hydrologic Region Upper Mohave River Valley Groundwater Basin," prepared by Department of Water Resources, February 27, 2004.

For the multiple year drought scenario from 2006 through 2010, the project demand accounts for 0.38% of the total estimated water demand for AVR. In 2010 the project represents 1.1% of the needed replacement water purchased from MWA. This demand does not constitute a substantial increase in needed supply. Therefore, water supplies are sufficient to meet demand in the event that a three year drought were to occur from 2008 through 2010. It should be mentioned that the Alto Subarea has an estimated groundwater storage capacity of approximately 2.1 million acre-feet, which can serve as backup water supplies in the event that demand exceeds supplies. Water extracted from this source can be replenished during wet years or when surplus water is available.

**Table 9**  
**Projected Water Supply and Demand**  
**Multiple Dry Years 2008 - 2010 with Project**  
**(acre-feet/year)**

<b>Water Demands</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Estimated Water Demands <sup>1</sup>	19,531	20,156	20,831
Estimated Water Conservation <sup>2</sup>	0	0	1,042
<b>Water Demand Subtotal</b>	19,531	20,156	19,789
Estimated Project Demand <sup>3</sup>	0	0	75
<b>Water Demand Total</b>	<b>19,531</b>	<b>20,156</b>	<b>19,865</b>
<b>Water Supply Sources</b>			
Free Production Allowance <sup>4</sup>	7,282	7,282	7,282
Jess Ranch Water Supply Contract <sup>5</sup>	3,815	3,815	3,815
Pre-Purchase Claim Program <sup>6</sup>	221	221	221
Leased Water Rights <sup>7</sup>	1,530	1,530	1,530
<b>Supply Subtotal</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>
Replacement Water Purchased from MWA <sup>8</sup>	6,683	7,308	7,017
<b>Supply Total</b>	<b>19,531</b>	<b>20,156</b>	<b>19,865</b>

Source: "Water Supply and Demand Projections: Appendix C of the WSA," Table 7C prepared by Terra Nova Planning & Research, July 25, 2008.

1 Adjusted "Year 2005 Urban Water Management Plan," Table 7 and Table 13, prepared by Apple Valley Ranchos Water Company, November 2005 to include demand from the "Updated Water Supply Assessment for the proposed North Apple Valley Industrial Specific Plan," prepared by Terra Nova planning & Research on April 25, 2007. Includes a 9.5% reduction in demand.

2 Water Savings during dry years are projected to be realized beginning in 2010 and will approximate 5% of estimated water demand.

3 Estimated Project Demand is based on Appendix A, which quantifies estimated water demand for the proposed project. Figures assume demand beginning in 2010 with a linear increase through buildout in 2025. A 9.5% reduction in demand is assumed for single dry years.

4 Free Production Allowance as determined by the Watermaster for AVR is 8,567 ac-ft/yr. To account for potential reductions in available supply, a 15% reduction factor is assumed for multiple dry years.

5 Water Supply and Surplus Water Contract, Jess Ranch Water Company & Apple Valley Ranchos Water Company have an agreement that provides AVR with 4,488 ac-ft/yr. To account for potential reductions in available supply, a 15% reduction factor is assumed for dry years.

6 Based on the annual allotment to AVR of pre-purchase claim water with deliveries through 2040 (confirm year). This amount is presumed to be fixed and will not fluctuate during single or multiple dry years.

7 Leased Water Rights are based on historical deliveries over the past 3 years. (Insert reference). To account for potential reductions in available supply, a 15% reduction factor is assumed for dry years.

8 Replacement Water Purchased from MWA is the difference between projected demand, including water savings through conservation efforts, and all supply sources.

For the multiple (five) year drought scenario from 2011 through 2015, sufficient water supplies are expected to be available to meet demands. In 2015 project demands account for 2.0% of AVR total estimated water demands and 4.4% of needed replacement water purchased from MWA. This demand does not constitute a substantial increase in needed supply. Therefore, water supplies are expected to be sufficient to meet demand in the event that a multiple dry year event were to occur from 2011 through 2015. It should be mentioned that the Alto Subarea has an estimated groundwater storage capacity of approximately 2.1 million acre-feet, which can serve as backup water supplies in the event that demand exceeds supplies. Water extracted from this source can be replenished during wet years or when surplus water is available.

**Table 10**  
**Projected Water Supply and Demand**  
**Multiple Dry Years 2011 – 2015 with Project**  
**(acre-feet/year)**

<b>Water Demands</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Estimated Water Demands <sup>1</sup>	21,828	22,824	23,821	24,818	25,814
Estimated Water Conservation <sup>2</sup>	1,419	1,826	2,263	2,730	3,227
<b>Water Demand Subtotal</b>	<b>20,409</b>	<b>20,998</b>	<b>21,558</b>	<b>22,088</b>	<b>22,587</b>
Estimated Project Demand <sup>3</sup>	151	226	301	376	452
<b>Water Demand Total</b>	<b>20,560</b>	<b>21,224</b>	<b>21,859</b>	<b>22,464</b>	<b>23,039</b>
<b>Water Supply Sources</b>					
Free Production Allowance <sup>4</sup>	7,282	7,282	7,282	7,282	7,282
Jess Ranch Water Supply Contract <sup>5</sup>	3,815	3,815	3,815	3,815	3,815
Pre-Purchase Claim Program <sup>6</sup>	221	221	221	221	221
Leased Water Rights <sup>7</sup>	1,530	1,530	1,530	1,530	1,530
<b>Supply Subtotal</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>
Replacement Water Purchased from MWA <sup>8</sup>	7,712	8,376	9,011	9,616	10,191
<b>Supply Total</b>	<b>20,560</b>	<b>21,224</b>	<b>21,859</b>	<b>22,464</b>	<b>23,039</b>

Source: "Water Supply and Demand Projections: Appendix C of the WSA," Table 8C prepared by Terra Nova Planning & Research, July 25, 2008.

1 Adjusted "Year 2005 Urban Water Management Plan," Table 7 and Table 13, prepared by Apple Valley Ranchos Water Company, November 2005 to include demand from the "Updated Water Supply Assessment for the proposed North Apple Valley Industrial Specific Plan," prepared by Terra Nova planning & Research on April 25, 2007. Includes a 9.5% reduction in demand.

2 Water Savings in 2011 are 6.5% of estimated water demand and increase by 1.5% per year through 2015 with an annual water savings of 12.5%.

3 Estimated Project Demand is based on Appendix A, which quantifies estimated water demand for the proposed project. Figures assume demand beginning in 2010 with a linear increase through buildout in 2025. A 9.5% reduction in demand is assumed for single dry years.

4 Free Production Allowance as determined by the Watermaster for AVR is 8,567 ac-ft/yr. To account for potential reductions in available supply, a 15% reduction factor is assumed for multiple dry years.

5 Water Supply and Surplus Water Contract, Jess Ranch Water Company & Apple Valley Ranchos Water Company have an agreement that provides AVR with 4,488 ac-ft/yr. To account for potential reductions in available supply, a 15% reduction factor is assumed for dry years.

6 Based on the annual allotment to AVR of pre-purchase claim water with deliveries through 2040 (confirm year). This amount is presumed to be fixed and will not fluctuate during single or multiple dry years.

7 Leased Water Rights are based on historical deliveries over the past 3 years. (Insert reference). To account for potential reductions in available supply, a 15% reduction factor is assumed for dry years.

8 Replacement Water to be Purchased from MWA is the difference between projected demand, including water savings through conservation efforts, and all supply sources.

For the multiple (five) year drought scenario from 2016 through 2020 sufficient water supplies are expected to be available to meet demands. In 2020 project demands account for 3.2% of estimated water demands for AVR and represent 6.3% of needed replacement water purchased from MWA. This demand does not constitute a substantial increase in needed supply. Therefore, water supplies are expected to be sufficient to meet demand in the event that a multiple dry year event were to occur from 2016 through 2020. It should be mentioned that the Alto Subarea has an estimated groundwater storage capacity of approximately 2.1 million acre-feet, which can serve as backup water supplies in the event that demand exceeds supplies. Water extracted from this source can be replenished during wet years or when surplus water is available.

**Table 11**  
**Projected Water Supply and Demand**  
**Multiple Dry Years 2016 – 2020 with Project**  
**(acre-feet/year)**

<b>Water Demands</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Estimated Water Demands <sup>1</sup>	26,939	28,064	29,188	30,313	31,438
Estimated Water Conservation <sup>2</sup>	3,771	4,350	4,962	5,608	6,288
<b>Water Demand Subtotal</b>	<b>23,168</b>	<b>23,714</b>	<b>24,226</b>	<b>24,705</b>	<b>25,150</b>
Estimated Project Demand <sup>3</sup>	527	602	678	753	828
<b>Water Demand Total</b>	<b>23,695</b>	<b>24,316</b>	<b>24,904</b>	<b>25,458</b>	<b>25,978</b>
<b>Water Supply Sources</b>					
Free Production Allowance <sup>4</sup>	7,282	7,282	7,282	7,282	7,282
Jess Ranch Water Supply Contract <sup>5</sup>	3,815	3,815	3,815	3,815	3,815
Pre-Purchase Claim Program <sup>6</sup>	212	212	212	212	212
Leased Water Rights <sup>7</sup>	1,530	1,530	1,530	1,530	1,530
<b>Supply Subtotal</b>	<b>12,839</b>	<b>12,839</b>	<b>12,839</b>	<b>12,839</b>	<b>12,839</b>
Replacement Water Purchased from MWA <sup>8</sup>	10,856	11,477	12,065	12,619	13,139
<b>Total Supply</b>	<b>23,695</b>	<b>24,316</b>	<b>24,904</b>	<b>25,458</b>	<b>25,978</b>

Source: "Water Supply and Demand Projections: Appendix C of the WSA," Table 8C prepared by Terra Nova Planning & Research, July 25, 2008.

1 Adjusted "Year 2005 Urban Water Management Plan," Table 7 and Table 13, prepared by Apple Valley Ranchos Water Company, November 2005 to include demand from the "Updated Water Supply Assessment for the proposed North Apple Valley Industrial Specific Plan," prepared by Terra Nova planning & Research on April 25, 2007. Includes a 9.5% reduction in demand.

2 Water Savings in 2016 are 14% of estimated water demand and increase by 1.5% per year through 2020, which has an annual water savings of 20%.

3 Estimated Project Demand is based on Appendix A, which quantifies estimated water demand for the proposed project. Figures assume demand beginning in 2010 with a linear increase through buildout in 2025. A 9.5% reduction in demand is assumed for single dry years.

4 Free Production Allowance as determined by the Watermaster for AVR is 8,567 ac-ft/yr. To account for potential reductions in available supply, a 15% reduction factor is assumed for multiple dry years.

5 Water Supply and Surplus Water Contract, Jess Ranch Water Company & Apple Valley Ranchos Water Company have an agreement that provides AVR with 4,488 ac-ft/yr. To account for potential reductions in available supply, a 15% reduction factor is assumed for dry years.

6 Based on the annual allotment to AVR of pre-purchase claim water with deliveries through 2040 (confirm year). This amount is presumed to be fixed and will not fluctuate during single or multiple dry years.

7 Leased Water Rights are based on historical deliveries over the past 3 years. (Insert reference). To account for potential reductions in available supply, a 15% reduction factor is assumed for dry years.

8 Replacement Water to be Purchased from MWA is the difference between projected demand, including water savings through conservation efforts, and all supply sources.

For the multiple (five) year drought scenario from 2021 through 2025 sufficient water supplies are expected to be available to meet demands. In 2025 project demands account for 4.0% of AVR total estimated water demands and represent 6.4% of needed replacement water purchased from MWA. This demand does not constitute a substantial increase in needed supply. Therefore, water supplies are expected to be sufficient to meet demand in the event that a multiple dry year event were to occur from 2021 through 2025. It should be mentioned that the Alto Subarea has an estimated groundwater storage capacity of approximately 2.1 million acre-feet, which can serve as backup water supplies in the event that demand exceeds supplies. Water extracted from this source can be replenished during wet years or when surplus water is available.

**Table 12**  
**Projected Water Supply and Demand**  
**Multiple Dry Years 2021 - 2025 with Project**  
**(acre-feet/year)**

<b>Water Demands</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
Estimated Water Demands <sup>1</sup>	32,715	33,992	35,269	36,546	37,823
Estimated Water Conservation <sup>2</sup>	6,543	6,798	7,054	7,309	7,565
<b>Water Demand Subtotal</b>	<b>26,172</b>	<b>27,194</b>	<b>28,215</b>	<b>29,237</b>	<b>30,258</b>
Estimated Project Demand <sup>3</sup>	904	979	1,054	1,129	1,205
<b>Water Demand Total</b>	<b>27,076</b>	<b>28,173</b>	<b>29,269</b>	<b>30,366</b>	<b>31,463</b>
<b>Water Supply Sources</b>					
Free Production Allowance <sup>4</sup>	7,282	7,282	7,282	7,282	7,282
Jess Ranch Water Supply Contract <sup>5</sup>	3,815	3,815	3,815	3,815	3,815
Pre-Purchase Claim Program <sup>6</sup>	221	221	221	221	221
Leased Water Rights <sup>7</sup>	1,530	1,530	1,530	1,530	1,530
<b>Supply Subtotal</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>
Replacement Water Purchased from MWA <sup>8</sup>	14,228	15,325	16,421	17,518	18,615
<b>Supply Total</b>	<b>27,076</b>	<b>28,173</b>	<b>29,269</b>	<b>30,366</b>	<b>31,463</b>

Source: "Water Supply and Demand Projections: Appendix C of the WSA," Table 10C prepared by Terra Nova Planning & Research, July 25, 2008.

1 Adjusted "Year 2005 Urban Water Management Plan," Table 7 and Table 13, prepared by Apple Valley Ranchos Water Company, November 2005 to include demand from the "Updated Water Supply Assessment for the proposed North Apple Valley Industrial Specific Plan," prepared by Terra Nova planning & Research on April 25, 2007. Includes a 9.5% reduction in demand.

2 Water Savings are expected to be 20% annually beginning in 2020.

3 Estimated Project Demand is based on Appendix A, which quantifies estimated water demand for the proposed project. Figures assume demand beginning in 2010 with a linear increase through buildout in 2025. A 9.5% reduction in demand is assumed for single dry years.

4 Free Production Allowance as determined by the Watermaster for AVR is 8,567 ac-ft/yr. To account for potential reductions in available supply, a 15% reduction factor is assumed for multiple dry years.

5 Water Supply and Surplus Water Contract, Jess Ranch Water Company & Apple Valley Ranchos Water Company have an agreement that provides AVR with 4,488 ac-ft/yr. To account for potential reductions in available supply, a 15% reduction factor is assumed for dry years.

6 Based on the annual allotment to AVR of pre-purchase claim water with deliveries through 2040 (confirm year). This amount is presumed to be fixed and will not fluctuate during single or multiple dry years.

7 Leased Water Rights are based on historical deliveries over the past 3 years. (Insert reference). To account for potential reductions in available supply, a 15% reduction factor is assumed for dry years.

8 Replacement Water to be Purchased from MWA is the difference between projected demand, including water savings through conservation efforts, and all supply sources.

For the multiple (five) year drought scenario from 2026 through 2030 sufficient water supplies are expected to be available to meet demands. In 2030 project demands account for 3.6% of estimated water demands for AVR, and represent 5.6% of needed replacement water purchased from MWA. This demand does not constitute a substantial increase in needed supply. Therefore, water supplies are expected to be sufficient to meet demand in the event that a multiple dry year event were to occur from 2026 through 2030. It should be mentioned that the Alto Subarea has an estimated groundwater storage capacity of approximately 2.1 million acre-feet, which serves as backup water supplies in the event that demand exceeds supplies. Water extracted from this source can be replenished during wet years or when surplus water is available.

**Table 13**  
**Projected Water Supply and Demand**  
**Multiple Dry Years 2026 - 2030 with Project**  
**(acre-feet/year)**

<b>Water Demands</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>
Estimated Water Demands <sup>1</sup>	38,592	39,362	40,132	40,902	41,672
Estimated Water Conservation <sup>2</sup>	7,718	7,872	8,026	8,180	8,334
<b>Water Demand Subtotal</b>	<b>30,874</b>	<b>31,490</b>	<b>32,106</b>	<b>32,722</b>	<b>33,338</b>
Estimated Project Demand <sup>3</sup>	1,205	1,205	1,205	1,205	1,205
<b>Water Demand Total</b>	<b>32,079</b>	<b>32,695</b>	<b>33,311</b>	<b>33,927</b>	<b>34,543</b>
<b>Water Supply Sources</b>					
Free Production Allowance <sup>4</sup>	7,282	7,282	7,282	7,282	7,282
Jess Ranch Water Supply Contract <sup>5</sup>	3,815	3,815	3,815	3,815	3,815
Pre-Purchase Claim Program <sup>6</sup>	221	221	221	221	221
Leased Water Rights <sup>7</sup>	1,530	1,530	1,530	1,530	1,530
<b>Supply Subtotal</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>
Replacement Water Purchased from MWA <sup>8</sup>	19,231	19,847	20,463	21,079	21,695
<b>Total Supply</b>	<b>32,079</b>	<b>32,695</b>	<b>33,311</b>	<b>33,927</b>	<b>34,543</b>

Source: "Water Supply and Demand Projections: Appendix C of the WSA," Table 10C prepared by Terra Nova Planning & Research, July 25, 2008.

1 Adjusted "Year 2005 Urban Water Management Plan," Table 7 and Table 13, prepared by Apple Valley Ranchos Water Company, November 2005 to include demand from the "Updated Water Supply Assessment for the proposed North Apple Valley Industrial Specific Plan," prepared by Terra Nova planning & Research on April 25, 2007. Includes a 9.5% reduction in demand.

2 Water Savings are expected to be 20% annually beginning in 2020.

3 Estimated Project Demand is based on Appendix A, which quantifies estimated water demand for the proposed project. Figures assume demand beginning in 2010 with a linear increase through buildout in 2025. A 9.5% reduction in demand is assumed for single dry years.

4 Free Production Allowance as determined by the Watermaster for AVR is 8,567 ac-ft/yr. To account for potential reductions in available supply, a 15% reduction factor is assumed for multiple dry years.

5 Water Supply and Surplus Water Contract, Jess Ranch Water Company & Apple Valley Ranchos Water Company have an agreement that provides AVR with 4,488 ac-ft/yr. To account for potential reductions in available supply, a 15% reduction factor is assumed for dry years.

6 Based on the annual allotment to AVR of pre-purchase claim water with deliveries through 2040 (confirm year). This amount is presumed to be fixed and will not fluctuate during single or multiple dry years.

7 Leased Water Rights are based on historical deliveries over the past 3 years. (Insert reference). To account for potential reductions in available supply, a 15% reduction factor is assumed for dry years.

8 Replacement Water to be Purchased from MWA is the difference between projected demand, including water savings through conservation efforts, and all supply sources.

#### 4.3.5 Conclusions

Based on the information and findings documented in this WSA, there is substantial evidence to support a determination that there will be sufficient water supplies to meet the demands of the Project during all scenarios included in this assessment through the year 2030. AVR will meet future demand through a combination of its existing water rights after judgment, supplies secured through additional production capacity and facilities, regional conservation and groundwater replenishment programs, the purchase or transfer of unused FPA from other parties to the Judgment, the purchase of BAP water rights from other parties to the Judgment, and water purchases from MWA. AVR has committed capital resources and planned investments in various water programs and facilities to serve all of its existing and planned customers.

Although AVR's 2005 Urban Water Management Plan did not specifically address demand for the Project, it did account for population increases, some of which may be attributed to the proposed Specific Plan. Nonetheless, the model assumes that demand associated with the Specific Plan is in addition to demand projected in the 2005 UWMP. Further, the analysis considers cumulative demands in that existing user and proposed development are accounted for as AVR's total demand and are added to the proposed project's demand to obtain a near-term and long-term view of water supplies and demands in AVR's service area.

Based on the analysis conducted there appears to be sufficient water sources to provide a secure and reliable water supply for the Project. These sources include the Water Supply and Surplus Water Contract between AVR and Jess Ranch Water Company (JRWC), whereby JRWC agreed to provide sufficient pumping rights to serve the AVR area in an amount up to 4,488 acre-feet/year of FPA, the estimated demand at full buildout, for a period of 99 years.<sup>22</sup> AVR plans to construct additional production capacity as needed to deliver the Replacement Water Purchased from MWA; AVR's tariffs provide for the collection of "Special Facilities Fees" from developers for the purpose of funding new wells. AVR's projected additional purchases from MWA, are notably less than the amount that MWA has available, as seen in Tables 6 and 7.<sup>23</sup>

AVR relies on MWA to satisfy its obligations under the Judgment through the implementation of management measures and replacement water purchases to ensure the sufficient availability of water supplies as represented in MWA's 2004 Regional Water Management Plan and its 2005 UWMP. As previously mentioned, the AVR's UWMP projects supply and demand through 2025. As required, this WSA analyzes cumulative impacts for a 20 year period.

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<sup>22</sup> AVR, under the agreement, has the right to annually lease any of JRWC's FPA that is not necessary to serve the Jess Ranch area. This provides AVR, either at no cost or through annual lease, with an annual supply of 4,488 acre-feet, which does not have to be met by purchasing Replacement Water from MWA.

No shortages are anticipated within AVR's service area through 2030 for any of the scenarios analyzed. It should be noted that no shortage analysis scenario was performed as it relates to water quality, and water quality may be a limiting factor for supply (Santa Clara River v. Castaic Lake Water Agency 123 Cal. App. 4th 1, 2004). Sufficient supply has been historically available within the Alto Subarea. During the 1987 to 1991 shortage, AVR's customers were not affected by the dry conditions because the groundwater basin provided adequate supply. In a multiple year drought, the groundwater basin would be pumped to meet demands. As previously mentioned, the Alto Subarea contains approximately 960,000 acre-feet of water and has a storage capacity of approximately 2.1 million acre-feet. Therefore, the Subarea has sufficient capacity to bank surplus water during wet years for use during dry periods.

## **5.0 WATER SUPPLY VERIFICATION**

### **5.1 General**

As discussed previously, this Project is subject to a Water Supply Verification (WSV) as outlined in Government Code Section 66473.7.

### **5.2 Water Source**

Water supplies for the proposed project will be provided from groundwater stored in the Alto Subarea.

### **5.3 Supporting Documentation**

Government Code Section 66473.7 (c) permits the use of an UWMP, the Project's WSA, and other acceptable water supply reliability information in support of the WSV.

This WSV relies on AVR UWMP, MWA RWMP, Water System Backup Facilities Charge Study, the MWARWP, as well as additional sources regarding current and future water supplies and restrictions as discussed throughout the WSA.

## **5.4 FACTORS OF RELIABILITY**

### 5.4.1 General

Government Code Section 66473.7(a) requires that all of the following factors be considered: (1) The availability of the supply over the last 20 years; (2) the applicability of an urban water shortage contingency found in the UWMP; (3) the reduction of water supply to a specific user by ordinance or resolution; and (4) the reasonable amount of water that can be relied upon from specified supply projects such as SWP and Colorado River agreements.

### 5.4.2 Historical Availability of Supply

As discussed in Section 4.3 of the WSA, the AVR service area has been primarily dependent on groundwater as the source of domestic water supply. SWP water has also been utilized. In 2005 MWA received 75,800 acre-feet of SWP water; as previously mentioned and illustrated in Table 6B this amount is expected to decline.

### 5.4.3 Water Shortage Contingency

AVR's 2005 UWMP Section 8: Water Shortage Contingency Plan, discusses actions to be taken in response to water supply shortages of up to 50 percent. The contingency plan identifies four water supply shortage stages ranging from voluntary reductions to critical rationing depending on the severity of the drought conditions. Prior to implementing any mandatory reductions, AVR must obtain approval from the California Public Utilities Commission (CPUC).

### 5.4.4 Reduction of Water Supply

There will not be a reduction of water supply to any user due to this Project's use of water resources, or due to AVR's ongoing management of water resources and planning for growth within their service area, which is illustrated in the UWMP.

#### 5.4.5 State Water Project Water

Water delivered from the State Water Project is used to recharge the Aquifer via the Mojave River. Bolstered by the various agreements, the Aquifer has sufficient storage to meet future demands. Based on the information provided in Section 4.0 of this document, and subject to the condition and qualification stated therein, adequate water supplies will be available to meet AVR's needs with the demand generated from the proposed project for a 20-year period. In the event that additional conservation and/or limitations are necessary, the Project would adhere to any and all limitations associated with potential reductions in supply.

### **5.5 IMPACTS ON OTHER PROJECTS**

This Project incorporates water conservation and water efficient design and therefore is consistent with the objectives of AVR Water Company. This Project will not have a significant impact on agricultural, potable, or industrial water users. Neither will this Project affect the water supply for any lower-income housing projects.

Through project-specific design and mitigation measures that reduce water demand and encourage water conservation, it is expected that the proposed project will require less than the average water demand of similar projects throughout the AVR service area. Although not considered in the model, the Project's groundwater demand is expected to be somewhat reduced through the use of recycled water for common area landscape irrigation as proposed in the Specific Plan. The combination of all of these actions results in the impact of the Project on the groundwater basin being fully mitigated.

### **5.6 RIGHTS TO GROUNDWATER**

As previously noted, the Aquifer has been adjudicated. The MWA acts as the Watermaster for the adjudicated basin. AVR has the right to extract groundwater equal to the FPA as determined by the Watermaster. Any groundwater that AVR extracts beyond the FPA is subject to replacement, which can be achieved through a per acre-foot payment to the Watermaster, or through the transfer of unused water rights within the Alto Subarea from another party to the Judgment. The adjudication does not limit AVR's pumping beyond the SWP water deliveries to the MWA.

### **5.7 VERIFICATION**

This document verifies the water supply for the Project as required by California Government Code 66473.7 is available.

## **LIST OF APPENDICES**

### **APPENDIX A**

“Project Specific Water Demand Estimates for the Hacienda at Fairview Valley Specific Plan,” prepared by Terra Nova Planning & Research Inc., September 8, 2008.

### **APPENDIX B**

“Water Resource Litigation and Other Actions”, prepared by Terra Nova Planning & Research Inc., September 8, 2008.

### **APPENDIX C**

“Water Supply and Demand Projections”, prepared by Terra Nova Planning & Research Inc., September 8, 2008.

## List of Supporting Documentation

A variety of supporting documentation was used in preparing this assessment. These include the following:

- Year 2005 Urban Water Management Plan, prepared by the Apple Valley Ranchos Water Company, November 2005.
- 2004 Regional Water Management Plan, prepared by the Mojave Water Agency, adopted February 24, 2005.
- 2004 Regional Water Management Plan, Supplement A: 2005 Urban Water Management Plan Update, prepared by the Mojave Water Agency, December 8, 2005.
- 2003-2004 Consumer Confidence Report, prepared by Apple Valley Ranchos Water Company.
- California's Groundwater Bulletin 118: South Lahontan Hydrologic Region Upper Mohave River Valley Groundwater Basin, prepared by Department of Water Resources, February 27, 2004.
- Hacienda at Fairview Valley Administrative Draft Specific Plan, for the Strata Equity Group, Inc., October 2007.
- Judgment After Trial, Mojave Basin Area Adjudication, City of Barstow, et al V. City of Adelanto, et al, Riverside County Superior Court Case No. 208568, prepared by the Superior Court State of California, County of Riverside, January 1996.
- Mojave Basin Area Water Master, Summary Report, Subsurface Flow Between Subareas, prepared by Robert C. Wagner, P.E., Webmaster Engineer, February 2006.
- Watermaster Annual Reports, for Water Years 1993 – 2007, prepared by the Mojave Basin Area Water Master, 1995 – 2008.
- Notice to State Water Project Contracts, No. 99-10, 2000 State Water Project Allocation, prepared by the California Department of Water Resources, November 1999.
- Notice to State Water Project Contracts, No. 06-04, 2006 State Water Project Allocation, prepared by the California Department of Water Resources, April 2006.
- The State Water Project Delivery Reliability Report, 2002 Final, prepared by the California Department of Water Resources, Bay-Delta Office, 2002.
- Victor Valley Wastewater Subregional Facilities Draft Program EIR/EIS, prepared by the Victor Valley Wastewater Reclamation Authority, 2004.
- Water Supply and Surplus Water Contract, between Apple Valley Ranchos Water Company and Jess Ranch Water Company, July 1994.

## LIST OF ACRONYMS

ac	Acre
ac-ft	Acre Feet
ac-ft/yr	Acre-Feet per Year
ac-ft/ac/yr	Acre-Feet per Acre per Year
AVR	Apple Valley Ranchos Water Company
BAP	Base Annual Production
CEQA	California Environmental Quality Act
DWR	Department of Water Resources
EIR	Environmental Impact Report
FPA	Free Production Allowance
MGD	Million Gallons per Day
MWA	Mojave Water Agency
MWD	Metropolitan Water District of Southern California
PWS	Public Water System
RWMP	Regional Water Management Plan
SB 221	Senate Bill 221: Water Supply Verification
SB 610	Senate Bill 610: Water Supply Assessment
SCAG	Southern California Association of Governments
SWP	State Water Project
UWMP	Urban Water Management Plan
WSA	Water Supply Assessment
WSV	Water Supply Verification

# APPENDIX A

## **Project-Specific Water Demand Estimates for the Hacienda at Fairview Valley Specific Plan**

**Prepared in Support of the  
Hacienda at Fairview Valley Specific Plan  
Water Supply Assessment**

Prepared by



Terra Nova Planning and Research, Inc.<sup>®</sup>  
400 S. Farrell Dr., Suite B-205  
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September 8, 2008

## **Estimated Water Demand Methodology**

The following describes the methodology, techniques, and assumptions that were utilized in quantifying water demand estimates for all proposed land uses described in the Hacienda Specific Plan. The analysis considers landscape and potable water demand for all land uses and includes a 35% return flows factor to total demand.

### Landscape Water Demand Methodology

Landscape water demand was calculated using the estimated landscape coverage area for residential, commercial, and open space land uses. The average landscaping square footage was derived by applying an estimated landscape area percentage factor to the total parcel square footage, which accounts for impervious surfaces for each parcel based on the designated land use. The total estimated square footage that will require irrigation for landscaping purposes was then multiplied by the Maximum Water Allowance (MWA) factor.

The water demand factor for Project landscaping is based on the MWA for Zone 3B as defined in the Coachella Valley Water District's (CVWD) Landscape Ordinance 1302.1. Several evapotranspiration (ETo) zones, including Zone 3B are defined for the Coachella Valley and account for differences in transpiration rates for plants depending on the location within the Valley floor. For example, transpiration rates in coves adjacent to hillsides, along the valley's margins have a lower ETo compared to transpiration rates on the valley floor since the former tend to be better shaded and are protected from high winds. Zone 3B was selected for use in Fairview Valley since it is defined as open desert with moderate prevailing winds. Although approximately 70 miles separate Fairview Valley from the Coachella Valley, the MWA estimate is considered applicable since both valleys have similar climatic and environmental conditions.

The total demand for landscaping is calculated using the appropriate MWA factor: moderate desert landscaping; or turf. Although the majority of the landscaping throughout the project site is designated (in general terms) as "desert landscaping," portions of open space recreational areas will contain turf. The MWA for moderate desert landscaping is 1,589 CCF (3.65 ac-ft/ac/yr) and for turf areas the MWA is 2,224 CCF (5.106 ac-ft/ac/yr). It should be noted that a total of 18 acres of the site will be developed as a water feature (lake), and although the water feature may not generate a demand for water since it may be maintained by runoff and/or treated wastewater, a demand factor of 5.106 acre feet per acre per year was applied to the water feature to provide a conservative estimate of overall demand.

To account for infiltration and percolation that will occur onsite as a result of outdoor irrigation, a 35% return flows factor was applied to the landscaping total demand. This factor assumes that 35% of the water used for irrigation onsite will be returned to the underlying aquifer via natural percolation.

Based on these estimates and the consideration of the return flows, a total of 1,006.6 acre-feet per year would be required for landscaping throughout the Project.

### Potable Water Demand Methodology

Potable water demand was calculated for all indoor uses based on estimates from the American Water Works Association Research Foundation (AWWARF). For residential land uses the number of planned dwelling units was multiplied by the expected household population for each residential type. The total population was then multiplied by the AWWARF per capita factor for indoor use: 69.3 gallons per day per person.<sup>1</sup>

Indoor potable demand for non-residential land uses were multiplied by the appropriate average per square-foot AWWARF water demand factor. Where square-footages of buildings were provided, the appropriate floor area ratio was applied to the land use acreage in order to estimate the potential building square-footage, which was then multiplied by the appropriate average per square-foot AWWARF water demand factor.<sup>2</sup>

Total potable demand was reduced by 35% to account for return flows. As described in the Specific Plan, the project will include the development of several wastewater treatment plants that will treat effluent which will then be used for irrigation throughout the project. Although it is likely that nearly 100% of effluent could be reclaimed, the 35% return flow factor is used to provide a conservative estimate and account for consumptive uses. As a result of these estimates, a total of 324.6 acre-feet per year would be required for potable water throughout the Project.

### Total Water Demand

The total water demand for the Project at buildout, including the 35% return flow for non-consumptive use, is estimated at 1,331.1 acre-feet per year or 1.19 million gallons per day.

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<sup>1</sup> Project #241A, Residential End Uses of Water, AWWARF, Winter 1999/2000

<sup>2</sup> Project #241B, Commercial and Industrial End Uses of Water, AWWARF, Summer 2000.

**Hacienda at Fairview Valley  
Terra Nova Planning and Research**

**Landscape Water Demand**

Table A-1

Land Use	Acres	Planned DUs	Average Sqft/Parcel	Impervious Area	Open Space Area/Parcel	Irrigated Landscaped Area/Parcel	Irrigated Landscaped Ac/Parcel	MWA (AF/Y)	Irrigated AF/Y/DU	Total Demand Less 35% Return Flows (AF/Y)
Rural Living (RL-2)	73	27	98,010	20%	78,408.0	60%	47,044.80	3.650	3.94	69.18
Estate (RS-1)	226	142	54,450	30%	38,115.0	65%	24,774.75	3.650	2.08	191.61
Equestrian (R-EQ)	47	30	65,340	30%	45,738.0	60%	27,442.80	3.650	2.30	44.84
Very Low (VL)	94	100	38,160	30%	26,712.0	70%	18,698.40	3.650	1.57	101.84
Low (L)	288	865	7,500	45%	4,125.0	85%	3,506.25	3.650	0.29	165.19
Low-Medium (LM)	196	785	6,500	45%	3,575.0	85%	3,038.75	3.650	0.25	129.92
Medium (M)	146	800	5,500	50%	2,750.0	90%	2,475.00	3.650	0.21	107.84
Medium-High (MH)	56	365	4,500	50%	2,250.0	90%	2,025.00	3.650	0.17	40.26
									<b>Subtotal</b>	<b>850.68</b>

MWA: Typical desert landscaping Maximum Water Allowance.

Land Use	Acres	Irrigated Landscaped Ac	Irrigated Landscaped Ac	MWA (AF/Y)	Total Demand Less 35% Return Flows (AF/Y)
Commercial (CN)	15	20%	3.0	3.65	7.12
				<b>Subtotal</b>	<b>7.12</b>

Land Use	Acres	Irrigated Landscaped Ac	Irrigated Landscaped Ac	MWA (AF/Y)	Total Demand Less 35% Return Flows (AF/Y)
Parks Landscape (OS-R)	38	20%	7.6	3.65	18.03
Parks - Rec Turf (OS-R)	38	30%	11.4	5.106	37.84
Water Feature	18	100%	18.0	5.106	59.74
Open Space (OS-C)	280	5%	14.0	3.65	33.22
				<b>Subtotal</b>	<b>148.82</b>

**Total Irrigated Landscape Demand (AF/Y) | 1,006.62**

**Hacienda at Fairview Valley  
Terra Nova Planning and Research**

**Potable Water Demand**

Table A-2

Land Use	Acres	Planned DUs	Persons/Unit	Gallons/Person/Day	Total Demand Less 35% Return Flows (AF/Y)
Rural Living (RL-2)	73	27	3.1	69.3	4.22
Estate (RS-1)	226	142	3.1	69.3	22.21
Equestrian (R-EQ)	47	30	3.1	69.3	4.69
Very Low (VL)	94	100	3.1	69.3	15.64
Low (L)	288	865	1.85	69.3	80.74
Low-Medium (LM)	196	785	1.85	69.3	73.28
Medium (M)	146	800	1.85	69.3	74.68
Medium-High (MH)	56	365	1.85	69.3	34.07
				<b>Subtotal</b>	<b>309.53</b>

Land Use	Acres	% Dev Ac	SQFT	GPD/SQFT	Total Demand Less 35% Return Flows (AF/Y)
Retail Commercial	15	30.6%	200,000	35	13.96
				<b>Subtotal</b>	<b>13.96</b>

Land Use	Acres	% Dev Ac	SQFT	GPD/SQFT	Total Demand Less 35% Return Flows (AF/Y)
Open Space Recreation	38	2%	33,000	16	1.053
				<b>Subtotal</b>	<b>1.053</b>

**Total Potable Demand (AF/Y) 324.55**

**TOTAL PROJECT WATER DEMAND (AF/Y) 1,331.17**

**Table A-3  
Hacienda Specific Plan  
Estimated Project Water Service Demands**

<b>SP Land Use Designation</b>	<b>Landscaping* (ac-ft/yr)</b>	<b>Potable* (ac-ft/yr)</b>	<b>Demand (ac-ft/yr)</b>	<b>Demand (mgd)</b>
Residential Rural Living (RL-2)	69.2	4.2	73.4	0.07
Residential Estate (RS-1)	191.6	22.2	213.8	0.19
Residential Equestrian (R-EQ)	44.8	4.7	49.5	0.04
Residential Very Low (VL)	101.8	15.6	117.5	0.10
Residential Low (L)	165.2	80.7	245.9	0.22
Residential Low-Medium (LM)	129.9	73.3	203.2	0.18
Residential Medium (M)	107.8	74.7	182.5	0.16
Residential Medium-High (MH)	40.3	34.1	74.3	0.07
Commercial	7.1	14.0	21.1	0.02
Parks Landscape (OS-R)	55.8	0.0	55.8	0.05
Water Features	59.7	0.0	59.7	0.05
Open Space (OS-C)	33.2	1.1	34.3	0.03
Streets	0.0	0.0	0.0	0.00
<b>Total</b>	<b>1,006.6</b>	<b>324.6</b>	<b>1,331.1</b>	<b>1.19</b>

Source: "Hacienda at Fairview Valley Specific Plan Project Specific Water Demand Estimates," prepared by Terra Nova Planning and Research, September 8, 2008. (Appendix A to this Water Supply Assessment)

\* Accounts for 35% non-consumptive return flows in the Alto Subbasin.

# **APPENDIX B**

## **Water Resource Litigation and Other Actions**

**Prepared in Support of the  
Hacienda at Fairview Valley Specific Plan  
Water Supply Assessment and Verification**

Prepared by



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September 8, 2008

## Water Resource Litigation and Other Actions

The following is a summary of background information that is to support the Hacienda at Fairview Water Supply Assessment for the Apple Valley Ranchos Water Company. This information includes pertinent legal actions and other actions that may impact the reliability of water resources in Southern California and Fairview Valley.

### Protection of the Delta Smelt and the Longfin Smelt

The delta smelt is a small fish with a typical adult size of 2-3 inches that is found only in the Sacramento-San Joaquin Estuary. The delta smelt was listed as a threatened species by the U.S. Fish and Wildlife Service and by CDFG 1993. The delta smelt population is affected by the amount of outflow from the estuary. Biological studies suggest that the decline of the delta smelt may be the result of toxics, exotic species and/or freshwater exports out of the delta by the state and federally operated water projects since 2001.<sup>1</sup> On August 31, 2007, U.S. District Court Judge Wanger ruled in the case of NRDC vs. Kempthorne, that the 2005 delta smelt biological opinion was invalid and that the US Fish and Wildlife Service shall prepare a new opinion (expected in late 2008).

As a result, the judge issued a prohibitory injunction against the US Bureau of Reclamation (USBR) and DWR to operate the SWP/Central Valley Project in the interim, and any operations must be consistent with the suite of actions the judge ordered based upon proposals submitted by the parties. Those actions include enhanced surveys and monitoring, as well as operational constraints from late December 2007 through June 2008. Actual water supply reductions will depend on fish, weather and flow conditions in the Delta and how reductions are divided between the state and federal projects.

The operational constraints of the judge's decision include a series of restrictions on state and federal water project operations in the Sacramento San Joaquin Delta selected from remedies submitted by environmental groups as well as state and federal resource agencies. Based on initial estimates supplied by the state, the Metropolitan Water District of Southern California and water purveyors supplying southern California stand to lose as much as 30 percent of their supplies during a normal water year (with smaller cuts during dry years) from northern California next year and possibly longer, under the preliminary ruling.<sup>2</sup> This ruling will reduce Table A allocations in 2008, and depending on the biological opinion due in June 2008 water restrictions could continue beyond 2008.

However, the judge reserved to DWR and USBR "the right on reasonable notice to deviate from the prescriptive remedies, if necessary to protect public health, safety and the human environment." During the hearing, the judge had indicated that public health, safety and human environment concerns were not necessarily limited to the maintenance of emergency water supplies for schools, hospitals or fire departments, but could include, depending upon the circumstances, significant effects related to

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<sup>1</sup> "Judge Throws Out Biological Opinion for Delta Smelt," Press Release, Natural Resources Defense Council, May 2007.

<sup>2</sup> "Metropolitan Water District of Southern California News Release," prepared by the Metropolitan Water District of Southern California, August 31, 2007.

agricultural land fallowing and/or subsidence from increased groundwater pumping necessitated by the absence of project water.

On October 22, 2007 the opposing parties provided the judge with drafts of the final order, including findings of fact and conclusions of law. The judge is currently reviewing these draft documents and is expected to make a final ruling on the case in early 2008.

As a result of the judge's decision SWP deliveries, which have averaged 77.3% per year, will be substantially cut for the next year and possibly longer. The percentage of SWP Table A water allocated to MWA that may actually be delivered in future years is currently unclear until the new Operating Criteria and Plan (OCAP) process is completed.

The longfin smelt is a close relative to the delta smelt that lives in the San Francisco Bay-Delta and is believed to be impacted by water exports from the San Joaquin River Delta.<sup>3</sup> In February 2008, the California Fish and Game Commission accepted the long fin smelt as a candidate species for listing under the California Endangered Species Act (ESA). Under the California ESA, when a species is accepted as a candidate species it has the same level of protection as if it was a listed threatened or endangered species. Therefore, the Commission adopted regulations meant to protect this species that may impact the SWP deliveries. Preliminary estimates of the possible impacts of Long Fin Smelt protection on SWP deliveries are between 0 and 400,000 acre feet per year.

The Department of Water Resources has issued a draft 2007 SWP Reliability Report that includes provisions for water supply reductions as a result of the delta smelt and other environmental issues. This is further discussed in the WSA and Appendix C.

In response to the potential impacts to the delta and reductions of water deliveries to southern California, the Delta Vision Blue Ribbon Task Force was developed by the Governor's office in order to provide a sustainable management program for the Sacramento-San Joaquin Bay Delta. The Delta Vision Task Force is a seven-member independent panel whose recommendations are non-binding but could be used by the Governor in crafting a new policy for the delta. The Task Force is currently drafting a report due out in 2008 that identifies \$5.9 billion for a comprehensive water plan, which includes \$1 billion for delta restoration and a new system for diverting water around the San Joaquin delta and considers the construction of new reservoirs and rock dams to further protect sensitive species as well as provide reliable water supplies to southern California.<sup>4</sup>

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<sup>3</sup> "Petition to List the San Francisco Bay-Delta Population of Longfin Smelt as Endangered Under the Endangered Species Act," prepared by The Bay Institute, Center for Biological Diversity, and the Natural Resources Defense Council, August 8, 2007.

<sup>4</sup> "Preliminary Visions Recommendations Report," prepared by the Delta Vision Stakeholder Coordination Group, August 2007.

Pacific Coast Federation of Fishermen's Association (PCFFA) vs. Gutierrez

On October 3, 2007, Judge Wanger reviewed the merits of a companion lawsuit to the NRDC vs. Kempthorne, in which the Pacific Coast Federation of Fishermen's Association (PCFFA) vs. Gutierrez challenged the salmon and steelhead biological opinion issued by the National Marine Fisheries Service in 2004. The plaintiffs allege similar types of deficiencies with this biological opinion, with an emphasis on the potential adverse impacts to species and habitat caused by changes to cold-water temperatures due to the reduction in water levels in the Sacramento River, and related changes in the methodology of species management.

The judgment on this case is still pending. However, similar to NRDC vs. Kempthorne, this case also contends that reductions of local waters in the San Joaquin River impact endangered species.

## **APPENDIX C**

### **Water Supply and Demand Projections Hacienda at Fairview Valley Specific Plan**

**Prepared in Support of the  
Hacienda at Fairview Valley Specific Plan  
Water Supply Assessment**

Prepared by



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September 8, 2008

## Water Supply and Demand Projection Methodology

The following describes the methodology utilized in developing water supply and demand projections for the normal, single, and multiple dry years analyzed in the Hacienda at Fairview Specific Plan Project (Project) Water Supply Assessment. This technical appendix is intended to support the conclusions made in the WSA and provide additional detail on the assumptions of the model as cited in the footnotes.

### Normal Water Year (Table 1C)

Table 1C shows the projected supply and demand for the Apple Valley Ranchos (AVR) Water Company from 2008 through 2030. Data included therein is modified based on available data from the AVR 2005 Urban Water Management Plan, which provides projections through 2025 in five year increments for supply and demand (AVR Water Use). Supply and demand sources are discussed further below.

#### Linear Proration

In order to analyze impacts to supply and demand through 2030, the linear trend provided for the five year increments and beginning in 2005 through 2025 was extrapolated using the least squares method to acquire a projection for 2030, which calculates a straight line projection that best fits the data. Therefore, the projected 2030 supply and demand figures are based on the values given in the previous five year increments; these projections also assume continued acquisition of additional water supplies at the rate represented in the given values from 2005 through 2025. The 2030 figure is applicable for this WSA only and should be considered accordingly.

In order to create annual estimates for supply and demand for years in between the given five-year increments, an annual incremental increase was assumed within each five year period. The model calculates the average difference between each five-year increment and adds that figure to the previous year in order to determine the consecutive year. This method was conducted independently for each five-year period and assumes a fixed incremental increase within each five year period.

### Data Sources for Demand

Demand sources include AVR Water Use and Hacienda Specific Plan (water) use. Water savings are factored in as percentage of AVR Water Use beginning in 2010 at 5% and increase by 1.5% annually to 20% through 2020. Water savings are not a demand, but serve to discount AVR Water Use.

AVR Water Use: Water use is derived from AVR's 2005 UWMP and is modified to show the impact of projected demand associated with development of the North Apple Valley Industrial Specific Plan (NAVISP) on available supply. Therefore, the values given are the sum of demand projection from the AVR 2005 UWMP and demand from the NAVISP as calculated in the NAVISP WSA. NAVISP is projected to begin development in 2010, so figures from 2005 through 2010 do not include the demand associated with the NAVISP, which is projected to buildout in 2025 with a maximum annual demand of 6,200 acre-feet per year. Therefore, values between 2025 and 2030 assume a demand factor of 6,200 acre-feet per year associated with the NAVISP. The application of the NAVISP demand projections to overall demand projected for the period starting in 2010 tempers the WSA water demand projections and may overstate demand in the years following 2010. The WSA's 20-year demand projections average an annual increase in demand of 2.5%, including the projected demand from the buildout of the NAVISP between 2010 and 2030.

As previously mentioned, the AVR 2005 UWMP includes data through 2025 and the least squares methodology was utilized to extend the linear trend to 2030.

Water Savings: Conservation efforts currently being initiated within AVR's service boundary are considered as Water Savings. It is expected that by 2010 water savings will represent 5% of projected AVR water use. An additional 1.5% water savings will be achieved annually beginning in 2011 through year 2020 when water savings will reach 20% of AVR's total projected water use. Subsequent years 2021 through 2030 also reflect an annual water savings of 20%. Water savings will be realized through conservation efforts, water saving programs, and market influences. Water saving strategies will be further described in the 2010 update to the UWMP for AVR.

Hacienda Specific Plan Use: Water demand for the Hacienda Specific Plan is based on Tables A1-A3 included in Appendix A, which show the estimated water consumption for all land uses associated with the project. Water demand for the Specific Plan is expected to initiate in 2010, and represent a water demand of 83.2 acre-feet. Assuming linear development and an annual increase in water demand of 83.2 acre-feet, buildout for the Hacienda Specific Plan would occur in 2025 with a maximum annual water consumption of 1,331 acre-feet. Total estimated water demand for the project, 1,311 acre-feet, was applied for each year from 2026 through 2030. It should be noted that although not accounted for in the model, the Project's groundwater demand at buildout is expected to be reduced through the use of recycled water for common area landscape irrigation as required by the Specific Plan.

### **Data Sources for Supply**

For some of the supply sources, such as the AVR Free Production Allowance (FPA), Jess Ranch Water Contract, Pre-Purchased Claim Rights, and Leased Water Rights, values are assumed to be constant under normal year condition over the 20 year model period. Replacement water purchased from MWA increases proportionally as demand increases.

AVR FPA: The Free Production Allowance (FPA) is taken directly from the AVR 2005 UWMP and is based on the Watermaster's targeted reduction to the Base Annual Production (BAP) figure by 60% by 2005-2006. For AVR the original base production was set at 13,022 acre-feet per year and was reduced to 8,567 acre-feet per year. This adjustment in the BAP was conducted in order to assure safe yield from the water basin, where imports, inflows, and consumption are balanced. The FPA was not further modified, although it was assumed that the safe yield figure would remain constant through 2030 during normal water year conditions.

Jess Ranch Water Contract: Water from this source is not included in the AVR 2005 UWMP; rather, it is based on the adopted contract. The terms of the contract allow AVR access to 4,488 acre-feet per year through 2030, as described in Section 2.3.3 of the Water Supply Assessment.

Pre-Purchased Claim Rights: AVR expects to receive an average of 221 acre-feet of water annually. This supply source is based on MWA's resolution No. 826-06, adopted on June 22, 2006, which allows for the sale of previously stored water within the adjudicated Mojave Basin Area.

Leased Water Rights: Based on historic deliveries of water available for lease, it is anticipated that AVR will have access to 1,800 acre-feet per year through 2030.

Replacement Water Purchased from MWA: Replacement water is the difference between supply and demand. This is amount of water beyond the FPA that will be purchased from MWA to meet demand.

### **Single Dry Year (Table 2C-6C)**

Tables 2C through 6C analyze the impacts to the water supply as a result of a single dry year occurring in each of the five year increments from 2010 through 2030. Other than the highlighted target year in which the single dry year event was to occur, all data inputs are identical to the normal year scenario. The inputs for the single dry year scenarios assume a 25% reduction in all supply sources for that year and a 9.5% reduction in AVR Water Use and Hacienda Specific Plan Use components in addition to Water Savings. Water savings and conservation are realized from AVR efforts and market pressures during drought conditions.

### **Multiple Dry Years (Table 7C-11C)**

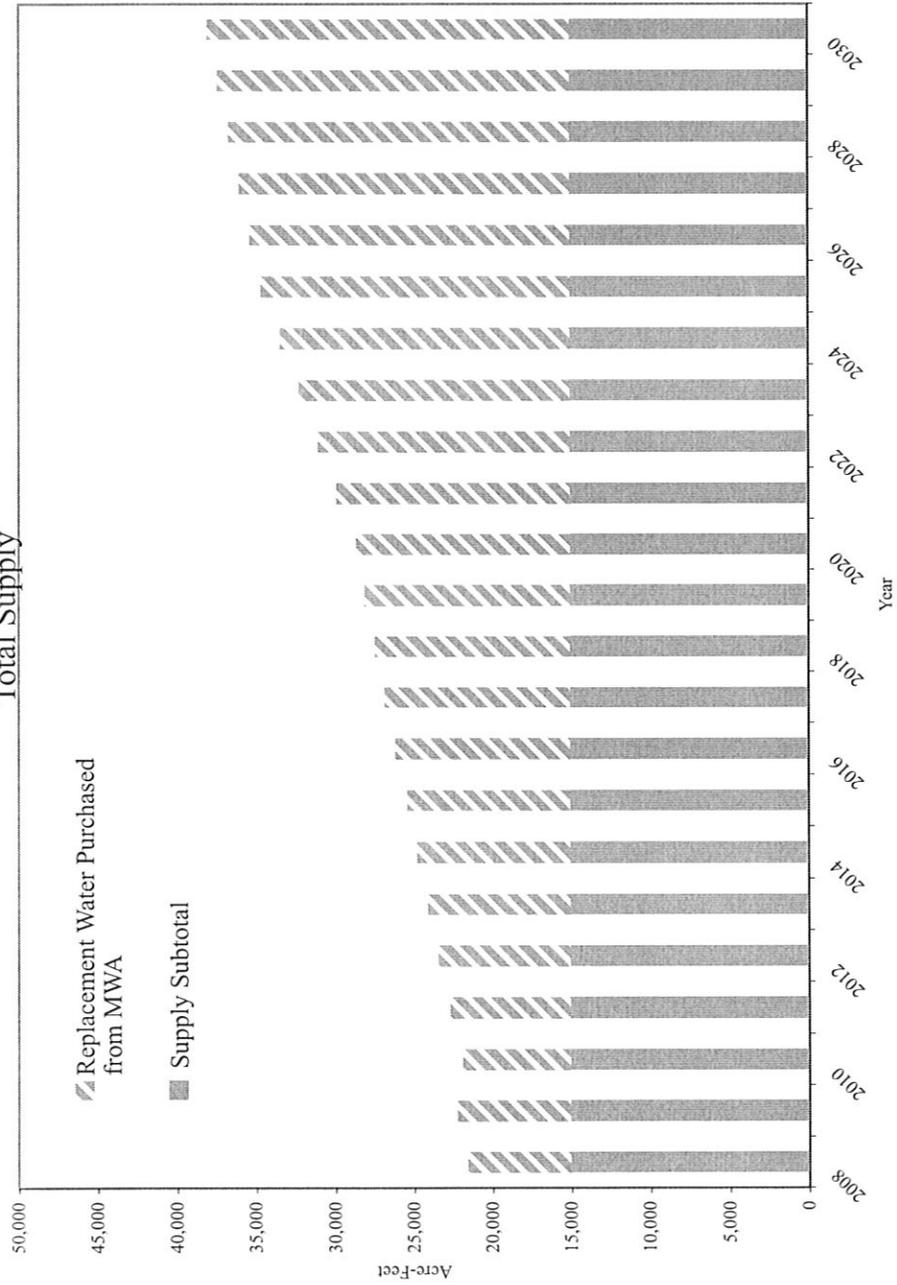
Tables 7C through 11C show the impacts to the water supply when subjected to multiple (five) years of drought conditions. Other than the highlighted target years in which the multiple dry year event were to occur, all data inputs are identical to the normal year scenario. The inputs for the multiple dry year scenarios assume a 15% reduction in all supply sources and a 9.5% reduction AVR Water Use and Hacienda Specific Plan Use to account for anticipated conservation from AVR efforts and market pressures during drought conditions.

**Table 1C**  
**WSA Normal Water Year**  
**Supply and Demand Projections**

Year	Demand				Supply						
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	Purchased MWA Water as Percent of Supply
2008	21,582	0	0	21,582	8,567	4,488	221	1,800	15,076	6,506	30%
2009	22,272	0	0	22,272	8,567	4,488	221	1,800	15,076	7,196	32%
<b>2010</b>	<b>23,018</b>	<b>1,151</b>	<b>83</b>	<b>21,950</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>6,874</b>	<b>31%</b>
2011	24,119	1,568	166	22,718	8,567	4,488	221	1,800	15,076	7,642	34%
2012	25,220	2,018	250	23,452	8,567	4,488	221	1,800	15,076	8,376	36%
2013	26,322	2,501	333	24,154	8,567	4,488	221	1,800	15,076	9,078	38%
2014	27,423	3,017	416	24,822	8,567	4,488	221	1,800	15,076	9,746	39%
<b>2015</b>	<b>28,524</b>	<b>3,566</b>	<b>499</b>	<b>25,458</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>10,382</b>	<b>41%</b>
2016	29,767	4,167	582	26,182	8,567	4,488	221	1,800	15,076	11,106	42%
2017	31,010	4,806	666	26,869	8,567	4,488	221	1,800	15,076	11,793	44%
2018	32,252	5,483	749	27,518	8,567	4,488	221	1,800	15,076	12,442	45%
2019	33,495	6,197	832	28,131	8,567	4,488	221	1,800	15,076	13,055	46%
<b>2020</b>	<b>34,738</b>	<b>6,948</b>	<b>915</b>	<b>28,706</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>13,630</b>	<b>47%</b>
2021	36,149	7,230	998	29,918	8,567	4,488	221	1,800	15,076	14,842	50%
2022	37,560	7,512	1,082	31,130	8,567	4,488	221	1,800	15,076	16,054	52%
2023	38,971	7,794	1,165	32,342	8,567	4,488	221	1,800	15,076	17,266	53%
2024	40,382	8,076	1,248	33,554	8,567	4,488	221	1,800	15,076	18,478	55%
<b>2025</b>	<b>41,793</b>	<b>8,359</b>	<b>1,331</b>	<b>34,766</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>19,690</b>	<b>57%</b>
2026	42,644	8,529	1,331	35,446	8,567	4,488	221	1,800	15,076	20,370	57%
2027	43,494	8,699	1,331	36,127	8,567	4,488	221	1,800	15,076	21,051	58%
2028	44,345	8,869	1,331	36,807	8,567	4,488	221	1,800	15,076	21,731	59%
2029	45,195	9,039	1,331	37,488	8,567	4,488	221	1,800	15,076	22,412	60%
<b>2030</b>	<b>46,046</b>	<b>9,209</b>	<b>1,331</b>	<b>38,168</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>23,092</b>	<b>61%</b>

Note: Footnotes are provided at the end of Appendix C.

Chart 1C  
Normal Water Year  
Total Supply

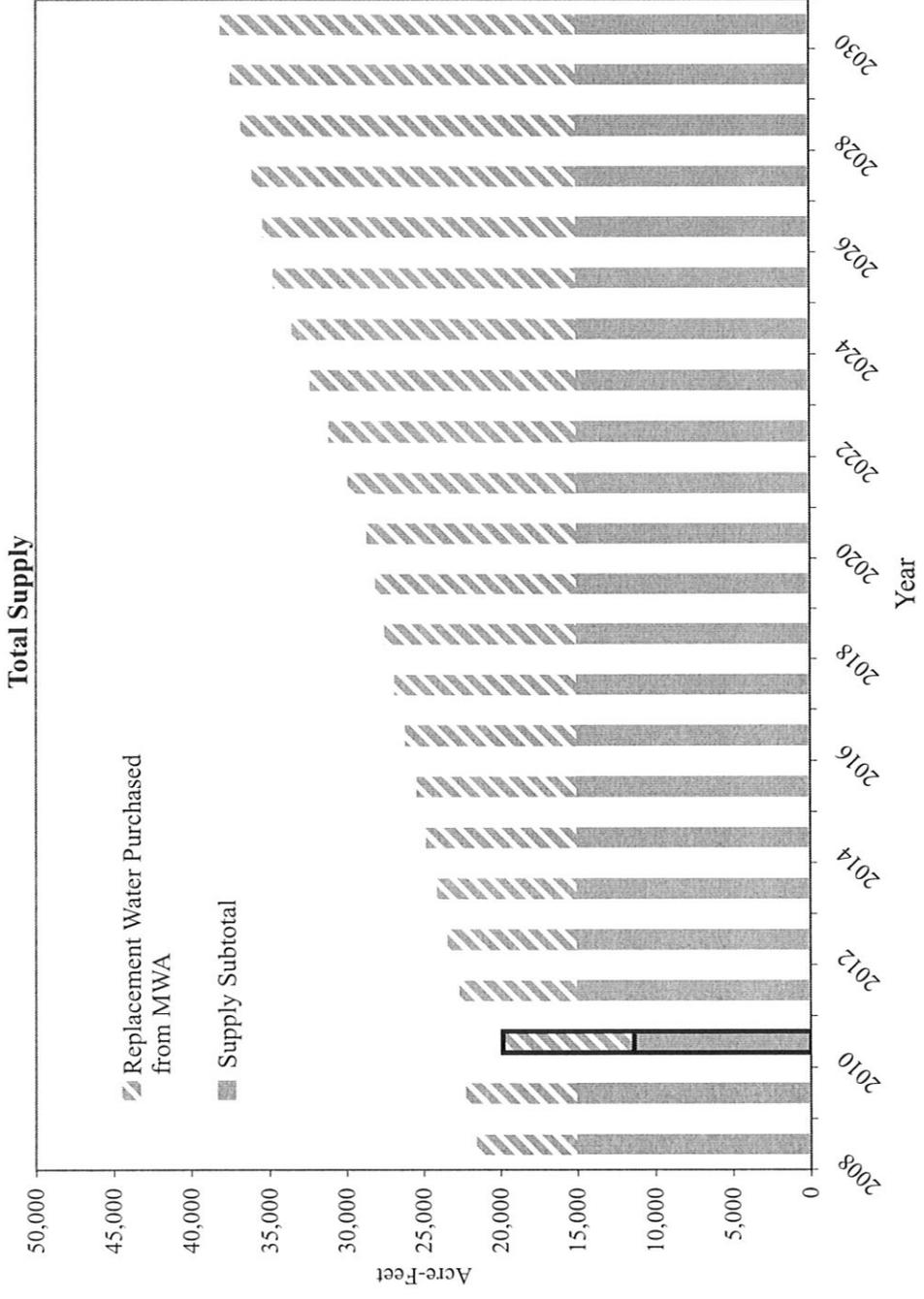


**Table 2C**  
**WSA Single Dry Year 2010**  
**Supply and Demand Projections**

Year	Demand				Supply						
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	Purchased MWA Water as Percent of Supply
2008	21,582	0	0	21,582	8,567	4,488	221	1,800	15,076	6,506	30%
2009	22,272	0	0	22,272	8,567	4,488	221	1,800	15,076	7,196	32%
<b>2010</b>	<b>20,831</b>	<b>1,042</b>	<b>75</b>	<b>19,865</b>	<b>6,425</b>	<b>3,366</b>	<b>221</b>	<b>1,350</b>	<b>11,362</b>	<b>8,503</b>	<b>43%</b>
2011	24,119	1,568	166	22,718	8,567	4,488	221	1,800	15,076	7,642	34%
2012	25,220	2,018	250	23,452	8,567	4,488	221	1,800	15,076	8,376	36%
2013	26,322	2,501	333	24,154	8,567	4,488	221	1,800	15,076	9,078	38%
2014	27,423	3,017	416	24,822	8,567	4,488	221	1,800	15,076	9,746	39%
<b>2015</b>	<b>28,524</b>	<b>3,566</b>	<b>499</b>	<b>25,458</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>10,382</b>	<b>41%</b>
2016	29,767	4,167	582	26,182	8,567	4,488	221	1,800	15,076	11,106	42%
2017	31,010	4,806	666	26,869	8,567	4,488	221	1,800	15,076	11,793	44%
2018	32,252	5,483	749	27,518	8,567	4,488	221	1,800	15,076	12,442	45%
2019	33,495	6,197	832	28,131	8,567	4,488	221	1,800	15,076	13,055	46%
<b>2020</b>	<b>34,738</b>	<b>6,948</b>	<b>915</b>	<b>28,706</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>13,630</b>	<b>47%</b>
2021	36,149	7,230	998	29,918	8,567	4,488	221	1,800	15,076	14,842	50%
2022	37,560	7,512	1,082	31,130	8,567	4,488	221	1,800	15,076	16,054	52%
2023	38,971	7,794	1,165	32,342	8,567	4,488	221	1,800	15,076	17,266	53%
2024	40,382	8,076	1,248	33,554	8,567	4,488	221	1,800	15,076	18,478	55%
<b>2025</b>	<b>41,793</b>	<b>8,359</b>	<b>1,331</b>	<b>34,766</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>19,690</b>	<b>57%</b>
2026	42,644	8,529	1,331	35,446	8,567	4,488	221	1,800	15,076	20,370	57%
2027	43,494	8,699	1,331	36,127	8,567	4,488	221	1,800	15,076	21,051	58%
2028	44,345	8,869	1,331	36,807	8,567	4,488	221	1,800	15,076	21,731	59%
2029	45,195	9,039	1,331	37,488	8,567	4,488	221	1,800	15,076	22,412	60%
<b>2030</b>	<b>46,046</b>	<b>9,209</b>	<b>1,331</b>	<b>38,168</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>23,092</b>	<b>61%</b>

Note: Footnotes are provided at the end of Appendix C.

**Chart 1C**  
**Single Dry Water Year 2010**  
**Total Supply**

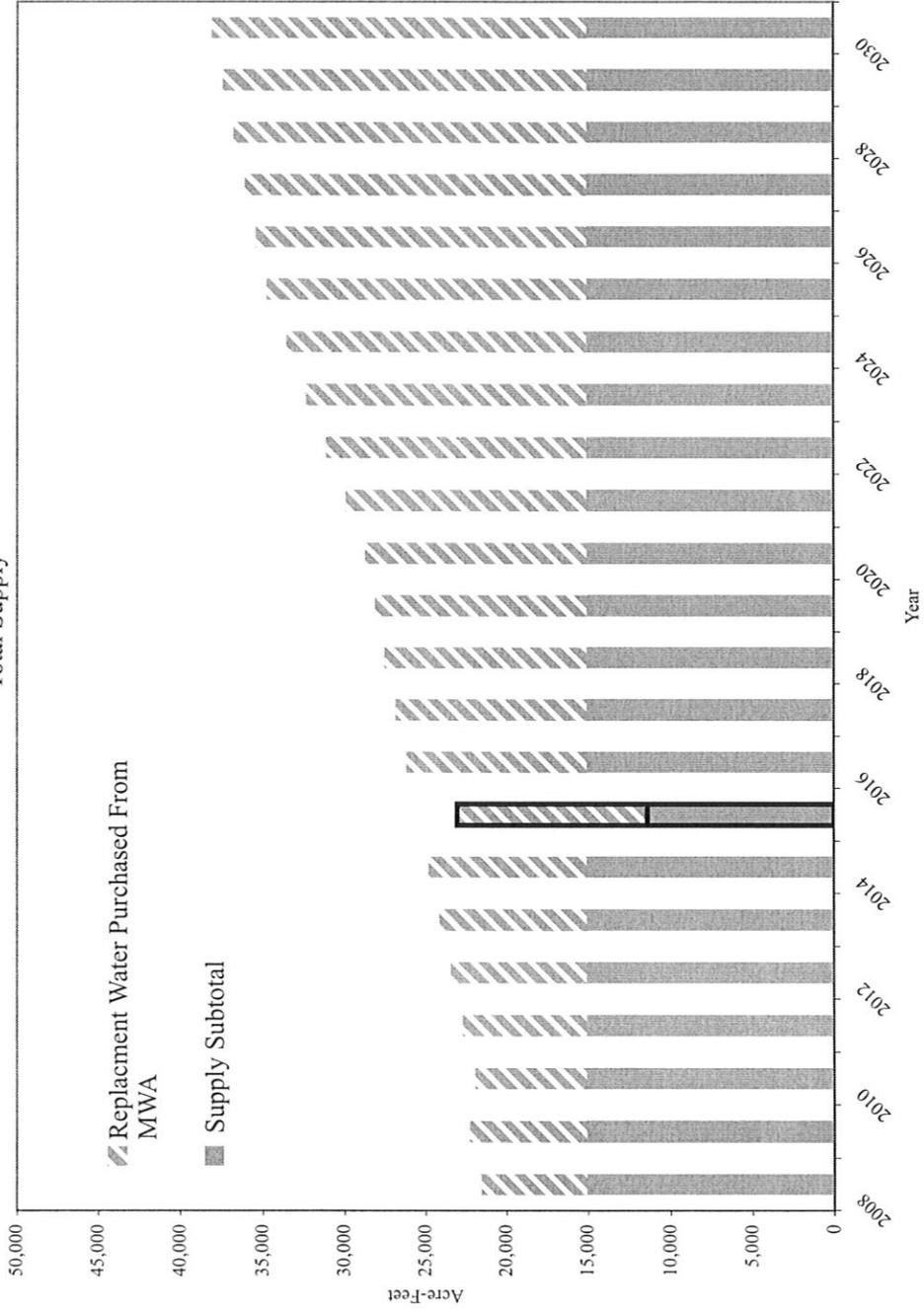


**Table 3C  
WSA Single Dry Year 2015  
Supply and Demand Projections**

Year	Demand				Supply						
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	Purchased MWA Water as Percent of Supply
2008	21,582	0	0	21,582	8,567	4,488	221	1,800	15,076	6,506	30%
2009	22,272	0	0	22,272	8,567	4,488	221	1,800	15,076	7,196	32%
<b>2010</b>	<b>23,018</b>	<b>1,151</b>	<b>75</b>	<b>21,942</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>6,866</b>	<b>31%</b>
2011	24,119	1,568	166	22,718	8,567	4,488	221	1,800	15,076	7,642	34%
2012	25,220	2,018	250	23,452	8,567	4,488	221	1,800	15,076	8,376	36%
2013	26,322	2,501	333	24,154	8,567	4,488	221	1,800	15,076	9,078	38%
2014	27,423	3,017	416	24,822	8,567	4,488	221	1,800	15,076	9,746	39%
<b>2015</b>	<b>25,814</b>	<b>3,227</b>	<b>452</b>	<b>23,039</b>	<b>6,425</b>	<b>3,366</b>	<b>221</b>	<b>1,350</b>	<b>11,362</b>	<b>11,677</b>	<b>51%</b>
2016	29,767	4,167	582	26,182	8,567	4,488	221	1,800	15,076	11,106	42%
2017	31,010	4,806	666	26,869	8,567	4,488	221	1,800	15,076	11,793	44%
2018	32,252	5,483	749	27,518	8,567	4,488	221	1,800	15,076	12,442	45%
2019	33,495	6,197	832	28,131	8,567	4,488	221	1,800	15,076	13,055	46%
<b>2020</b>	<b>34,738</b>	<b>6,948</b>	<b>915</b>	<b>28,706</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>13,630</b>	<b>47%</b>
2021	36,149	7,230	998	29,918	8,567	4,488	221	1,800	15,076	14,842	50%
2022	37,560	7,512	1,082	31,130	8,567	4,488	221	1,800	15,076	16,054	52%
2023	38,971	7,794	1,165	32,342	8,567	4,488	221	1,800	15,076	17,266	53%
2024	40,382	8,076	1,248	33,554	8,567	4,488	221	1,800	15,076	18,478	55%
<b>2025</b>	<b>41,793</b>	<b>8,359</b>	<b>1,331</b>	<b>34,766</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>19,690</b>	<b>57%</b>
2026	42,644	8,529	1,331	35,446	8,567	4,488	221	1,800	15,076	20,370	57%
2027	43,494	8,699	1,331	36,127	8,567	4,488	221	1,800	15,076	21,051	58%
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2029	45,195	9,039	1,331	37,488	8,567	4,488	221	1,800	15,076	22,412	60%
<b>2030</b>	<b>46,046</b>	<b>9,209</b>	<b>1,331</b>	<b>38,168</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>23,092</b>	<b>61%</b>

Note: Footnotes are provided at the end of Appendix C.

Chart 3C  
 Single Dry Year 2015  
 Total Supply

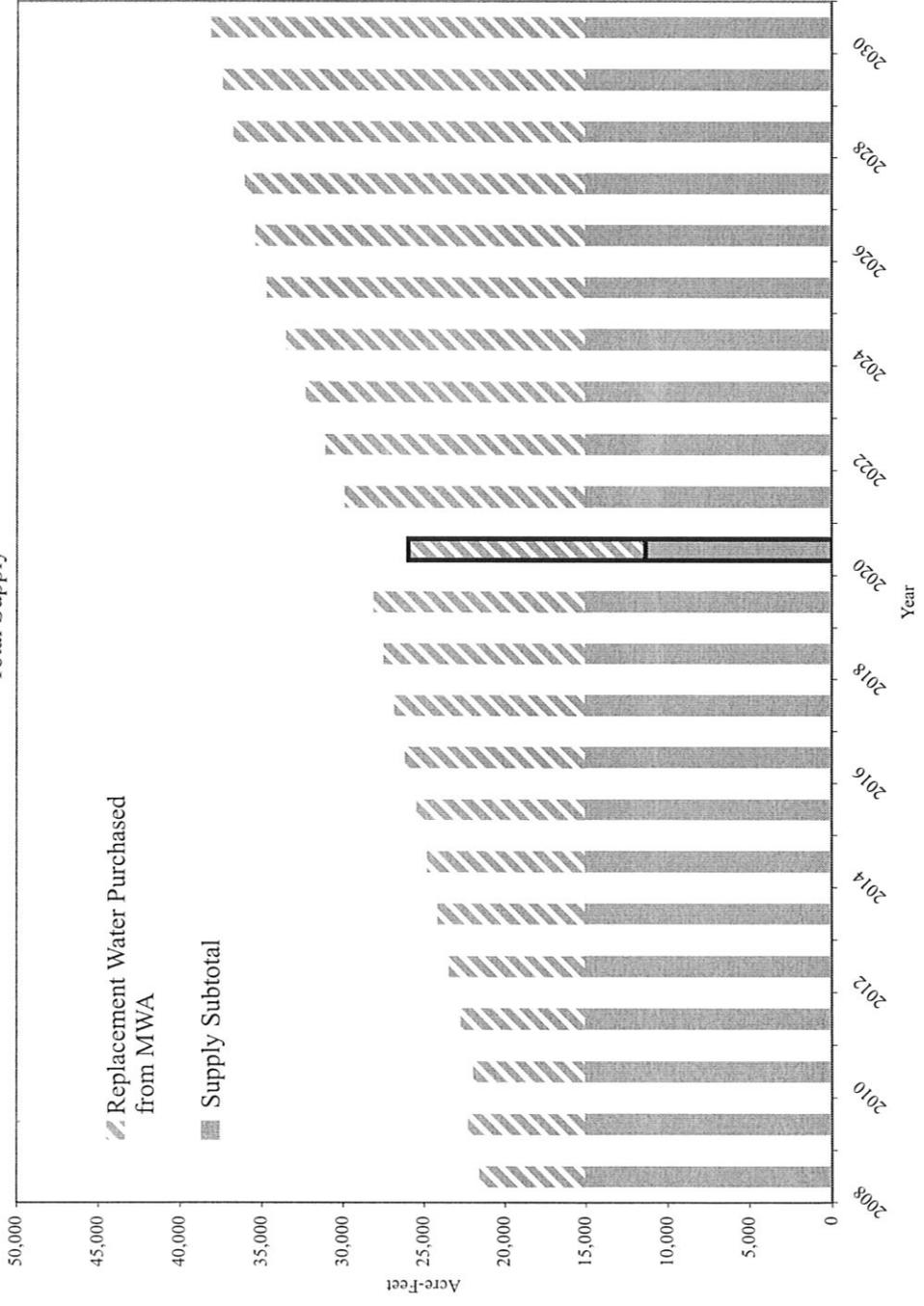


**Table 4C**  
**Single Dry Year 2020**  
**Supply and Demand Projections**

Year	Demand					Supply					Purchased MWA Water as Percent of Supply
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	
2008	21,582	0	0	21,582	8,567	4,488	221	1,800	15,076	6,506	30%
2009	22,272	0	0	22,272	8,567	4,488	221	1,800	15,076	7,196	32%
<b>2010</b>	<b>23,018</b>	<b>1,151</b>	<b>75</b>	<b>21,942</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>6,866</b>	<b>31%</b>
2011	24,119	1,568	166	22,718	8,567	4,488	221	1,800	15,076	7,642	34%
2012	25,220	2,018	250	23,452	8,567	4,488	221	1,800	15,076	8,376	36%
2013	26,322	2,501	333	24,154	8,567	4,488	221	1,800	15,076	9,078	38%
2014	27,423	3,017	416	24,822	8,567	4,488	221	1,800	15,076	9,746	39%
<b>2015</b>	<b>28,524</b>	<b>3,566</b>	<b>499</b>	<b>25,458</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>10,382</b>	<b>41%</b>
2016	29,767	4,167	582	26,182	8,567	4,488	221	1,800	15,076	11,106	42%
2017	31,010	4,806	666	26,869	8,567	4,488	221	1,800	15,076	11,793	44%
2018	32,252	5,483	749	27,518	8,567	4,488	221	1,800	15,076	12,442	45%
2019	33,495	6,197	832	28,131	8,567	4,488	221	1,800	15,076	13,055	46%
<b>2020</b>	<b>31,438</b>	<b>6,288</b>	<b>828</b>	<b>25,979</b>	<b>6,425</b>	<b>3,366</b>	<b>221</b>	<b>1,350</b>	<b>11,362</b>	<b>14,616</b>	<b>56%</b>
2021	36,149	7,230	998	29,918	8,567	4,488	221	1,800	15,076	14,842	50%
2022	37,560	7,512	1,082	31,130	8,567	4,488	221	1,800	15,076	16,054	52%
2023	38,971	7,794	1,165	32,342	8,567	4,488	221	1,800	15,076	17,266	53%
2024	40,382	8,076	1,248	33,554	8,567	4,488	221	1,800	15,076	18,478	55%
<b>2025</b>	<b>41,793</b>	<b>8,359</b>	<b>1,331</b>	<b>34,766</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>19,690</b>	<b>57%</b>
2026	42,644	8,529	1,331	35,446	8,567	4,488	221	1,800	15,076	20,370	57%
2027	43,494	8,699	1,331	36,127	8,567	4,488	221	1,800	15,076	21,051	58%
2028	44,345	8,869	1,331	36,807	8,567	4,488	221	1,800	15,076	21,731	59%
2029	45,195	9,039	1,331	37,488	8,567	4,488	221	1,800	15,076	22,412	60%
<b>2030</b>	<b>46,046</b>	<b>9,209</b>	<b>1,331</b>	<b>38,168</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>23,092</b>	<b>61%</b>

Note: Footnotes are provided at the end of Appendix C.

Chart 4C  
 Single Dry Year 2020  
 Total Supply

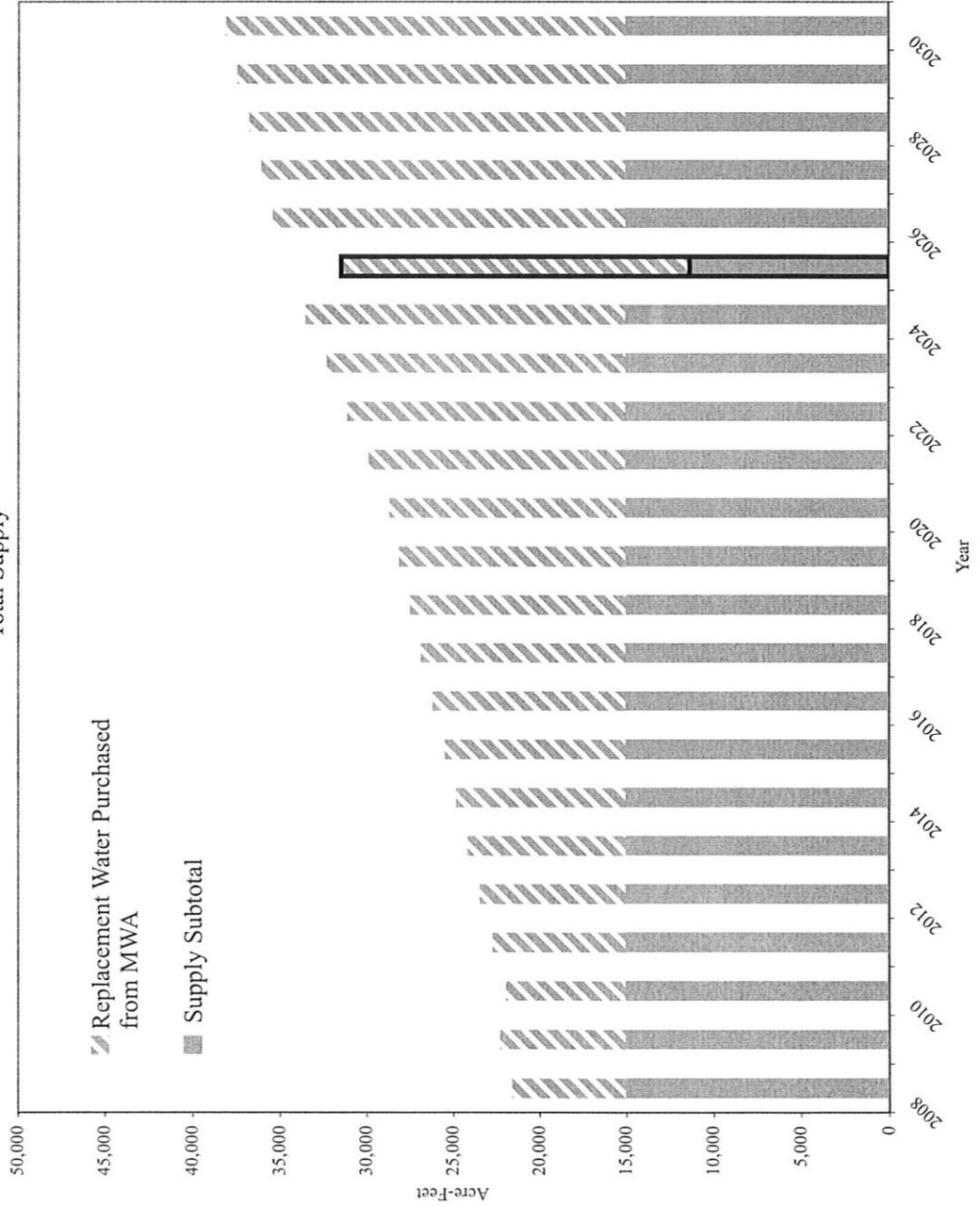


**Table 5C**  
**Single Dry Year 2025**  
**Supply and Demand Projections**

Year	Demand				Supply						
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	Purchased MWA Water as Percent of Supply
2008	21,582	0	0	21,582	8,567	4,488	221	1,800	15,076	6,506	30%
2009	22,272	0	0	22,272	8,567	4,488	221	1,800	15,076	7,196	32%
<b>2010</b>	<b>23,018</b>	<b>1,151</b>	<b>75</b>	<b>21,942</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>6,866</b>	<b>31%</b>
2011	24,119	1,568	166	22,718	8,567	4,488	221	1,800	15,076	7,642	34%
2012	25,220	2,018	250	23,452	8,567	4,488	221	1,800	15,076	8,376	36%
2013	26,322	2,501	333	24,154	8,567	4,488	221	1,800	15,076	9,078	38%
2014	27,423	3,017	416	24,822	8,567	4,488	221	1,800	15,076	9,746	39%
<b>2015</b>	<b>28,524</b>	<b>3,566</b>	<b>499</b>	<b>25,458</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>10,382</b>	<b>41%</b>
2016	29,767	4,167	582	26,182	8,567	4,488	221	1,800	15,076	11,106	42%
2017	31,010	4,806	666	26,869	8,567	4,488	221	1,800	15,076	11,793	44%
2018	32,252	5,483	749	27,518	8,567	4,488	221	1,800	15,076	12,442	45%
2019	33,495	6,197	832	28,131	8,567	4,488	221	1,800	15,076	13,055	46%
<b>2020</b>	<b>34,738</b>	<b>6,948</b>	<b>915</b>	<b>28,706</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>13,630</b>	<b>47%</b>
2021	36,149	7,230	998	29,918	8,567	4,488	221	1,800	15,076	14,842	50%
2022	37,560	7,512	1,082	31,130	8,567	4,488	221	1,800	15,076	16,054	52%
2023	38,971	7,794	1,165	32,342	8,567	4,488	221	1,800	15,076	17,266	53%
2024	40,382	8,076	1,248	33,554	8,567	4,488	221	1,800	15,076	18,478	55%
<b>2025</b>	<b>37,823</b>	<b>7,565</b>	<b>1,205</b>	<b>31,463</b>	<b>6,425</b>	<b>3,366</b>	<b>221</b>	<b>1,350</b>	<b>11,362</b>	<b>20,101</b>	<b>64%</b>
2026	42,644	8,529	1,331	35,446	8,567	4,488	221	1,800	15,076	20,370	57%
2027	43,494	8,699	1,331	36,127	8,567	4,488	221	1,800	15,076	21,051	58%
2028	44,345	8,869	1,331	36,807	8,567	4,488	221	1,800	15,076	21,731	59%
2029	45,195	9,039	1,331	37,488	8,567	4,488	221	1,800	15,076	22,412	60%
<b>2030</b>	<b>46,046</b>	<b>9,209</b>	<b>1,331</b>	<b>38,168</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>23,092</b>	<b>61%</b>

Note: Footnotes are provided at the end of Appendix C.

Chart 5C  
Single Dry Year 2025  
Total Supply

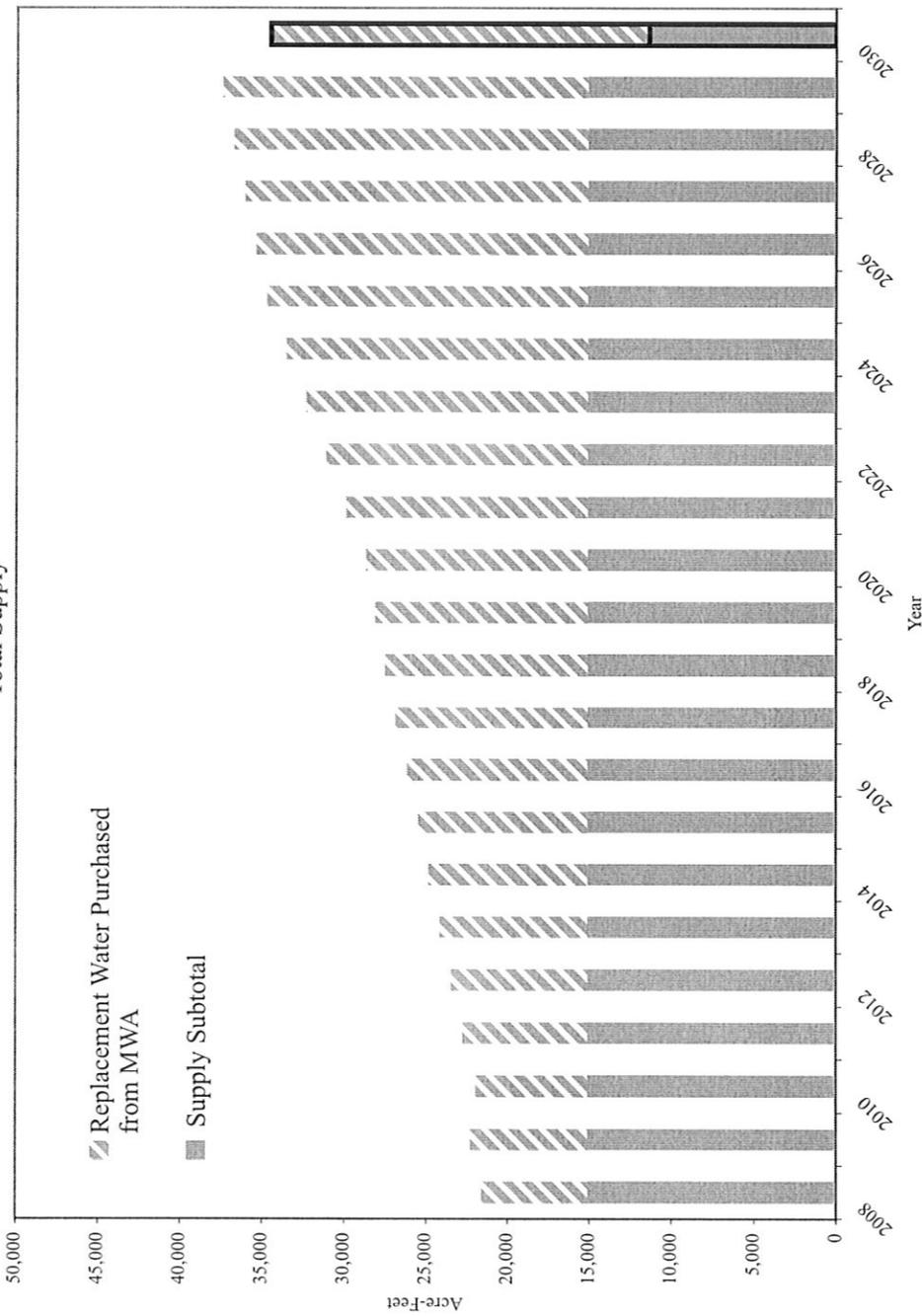


**Table 6C**  
**Single Dry Year 2030**  
**Supply and Demand Projections**

Year	Demand					Supply					Purchased MWA Water as Percent of Supply
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	
2008	21,582	0	0	21,582	8,567	4,488	221	1,800	15,076	6,506	30%
2009	22,272	0	0	22,272	8,567	4,488	221	1,800	15,076	7,196	32%
<b>2010</b>	<b>23,018</b>	<b>1,151</b>	<b>75</b>	<b>21,942</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>6,866</b>	<b>31%</b>
2011	24,119	1,568	166	22,718	8,567	4,488	221	1,800	15,076	7,642	34%
2012	25,220	2,018	250	23,452	8,567	4,488	221	1,800	15,076	8,376	36%
2013	26,322	2,501	333	24,154	8,567	4,488	221	1,800	15,076	9,078	38%
2014	27,423	3,017	416	24,822	8,567	4,488	221	1,800	15,076	9,746	39%
<b>2015</b>	<b>28,524</b>	<b>3,566</b>	<b>499</b>	<b>25,458</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>10,382</b>	<b>41%</b>
2016	29,767	4,167	582	26,182	8,567	4,488	221	1,800	15,076	11,106	42%
2017	31,010	4,806	666	26,869	8,567	4,488	221	1,800	15,076	11,793	44%
2018	32,252	5,483	749	27,518	8,567	4,488	221	1,800	15,076	12,442	45%
2019	33,495	6,197	832	28,131	8,567	4,488	221	1,800	15,076	13,055	46%
<b>2020</b>	<b>34,738</b>	<b>6,948</b>	<b>915</b>	<b>28,706</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>13,630</b>	<b>47%</b>
2021	36,149	7,230	998	29,918	8,567	4,488	221	1,800	15,076	14,842	50%
2022	37,560	7,512	1,082	31,130	8,567	4,488	221	1,800	15,076	16,054	52%
2023	38,971	7,794	1,165	32,342	8,567	4,488	221	1,800	15,076	17,266	53%
2024	40,382	8,076	1,248	33,554	8,567	4,488	221	1,800	15,076	18,478	55%
<b>2025</b>	<b>41,793</b>	<b>8,359</b>	<b>1,331</b>	<b>34,766</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>19,690</b>	<b>57%</b>
2026	42,644	8,529	1,331	35,446	8,567	4,488	221	1,800	15,076	20,370	57%
2027	43,494	8,699	1,331	36,127	8,567	4,488	221	1,800	15,076	21,051	58%
2028	44,345	8,869	1,331	36,807	8,567	4,488	221	1,800	15,076	21,731	59%
2029	45,195	9,039	1,331	37,488	8,567	4,488	221	1,800	15,076	22,412	60%
<b>2030</b>	<b>41,672</b>	<b>8,334</b>	<b>1,205</b>	<b>34,542</b>	<b>6,425</b>	<b>3,366</b>	<b>221</b>	<b>1,350</b>	<b>11,362</b>	<b>23,180</b>	<b>67%</b>

Note: Footnotes are provided at the end of Appendix C.

Chart 6C  
Single Dry Year 2030  
Total Supply

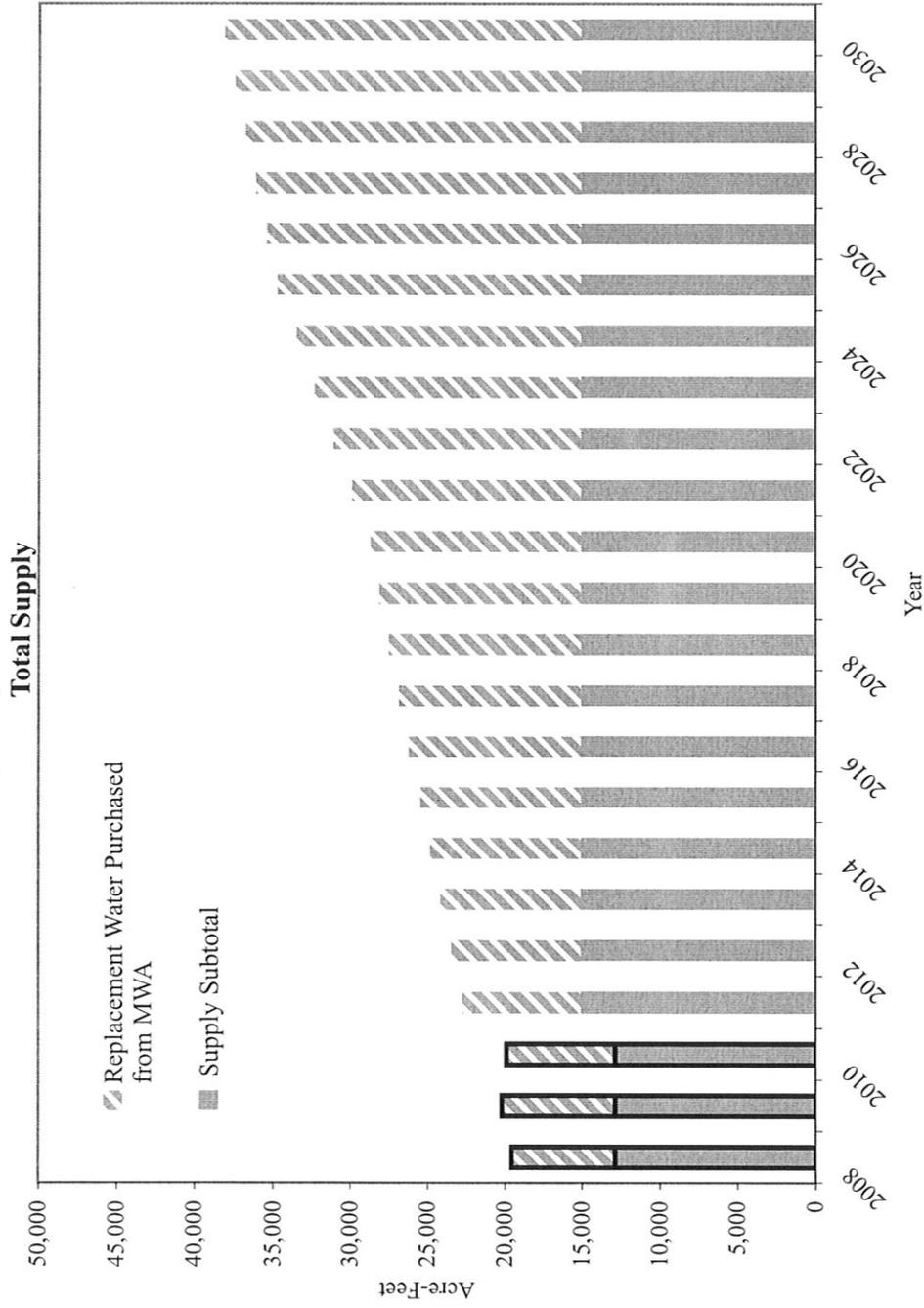


**Table 7C**  
**WSA Multiple Dry Years 2008-2010**  
**Supply and Demand Projections**

Year	Demand					Supply						
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	Purchased MWA Water as Percent of Supply	
2008	19,531	0	0	19,531	7,282	3,815	221	1,530	12,848	6,684	34%	
2009	20,156	0	0	20,156	7,282	3,815	221	1,530	12,848	7,308	36%	
<b>2010</b>	<b>20,831</b>	<b>1,042</b>	<b>68</b>	<b>19,858</b>	<b>7,282</b>	<b>3,815</b>	<b>221</b>	<b>1,530</b>	<b>12,848</b>	<b>7,010</b>	<b>35%</b>	
2011	24,119	1,568	166	22,718	8,567	4,488	221	1,800	15,076	7,642	34%	
2012	25,220	2,018	250	23,452	8,567	4,488	221	1,800	15,076	8,376	36%	
2013	26,322	2,501	333	24,154	8,567	4,488	221	1,800	15,076	9,078	38%	
2014	27,423	3,017	416	24,822	8,567	4,488	221	1,800	15,076	9,746	39%	
<b>2015</b>	<b>28,524</b>	<b>3,566</b>	<b>499</b>	<b>25,458</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>10,382</b>	<b>41%</b>	
2016	29,767	4,167	582	26,182	8,567	4,488	221	1,800	15,076	11,106	42%	
2017	31,010	4,806	666	26,869	8,567	4,488	221	1,800	15,076	11,793	44%	
2018	32,252	5,483	749	27,518	8,567	4,488	221	1,800	15,076	12,442	45%	
2019	33,495	6,197	832	28,131	8,567	4,488	221	1,800	15,076	13,055	46%	
<b>2020</b>	<b>34,738</b>	<b>6,948</b>	<b>915</b>	<b>28,706</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>13,630</b>	<b>47%</b>	
2021	36,149	7,230	998	29,918	8,567	4,488	221	1,800	15,076	14,842	50%	
2022	37,560	7,512	1,082	31,130	8,567	4,488	221	1,800	15,076	16,054	52%	
2023	38,971	7,794	1,165	32,342	8,567	4,488	221	1,800	15,076	17,266	53%	
2024	40,382	8,076	1,248	33,554	8,567	4,488	221	1,800	15,076	18,478	55%	
<b>2025</b>	<b>41,793</b>	<b>8,359</b>	<b>1,331</b>	<b>34,766</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>19,690</b>	<b>57%</b>	
2026	42,644	8,529	1,331	35,446	8,567	4,488	221	1,800	15,076	20,370	57%	
2027	43,494	8,699	1,331	36,127	8,567	4,488	221	1,800	15,076	21,051	58%	
2028	44,345	8,869	1,331	36,807	8,567	4,488	221	1,800	15,076	21,731	59%	
2029	45,195	9,039	1,331	37,488	8,567	4,488	221	1,800	15,076	22,412	60%	
<b>2030</b>	<b>46,046</b>	<b>9,209</b>	<b>1,331</b>	<b>38,168</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>23,092</b>	<b>61%</b>	

Note: Footnotes are provided at the end of Appendix C.

**Chart 7C**  
**Multiple Dry Water Years 2008-2010**

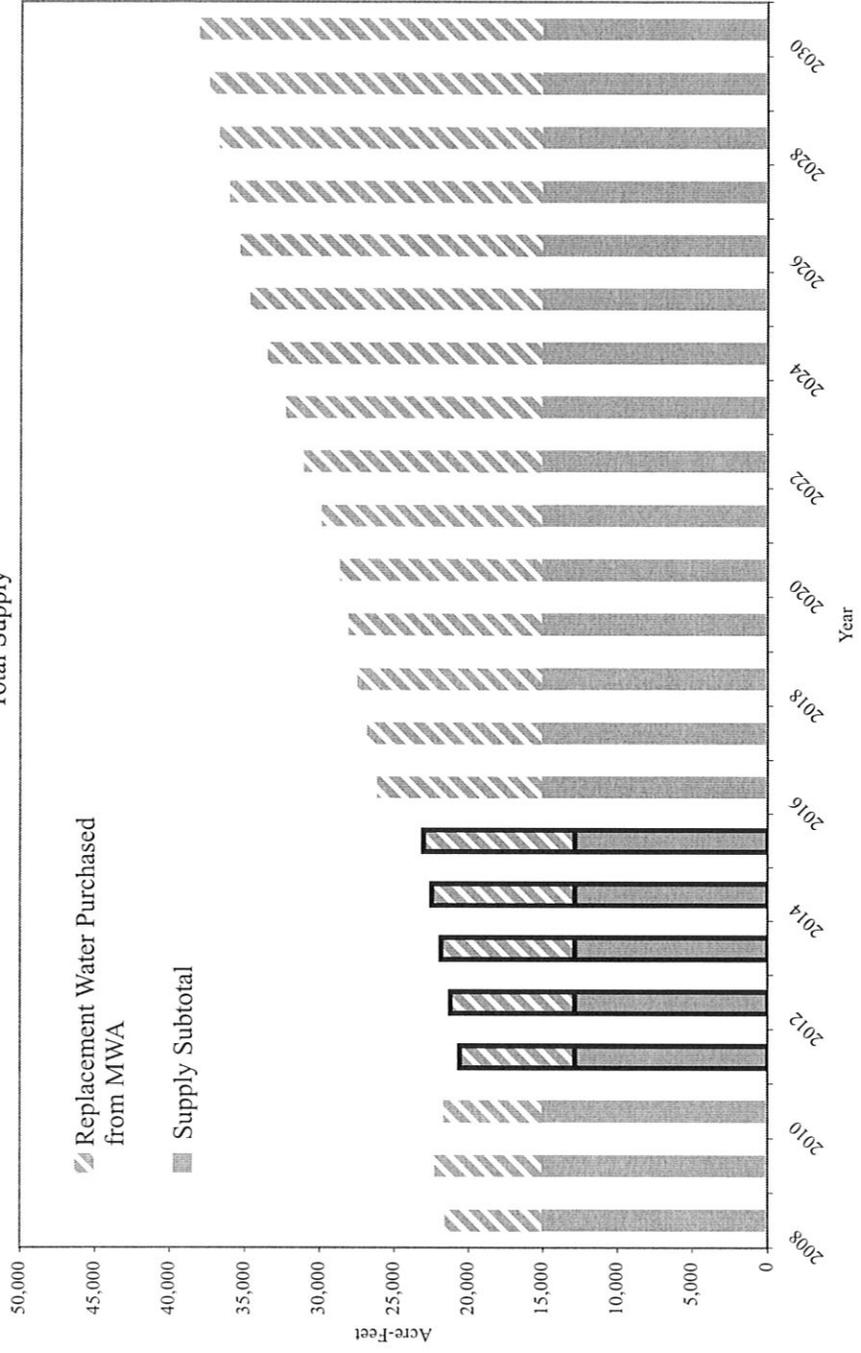


**Table 8C**  
**WSA Multiple Dry Years 2011-2015**  
**Supply and Demand Projections**

Year	Demand				Supply						
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	Purchased MWA Water as Percent of Supply
2008	21,582	0	0	21,582	8,567	4,488	221	1,800	15,076	6,506	30%
2009	22,272	0	0	22,272	8,567	4,488	221	1,800	15,076	7,196	32%
<b>2010</b>	<b>23,018</b>	<b>1,151</b>	<b>75</b>	<b>21,674</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>6,598</b>	<b>30%</b>
2011	21,828	1,419	151	20,560	7,282	3,815	221	1,530	12,848	7,712	38%
2012	22,824	1,826	226	21,224	7,282	3,815	221	1,530	12,848	8,377	39%
2013	23,821	2,263	301	21,859	7,282	3,815	221	1,530	12,848	9,011	41%
2014	24,818	2,730	376	22,464	7,282	3,815	221	1,530	12,848	9,616	43%
<b>2015</b>	<b>25,814</b>	<b>3,227</b>	<b>452</b>	<b>23,039</b>	<b>7,282</b>	<b>3,815</b>	<b>221</b>	<b>1,530</b>	<b>12,848</b>	<b>10,191</b>	<b>44%</b>
2016	29,767	4,167	582	26,182	8,567	4,488	221	1,800	15,076	11,106	42%
2017	31,010	4,806	666	26,869	8,567	4,488	221	1,800	15,076	11,793	44%
2018	32,252	5,483	749	27,518	8,567	4,488	221	1,800	15,076	12,442	45%
2019	33,495	6,197	832	28,131	8,567	4,488	221	1,800	15,076	13,055	46%
<b>2020</b>	<b>34,738</b>	<b>6,948</b>	<b>915</b>	<b>28,706</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>13,630</b>	<b>47%</b>
2021	36,149	7,230	998	29,918	8,567	4,488	221	1,800	15,076	14,842	50%
2022	37,560	7,512	1,082	31,130	8,567	4,488	221	1,800	15,076	16,054	52%
2023	38,971	7,794	1,165	32,342	8,567	4,488	221	1,800	15,076	17,266	53%
2024	40,382	8,076	1,248	33,554	8,567	4,488	221	1,800	15,076	18,478	55%
<b>2025</b>	<b>41,793</b>	<b>8,359</b>	<b>1,331</b>	<b>34,766</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>19,690</b>	<b>57%</b>
2026	42,644	8,529	1,331	35,446	8,567	4,488	221	1,800	15,076	20,370	57%
2027	43,494	8,699	1,331	36,127	8,567	4,488	221	1,800	15,076	21,051	58%
2028	44,345	8,869	1,331	36,807	8,567	4,488	221	1,800	15,076	21,731	59%
2029	45,195	9,039	1,331	37,488	8,567	4,488	221	1,800	15,076	22,412	60%
<b>2030</b>	<b>46,046</b>	<b>9,209</b>	<b>1,331</b>	<b>38,168</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>23,092</b>	<b>61%</b>

Note: Footnotes are provided at the end of Appendix C.

Chart 8C  
 Multiple Dry Water Years 2011-2015  
 Total Supply

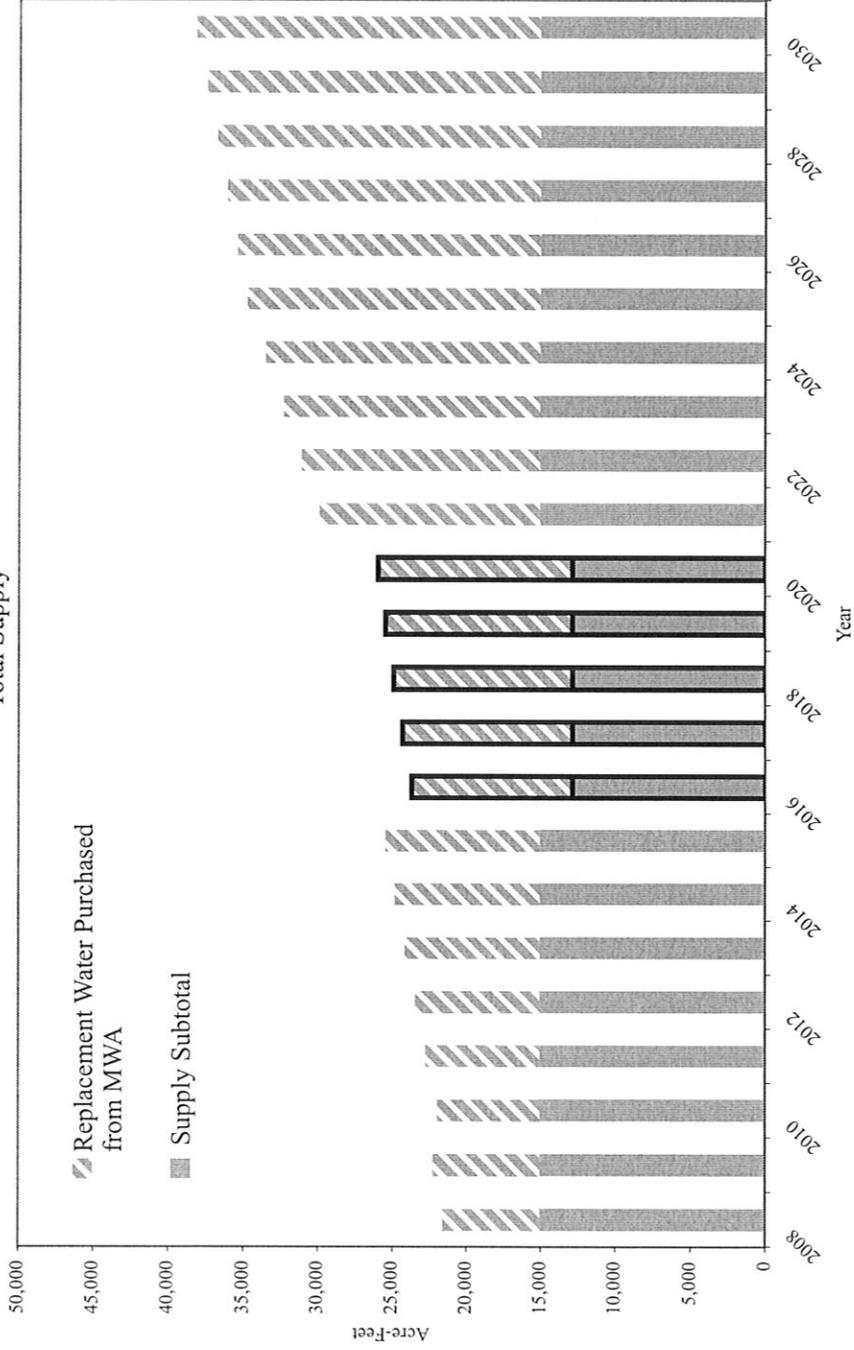


**Table 9C**  
**WSA Multiple Dry Years 2016-2020**  
**Supply and Demand Projections**

Year	Demand				Supply						
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	Purchased MWA Water as Percent of Supply
2008	21,582	0	0	21,582	8,567	4,488	221	1,800	15,076	6,506	30%
2009	22,272	0	0	22,272	8,567	4,488	221	1,800	15,076	7,196	32%
<b>2010</b>	<b>23,018</b>	<b>1,151</b>	<b>75</b>	<b>21,942</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>6,866</b>	<b>31%</b>
2011	24,119	1,568	166	22,718	8,567	4,488	221	1,800	15,076	7,642	34%
2012	25,220	2,018	250	23,452	8,567	4,488	221	1,800	15,076	8,376	36%
2013	26,322	2,501	333	24,154	8,567	4,488	221	1,800	15,076	9,078	38%
2014	27,423	3,017	416	24,822	8,567	4,488	221	1,800	15,076	9,746	39%
<b>2015</b>	<b>28,524</b>	<b>3,566</b>	<b>499</b>	<b>25,458</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>10,382</b>	<b>41%</b>
2016	26,939	3,771	527	23,695	7,282	3,815	221	1,530	12,848	10,847	46%
2017	28,064	4,350	602	24,316	7,282	3,815	221	1,530	12,848	11,468	47%
2018	29,188	4,962	678	24,904	7,282	3,815	221	1,530	12,848	12,056	48%
2019	30,313	5,608	753	25,458	7,282	3,815	221	1,530	12,848	12,610	50%
<b>2020</b>	<b>31,438</b>	<b>6,288</b>	<b>828</b>	<b>25,979</b>	<b>7,282</b>	<b>3,815</b>	<b>221</b>	<b>1,530</b>	<b>12,848</b>	<b>13,131</b>	<b>51%</b>
2021	36,149	7,230	998	29,918	8,567	4,488	221	1,800	15,076	14,842	50%
2022	37,560	7,512	1,082	31,130	8,567	4,488	221	1,800	15,076	16,054	52%
2023	38,971	7,794	1,165	32,342	8,567	4,488	221	1,800	15,076	17,266	53%
2024	40,382	8,076	1,248	33,554	8,567	4,488	221	1,800	15,076	18,478	55%
<b>2025</b>	<b>41,793</b>	<b>8,359</b>	<b>1,331</b>	<b>34,766</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>19,690</b>	<b>57%</b>
2026	42,644	8,529	1,331	35,446	8,567	4,488	221	1,800	15,076	20,370	57%
2027	43,494	8,699	1,331	36,127	8,567	4,488	221	1,800	15,076	21,051	58%
2028	44,345	8,869	1,331	36,807	8,567	4,488	221	1,800	15,076	21,731	59%
2029	45,195	9,039	1,331	37,488	8,567	4,488	221	1,800	15,076	22,412	60%
<b>2030</b>	<b>46,046</b>	<b>9,209</b>	<b>1,331</b>	<b>38,168</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>23,092</b>	<b>61%</b>

Notc: Footnotes are provided at the end of Appendix C.

Chart 9C  
Multiple Dry Water Years 2016-2020  
Total Supply

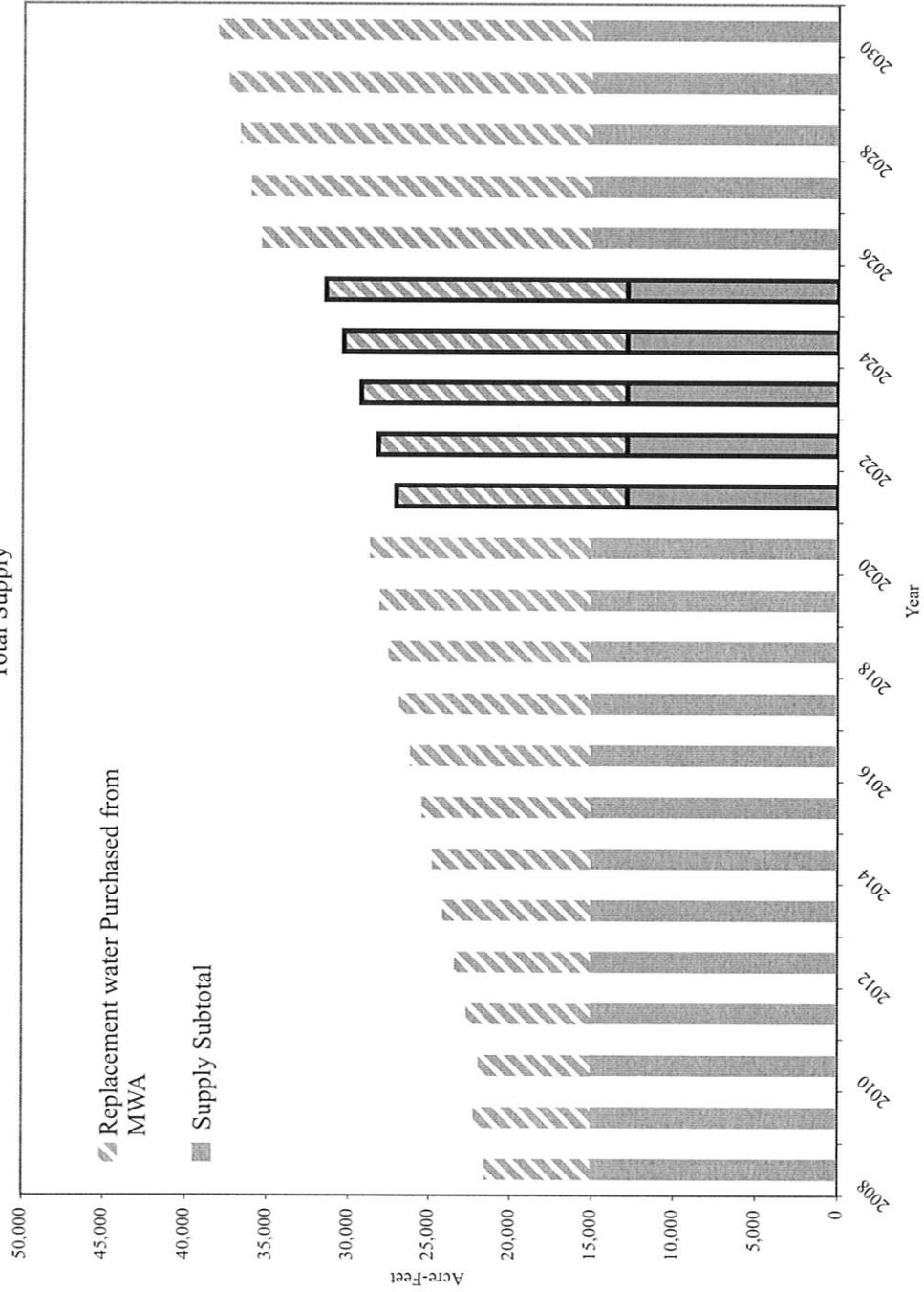


**Table 10C**  
**WSA Multiple Dry Years 2021-2025**  
**Supply and Demand Projections**

Year	Demand					Supply					
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	Purchased MWA Water as Percent of Supply
2008	21,582	0	0	21,582	8,567	4,488	221	1,800	15,076	6,506	30%
2009	22,272	0	0	22,272	8,567	4,488	221	1,800	15,076	7,196	32%
<b>2010</b>	<b>23,018</b>	<b>1,151</b>	<b>75</b>	<b>21,942</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>6,866</b>	<b>31%</b>
2011	24,119	1,568	166	22,718	8,567	4,488	221	1,800	15,076	7,642	34%
2012	25,220	2,018	250	23,452	8,567	4,488	221	1,800	15,076	8,376	36%
2013	26,322	2,501	333	24,154	8,567	4,488	221	1,800	15,076	9,078	38%
2014	27,423	3,017	416	24,822	8,567	4,488	221	1,800	15,076	9,746	39%
<b>2015</b>	<b>28,524</b>	<b>3,566</b>	<b>499</b>	<b>25,458</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>10,382</b>	<b>41%</b>
2016	29,767	4,167	582	26,182	8,567	4,488	221	1,800	15,076	11,106	42%
2017	31,010	4,806	666	26,869	8,567	4,488	221	1,800	15,076	11,793	44%
2018	32,252	5,483	749	27,518	8,567	4,488	221	1,800	15,076	12,442	45%
2019	33,495	6,197	832	28,131	8,567	4,488	221	1,800	15,076	13,055	46%
<b>2020</b>	<b>34,738</b>	<b>6,948</b>	<b>915</b>	<b>28,706</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>13,630</b>	<b>47%</b>
2021	32,715	6,543	904	27,075	7,282	3,815	221	1,530	12,848	14,228	53%
2022	33,992	6,798	979	28,172	7,282	3,815	221	1,530	12,848	15,325	54%
2023	35,269	7,054	1,054	29,269	7,282	3,815	221	1,530	12,848	16,421	56%
2024	36,546	7,309	1,129	30,366	7,282	3,815	221	1,530	12,848	17,518	58%
<b>2025</b>	<b>37,823</b>	<b>7,565</b>	<b>1,205</b>	<b>31,463</b>	<b>7,282</b>	<b>3,815</b>	<b>221</b>	<b>1,530</b>	<b>12,848</b>	<b>18,615</b>	<b>59%</b>
2026	42,644	8,529	1,331	35,446	8,567	4,488	221	1,800	15,076	20,370	57%
2027	43,494	8,699	1,331	36,127	8,567	4,488	221	1,800	15,076	21,051	58%
2028	44,345	8,869	1,331	36,807	8,567	4,488	221	1,800	15,076	21,731	59%
2029	45,195	9,039	1,331	37,488	8,567	4,488	221	1,800	15,076	22,412	60%
<b>2030</b>	<b>46,046</b>	<b>9,209</b>	<b>1,331</b>	<b>38,168</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>23,092</b>	<b>61%</b>

Note: Footnotes are provided at the end of Appendix C.

Chart 10C  
 Multiple Dry Water Years 2021-2025  
 Total Supply

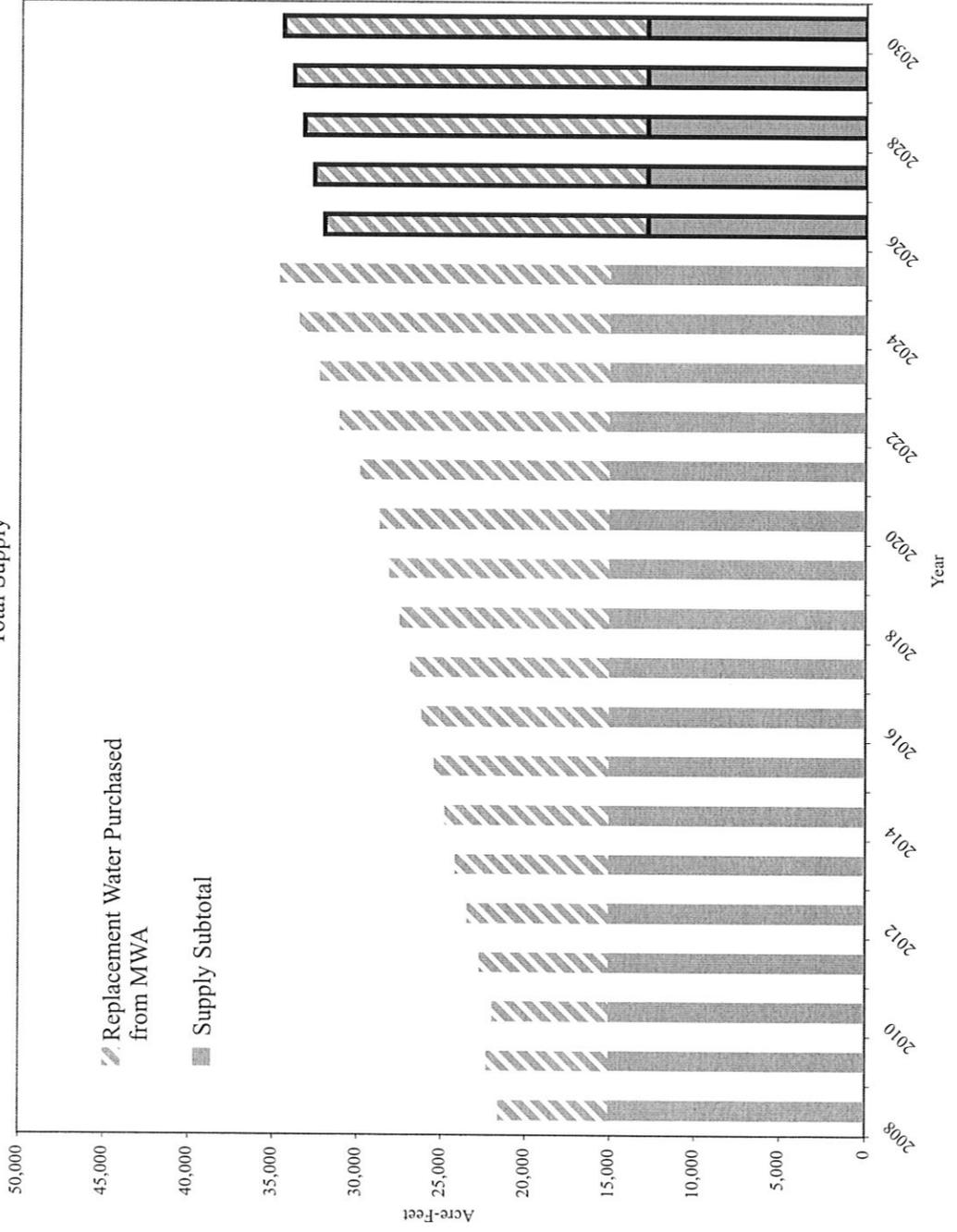


**Table 11C**  
**WSA Multiple Dry Years 2026-2030**  
**Supply and Demand Projections**

Year	Demand					Supply					
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	Purchased MWA Water as Percent of Supply
2008	21,582	0	0	21,582	8,567	4,488	221	1,800	15,076	6,506	30%
2009	22,272	0	0	22,272	8,567	4,488	221	1,800	15,076	7,196	32%
<b>2010</b>	<b>23,018</b>	<b>1,151</b>	<b>75</b>	<b>21,942</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>6,866</b>	<b>31%</b>
2011	24,119	1,568	166	22,718	8,567	4,488	221	1,800	15,076	7,642	34%
2012	25,220	2,018	250	23,452	8,567	4,488	221	1,800	15,076	8,376	36%
2013	26,322	2,501	333	24,154	8,567	4,488	221	1,800	15,076	9,078	38%
2014	27,423	3,017	416	24,822	8,567	4,488	221	1,800	15,076	9,746	39%
<b>2015</b>	<b>28,524</b>	<b>3,566</b>	<b>499</b>	<b>25,458</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>10,382</b>	<b>41%</b>
2016	29,767	4,167	582	26,182	8,567	4,488	221	1,800	15,076	11,106	42%
2017	31,010	4,806	666	26,869	8,567	4,488	221	1,800	15,076	11,793	44%
2018	32,252	5,483	749	27,518	8,567	4,488	221	1,800	15,076	12,442	45%
2019	33,495	6,197	832	28,131	8,567	4,488	221	1,800	15,076	13,055	46%
<b>2020</b>	<b>34,738</b>	<b>6,948</b>	<b>915</b>	<b>28,706</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>13,630</b>	<b>47%</b>
2021	36,149	7,230	998	29,918	8,567	4,488	221	1,800	15,076	14,842	50%
2022	37,560	7,512	1,082	31,130	8,567	4,488	221	1,800	15,076	16,054	52%
2023	38,971	7,794	1,165	32,342	8,567	4,488	221	1,800	15,076	17,266	53%
2024	40,382	8,076	1,248	33,554	8,567	4,488	221	1,800	15,076	18,478	55%
<b>2025</b>	<b>41,793</b>	<b>8,359</b>	<b>1,331</b>	<b>34,766</b>	<b>8,567</b>	<b>4,488</b>	<b>221</b>	<b>1,800</b>	<b>15,076</b>	<b>19,690</b>	<b>57%</b>
2026	38,592	7,718	1,205	32,079	7,282	3,815	221	1,530	12,848	19,231	60%
2027	39,362	7,872	1,205	32,695	7,282	3,815	221	1,530	12,848	19,847	61%
2028	40,132	8,026	1,205	33,310	7,282	3,815	221	1,530	12,848	20,463	61%
2029	40,902	8,180	1,205	33,926	7,282	3,815	221	1,530	12,848	21,078	62%
<b>2030</b>	<b>41,672</b>	<b>8,334</b>	<b>1,205</b>	<b>34,542</b>	<b>7,282</b>	<b>3,815</b>	<b>221</b>	<b>1,530</b>	<b>12,848</b>	<b>21,694</b>	<b>63%</b>

Note: Footnotes are provided at the end of Appendix C.

Chart 11C  
 Multiple Dry Water Years 2026-2030  
 Total Supply



## Appendix C Footnotes

- 1) Adjusted "Year 2005 Urban Water Management Plan," Table 7 and Table 13, prepared by Apple Valley Ranchos Water Company, November 2005 to include demand from the "Updated Water Supply Assessment for the proposed North Apple Valley Industrial Specific Plan," prepared by Terra Nova planning & Research on April 25, 2007.
  - 2) Water Savings are realized through AVR's aggressive water conservation program which is estimated to reduce demand by 5% in 2010 and by an additional 1.5% per year through 2020, so that in year 2015 conservation represents 12.5% of demand, and in 2020 conservation represents 20% of demand. Subsequent years, 2021 through 2030 also recognize an estimated water savings of 20% of demand. Reduction will be realized through current incentive offered by MWA and programs set forth in AVR's upcoming 2010 UWMP update.
  - 3) Estimated Project Demand is based on Appendix A, which quantifies estimated water demand for the proposed project. Figures assume demand beginning in 2010 with a linear increase through buildout in 2025. Single and multiple dry years include a reduction in demand of 9.5%.
  - 4) Free Production Allowance as determined by the Water Master for AVR water company and is subject to change only as a result of a court order.
  - 5) Water Supply and Surplus Water Contract, Jess Ranch Water Company & Apple Valley Ranchos Water Company. Delivery amount is subject to change only as a result of a court order.
  - 6) Based on the annual allotment of 221 acre-feet to AVR of pre-purchase claim water totaling 8,000 acre-feet to be delivered over a 40 year period.
  - 7) Leased Water Rights are based on historical deliveries over the past 3 years as specified in Appendix E of the Watermaster Annual Report.
  - 8) Replacement Water to be Purchased from MWA is the difference between projected demand, including water savings through conservation efforts, and all supply sources.
- Note: Values for each five year increment between 2010 and 2025 (in bold) are derived from AVR UWMP and combined with figures from the updated NAVISP, annual values are extrapolated assuming a linear growth rate within each five year increment. For single dry years a 25% reduction factor was applied to all supply sources other than Pre-Purchased Claim Rights and for multiple dry years a 15% reduction was applied in the same manner. A 9.5% reduction was applied to AVR's Water Use demand component for single and multiple dry years to account for water conservation efforts and market forces. No additional water savings are considered during single and multiple dry years. Also, see Appendix C methodology discussion.

# **WATER RESOURCES STUDY**

*for the proposed*

## **Hacienda at Fairview Valley Specific Plan**

*prepared by*



**Terra Nova Planning & Research, Inc<sup>®</sup>**  
**400 South Farrell, B-205**  
**Palm Springs, California 92262**

**July 21, 2009**

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# **WATER RESOURCES STUDY**

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## **WATER RESOURCES STUDY FOR THE HACIENDA AT FAIRVIEW VALLEY SPECIFIC PLAN**

### **SECTION I. INTRODUCTION**

#### **A. Introduction**

The purpose of this Water Resources Study is to assess the adequacy of the regional water supply to meet the projected demand at build-out of the Hacienda at Fairview Valley Specific Plan, based on the most recent information available and determine any potential impacts that buildout of the project may have on local or regional water resources. This Water Resources Study has been prepared in support of the Water Supply Assessment prepared for this project that was adopted by Apple Valley Ranchos (AVR) Water Company in November of 2008 and utilizes information contained in the Mojave Water Agency (MWA) 2005 Urban Water Management Plan (UWMP) AVR's UWMP, and other public documents that describe the availability and reliability of statewide, regional and local water resources.

#### **B. Purpose of Water Resources Study**

As a supplement to the November 19, 2008 Water Supply Assessment (WSA) prepared by AVR for the Hacienda at Fairview Valley Specific Plan, the purpose of this report is to provide additional discussion and analyses regarding matters such as: AVR's total projected water supplies over the next 20-year period in relation to demands associated with the proposed project and other existing and planned future uses; recent factors having the potential to affect those supplies; MWA's role as the Watermaster in the Mojave Groundwater Basin; and potential impacts of supplying water to the proposed project. Although the WSA concluded that there are sufficient water supplies in the Alto Subarea to meet existing and future water demands including the proposed project without resulting in significant impacts to water supplies, this Report provides recommendations to limit water demand associated with the proposed project and further assurance that impacts to water resources are maintained below levels of significance.

As indicated above, information and analyses utilized in preparing this report were derived from sources including, but not limited to, AVR's 2005 UWMP,<sup>1</sup> MWA's 2005 UWMP<sup>2</sup> and UWMP

---

<sup>1</sup> "Urban Water Management Plan 2005," prepared by Apple Valley Ranchos Water Company, November 2005.

Update,<sup>3</sup> MWA’s 2006 Final Environmental Impact Report for the Mojave Water Agency Water Supply Reliability and Groundwater Management Program,<sup>4</sup> and the 15<sup>th</sup> Annual Report of the Mojave Basin Area Watermaster.<sup>5</sup>

**C. Project Description and Water Demand**

The proposed project is a Specific Plan of Land Use (Specific Plan) with residential, commercial and recreational land uses on approximately 1,557 acres in San Bernardino County, east of the Town of Apple Valley but within the Town's Sphere of Influence. The proposed project will facilitate the development of approximately 1,126 acres of residential development, 80 acres of roadways, 15 acres of commercial development, and 336 acres of open space, parks and water features. Implementation of the Specific Plan will facilitate the phased development of the project. Table I-1 shows the proposed acres and dwelling units or square footage of development for each land use type.

**Table I-1  
 Land Use Description**

<b>Residential</b>	<b>Planned Units</b>	<b>Acres</b>
Rural Living (RL-2)	27	73
Estate (RS-1)	142	226
Equestrian (R-EQ)	30	47
Very Low (VL)	100	94
Low (L)	865	288
Low-Medium (LM)	785	196
Medium (M)	800	146
Medium-High (MH)	365	56
<b>Subtotal</b>	<b>3,114</b>	<b>1,126</b>
<b>Other Land Uses</b>	<b>Square Footage</b>	<b>Acres</b>
Commercial (CN)	200,000	15
Parks (OS-R)	33,000	38
Water Features	N/A	18
Open Space (OS-C)	N/A	280
Streets	N/A	80
<b>Subtotal</b>	<b>233,000</b>	<b>431</b>
	<b>Total Acreage</b>	<b>1,557</b>
Source: “Hacienda at Fairview Valley Specific Plan – Land Use Summary Table,” prepared by Strata Equity Group, August 2008		

<sup>2</sup> “Mojave Water Agency 2004 Regional Water Management Plan,” prepared by Mojave Water Agency, Adopted February 24, 2005.  
<sup>3</sup> “Supplement A: 2005 Urban Water Management Plan Update,” prepared by Mojave Water Agency, December 8, 2005.  
<sup>4</sup> “Mojave Water Agency Water Supply Reliability and Groundwater Replenishment Program: Final Project Environmental Impact Report,” prepared by Mojave Water Agency, January 2006.  
<sup>5</sup> “Fifteenth Annual Report of the Mojave Basin Area Watermaster: Water Year 2007-08,” prepared by Mojave Basin Area Watermaster, May 1, 2009.

As estimated in the WSA, buildout of the project will generate a water demand of approximately 1.19 million gallons per day (mgd) or 1,331 acre-feet per year, as shown in Table I- 2. Water use is projected per land use type and assumes water efficient appliances, toilets and faucets will be installed for all new development, and onsite landscaping will consist of native landscape and other drought-tolerant plants, with limited turf, and the use of landscaping features that do not require supplemental water. The project will include approximately 18 acres of surface waters in lakes and other water features, which are designed to utilize reclaimed water.

**Table I-2  
 Estimated Water Service Demands**

<b>Land Use Designation</b>	<b>Landscaping* (ac-ft/yr)</b>	<b>Potable* (ac-ft/yr)</b>	<b>Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Residential Rural Living (RL-2)	69.2	4.2	73.4	0.07
Residential Estate (RS-1)	191.6	22.2	213.8	0.19
Residential Equestrian (R-EQ)	44.8	4.7	49.5	0.04
Residential Very Low (VL)	101.8	15.6	117.5	0.10
Residential Low (L)	165.2	80.7	245.9	0.22
Residential Low-Medium (LM)	129.9	73.3	203.2	0.18
Residential Medium (M)	107.8	74.7	182.5	0.16
Residential Medium-High (MH)	40.3	34.1	74.3	0.07
Commercial (CN)	7.1	14.0	21.1	0.02
Parks Landscape (OS-R)	55.9	0.0	55.9	0.05
Water Features	59.7	0.0	59.7	0.05
Open Space (OS-C)	33.2	1.1	34.3	0.03
Streets	0.0	0.0	0.0	0.00
<b>Total</b>	<b>1,006.6</b>	<b>324.6</b>	<b>1,331.2</b>	<b>1.19</b>

Source: "Water Supply Assessment and Water Supply Verification for the Hacienda at Fairview Valley Specific Plan," adopted by Apple Valley Ranchos Water Company, November 19, 2008.

\* Accounts for 35% non-consumptive return flows into the Alto Subarea.

Although the project's water demand does not specifically account for the reuse of reclaimed water, which could be used as a substitute for groundwater for landscaping demands, the model does include a 35% non-consumptive return flow factor for all land uses. Non-consumptive return flows represent that portion of water that is not consumed and is returned to the basin via natural percolation through irrigation of landscaped areas or through percolation of treated wastewater effluent. The above table shows the estimated net demand of the project assuming that 35% of water use is returned to the groundwater basin.

Apple Valley Ranchos Water Company (AVR) expanded their Service Area boundary on April 6, 2009 to include the entire Hacienda at Fairview Valley Specific Plan site and will serve as the water provider for the proposed project. Exhibit II-3 shows AVR's Service Area Expansion. As stated in the WSA and confirmed by the attached letter from AVR, the Water Company has indicated that they can provide water services to the Hacienda at Fairview Valley site without adversely affecting service to existing customers. (See Appendix C).

# **WATER RESOURCES STUDY**

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## **WATER RESOURCES STUDY FOR THE HACIENDA AT FAIRVIEW VALLEY SPECIFIC PLAN**

### **SECTION II. EXISTING CONDITIONS**

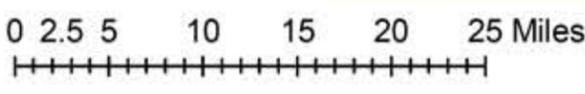
#### **A. Background**

Although located in one of the driest geographic regions of the state, there is a substantial subsurface groundwater basin underlying the Hacienda at Fairview Valley Specific Plan site. The accumulation of groundwater is due in part to water runoff from surrounding mountains and natural percolation of the Mojave River.

In order to prevent adverse impacts from the depletion of groundwater reserves throughout the Mojave Basin, the Watermaster, the Mojave Water Agency, monitors and manages water supplies, implements water conservation, restricts pumping from the groundwater basin, and imports State Water Project water.

The primary source of water in the Mojave Basin is from groundwater contained within the underlying aquifer. Groundwater is recharged naturally via the Mojave River and other sources within the watershed, which is fed by precipitation within the San Bernardino Mountains and region, percolation of non-consumptive irrigation water, reclaimed wastewater, and imported State Water Project water.

The Mojave Water Agency's service area extends over 4,900 square miles of the High Desert within San Bernardino County (See Exhibit II-1). The Upper, Middle, and Lower Mojave River Basins are included in the Mojave Basin Area Judgment and are the focus of this Report. There are five Subareas within the Mojave Basin: Alto, Baja, Centro, Este, and Oeste. The groundwater supply is contained within two aquifers; the Regional Aquifer and Floodplain Aquifer. The Floodplain Aquifer is located along the path of the Mojave River and is recharged by percolating river water. The Regional Aquifer encompasses the remainder of the Mojave Groundwater Basin and underlies and surrounds the Floodplain Aquifer. MWA's 2005 UWMP details the hydrogeology of these aquifers including a discussion of water bearing alluvium.



**Water Purveyors**

- |  |   |  |
|--|---|--|
| 1. Apple Valley Foothill County Water District | 16. Daggett Community Services District   | 32. Juniper-Riviera County Water District              |
| 2. Apple Valley Heights County Water District  | 17. Desert Dawn Mutual Water Company      | 33. Lucerne Valley Mutual Water Company                |
| 3. Apple Valley Ranchos Water Company          | 18. Desert Springs Mutual Water Company   | 34. Lucerne Vista Mutual Water Company                 |
| 4. Apple Valley View Mutual Water Company      | 19. Golden State Water Apple Valley       | 35. Mariana Ranchos Water District                     |
| 5. Bar H Mutual Water Company                  | 20. Golden State Water System 3           | 36. Navajo Mutual Water Company                        |
| 6. Bar-Len Mutual Water Company                | 21. Golden State Water System 5           | 37. Phelan Pinon Hills Community Services District     |
| 7. Bighorn-Desert View Water Agency            | 22. Golden State Water System 6           | 38. Rancheritos Mutual Water Company                   |
| 8. Center Water Company                        | 23. Golden State Water System Barstow     | 39. Rand Communities Water District                    |
| 9. Chamisal Mutual Water Company               | 24. Gordon Acres Water Company            | 40. Sheep Creek Water Company                          |
| 10. City of Adelanto                           | 25. Helendale Community Services District | 41. Stoddard Valley Mutual Water Company               |
| 11. County Service Area 42                     | 26. Hesperia Water District               | 42. Thunderbird County Water District                  |
| 12. County Service Area 64                     | 27. Hi Desert Mutual Water Company        | 43. Victorville Water District Improvement District #1 |
| 13. County Service Area 70 J                   | 28. Hi Desert Water District              | 44. Victorville Water District Improvement District #2 |
| 14. County Service Area 70 W1                  | 29. Indian Wells Valley Water District    | 45. West End Mutual Water Company                      |
| 15. County Service Area 70 W4                  | 30. Joshua Basin County Water District    | 46. Yermo Water District                               |
|  | 31. Jubilee Mutual Water Company          | <b>MWA Boundary</b>                                    |

Source: MWA Water Purveyor Geographic Guide and Contact Information, January 2009



June 25, 2009

## **B. California Water Planning Law**

### Senate Bill 610

A WSA is required because the proposed project area would demand an amount of water greater than that required by a 500 dwelling unit project, occupies more than 40 acres of land, or may have more than 650,000 square feet of floor area (Water Code Section 10912; SB 610).

As the water provider for the proposed project, the Apple Valley Ranchos Water Company is required by law to generate a Water Supply Assessment in accordance with SB 610 and in support of the California Environmental Quality Act (CEQA) review process.

A Water Supply Assessment for the subject project was adopted by the AVR Board of Directors on November 19, 2008. As the water provider AVR has substantial discretion in their evaluation of the water supply availability and concludes that there are and will be sufficient water through the 20-year period analyzed in the WSA. The WSA serves as part of the CEQA record in analyzing and assessing the project's impact to water resources.

## **C. Mojave Water Basin**

As noted above, the Mojave Water Basin extends over 4,900 square miles of the High Desert within San Bernardino County. There are five Subareas within the Mojave Basin; Alto, Baja, Centro, Este, and Oeste. The Mojave Water Agency acts as the Watermaster and manages groundwater throughout these Subareas. This report focuses on the Alto Subarea, from which AVR and several other water purveyors under the Judgment extract groundwater.

### **Mojave Water Agency**

The Mojave Water Agency serves as the Watermaster for the adjudicated Mojave Basin. As the Watermaster it is the responsibility of MWA to manage the Basin, regulate pumping limits, collect fees for replacement water, secure additional sources of water and assure that Subareas are not overdrafted.

### Adjudicated Mojave Basin

The adjudication process of the groundwater in the Mojave Basin began in 1990 with cross complaints filed in 1991. In 1992 numerous parties agreed to conduct good faith negotiations and by 1993 over 75 percent of the parties involved were agreed to the Judgment, thus binding the involved parties. In 1995 a trial involving the non-stipulated parties was completed. The final Judgment was entered in 1996 adopting the Physical Solution set forth in the Judgment. The purpose of the Judgment was to create incentives to conserve local water, guarantee that downstream producers will not be adversely affected by upstream producers, and assess producers to obtain funding for the purchase of imported water.

The Judgment provided a Physical Solution for all parties by requiring equitable water allocation and costs for all users. The Judgment holds that "sufficient information and data are known to formulate reasonable and just allocation of existing water supplies" between Subareas and among water users within each Subarea. The Physical Solution takes into consideration the

climatic condition of the Mojave Basin Area, consumptive use of water, quantity and rate of return flows, extent of established uses, availability of storage water, impacts to upstream and downstream Subareas, and the need to protect public interest and public trust concerns. (See Appendix A for The Judgment)

The Watermaster has established the methodology to determine groundwater conditions and properly manage the Basin. Specific terminology is utilized in the Judgment and subsequently in MWA's UWMP and in AVR's UWMP. Several of these common terms are described below.

A Base Annual Production (BAP) level was set for each producer based on historical production and is defined as the producers' highest annual verified use. The Judgment established an initial BAP of 122,365 acre-feet for the Alto Subarea for the period between 1986 and 1990, which was subsequently ramped down. For the 2007-2008 water year the BAP for the Alto Subarea was 116,412 acre-feet. (As set forth in greater detail below, AVR and the project site are located within the Alto Subarea.)

The Free Production Allowance (FPA) is that portion of the BAP that can be pumped without triggering the need for obligatory replacement water. Replacement water is secured either through the payment of established fees or by transferring unused production rights from another producer. As set forth in the Judgment the Watermaster must obtain court approval prior to increasing or reducing the FPA. A reduction in the FPA is not permitted to exceed five (5) percent.

Verified production is the amount of water that each Subarea has pumped in a given water year. MWA collects this data from a variety of sources including water levels, pumping records, and monitoring. This amount is reported in the Annual Report (see Table III-2 below for the Alto Subarea Verified Production).

Each producer has a Carry Over right, which allows the producer to delay and accumulate their share of a FPA until the following year without incurring any Replacement Water Assessment. Carryover water can be transferred between purveyors within each Subarea and between Subareas and can be bought, sold, or leased.

To maintain historical natural flows between Subareas, a baseline figure, known as the Subarea Obligation, was established using the estimated average natural flow between Subareas over the 60-year period from 1930 to 1990. To assure that Subareas receive their minimum natural flows annual accounting is conducted. When natural flows are below the minimum obligation the upstream Subarea is required to pay the Watermaster for Makeup Water to remedy the deficiency and satisfy the Subarea Obligation. When natural flows are greater than the average, the upstream Subarea can receive a credit, which can then be used to offset deficiencies identified in future years. Individual producers within a Subarea are collectively responsible for purchasing Makeup Water.

Producers that exceed their FPA must pay the Watermaster a Replacement Water fee for any water pumped beyond the FPA including any transfers or carryover FPA. Replacement obligations are incurred for water pumped in excess of the FPA and for Makeup water.

Replacement Water Fees paid by a producer include a component for any excess production over FPA, a component to cover the collective share of the Subarea's Makeup Water Obligation, and are calculated to account for transfers, leases, and any Carry Over.

#### Mojave Water Agency Regional Water Management Plan

The fundamental objective of the UWMP is to bring the basin into balance by ensuring that future water demands are equivalent to available water supplies, thereby stabilizing the groundwater in storage. The Plan sets forth management actions that allow the Mojave Water Agency to achieve Basin-wide balance by 2020 by maximizing beneficial use of water and supplying water in adequate quantity and quality to meet various demands. This will be achieved via the combination of imported water and recycled water supplies, enhanced conservation, and demand management measures. The latest UWMP was adopted in 2005, and an updated UWMP is expected in 2010.

#### Groundwater Overdraft Condition

Groundwater overdraft occurs when water extraction exceeds replenishment, and can result in reductions to water levels in storage, decreased well yields, increased pumping costs, water quality problems, and ground subsidence. Overdraft in the Mojave Basin resulted from historic increased pumping due to population growth in the High Desert communities. In order to address overdraft the Mojave Basin was adjudicated via the Mojave Basin Area Judgment, which charged MWA with finding ways to assure a long-term reliable water supply and, where possible, to reverse the overdraft of the Mojave Basin Area.

MWA has initiated a number of programs to recharge the Basin and conserve water resources. The Morongo Basin and Mojave River Pipelines convey State Water Project water from the California Aqueduct to recharge facilities located throughout the Basin where percolation into the groundwater aquifer can occur. In an effort to conserve water, promote water saving methodologies, and provide water conservation education to the community, MWA has partnered with the Alliance for Water Awareness and Conservation (AWAC).

A riparian recovery program that removes invasive and non-native species, such as tamarisk, which are high water users, has been initiated via a Memorandum of Understanding with the Mojave Desert Resource Conservation District (MDRCD).

In addition, MWA has initiated the "Regional Recharge and Recovery Program (R<sup>3</sup>), which utilizes the Upper Mojave Basin Hydrogeologic Model, the Upper Mojave River Well Field and Water Supply Pipeline, and potentially a new pipeline and recharge facility that would allow groundwater recharge south of the existing Rock Springs spreading facility. Currently, the project is in the preliminary design phase and is expected to begin operating by 2010.

#### Watermaster Annual Report for Water Year 2007-2008<sup>6</sup>

The Watermaster is required to file an annual report with the Riverside County Superior Court depicting activities and determinations of the Watermaster, including information required by the Stipulated Judgment, and water supply conditions for the water year. The report addresses the

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<sup>6</sup> "Fifteenth Annual Report of the Mojave Basin Area Watermaster Water Year 2007-2008," prepared by Mojave Basin Area Watermaster, May 1, 2009.

production amounts of each producer, including amounts that exceed the Free Production Allowance (FPA), replacement and makeup water obligations, imported water purchased, and the amount of replacement fees to be levied in accordance with water production. The Report must be filed by April 1<sup>st</sup> of each year.

### **Alto Subarea**

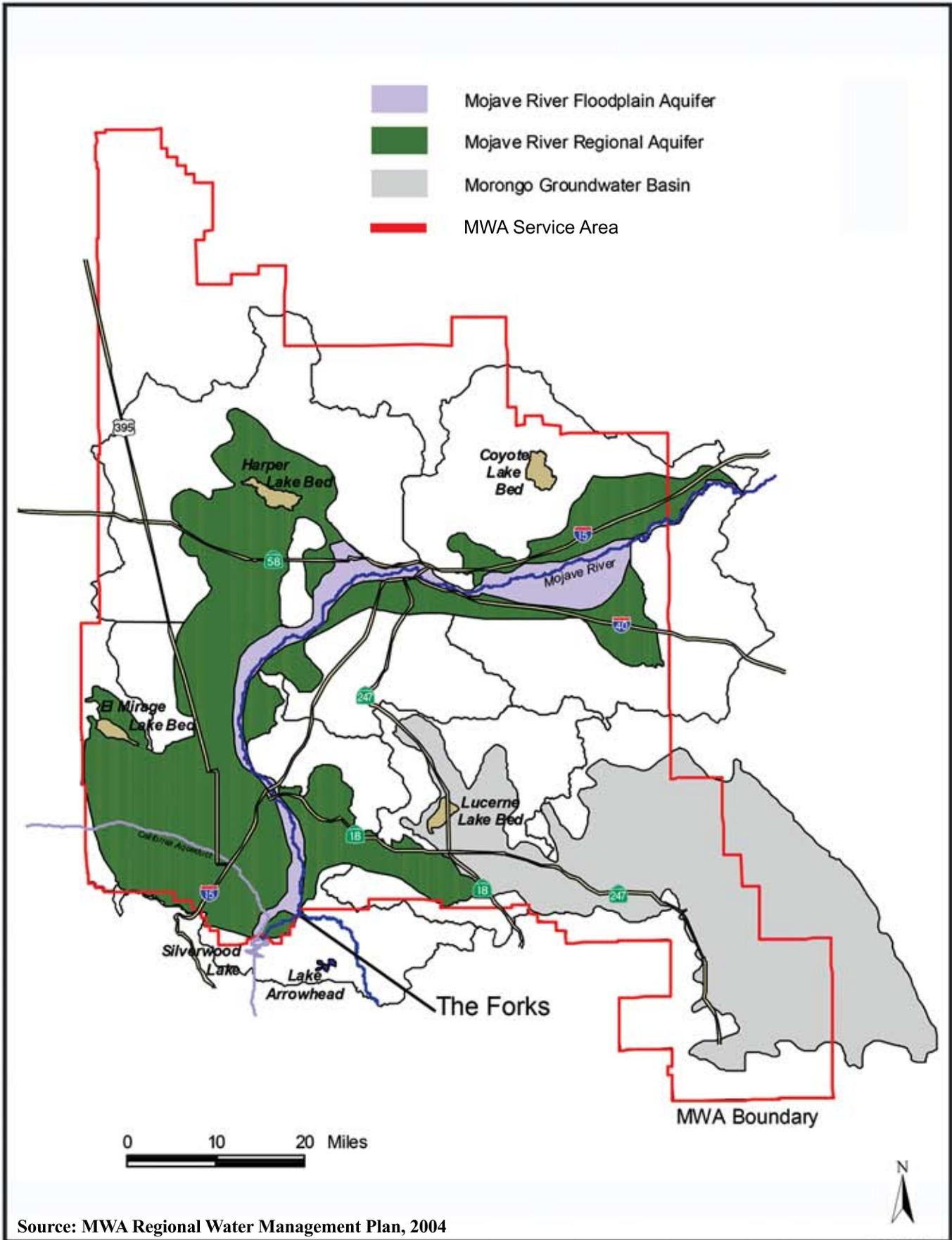
The Alto Subarea is located within the southwestern portion of the Mojave Water Agency boundary, just east of the Oeste Subarea, south of Centro, and west of Este Subareas. The Mojave River flows through the central portion of the Alto Subarea and serves as a primary source of groundwater replenishment. Water within the Alto Subarea flows from the south to the north in a northeast direction, generally consistent with the surface flow of the Mojave River.

There are two aquifers within the Alto Subarea, the Mojave River Floodplain Aquifer associated with the Mojave River, and the Regional Aquifer that extends beyond the Floodplain Aquifer (See Exhibit II-2). Water levels near the river, within the Floodplain Aquifer, are considered to be stable with seasonal variation, rising in the winter and falling in the summer. It is projected that under current pumping conditions and long-term precipitation wells along the Floodplain Aquifer will remain stable.

Although the Regional Aquifer within the Alto Subarea is currently stressed due to increased pumping and limited recharge, the Watermaster has developed and is implementing several programs to correct this trend and bring the basin into balance. MWA is working with the City of Victorville to develop the Oro Grande Wash, a groundwater recharge project that is part of the R3 Program and is specifically designed to recharge the Regional Aquifer. Thus far, the project has consisted of constructing deep monitoring wells, geophysical surveys, and pilot tests. In addition, a hydrologic computer model has been developed.<sup>7</sup>

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<sup>7</sup> Ibid.



June 25, 2009

Source: MWA Regional Water Management Plan, 2004

Since 1995 there has been a shift in water use within the Alto Subarea from agricultural to primarily municipal use. This has resulted in the total water use remaining fairly consistent.

Based on current estimates, the Alto Subarea has approximately 960,000 acre-feet of water in storage and an additional available storage capacity of 1,126,000 acre-feet.

For the 2008-2009 water year the BAP for the Alto Subarea was 116,412 acre-feet. For the 2008-2009 water year the FPA for the Alto Subarea was 74,595 acre-feet. The FPA currently exceeds the production safe yield, 69,862 acre-feet, by 4.1%, which is below the 5% thresholds as set forth in the adjudication, indicating that further rampdown is not warranted at this time.<sup>8</sup>

The average Subarea Obligation of subsurface flow from the Alto Subarea has been set at 23,000 acre-feet per year. If this obligation is not met, the producers in the Alto Subarea must pay fees to the Watermaster for the purchase of Makeup Water to be delivered to the downstream Subarea (Centro) as set forth in the Judgment. At the end of the 2007-2008 water year the Alto Subarea incurred 3,206 acre-feet of Makeup Water Obligation. The Alto Subarea has incurred makeup obligations nine of the past ten years (water years 1998-1999 through 2007-2008), ranging from 2,859 acre-feet in water year 2006-2007 to 5,950 acre feet in water year 2002-2003. At the end of 2008, the Alto Subarea had a total un-met Makeup Water Obligation of 82.69 acre-feet.

For water year 2006-2007, the Alto Subarea had a Replacement Water Obligation of 36,595 acre-feet.<sup>9</sup> For water year 2007-2008 the Alto Subarea had a replacement obligation of 30,328 acre-feet. The 2007-2008 replacement water assessment rate is \$337.00 per acre-foot. In 2007-2008 the Watermaster purchased 27,661 acre-feet of replacement water for the Alto Subarea obligation incurred in 2007. Through the combination of purchasing replacement water and acquiring transfers at the end of 2008, the Alto Subarea had satisfied all cumulative Replacement Water Obligations.<sup>10</sup>

For the 2007-2008 water year the Alto Subarea had a small surplus since water inflows exceeded outflows by approximately 5,000 acre-feet.

### **Apple Valley Ranchos Water Company**

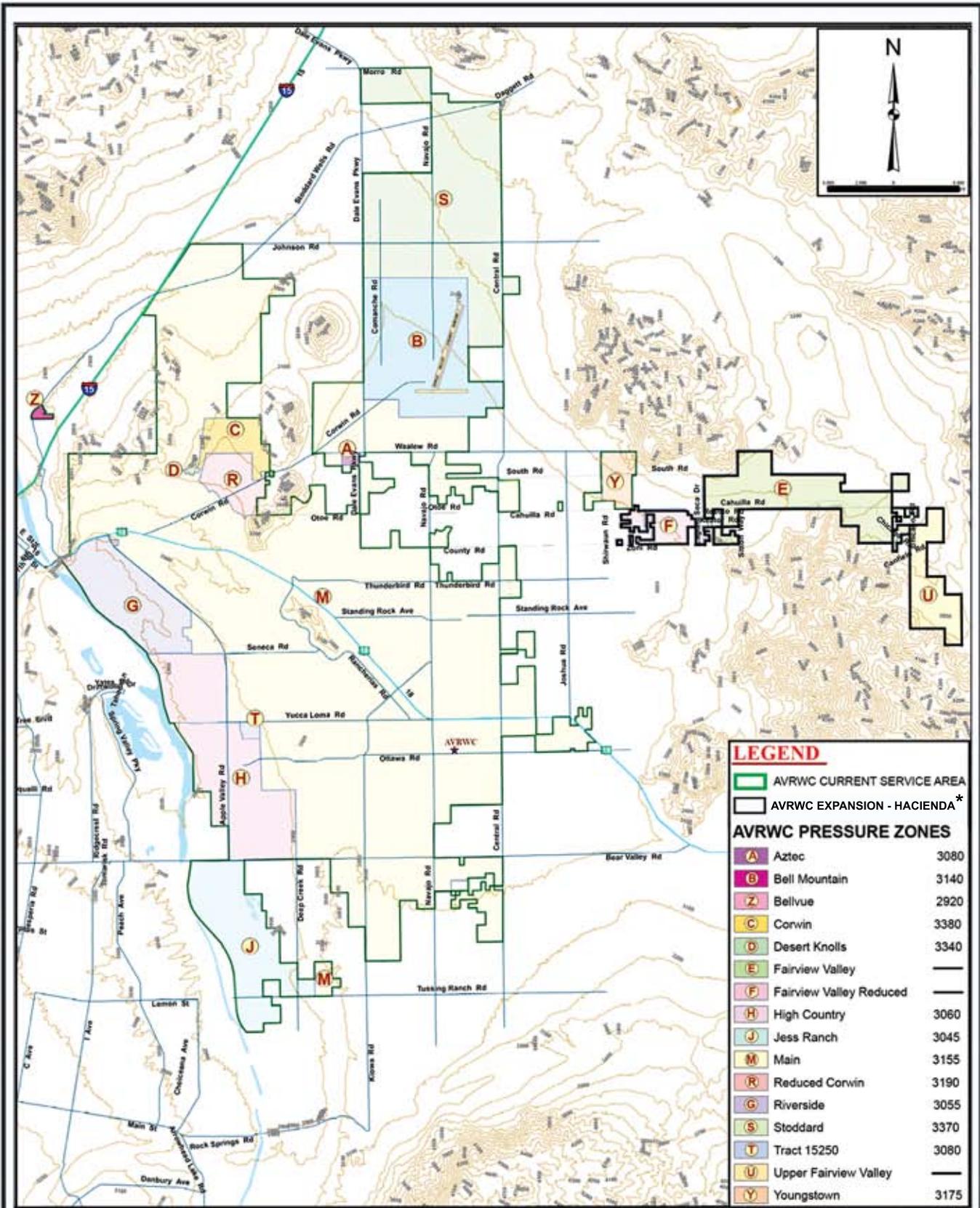
AVR, an investor-owned water utility, is regulated by the California Public Utilities Commission (CPUC). The AVR service boundary overlays the Alto Subarea and is the primary water supplier for most of the Town of Apple Valley and a portion of unincorporated San Bernardino County. Exhibit II-3 shows the limits of AVR's service area, which covers approximately 50 square miles. As a party under the Judgment, AVR is subject to those requirements imposed by the Judgment and Watermaster.

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<sup>8</sup> "Fifteenth Annual Report of the Mojave Basin Area Water Master, Water Year 2007-08: Chapter 5," prepared by the Mojave Basin Area Watermaster, April 2008. This figure does not including Minimal Producer, those producers who pump less than 10 acre feet per year.

<sup>9</sup> "Fourteenth Annual Report of the Mojave Basin Area Water Master, Water Year 2006-07," prepared by the Mojave Basin Area Watermaster, April 2008.

<sup>10</sup> "Fifteenth Annual Report of the Mojave Basin Area Water Master, Water Year 2007-08," prepared by the Mojave Basin Area Watermaster, April 2009.



Source: Apple Valley Ranchos Water Company, June 2009

\*Cal P.U.C. Sheet # 610-W, effective 4.6.09

July 21, 2009

### Apple Valley Ranchos Water Agency Urban Water Management Plan<sup>11</sup>

AVR prepared an UWMP to demonstrate the availability of future water supplies and project future demands in compliance with Water Code Section 10610 through 10656 (California Urban Water Management Planning Act). The UWMP is prepared to analyze and demonstrate the sufficient and reliability of AVR's total projected water supplies in meeting the needs of its customers during normal, dry and multiple dry years over a 20-year period.

### Supplemental Water Acquisition Fee<sup>12</sup>

In August of 2007 AVR adopted Resolution W-4655 to include a Supplemental Water Acquisition Fee, which is charged to applicants for main extensions as a refundable advance. The fee will fund the pre-purchase of Replacement Water from MWA or will be used by AVR to purchase water rights as available. Pre-purchased water establishes a fixed cost for water and locks-in a commitment from MWA for the agreed upon quantity of water, which allows both AVR and MWA to more precisely plan for and manage water supplies.

### Special Facilities Fees for Water Supply

AVR's also collects Special Facilities Fees from developers for the purpose of funding new wells; the fees serve as a source of capital to construct additional production capacity.

### 2007-2008 Water Year

As reported by MWA in the 15<sup>th</sup> Annual Report, Apple Valley Ranchos had a BAP of 13,223, a FPA of 7,934, and a total verified production of 14,245 acre-feet for the 2007-2008 water year. After factoring in 3,497 acre-feet of carryover water, AVR accumulated a 2,814 acre-foot Replacement Water Obligation and a 636 acre-foot makeup obligation.

## **Water Quality**

The California Regional Water Quality Control Board (CRWQCB), Lahontan Region, implements federal and state laws and regulations pertaining to water quality. A number of factors impact groundwater quality, including the water source, type of water-bearing materials in which groundwater water occurs or is stored, depth to the water table, proximity to faults, presence of surface or subsurface contaminants, and quality of well maintenance.

Groundwater quality may also be adversely impacted by long-term discharge from on-lot septic systems. These impacts to groundwater quality are expected to be greatest where septic systems serve large populations in high densities. Well-maintained community sewer systems provide excellent protection of groundwater resources through the prompt removal of sewage materials and high levels of treatment at the plant and in the soil column to assure safe recharge into the subsurface groundwater basin.

AVR publishes a Consumer Confidence Report that states that water quality is considered to be very high, based on data from hundreds of monthly water samples collected. Samples are analyzed to ensure that AVR complies with all federal and state drinking water standards. The following discusses testing data for Total Dissolved Solids (TDS) and nitrates.

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<sup>11</sup> "Apple Valley Ranchos 2005 Urban Water Management Plan," Apple Valley Ranchos Water Company, December 2005.

<sup>12</sup> "Resolution W-4655 Apple Valley Water Company- Revision of tariff Rule 15," prepared by Public Utilities Commission of the State of California, August 23, 2007.

### Total Dissolved Solids

Based on data provided in the AVR 2006/2007 Annual Water Quality Report, AVR water wells within the Town of Apple Valley contain total dissolved solids (TDS) concentrations ranging from 120 to 960 milligrams per liter (mg/L), with an average of 248 mg/L. The State Maximum Contaminant Level (MCL) is 1,000 mg/L. AVR indicates that potential sources of TDS are run-off and leaching from natural deposits.<sup>13</sup>

### Nitrates

Based on water quality data for 2006-2007, AVR wells average nitrate concentrations (as NO<sub>3</sub>) range between 2.5 and 17 parts per million (ppm), with an average of 6.4 ppm.<sup>14</sup> The State MCL and Public Health Goal (PHG) or Maximum Contaminant Level Goal (MCLG) is 45 ppm.

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<sup>13</sup> “Apple Valley Ranchos Water Co. – 2006/2007 Annual Water Quality Report, Water Quality Parameters Detected in Apple Valley Ranchos Company Wells,” prepared by Apple Valley Ranchos Water Company.

<sup>14</sup> Ibid.

# WATER RESOURCES STUDY

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## WATER RESOURCES STUDY FOR THE HACIENDA AT FAIRVIEW VALLEY SPECIFIC PLAN

### SECTION III. MOJAVE BASIN WATER RESOURCES

#### A. Water Demand and Supply

##### **Mojave Water Agency**

As reported in the 2005 UWMP for the year 2000, the Mojave Basin total demand was 105,200 acre-feet and supplies were 71,400 acre-feet (including 8,000 acre-feet of SWP water), leaving 33,800 acre-feet of water that needs to be replaced. In 2007-2008 the Mojave Basin total demand was 119,800 acre-feet and supplies were 107,997 acre-feet, leaving 11,803 acre-feet of water that needs to be replaced. Although water demands exceeded supplies, the annual amount of water needed to achieve a balance between supplies and demand in the Basin has clearly been reduced.<sup>15</sup> The Mojave Water Agency has developed an aggressive plan to achieve basinwide balance by 2020.

As described in the Supplement A: 2005 UWMP Update, Agricultural Scenario 2 was adopted as the basis for further planning in the 2004 Regional Water Management Plan. This Scenario assumes that agricultural water users transfer their free production allowance to non-agricultural uses.<sup>16</sup> Under Agricultural Scenario 2, the Mojave Basin total demand in 2025 is expected to be 115,000 acre-feet and supplies are estimated at 123,900 acre-feet (including 58,400 acre-feet of SWP water), leaving an overall surplus of 4,700 acre-feet. It should be noted that for future year 2025, the UWMP Update assumes 77% of SWP Table A allocations. Based on the 2007 Reliability Report the SWP long-term average delivery was reduced to 66-69%.<sup>17</sup> Therefore, MWA can expect to receive as much as 52,300 acre-feet per year in 2025. Thus, in 2025 assuming demand consistent with Agricultural Scenario 2 and total supplies of 117,800 acre-feet per year (natural inflows of 65,500 acre-feet plus 69% of imported SWP water), the Mojave Basin Area would have a surplus of 2,800 acre-feet.

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<sup>15</sup> Refers to net amount of inputs and outputs, does not include groundwater in storage.

<sup>16</sup> "Supplement A: 2005 Urban water Management Plan Update," prepared by the Mojave Water Agency, December 5, 2005.

<sup>17</sup> "The State Water Project Delivery Reliability Report," prepared by the Department of Water Resources, 2007.

The following discusses the primary water supply sources for the Mojave Water Agency and sets forth environmental and political conditions that may impact deliveries of SWP water in future years.

#### Water Banking Project

In addition, MWA has entered into a water banking demonstration project with the Metropolitan Water District of Southern California (MWD), who is also a State Contractor and holds the largest DWR contract for SWP supplies. Through the water banking agreement MWD delivers up to 75,000 acre-feet of their SWP entitlement for storage within the Mojave Water Basin. The terms of the agreement provide that MWD has five (5) years to take return delivery of the water through exchange of MWA SWP supply. To date MWD has delivered approximately 44,870 acre-feet to the Mojave Basin and MWA has returned 34,491 acre-feet. In 2009 MWA is expected to return an additional 5,780 acre-feet.

#### Surface Water

The primary source of surface water for Mojave Basin is the Mojave River. Rainfall and snowmelt emanating from the San Bernardino Mountains form two small streams that converge at the Forks, forming the Mojave River. The drainage area of the Mojave River encompasses approximately 3,800 square miles. Surface water from the Mojave River is not used directly as a water source. The Mojave River percolates into the underlying Mojave River Floodplain Aquifer, which is then pumped for groundwater.

#### Groundwater

Water use within the Mojave Water Agency service area is supplied by extracting water from the underlying groundwater basins. The Mojave Groundwater Basin includes, the Este, Alto, Oeste, Centro, and Baja Subareas, and contains the Mojave River Floodplain Aquifer and the Mojave River Regional Aquifer. The Mojave Groundwater Basin encompasses nearly 1,400 square miles and has an estimated operational storage capacity of approximately five (5) million acre-feet, and is estimated to have approximately two (2) million acre-feet left in storage.

#### Recycled Water

Reclaimed wastewater from the Victor Valley Wastewater Reclamation Authority (VWRA) is discharged into the Mohave River downstream of the Lower Narrows gage. In 2007-2008 wastewater effluent from the VWRA was approximately 13,385 acre-feet. In addition, wastewater from Lake Arrowhead Community Service District, Crestline Sanitation District, and Big Bear Area Regional Wastewater Agency delivered 4,776 acre-feet of reclaimed wastewater into the Mojave Basin. The amount of reclaimed water available has increased from approximately 4,000 acre-feet per year since the mid 1980's to over 13,000 acre-feet per year in 2008. As additional wastewater treatment facilities are constructed more reclaimed water will become available to supplement water supplies. Reclaimed water is an important water supply source that can be expanded and developed to provide a new water resource for planning and management in achieving basin wide balance.

#### California Department of Water Resources/ State Water Project

The California Department of Water Resources (DWR) operates and maintains the State Water Project (SWP), including the California Aqueduct. The department also provides dam safety and

flood control services, assists local water districts in water management and conservation activities, promotes recreational opportunities, and plans for future statewide water needs.

The State's effort to acquire the water rights that the SWP now conserves, sells and conveys, began in 1927 when the California Legislature gave the State Department of Finance the authority to file application to reserve unappropriated water for future development projects. Federal, state and other agencies filed applications for this water. Water rights permits were then issued on many of these applications for water projects, including the State Water Project and to other agencies for state and local projects.

The SWP includes 701 miles of open canals and pipelines, 34 conveyance facilities, lakes, and reservoirs, 20 pumping plants, 4 combined pumping/power generating plants, 5 hydroelectric power plants; facilities range from Lake Oroville in the north to Lake Perris in the south. The SWP has contracts to deliver water to 29 contracting agencies. The Mojave Water Agency is the SWP contractor for the Mojave basin region.

Water from Northern California is transported via the California aqueduct to Southern California where it provides water for municipal purposes. The amount of water that is transferred to southern California varies, such that in wet years additional water is available, but in dry years the amount of water delivered declines. In recent years pumping restrictions, intended to protect threatened and endangered fish species, have resulted in reduced deliveries of State Water Project water.

Due to the changing environmental and political conditions that can affect SWP deliveries, the Department of Water Resources publishes a Delivery Reliability Report that sets forth long-term projections of SWP delivery probabilities. In projecting the reliability of the SWP, DWR considers many factors such as future regulatory standards in the Delta, population growth, conservation efforts, impacts of climate change including a rise in sea level, and the stability of SWP infrastructure. The latest Report was published in 2007 and an updated Report is expected in the Fall of 2009.

The DWR has contracts to deliver State Water Project water to 29 contracting agencies. MWA is a "participating public agency" and holds a contract with DWR to receive an allotment of SWP supply. MWA's SWP Table A maximum allotment is 75,800 acre-feet per year.

MWA replenishes the Basin via imported water supplies from the State Water Project. Imported supplies are artificially recharged to augment natural groundwater replenishment. State Water Project water is percolated into the groundwater basin via recharge basins served by the Morongo and Mojave River Pipelines that connect to the California Aqueduct and releases of SWP water directly into the Mojave River.

The Morongo Basin Pipeline serves as the conveyance system from the California Aqueduct to the Rock Springs, Antelope Wash, and Morongo Basins 3, 6, and 7 recharge sites. The 24, 30, and 54-inch pipelines, which extend 78 miles, were completed in the mid 1990's.

The Mojave River Pipeline serves as the conveyance system from the State Water Project delivery source to the Hodge, Lenwood, Daggett/Yermo, and Newberry Springs recharge basins.

The 20 to 48-inch pipelines, which extend 76 miles, were completed in March of 2006. This line has the capacity to deliver up to 45,000 acre-feet of water per year to the Mojave Basin for recharge purposes.

### **Water Resource Litigation and Other Actions Affecting SWP Supplies**

The potential environmental impacts from the delivery of State Water Project water from Northern California to Southern California have been subjected to numerous lawsuits and regulatory actions over the last several years. These matters have resulted in changes to Delta pumping frequency and duration. Several lawsuits have yet to be resolved and could result in further restrictions to State Water Project operations. The following information includes pertinent legal actions and other actions that may impact the reliability of imported water resources in Southern California and the Mojave Basin.

#### Watershed Enforcers v. California Department of Water Resources, et al

In this case, a plaintiffs group filed suit against the Department of Water Resources (DWR) alleging that the SWP is being operated without “take authorization” as defined under the California Endangered Species Act. The case was heard on November 17, 2006 and, on April 18, 2007, the Alameda County Superior Court issued a judgment granting a peremptory writ of mandate ordering DWR to cease and desist further operations of the Harvey O. Banks pumping plant facilities of the SWP unless DWR obtained proper authorization from the California Department of Fish and Game for the take of threatened and endangered salmon species and delta smelt. The trial court decision was appealed by DWR and several water agency parties, and the case was stayed pending the appeal. Due to the stay, the judgment is currently not in effect and DWR has not been required to cease operations of the Banks pumping plant facilities.

The parties have extended the allotted time for the appeal process and, therefore, a final decision is not expected in the near future. For these reasons, and because the effects of SWP operations on protected fish species in the Delta are already being addressed in the Kempthorne and Gutierrez cases as discussed in the WSA and reported below, the Watershed Enforcers case is not expected to result in additional reductions to SWP supplies.

#### Delta Smelt: New U.S. Fish and Wildlife Service Biological Opinion for Delta Smelt

On December 15, 2008, the FWS issued a new B.O. regarding the effects of CVP and SWP operations on delta smelt. According to preliminary information published DWR, which operates the SWP, the new B.O. will continue reductions in SWP and CVP exports from the Delta that were in effect since December 2007 under the federal court order in Kempthorne, (described in the WSA). DWR has estimated that under average water year conditions, the “most likely” result of the new B.O. is a one percent increase in the amount of available SWP supplies in comparison to the Kempthorne restrictions, although a worst-case scenario could result in a 13 percent decrease in available supplies. Under dry water year conditions, DWR states the “most likely” result of the new B.O. is the exact same type of potential restrictions as set forth in Kempthorne, although restrictions could possibly increase by 21 percent under a worst-case scenario.<sup>18</sup> As with the Kempthorne order, potential water supply restrictions under the new B.O. are dependent on various factors that cannot be predicted with a high degree of certainty, including hydrologic

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<sup>18</sup> See [www.water.ca.gov/news/newsreleases/2008/121508swpimpacts.pdf](http://www.water.ca.gov/news/newsreleases/2008/121508swpimpacts.pdf).

conditions, migratory and reproductive patterns of delta smelt, and other factors affecting delta smelt abundance in the Delta.

Due to a number of alleged scientific and other deficiencies in the new B.O., water agencies holding contracts to receive SWP supplies from DWR, among others, filed complaints in the Federal District Court for the Eastern District of California challenging the B.O. (See, *San Luis Delta-Mendota Water Authority et al. v. Salazar et al.*, Case No. 1:09-cv-407 (E.D. Cal., filed Mar. 3, 2009); *State Water Contractors v. Salazar, et al.*, Case No. 1:09-CV-422 (E.D. Cal., filed Mar. 4, 2009); *Coalition for a Sustainable Delta et al. v. United States Fish and Wildlife Service et al.*, Case No. 1:09-cv-480 (E.D. Cal., filed Mar. 12, 2009; amended complaint filed May 28, 2009); *Metropolitan Water District v. United States Fish and Wildlife Service*, Case No. 1:09-cv-631 (E.D. Cal., filed Apr. 8, 2009); and *Stewart & Jasper Orchards et al. v. United States Fish and Wildlife Service et al.*, Case No. 1:09-cv-892 (E.D. Cal., filed May 21, 2009).) These litigation matters challenging the validity of the new B.O. give rise to the additional possibility that SWP delivery reductions as set forth by the Final Order in *Kempthorne* could be put back in place pending final legal resolution of the new B.O. In light of these various factors, the degree to which SWP deliveries may be reduced under the new B.O. for delta smelt remains somewhat speculative at this time.

#### Longfin Smelt: California Department of Fish and Game Incidental Take Permit

Another factor having the potential to affect the availability and reliability of SWP supplies is the March 4, 2009 decision by the California Fish and Game Commission (Commission) that listing the longfin smelt as a “threatened” species is warranted under the California Endangered Species Act (CESA). The longfin smelt is a small pelagic fish species, related to the delta smelt, whose habitat includes the Sacramento-San Joaquin Delta, among other areas along the West Coast. Under CESA, a threatened species is a native species or subspecies that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future absent special protection and management efforts. CESA sets forth a general prohibition against the take of a threatened species except as otherwise authorized under CESA. One such authorization is provided by California Fish and Game Code section 2081, wherein the California Department of Fish and Game (DFG) may authorize the incidental taking of a threatened species in connection with an otherwise lawful activity through the issuance of a permit.

On February 29, 2009, DFG issued Incidental Take Permit No. 2081-2009-001-03 (Permit) to DWR as the owner and operator of the SWP. The Permit applies to the ongoing and long-term operation of the SWP’s facilities in the Delta, including Clifton Court Forebay, the John E. Skinner Fish Facility, the Harvey O. Banks Pumping Plant and the North Bay Aqueduct, and authorizes DWR to incidentally take longfin smelt in connection with its operation of the SWP, provided the terms and conditions of the Permit are satisfied. The Permit imposes operating restrictions on the SWP facilities that are based in large part on the restrictions imposed on the SWP by the new B.O. issued by FWS for delta smelt (see above). As with the B.O. for delta smelt, potential water supply restrictions under the Permit are dependent on various factors that cannot be predicted with a high degree of certainty, including hydrologic conditions in the Delta region, migratory and reproductive patterns of longfin smelt, and other factors affecting longfin smelt abundance in the Delta. DWR has not indicated whether any particular reductions in SWP

exports are likely to result from the Permit. Due to a number of alleged scientific and other deficiencies in the Permit, an organization of water agencies holding contracts to receive SWP supplies from DWR has filed a complaint in Sacramento County Superior Court challenging the Permit. (See, *State Water Contractors v. California Dept. of Fish and Game, et al.*, Sac. Sup. Ct. Case No. 34-2009-80000203.) That case has brought DFG's ability to enforce the Permit into question. In light of the foregoing factors, potential reductions in SWP supplies resulting from DFG's Incidental Take Permit for longfin smelt remain speculative at this time.

Salmon/Anadromous Species: New National Marine Fisheries Service Biological Opinion

An additional factor discussed in the WSA as having the potential to affect the availability and reliability of SWP supplies is the ongoing litigation and regulatory actions affecting protected anadromous fish species in the Delta, including, winter and spring-run salmon, steelhead trout and green sturgeon. As set forth in the WSA, a previous B.O. prepared by the National Marine Fisheries Service (NMFS) was invalidated by the Federal District Court of the Eastern District of California in 2008 (*Pacific Coast Federation of Fishermen's Associations, et al. v. Gutierrez, et al.*, Case No. 1:06-CV-00245-OWW-GSA). In that case, the court determined that additional water supply restrictions to protect anadromous species were not required beyond those that were already required for the protection of delta smelt, and ordered the preparation of a new NMFS B.O.

On June 4, 2009, NMFS issued a new B.O. regarding the effects of CVP and SWP operations on protected salmon, steelhead, green sturgeon, and resident killer whales. According to draft information published by DWR, NMFS has calculated that the B.O. has the potential to reduce combined CVP and SWP deliveries from the Delta by 5 to 7 percent, while DWR has initially estimated that average year reductions have the potential to range closer to 10 percent, in addition to restrictions imposed under the FWS B.O. for delta smelt.<sup>19</sup> As with the FWS B.O. for delta smelt and the Incidental Take Permit for longfin smelt, potential water supply restrictions under the NMFS B.O. are dependent on various factors that cannot be predicted with a high degree of certainty, including hydrologic conditions in the Delta region, migratory and reproductive patterns of protected anadromous fish, and other factors affecting the abundance of those species in the Delta.

In June 2009, legal challenges were filed against the NMFS B.O. in the United States District Court for the Eastern District of California alleging, among other things, that the water supply restrictions set forth in the B.O. were established in violation of the federal Endangered Species, the federal Administrative Procedures Act, and other laws.<sup>20</sup> The above-mentioned cases and other potential litigation that could be filed against the NMFS B.O. call into question whether the water supply restrictions in the B.O. can be imposed against the SWP. For these reasons, the degree to which SWP deliveries may be reduced under the new NMFS B.O. species remains speculative at this time.

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<sup>19</sup> <http://www.water.ca.gov/news/newsreleases/2009/060409salmon.pdf>.

<sup>20</sup> See, e.g., *San Luis & Delta Mendota Water Authority, et al. v. Locke, et al.*, Case No. 1:09-CV-01053-OWW-DLB; *Stockton East Water District v. United States National Oceanic and Atmospheric Administration, et al.*, Case No. 1:09-CV-01090-OWW-DLB.

California Drought

In February of 2009, the Governor declared a state of emergency due to the statewide drought conditions, evidenced by the extremely low reservoir storage and estimated snowpack water content at 39% below average. The Report to the Governor, prepared in March sets forth the statewide hydrologic conditions, which were somewhat improved from the time the declaration was made. As of March 2009 the larger reservoirs had accumulated an overall average of 82% of their historic average and the statewide snowpack was 87% of average.<sup>21</sup>

Although it is unclear to what extent continued drought conditions will affect water supplies, the Report to the Governor includes the following list of potential impacts that may arise from continued drought conditions: 1) reduction in hydropower generation; 2) increased cost of groundwater extraction due to deepening wells or construction new wells; 3) water rationing; 4) increased fire risk statewide; 5) mandatory water conservation; 6) insufficient vegetation on dryland range to support cattle grazing; and 7) large cutbacks in SWP and CVP deliveries.

Based on the existing hydrological conditions and state of regulatory actions, the Department of Water Resources revised the State Water Project allocation in May of 2009 to 40% of Table A deliveries. SWP water deliveries estimated are updated and revised to reflect current and anticipated water supply conditions.

**Alto Subarea/AVR**

The Alto Subarea generally encompasses the communities of Apple Valley, Victorville, Adelanto, Hesperia, and Helendale. The Subarea is comprised of an approximately 35-mile long water-bearing strata underlying the Mojave River, and is recharged by snowmelt from the San Bernardino Mountains. The Alto Subarea has the largest water supply in the Mojave Basin, due to its proximity to the Mojave River. The general boundaries of the Alto Subarea are the non-water bearing rocks of the San Bernardino Mountains to the south, the non-water bearing rocks of the San Gabriel Mountains to the west, and Helendale Fault to the northeast.

In 1999 it was estimated that the Alto Subarea has approximately 960,000 acre-feet of water in storage and an available storage capacity of 1,126,000 acre-feet (See Table III-1 below).

**Table III-1**  
**Alto Subarea Storage Capacity**  
**(acre-feet)\***

<b>Alto Subarea</b>	<b>Storage</b>
Amount in Storage	960,000
Available Capacity	1,126,000
<b>Total Storage Capacity:</b>	<b>2,086,000</b>

\* Assumes an economic pumping depth of 100 feet as a limit for effective basin pumping. Source: "Upper Mojave River Valley Groundwater Basin No. 6-42," South Lahontan Hydrologic Region, California Groundwater Bulletin 118.

<sup>21</sup> "California's Drought: Water Conditions & Strategies to Reduce Impacts," prepared by the Department of Water Resources and the Department of Food and Agriculture, Report to the Governor March 30, 2009.

As reported in the 2005 UWMP for the year 2000, the Alto Subarea total demand was 51,500 acre-feet and supplies were 34,700 acre-feet (not including SWP water), leaving 16,800 acre-feet of water needed to achieve balance. In 2007-2008 the Alto Subarea total demand was 97,500 acre-feet and supplies were 102,538 acre-feet, leaving an overall surplus of 5,038 acre-feet.

As projected in the 2005 UWMP Update for the year 2025 under Agricultural Scenario 2, the Alto Subarea total demand is expected to be 75,500 acre-feet due to decreased agricultural water use and 10% municipal conservation, and total supplies in the Mojave Basin are projected to be 123,900 (including 58,400 acre-feet of state water project water). Importation of 69% of SWP allocation is expected to be sufficient to replenish the Alto Subarea and yield an overall balance, with a modest surplus (up to 2,800 acre-feet), within the Mojave Basin for year 2025.

Due to conservation efforts verified water production in the Alto Subarea during the 2007-2008 water year was reduced by 10% (10,258 acre-feet) compared to the previous water year, see Table III-2.

**Table III-2**  
**Alto Subarea Verified Annual Production**  
**1994 – 2008**

<b>Year</b>	<b>Acre-Foot</b>	<b>Million Gallons</b>
1997	88,500	28,838
1998	75,900	24,732
1999	83,300	27,143
2000	88,300	28,773
2001	82,800	26,980
2002	87,100	28,382
2003*	86,735	28,263
2004*	92,677	30,199
2005*	88,853	28,953
2006*	95,890	31,246
2007*	99,923	32,560
2008*	89,665	29,217

Source: MWA 2005 UWMP Table 5-4.

\*Mojave Basin Area Watermaster Annual Water Reports, 1994 – 2007 Appendix L. Shows Net Recirculated Water.

Apple Valley Ranchos

The Apple Valley Ranchos Water Company (AVR) extracts water from the Alto Subarea and is the water supplier for the proposed Hacienda at Fairview Valley Specific Plan. Through the adopted WSA, AVR has concluded that sufficient water supplies exist to meet the projected demand of the proposed project, in addition to AVR’s other existing and planned future uses during normal, single, and multiple-dry conditions over the next 20-years without adversely impacting existing and/or future water users within AVR’s service area

AVR's sources for water supply are limited to groundwater from the Alto Subarea. Table III-3 below shows the historical water production within AVR's service area.

**Table III-3**  
**Apple Valley Ranchos Annual Production**  
**1999 - 2008**

<b>Year</b>	<b>Acre-Feet</b>	<b>Million Gallons</b>
1999	14,916	4,860
2000	16,002	5,214
2001	14,741	4,803
2002	15,853	5,166
2003	15,009	4,891
2004	15,711	5,119
2005	14,060	4,581
2006*	15,123	4,928
2007*	16,392	5,341
2008*	14,245	4,642

Source: "Urban Water Management Plan," Table 6, prepared by AVR, 2005.

\*Mojave Basin Area Watermaster 15<sup>th</sup> Annual Water Report, Appendix L.

As a percentage of the total verified water production within the Alto Subarea, AVR produced 15.89% for 2008.

#### Hacienda at Fairview Valley Water Supply Assessment

The water demand associated with build out of the Hacienda at Fairview Valley Specific Plan and potential impacts to water supplies were not explicitly accounted for in the AVR 2005 UWMP. Therefore, a WSA was prepared that quantified the project's estimated water demand at build out and identified water supply sources and their availability. These are reported below and put in the context of the Alto Subarea, the groundwater basin from which water for the project will be extracted.

At buildout (estimated for year 2025) the Hacienda at Fairview Valley Specific Plan is estimated to generate an annual water demand of 1,331 acre-feet assuming 35 percent return flows from the percolation of irrigation water and from the treatment and return of non-consumptive potable water.

Table III-4 below, shows the projected amount of replacement water that AVR will have to purchase from MWA due to exceeding their FPA. Water demand and the projected replacement water needed to fulfill the obligation under the Judgment is a result of all water users within AVR's Service Area including the proposed Hacienda at Fairview Valley Specific Plan. The Table assumes that the project will buildout in 2025.

**Table III-4**  
**Apple Valley Ranchos Projected Water Demand and Supply**  
**(Acre-Feet/Year)**

	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
<b>Demands<sup>(1)</sup></b>	21,950	25,458	28,706	34,766	38,168
<b>Supply Sources<sup>(2)</sup></b>					
Free Production Allowance	8,567	8,567	8,567	8,567	8,567
Jess Ranch Water Contract	4,488	4,488	4,488	4,488	4,488
Pre-purchase Claim Water	221	221	221	221	221
Leased Water Rights	1,800	1,800	1,800	1,800	1,800
<b>Supply Subtotal</b>	<b>15,076</b>	<b>15,076</b>	<b>15,076</b>	<b>15,076</b>	<b>15,076</b>
<b>Replacement Water</b>	<b>6,874</b>	<b>10,382</b>	<b>13,630</b>	<b>19,690</b>	<b>23,092</b>

1 Demand estimates include Tables 7 and 13 from the 2005 UWMP, prepared by Apple Valley Ranchos Water Company, November 2005, projected demand from the "Updated Water Supply Assessment for the proposed North Apple Valley Industrial Specific Plan," prepared by Terra Nova planning & Research on April 25, 2007, and estimated demands for the Hacienda at Fairview Valley Specific Plan as set forth in Appendix C of the WSA.

2 Sources are from the adopted Hacienda at Fairview Valley WSA and are described below.

Assuming that the Specific Plan were to buildout in 2025, AVR's total demand would be 34,766 acre-feet (including demand as projected in the 2005 UWMP plus buildout of the North Apple Valley Industrial Specific Plan<sup>22</sup>, plus 20% conservation). This constitutes 46.0 percent of MWA's demand projections for the Alto Subarea under Agricultural Scenario 2, which projects that total consumptive water use in 2025 will be 75,500 acre-feet per year.<sup>23</sup>

*Free Production Allowance*

As described above, the FPA is the amount that a producer can pump without incurring a Replacement Water Obligation. For AVR the FPA in 2008 was 7,934 acre-feet per year. As set forth in the WSA, AVR's FPA is a core component of AVR's total projected water supplies available during normal, single-dry and multiple-dry years over the next 20-year period. Also noted in the WSA and above, FPA is subject to annual adjustment by the Watermaster according to factors set forth in the Judgment and Rules and Regulations adopted by the Watermaster.

As authorized by the SB 610 statute, the WSA utilized information and analysis from the 2005 UWMP to project AVR's FPA over the next 20-year period, which was reported as 8,567 acre-feet per year in the UWMP. Indeed, at the time the UWMP was prepared, the FPA was 65% of BAP as determined by the Watermaster, resulting in the FPA figure of 8,567 acre-feet per year. Since that time, however, FPA has been adjusted to 60%. As set forth in the Judgment, a FPA of 60% of BAP is expected to achieve consumption safe yield and further rampdown within the Alto Subarea is not expected during the next 20-year period.

<sup>22</sup> NAVISP

<sup>23</sup> "Supplement A: 2005 Urban Water Management Plan Update," prepared by the Mojave Water Agency, December 8, 2005.

### *Jess Ranch Water Company*

AVR holds a contract with Jess Ranch to receive a portion of their unused FPA annually. Jess Ranch currently has a BAP of 7,480 acre-feet and an FPA of 4,488 acre-feet (60% of BAP). The Jess Ranch contract amount of 4,488 acre-feet as reported in the WSA accounts for AVR's contract rights (amount varies per contract) plus leased water from Jess Ranch based on average transfers over the last 5 years (2,532 acre-feet).<sup>24</sup> Ultimately Jess Ranch could utilize as much as 2,500 acre-feet per year. Therefore, at most 1,988 acre-feet would be available to AVR to meet the contract obligation and provide leased water (carryover as reported in the Watermaster's Annual Report: Appendix E). As such, the WSA overstates the amount of water that will be available from Jess Ranch in the future. The most AVR can rely on is 1,988 acre-feet in total (contract amount plus leased water).

### *Pre-purchased Claim Water*

Through an agreement with MWA, AVR has pre-paid for water that was previously stored in the Alto Subarea. The attached letter (See Appendix B) confirms Resolution No. 826-06, which grants AVR 442 acre-feet every two years through 2012 and 7,293 acre-feet in 2014 for a total of 8,619 acre-feet. This Claim water can be used by AVR to meet future Alto Subarea Replacement Water Obligations. The WSA sets forth an average annual allotment of 221 acre-feet between 2008 and 2030. It should be noted that due to the terms set forth in Appendix B, an additional 3,757 acre-feet of pre-purchased claim water would be available in 2014. AVR's current plan is to utilize 221 acre-feet per year over a 39 year period. However, in order to capture the entire quantity of pre-purchased claim water that AVR has already secured, Appendix B reflects an accelerated usage rate of the pre-purchased claim water in the amount of 392 acre-feet per over the 22 year modeling period.<sup>25</sup>

### *Leased Water Rights (Carryover)*

The Judgment establishes provisions for the transfer of unused BAP and FPA rights (called Carryover) among water users within and between defined Subareas. As reported in MWA's 15<sup>th</sup> Annual Report, Appendix E, AVR received approximately 4,079 acre-feet of Carryover (2007-2008) FPA water from other water users in the Alto Subarea. As described in the WSA, Leased Water Rights are based on historical deliveries of water transfers as specified in Appendix E of the Watermaster's Annual Report. Since 2003 AVR has received approximately 18,000 acre-feet of transfers in the form of leased water rights, for an average of approximately 3,600 acre-feet per year (not including leased water from Jess Ranch). See Appendix B for historical availability of leased water, which is greater than the amount that was reported in the WSA (1,800 acre-feet).

### *Conservation Water*

AVR is a participating agency in the "High Desert Saves Water" program, which offers a variety of incentives such as vouchers and rebates to water users for reducing water consumption. Currently rebates are offered for replacing older toilets and washing machines for high efficiency models. In addition, rebates are offered on a per square foot basis for replacing water intensive turf grass with desert landscaping. The program's aggressive goal is to achieve up to 20% reduction per capita by 2020.<sup>26</sup>

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<sup>24</sup> Appendix B, Table 1, shows the historical average annual allotment that AVR has received.

<sup>25</sup> Appendix B, Table 2.

<sup>26</sup> Personal communication with Scott Weldy, General Manager, Apple Valley Ranchos Water Company, May 2008.

### *Recycled Water*

At buildout the Specific Plan will treat all non-consumptive water collected in the proposed wastewater system to tertiary levels, which can then be used for irrigation purposes, thereby reducing the amount of potable groundwater used for irrigation. Although a 35% non-consumptive return flows factor was included in the Hacienda project's water demand model as set forth in the WSA, the direct treatment of wastewater and reuse for irrigation could result in a reduced groundwater demand for the project. This source is expected to provide up to 10% of the project's total demand. Actual water savings realized through the use of recycled water depend on the quantity of wastewater generated and collected. To ensure a conservative analysis, this potential 10% reduction was not incorporated in calculating the project's estimated potable water demand.

### Revised Water Supply and Projected Replacement Water Obligations

As described above and in the WSA, annual production in excess of FPA factors into AVR's replacement water obligations, as does the transfer of BAP and FPA from other users, carryover water, leased water right, and pre-purchased claim water. Thus, under the revised water supply conditions as stated above and presented in Appendix B, Table 2 and Chart 1, AVR's projected replacement water obligations over the next 20-year period, would be as follows: 7,493 acre-feet in 2010; 11,544 acre-feet in 2015; 14,792 acre-feet in 2020; 20,852 acre-feet in 2025; and 24,254 acre-feet in 2030. These figures represent an increase in replacement water obligation of 5 to 10% compared to those projected in the WSA. As mentioned above and supported by AVR's letter in Appendix C, these updated supply figures do not affect the findings of the WSA in that the proposed project is not expected to adversely impact water supplies or AVR's ability to provide water services to the proposed project and existing and planned future users.

## **B. Water Supply Reliability and Planning**

As with most water systems in southern California, water reliability has the potential to be affected by earthquakes, power outages, floods and other potentially devastating events. In addition, changing climatic conditions and variation in the historical weather patterns have the potential to effect water resources.

### Water Resources and Climate Change

Climate Change has the potential to directly and indirectly affect water reliability and needs to be considered in planning and managing water resources.

Increased levels of carbon dioxide and other green house gases in the atmosphere have triggered climatic changes. Although the outcome of these climatic changes remains uncertain, there is a general consensus about certain trends. The primary concern in dealing with climate change is adequately predicting future hydrological and water resource conditions so that appropriate management techniques can be established.

The most agreed upon effect is that temperatures are rising and this increase in temperature has the potential to cause a shift in the hydrological cycle. While predicted patterns vary with latitude and global location, roughly three-quarters of analyzed climate change models agree that within

the western United States there will be a 10 to 40 percent decrease in stream flow by 2050.<sup>27</sup> This is potentially due to a decrease in precipitation levels, which has been evident in drought conditions suffered by the southwest in recent years, as well as an increase in evaporation, which is temperature dependant and increases as temperatures climb. It has been predicted that a change in the global average surface temperature of 2°C would be at the low end of the possible range.<sup>28</sup>

A potential impact of a warming climate is a shift in precipitation type and time. With warmer conditions, precipitation will fall as rain rather than snow, and where snow does accumulate it will melt earlier in the season. This will result in an increase of winter runoff, a decrease of spring runoff, and an earlier peak snowmelt runoff time. The elevated levels of winter runoff, accompanied by a decline in spring runoff, will have the effect of bringing the spring season earlier by an estimated 5 to 25 days.<sup>29</sup> The Department of Water Resources predicts that by 2050 the Sierra snowpack may be reduced by at least 25% compared to historical levels.

Despite the debate surrounding the effects of global warming, it is apparent that measures should be taken to limit its effects and prepare for potential outcomes. One way to do this is to initiate water storage plans for new developments. In the Alto Subarea it is possible to utilize the underground basin for water storage and recharge, which reduces evaporation when compared to surface storage basins/reservoirs. The groundwater reserve can then serve as a water source in times of extreme water shortage if external sources are interrupted.

### **Mojave Water Agency**

In order to plan for and manage groundwater resources within the Mojave Basin and assure that the Basin is in balance and complying with those requirements set forth in the Judgment, MWA monitors and regulates pumping, prepares annual reports on the status of the basin, and updates the UWMP every five (5) years (an updated water management plan is expected in 2010).

MWA's UWMP sets forth strategies for addressing water shortages, which include implementing conservation programs and securing additional water supplies. MWA will provide regional water balances and supplemental water supplies, so that local purveyors can appropriately anticipate future water supply conditions and plan accordingly. Vacant lands that are conducive to recharging the basin will be identified and preserved in order to provide additional recharge capacity to the aquifers.

MWA will coordinate with local jurisdictions regarding growth projections and changes in proposed land uses. MWA planning will also ensure that water demand associated with proposed developments are consistent with water planning efforts, and will continue working with the Alliance for Water Awareness and Conservation (AWAC) in developing water conserving measures and monitoring.

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<sup>27</sup> "Global Pattern of Trends in Stream Flow and Water Availability in a Changing Climate," by P.C.D. Milly et al., Nature Letter, 2005.

<sup>28</sup> "Climate Change 2007: Mitigation of Climate Change, Working Group III contribution to the Intergovernmental Panel on Climate Change Fourth Assessment Report," edited by B. Metz, O. R. Davidson, P. R. Bosh, R. Dave, L. A. Meyer, May 2007.

<sup>29</sup> "River Basin Water Management: Evaluating and Adjusting to Hydroclimatic Variability," prepared by the National Research Council, February 2007.

In addition, Victor Valley Wastewater Reclamation Authority (VWVRA) is planning to expand wastewater treatment throughout its service area through the development of sub-regional treatment facilities. Reclaimed water from new treatment facilities can be used to substitute the use of groundwater for irrigation of landscaped areas such as golf courses, parks, municipalities, and schools, thereby reducing the demand for groundwater. Furthermore, as the volume of treated effluent increases, more recycled water will be available for groundwater recharge. Recycled water is an important supply source that will help MWA achieve a balanced Basin.

### **State Water Project Reliability**

Table III-5, below, outlines the historic reliability of SWP deliveries, including initial and final allocations from 1987 through 2009. Over the past 20 years SWP water deliveries have averaged 80% of water purveyors' allocations. DWR's 2008 State Water Project Delivery Reliability Report estimates that average reliability of future State Water Project Table A deliveries through 2027 will range from 66% to 69%.<sup>30</sup>

The analyses provided in the DWR Reliability Report are based upon 82 years of historical records for rainfall and runoff that have been adjusted to reflect the current and future levels of development in the source areas by analyzing land use patterns and projecting future land and water uses. Of key importance, the studies in the Reliability Report for current (2007) through future (2027) conditions assume and account for current facility and institutional limitations.<sup>31</sup>

DWR's long-term SWP delivery reliability analyses incorporate assumptions to account for potential supply shortfalls related to global climate change. In fact, the DWR Reliability Report accounts for potential effects of future climate change on SWP deliveries through the year 2050 by examining four climate change scenarios: (1) weak temperature warming and weak precipitation increase in California under model PCM; (2) modest warming and modest drying under model PCM; (3) modest warming and modest drying under model GFDL v. 2.0; and (4) weak temperature warming and weak precipitation increase in California under model GFDL v. 2.0. Thus, the effects of long-term global climate change have been extensively analyzed and accounted for by DWR's 2007 Final SWP Delivery Reliability Report.

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<sup>30</sup> "Department of Water Resources Draft State Water Project Delivery Reliability Report," prepared by the California Department of Water Resources Delta Bay Office, December 20, 2007.

<sup>31</sup> These limitations include water quality issues, fishery protections, export curtailments and other requirements under State Board Water Rights Decision 1641, the Vernalis Adaptive Management Plan (VAMP) as described in the 2004 Operations Criteria and Plan (OCAP), and recent court-ordered in-Delta flow targets in Old and Middle Rivers to protect delta smelt (such as *Natural Resources Defense Council v. Kempthorne*), as well as potential effects of Delta levee failures and other seismic or flood events.

**Table III-5  
 Department of Water Resources Table A Water Allocations**

<b>Year</b>	<b>Initial Allocation</b>	<b>Final Allocation</b>
1987	100%	100%
1988	100%	100%
1989	100%	100%
1990	100%	100%
1991	85%	30%
1992	20%	45%
1993	10%	100%
1994	50%	50%
1995	40%	100%
1996	40%	100%
1997	70%	100%
1998	40%	100%
1999	55%	100%
2000	50%	90%
2001	40%	39%
2002	20%	70%
2003	20%	90%
2004	35%	65%
2005	40%	90%
2006	55%	100%
2007	60%	60%
2008	25%	35%
2009	40%	N/A
<b>Average</b>	<b>52%</b>	<b>80%</b>

Source: State of California DWR, Water Contract Branch within the SWP Analysis Office, Notices to State Water Contractors, 1987 – 2009.

State Water Project delivery projections are updated annually and provided to SWP purveyors so they can plan and manage the water resources they will have available that year. Annual updates consider changes in regulation and law as well as annual precipitation, snowpack, and water stored in reservoirs. As of May 2009, the DWR has indicated that SWP contractors can rely upon the delivery of 40% of their annual allocation during 2009.

DWR’s Delivery Reliability Report is the primary source used to make long-term projections of SWP supplies and is referenced in the MWA’s UWMP and the WSA prepared for the Hacienda at Fairview Valley Project. For the Mojave Basin where there is nearly 2 million acre-feet of groundwater in storage, fluctuations in SWP deliveries are not expected to result in deficient supplies since water demand can be met through groundwater in storage. It should be noted that the Judgment and Physical Solution are part of a well-managed framework that allow groundwater production to be supplemented over the long-term with imported and other water supplies available to MWA. Nonetheless, SWP water is an important water source for Southern California and is necessary to achieve a balanced basin in the Mojave Area as described in the UWMP. The DWR and State agencies are working to assure that Southern California continues to receive SWP deliveries in a consistent and reliable fashion.

New estimates for long term annual deliveries from the State Water Project, prepared by the Department of Water Resources are expected in the Fall of 2009 and will consider the National

Marine Fisheries Service Biological Opinion that was issued in June of 2009, as well as other Fish and Wildlife Service Biological Opinions that have been prepared since the 2007 Reliability Report.

Future State Water Project delivery allocations are subject to revisions per the DWR. As discussed above, changes in future SWP deliveries may result from the recent decline of several fish species in the Delta such as delta and long-fin smelt, and striped bass. Variable hydrological conditions from climate change and a rise in sea level, as well as the aging Delta levees and other SWP conveyance infrastructure may also affect future water deliveries through the SWP.

Several solutions are being considered to assure that State Water Project deliveries can continue and to prepare for fluctuations in hydrological conditions such as increased rainfall during the wet season and dryer summers. Due to the delicacy of the Delta system, dialog regarding the long-discussed peripheral canal project to convey water around the Sacramento-San Joaquin Delta has been resurrected. In addition, the State has considered the option of increasing the capacity of the reservoir storage system, so that in times of heavy water flows more water can be stored. Both of these options have environmental and political ramifications. The Department of Water Resources will continue to explore options and alternatives for assuring continued delivery of water supplies in the future.

#### The Bay-Delta Conservation Plan/Delta Vision

The Bay-Delta Conservation Plan (BDCP) identifies near and intermediate-term actions that are intended to reduce fishery impacts and earthquake related risks, and implement elements such as real-time monitoring of fishery resources, ecosystem restoration, physical modifications to Delta channels, local water supply projects, and emergency preparedness and response plans.

The BDCP process involves several state and federal resource agencies, along with various environmental and water user entities, who are currently engaged in developing a plan to address ecosystem needs and secure long-term operating permits for the SWP. The process is scheduled for completion during the third quarter of 2009 and includes acquisition of appropriate permits and completion of necessary environmental review.

The Delta Vision process established by Governor Schwarzenegger is also aimed at identifying long-term solutions for the Delta. On December 17, 2007, the Delta Vision Blue Ribbon Task Force released its Final Report entitled Our Vision for the California Delta, containing findings and recommendations for sustaining the Delta as a healthy ecosystem and critical water supply resource for California. The plan is also to address the need for a comprehensive solution that stabilizes the ecosystem of the Delta estuary and provides for a reliable long-term water supply such as a dual-conveyance system in the Delta and enhanced water use efficiency and conservation.

A Strategic Plan to implement Delta solutions was approved by the Task Force on October 17<sup>th</sup>, 2008. The Plan was just one part of the Governor's comprehensive water initiative. Of the \$5.9 billion proposed by the Governor, \$1 billion was earmarked for Delta restoration, including the installation of a new conveyance system to help divert water around the Delta, and the potential construction of new reservoirs and rock dams. Fundamentally, the Plan was designed to protect sensitive species and provide reliable water supplies to Southern California.

### **Apple Valley Ranchos**

As a water provider and a beneficiary under the Judgment, AVR is responsible for supplying water to existing and future customers in a manner that is consistent with the requirements of the Judgment. Due to AVR's ability to pump water from the Alto Subarea drought conditions have historically had a negligible effect on AVR's ability to supply water to customers.

AVR has developed an Emergency Response and Recovery Plan to respond to potential disruptions in the water supply system. AVR's water system is interconnected with Southern California Water Company and Victorville Water District and has arranged water transfers with these providers in the event of an emergency.

As a private water utility, AVR has limited resources to require mandatory conservation during water shortages (AVR Rule 14.1: Water Conservation and Rationing Plan). However, AVR has partnered with the Town of Apple Valley to address water use efficiency and conservation. The Town of Apple Valley has adopted a Water Conservation Plan, which is intended to achieve a 20% reduction in per capita water demand by 2020. The Town's ordinance (Development Code Chapter 9.75) prohibits wasteful water practices such as excessive runoff from irrigation, and washing driveways and sidewalks. In addition, AVR works with the Town of Apple Valley's Code Compliance staff to educate water users on water conservation practices. AVR plans to construct additional wells to increase production capacity and pursues opportunities to purchase additional water rights in order to meet future water demands.

As mentioned above, Appendix C contains a letter from AVR stating that despite changing environmental and political conditions that may effect imported water supplies, the findings of the WSA as adopted in November of 2008 still hold in that development of the proposed Hacienda at Fairview Valley Specific Plan will not adversely impact water supplies and sufficient water supplies will be available to meet the increased demand for the 20-year period analyzed.

## **C. Conclusions and Recommendations**

### Conclusions

According to the California Environmental Quality Act, a proposed project is considered to have a potentially significant impact to water resources if the project would "substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level," or if the project would "substantially degrade water quality."

The proposed project in and of itself would not substantially deplete groundwater supplies. As proposed, the project incorporates a number of water saving design features such as native and other drought-tolerant landscaping and a wastewater reclamation facility with tertiary treatment capability. The Specific Plan also requires the use of the water conserving appliances, toilets, and faucets in all new buildings.

As estimated in the WSA, buildout of the Hacienda at Fairview Valley Specific Plan would generate a water demand of 1,331 acre-feet per year, which constitutes 9.3% of AVR's 2007-

2008 verified water production (14,245 acre-feet) and 1.5% of the verified production for the Alto Subarea (86,665 acre-feet). In 2025 the project's water demand would represent 3.8% of AVR's 2025 projected water demand (including buildout of the NAVISP and 20% conservation), and 1.8% under Agricultural Scenario 2 for the Alto Subarea.

Available storage capacity in the Alto Subarea will allow for the water banking of natural inflows and future imported water deliveries. The adjudication of the Mojave Water Basin (including the Alto Subbasin) also serves to assure a managed aquifer. Therefore, the additional water demand and pumping requirements generated by buildout of the Specific Plan will have less than significant impacts on groundwater supplies in the Alto Subarea and will not result in a lowering of the groundwater table or a net deficit in the aquifer.

Whether the project will have cumulative significant impacts on water resources is dependent on the amount of additional growth and development, and the associated increase in water demand that occurs within the Alto Subarea and ultimately the Mojave Basin. The WSA analysis and UWMP projections consider cumulative conditions since these documents incorporate future planned development (NAVISP) as well as increased water demand overtime from population growth. If actual development is within those limits projected in the AVR UWMP then the project's cumulative impact can be considered less than significant. However, if additional water demand beyond what is projected in the UWMP is realized then the project's water demand has the potential to be cumulatively considerable. For the purposes of this analysis it is assumed that future water demand is limited to those projections set forth in the UWMP and further described in the WSA, therefore, the project's cumulative impact to water resources is considered to be less than significant.

The project will not substantially degrade water quality and will comply with all requirements of the National Pollutant Discharge Elimination System (NPDES). Consistent with County regulations, the majority of onsite development will be connected to the proposed community sewer system, which will convey and treat wastewater to tertiary levels. Onsite septic systems would be limited to 299 units (2,815 units will be connected to the onsite sewage collection system) that are greater than three-quarter acre and are to be designed in compliance with the latest regulations set by the Lahanton Regional Water Quality Control Board.

The proposed project is not expected to have significant impacts on waste discharge requirements since it will not discharge hazardous and other wastes into the local storm water system or sanitary sewer system. Potential runoff from onsite storage areas, vehicle and equipment maintenance, waste handling, delivery areas, and loading docks and other urban areas will be required to be carefully managed as described in the EIR. Therefore, the proposed development is not expected to violate water quality standards or waste discharge requirements and the Hacienda at Fairview Valley Specific Plan will have a less than significant impact on water quality in the project vicinity and the underlying Alto Subarea.

#### Recommendations

In order to limit the amount of water needed to service the Hacienda at Fairview Valley Specific Plan and provide further assurance that potential impacts to water supplies are minimized, all practical water-conserving design measures shall be incorporated into the project, including drought-tolerant landscaping that is irrigated with reclaimed water delivered via smart controllers

and highly efficient emitters. Also, water use for indoor and potable purposes shall be delivered and used in a manner that maximizes water conservation by installing water efficient appliances, toilets, faucets and fixtures, and a water conveyance system that can detect leaks and inefficiencies.

All common area irrigation water shall utilize non-potable water such as reclaimed wastewater. A micro-irrigation system for watering landscaped areas and street right of ways shall be utilized. Prior to issuance of building permits, the applicant shall submit detailed wastewater system plans to the County Service Area for approval. The use of groundwater for irrigation should be prohibited or otherwise limited to that which cannot be served with reclaimed water. Water features such as lakes and ponds shall also utilize reclaimed water to maintain desired water levels. Turf area shall be kept to a minimum as regulated by the Specific Plan, irrigated with reclaimed wastewater, and any golf course development shall limit turf areas to a maximum of 5.5 acres per hole.

A minimum of 90% of all non-turf planting areas in common areas and street right of ways shall utilize native and other drought tolerant plant materials. The project landscape plan shall also incorporate native elements, including boulders, cobble and decomposed granite to the greatest extent practicable. Turf grass coverage in residential front yards for lots three-quarters of an acre and larger shall be limited to a maximum of 19% of yard area. Lots less than three-quarters of an acre turf shall be limited to a maximum of 28% of yard area. All non-functional turf grass coverage shall be prohibited. Limited areas of tee boxes, fairways, and greens can incorporate non-native elements as described in the Specific Plan. The master landscape design plan, plant palette, and irrigation plan, which demonstrates and quantifies irrigation demand associated with the landscape plan, shall be reviewed and approved by the County and/or AVR prior to approval of any subdivision or land use permit in order to assure that onsite water demand is reduced to the greatest extent practicable.

Private pools on individual lots shall be discouraged. Community pools located at community recreational areas within convenient distance will reduce the need for private pools at individual homes and decreases water requirements at individual lots.

Even with the use of water conserving elements throughout the project site, the project will still result in an overall increase in water demand for the AVR service area. Relative to existing and projected water use within AVR's service area and the Alto Subarea the project's water demand does not represent a substantial increase in demand, and impacts to water resources are expected to be less than significant. Nonetheless, project proponents should coordinate with AVR to secure additional water supplies, as necessary, and/or contribute monies to fund the purchase of additional supplies and construct necessary infrastructure such as additional wells, pumps, tanks, and water conveyance pipelines.

The developer will be required to pay groundwater replenishment fees and other charges pursuant to AVR's tariffs or secure additional sources of water such as purchasing water right from other water users as a means to further reduce impacts from project demand on water resources and delivery. The fees shall be based upon AVR Rule 15 (Mail Extension), in order to fund acquisition of replenishment water and facility improvements. Specific terms and conditions should be included in the water service agreement between AVR and the project developer.

# **APPENDIX A**

## **Judgment After Trial**

**Attached in Support of the  
Hacienda at Fairview Valley Specific Plan  
Water Resources Study and Water Supply Assessment**

**JUDGMENT AFTER TRIAL**

**JANUARY 10, 1996**

**MOJAVE BASIN AREA ADJUDICATION  
CITY OF BARSTOW, ET AL V. CITY OF ADELANTO, ET AL  
RIVERSIDE COUNTY SUPERIOR COURT CASE NO. 208568**



CHAMBERS OF  
VICTOR MICELI  
JUDGE OF THE SUPERIOR COURT

**Superior Court**  
STATE OF CALIFORNIA  
COUNTY OF RIVERSIDE

COURTHOUSE  
4050 MAIN STREET  
RIVERSIDE, CALIFORNIA 92501

January 10, 1996

TO: ALL PARTIES LISTED ON THE ATTACHED MAILING LIST  
FROM: E. MICHAEL KAISER, JUDGE *by ss*  
SUBJECT: CITY OF BARSTOW VS CITY OF ADELANTO, Case No.: 208568

The Judgment in the above-entitled case was signed on January 10, 1996. Please find attached the amended two pages of Exhibit B, Table B-1.

Please find attached two amended pages of Exhibit B, Table B-1.

~~12/10/92~~  
~~01/20/93~~  
~~02/02/93~~  
~~04/18/93~~  
~~04/28/93~~  
09/25/95

EXHIBIT B  
TABLE B-1  
TABLE SHOWING BASE ANNUAL PRODUCTION AND  
BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN ALTO SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

ALTO SUBAREA  PRODUCER	BASE ANNUAL <sup>1</sup>	BASE ANNUAL <sup>2</sup>	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
	PRODUCTION  (ACRE-FEET)	PRODUCTION RIGHT (PERCENT)	FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
SAN BERNARDINO CO SERVICE AREA 70J	1,005	0.8213	1,005	954	904	854	804
SAN BERNARDINO CO SERVICE AREA 70L	355	0.2901	355	337	319	301	284
SAN FILIPPO, JOSEPH & SHELLEY	35	0.0286	35	33	31	29	28
SILVER LAKES ASSOCIATION	3,987	3.2583	3,987	3,787	3,588	3,388	3,189
SOUTHDOWN, INC	1,519	1.2414	1,519	1,443	1,367	1,291	1,215
SOUTHERN CALIFORNIA WATER COMPANY	940	0.7682	940	893	846	799	752
SPRING VALLEY LAKE ASSOCIATION	3,056	2.4974	3,056	2,903	2,750	2,597	2,444
SPRING VALLEY LAKE COUNTRY CLUB	977	0.7984	977	928	879	830	781
STORM, RANDALL	62	0.0507	62	58	55	52	49
SUDMEIER, GLENN W	121	0.0989	121	114	108	102	96
SUMMIT VALLEY RANCH	452	0.3694	452	429	406	384	361
TATRO, RICHARD K & SANDRA A	280	0.2288	280	266	252	238	224
TATUM, JAMES B	829	0.6775	829	787	746	704	663
TAYLOR, ALLEN C / HAYMAKER RANCH	456	0.3727	456	433	410	387	364
THOMAS, S DALE	440	0.3596	440	418	396	374	352
THOMAS, WALTER	36	0.0294	36	34	32	30	28
THOMPSON, JAMES A	418	0.3416	418	397	376	355	334
THOMPSON, RODGER	76	0.0621	76	72	68	64	60
THRASHER, GARY	373	0.3048	373	354	335	317	298
THUNDERBIRD COUNTY WATER DISTRICT	118	0.0964	118	112	106	100	94
TURNER, ROBERT	70	0.0572	70	66	63	59	56
VAIL, JOSEPH B & PAULA E	126	0.1030	126	119	113	107	100
* VAN BURGER, CARL	710	0.5802	710	674	639	603	568
VAN LEEUWEN FAMILY TRUST	341	0.2787	341	323	306	289	272

\* Durston Well, location 06N/04W-18F, APN 468-151-11 - water production right of 357 acre/feet, claimed by Durston/Van Burger/CVB Investments and Industrial Asphalt. Product right to be determined in a subsequent severed proceeding, jurisdiction reserved.

~~12/10/92~~  
~~01/20/93~~  
~~02/02/93~~  
~~01/10/93~~  
~~01/28/92~~  
09/25/95

EXHIBIT B  
TABLE B-1  
TABLE SHOWING BASE ANNUAL PRODUCTION AND  
BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN CENTRO SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

CENTRO SUBAREA  PRODUCER	BASE ANNUAL <sup>1</sup>	BASE ANNUAL <sup>2</sup>	FREE PRODUCTION ALLOWANCES (ACRE-FBET)				
	PRODUCTION (ACRE-FBET)	PRODUCTION RIGHT (PERCENT)	FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
AGCON, INC	0	0.0000	0	0	0	0	0
AGUAYO, JEANETTE L	212	0.3742	212	201	190	180	169
ATCHISON, TOPEKA, SANTA FE RAILWAY CO	120	0.2118	120	114	108	102	96
AVDEEF, THOMAS	34	0.0600	34	32	30	28	27
AZTEC FARM DEVELOPMENT COMPANY (Now, Virgil Gorman)	220	0.3883	220	209	198	187	176
BARNES, PAY - EXECUTOR OF ESTATE OF WAYNE BARNES	243	0.4289	243	230	218	206	194
BROMMER, MARVIN	361	0.6372	361	342	324	306	288
BURNS, RITA J & PAMELA E	16	0.0282	16	15	14	13	12
CHAPA, LARRY R	96	0.1694	96	91	86	81	76
CHOI, YONG IL & JOUNG AE	38	0.0671	38	36	34	32	30
CHRISTISON, JOEL	75	0.1324	75	71	67	63	60
COOK, KWON W	169	0.2983	169	160	152	143	135
DE VRIES, NEIL	3,800	6.7070	3,800	3,610	3,420	3,230	3,040
DESERT COMMUNITY BANK	156	0.2753	156	148	140	132	124
DURAN, FRANK T	50	0.0883	50	47	45	42	40
GAINES, JACK	117	0.2065	117	111	105	99	93
GESIRIECH, WAYNE	121	0.2136	121	114	108	102	96
GORMAN, VIRGIL	138	0.2436	138	131	124	117	110
GRIEDER, RAYMOND H & DORISANNE	30	0.0530	30	28	27	25	24
GRILL, NICHOLAS P & MILLIE D	21	0.0371	21	19	18	17	16
GROEN, CORNELIS	1,043	1.8409	1,043	990	938	886	834
HANIFY, DBA - WHITE BEAR RANCH	152	0.2683	152	144	136	129	121
HARMSBN, JAMES & RUTH ANN	1,522	2.6863	1,522	1,445	1,369	1,293	1,217
HARPER LAKE COMPANY	1,433	2.5293	1,433	1,361	1,289	1,218	1,146

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7  
8 SUPERIOR COURT OF THE STATE OF CALIFORNIA  
9 IN AND FOR THE COUNTY OF RIVERSIDE

10  
11 CITY OF BARSTOW, et al,

12 Plaintiff,

13 v.

14 CITY OF ADELANTO, et al,

15 Defendant.

16  
17 MOJAVE WATER AGENCY,

18 Cross-complainant,

19 v.

20 ANDERSON, RONALD H. et al,

21 Cross-defendants.

CASE NO. 208568

ASSIGNED TO JUDGE KAISER  
DEPT. 4 FOR ALL PURPOSES

JUDGMENT AFTER TRIAL

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Exhibit "A" - Map entitled, "Map showing Mojave Water Agency, Mojave River, Mojave Basin Area and Hydrologic Subareas and Limits of Adjudicated Area Together with Geologic and Other Pertinent Features."

Exhibit "B" - Tables entitled, "Table B-1: Table Showing Base Annual Production, Base Annual Production Right of Each Producer Within Each Subarea, and Free Production Allowance for Subareas for First Five Years of the Judgment" and "Table B-2: Table Showing Total Water Production for Aquaculture and Recreational Lake Purposes."

Exhibit "C" - Engineering Appendix.

Exhibit "D" - Time Schedules.

Exhibit "E" - List of Producers and Their Designees.

Exhibit "F" - Transfers of Base Annual Production Rights.

Exhibit "G" - Subarea Obligations.

Exhibit "H" - Biological Resource Mitigation.

Exhibit "I" - Map Showing Potential Groundwater Recharge Areas

1 I. INTRODUCTION

2 A. The Complaint. The original complaint herein was filed  
3 by the City of Barstow and Southern California Water Company  
4 (collectively "Plaintiffs") in San Bernardino Superior Court, North  
5 Desert District, on May 30, 1990 as Case No. BCV6672, and  
6 transferred to Riverside County Superior Court on November 27,  
7 1990. Plaintiffs allege that the cumulative water Production  
8 upstream of the City of Barstow Overdrafted the Mojave River  
9 system, and request an average Annual flow of 30,000 acre-feet of  
10 surface water to the City of Barstow area. The complaint also  
11 includes a request for a writ of mandate to require the Mojave  
12 Water Agency ("MWA") to act pursuant to its statutory authority to  
13 obtain and provide Supplemental Water for use within the Mojave  
14 Basin Area.

15 B. The MWA Cross-Complaint. On July 26, 1991, the MWA filed  
16 its first amended cross-complaint in this case. The MWA first  
17 amended cross-complaint and its ROE amendments name Producers who  
18 collectively claim substantially all rights of water use within the  
19 Mojave Basin Area, including Parties downstream of the City of  
20 Barstow. The MWA cross-complaint, as currently amended, requests  
21 a declaration that the available native water supply to the Mojave  
22 Basin Area (not including water imported from the California State  
23 Water Project) is inadequate to meet the demands of the combined  
24 Parties and requests a determination of the water rights of  
25 whatever nature within the MWA boundaries and the Mojave Basin  
26 Area. The MWA has named as Parties several hundred Producers  
27 within the Basin Area.

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1 C. The Arc Las Flores Cross-Complaint. On July 3, 1991, Arc  
2 Las Flores filed a cross-complaint for declaratory relief seeking  
3 a declaration of water rights of certain named cross-defendants and  
4 a declaration that the appropriative, overlying and riparian rights  
5 of Arc Las Flores be determined to be prior and paramount to any  
6 rights of the Plaintiffs and other appropriators.

7 D. Stipulation and Trial. On October 16, 1991, the Court  
8 ordered a litigation standstill. The purpose of the standstill was  
9 to give the parties time to negotiate a settlement and develop a  
10 solution to the overdraft existing in the Mojave River Basin.

11 A committee of engineers and attorneys, representing a variety  
12 of water users and interests throughout the Mojave River Basin, was  
13 created to develop a physical solution to the water shortage  
14 problem. The work of the committee resulted in a stipulated  
15 interlocutory order and judgment, which was entered by the court on  
16 September 23, 1993.

17 Several non-stipulating parties requested a trial. On April  
18 20, 1994, the Court issued a memorandum setting forth the trial  
19 issues. This cause came on regularly for trial on February 6,  
20 1995, and was tried in Department 4 of the above-entitled Court,  
21 the Honorable E. Michael Kaiser, Judge, Presiding, without a jury.  
22 Oral and documentary evidence was introduced on behalf of the  
23 respective parties and the cause was argued and submitted for  
24 decision.

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1 II. DECREE

2 NOW, THEREFORE, IT IS ORDERED, ADJUDGED AND DECREED:

3 A. JURISDICTION, PARTIES, DEFINITIONS.

4 1. Jurisdiction and Parties.

5 a. Jurisdiction. This Court has jurisdiction to  
6 enter Judgment declaring and adjudicating the rights to reasonable  
7 and beneficial use of water by the Parties in the Mojave Basin Area  
8 pursuant to Article X, Section 2 of the California Constitution.  
9 This Judgment constitutes an adjudication of water rights of the  
10 Mojave Basin Area pursuant to Section 37 of Chapter 2146 of  
11 Statutes of 1959 ("the MWA Act").

12 b. Parties. All Parties to the MWA cross-  
13 complaint are included in this Judgment. The MWA has notified  
14 those Persons claiming any right, title or interest to the natural  
15 waters within the Mojave Basin Area to make claims. Such notice  
16 has been given: 1) in conformity with the notice requirements of  
17 Water Code §§ 2500 et seq.; 2) pursuant to Section 37 of the MWA  
18 Act; and 3) pursuant to order of this Court. Subsequently, all  
19 Producers making claims have been or will be included as Parties.  
20 The defaults of certain Parties have been entered, and certain  
21 named cross-defendants to the MWA cross-complaint who are not  
22 Producers have been dismissed. All named Parties who have not been  
23 dismissed have appeared herein or have been given adequate  
24 opportunity to appear herein. The Court has jurisdiction of the  
25 subject matter of this action and of the Parties hereto.

26 c. Minimal Producers. There are numerous Minimal  
27 Producers in the Basin Area and their number is expected to  
28 increase in the future. In order to minimize the cost of

1 administering this Judgment and to assure that every Person  
2 producing water in the Basin Area participates fairly in the  
3 Physical Solution, MWA shall:

4 i. within one Year following entry of this  
5 Judgment, prepare a report to the Court: 1) setting forth the  
6 identity and verified Base Annual Production of each Minimal  
7 Producer in each Subarea of the Basin Area; and 2)  
8 recommending a proposed system of Minimal Producer  
9 Assessments. The system of Minimal Producer Assessments shall  
10 achieve an equitable allocation of the costs of the Physical  
11 Solution that are attributable to Production of verified Base  
12 Annual Production amounts by Minimal Producers in each Subarea  
13 to and among such Minimal Producers. Minimal Producer  
14 Assessments need not be the same for existing Minimal  
15 Producers as for future Minimal Producers.

16 ii. within one Year following entry of this  
17 Judgment, prepare a report to the Court setting forth a  
18 proposed program to be undertaken by MWA, pursuant to its  
19 statutory authority, to implement the proposed system of  
20 Minimal Producer Assessments. The Court may order MWA to  
21 implement the proposed program or, if MWA's statutory  
22 authority is inadequate to enable implementation, or if either  
23 the proposed program or the proposed system of Minimal  
24 Producer Assessments is unacceptable to the Court, the Court  
25 may then order MWA either to implement an alternative program  
26 or system, or in the alternative, to name all Minimal  
27 Producers as Parties to this litigation and to serve them for  
28 the purpose of adjudicating their water rights.

1 Any Minimal Producer whose Annual Production exceeds ten (10) acre-  
2 feet in any Year following the date of entry of Judgment shall be  
3 made a Party pursuant to Paragraph 12 and shall be subject to  
4 Administrative, Replacement Water, Makeup Water and Biological  
5 Resources Assessments. Any Minimal Producer who produced during  
6 the 1986-1990 period may become a Party pursuant to Paragraph 40  
7 with a Base Annual Production Right based on such Minimal  
8 Producer's verified Base Annual Production. To account properly  
9 for aggregate Production by Minimal Producers in each Subarea,  
10 Table B-1 of Exhibit B shall include an estimated aggregate amount  
11 of Base Annual Production by all Minimal Producers in each Subarea.  
12 The Base Annual Production of any Minimal Producer who becomes a  
13 Party shall be deducted from the aggregate amount and assigned to  
14 such Minimal Producer.

15 2. Physical and Legal Complexity. The physical and  
16 legal issues of the case as framed by the complaint and cross-  
17 complaints are extremely complex. Production of more than 1,000  
18 Persons producing water in the Basin Area has been ascertained. In  
19 excess of 1,000 Persons have been served. The water supply and  
20 water rights of the entire Mojave Basin Area and its hydrologic  
21 Subareas extending over 4000 square miles have been brought into  
22 issue. Most types and natures of water right known to California  
23 law are at issue in the case. Engineering studies by the Parties,  
24 jointly and severally, leading toward adjudication of these rights  
25 and a Physical Solution, have required the expenditure of over two  
26 Years' time and hundreds of thousands of dollars.

27 3. Need for a Declaration of Rights and Obligations and  
28 for Physical Solution. A Physical Solution for the Mojave Basin

1 Area based upon a declaration of water rights and a formula for  
2 Intra- and Inter-Subarea allocation of rights and obligations is  
3 necessary to implement the mandate of Article X, Section 2 of the  
4 California Constitution and California water policy. Such Physical  
5 Solution requires the definition of the individual rights of all  
6 Producers within the Basin Area in a manner which will equitably  
7 allocate the natural water supplies and which will provide for  
8 equitable sharing of costs for Supplemental Water. Nontributary  
9 supplemental sources of water are or will be available in amounts,  
10 which when combined with water conservation, water reclamation,  
11 water transfers, and improved conveyance and distribution methods  
12 within the Basin Area, will be sufficient in quantity and quality  
13 to assure implementation of a Physical Solution. Sufficient  
14 information and data are known to formulate a reasonable and just  
15 allocation of existing water supplies as between the hydrologic  
16 Subareas within the Basin Area and as among the water users within  
17 each Subarea. Such Physical Solution will allow the public water  
18 supply agencies and individual water users within each hydrologic  
19 Subarea to proceed with orderly water resource planning and  
20 development. It will be necessary for MWA to construct conveyance  
21 facilities to implement the Physical Solution. Absent the  
22 construction of conveyance facilities, some Subareas may be  
23 deprived of an equitable share of the benefits made possible by the  
24 Physical Solution. Accordingly, this Physical Solution mandates  
25 the acquisition or construction of conveyance facilities for  
26 importation and equitable distribution of Supplemental Water to the  
27 respective Subareas. Such construction is dependent on the  
28 availability of appropriate financing, and any such financing

1 assessed to the Parties will be based upon benefit to the Parties  
2 in accordance with the MWA Act.

3 4. Definitions. As used in this judgment, the  
4 following terms shall have the meanings herein set forth:

5 a. Afton - The United States Geological Survey gauging  
6 station "Mojave River at Afton, CA."

7 b. Annual or Year - As used in this Judgment refers to  
8 the Annual period beginning October 1 and ending  
9 September 30 of the following Year.

10 c. Aquaculture Water - Water so identified in Exhibit  
11 "B". Such water may be used only for fish breeding  
12 and rearing. The Annual Consumptive Use of such  
13 water in acre-feet is equal to the water surface  
14 area, in acres, of the fish rearing facilities  
15 multiplied by seven (feet).

16 d. Assessments - Those Assessments levied and  
17 collected pursuant to this judgment including  
18 Replacement Water, Makeup Water, Administrative and  
19 Biological Resource Assessments.

20 e. Barstow - The United States Geological Survey  
21 Gauging Station "Mojave River at Barstow, CA."

22 f. Base Annual Production - The verified maximum Year  
23 Production, in acre-feet, for each Producer for the  
24 five Year Period 1986-1990 as set forth in Table  
25 B-1 of Exhibit "B", except where otherwise noted  
26 therein. The maximum Year Production for each  
27 Producer was verified based on one or more of the  
28 following: flow meter readings, electrical power

1 or diesel usage records or estimated applied water  
2 duty. The Base Annual Production for recreational  
3 lakes in the Baja Subarea and for Aquaculture shall  
4 be equal either to the area of water surface  
5 multiplied by seven feet or to verified Production,  
6 whichever is less. The five Year period 1986-1990  
7 shall also be the time period for which Base Annual  
8 Production for Minimal Producers shall be  
9 calculated.

10 g. Base Annual Production Right - The relative Annual  
11 right of each Producer to the Free Production  
12 Allowance within a given Subarea, expressed as a  
13 percentage of the aggregate of all Producers' Base  
14 Annual Production in the Subarea. The percentage  
15 for each Producer is calculated by multiplying that  
16 Producer's Base Annual Production in a Subarea  
17 times one hundred (100) and dividing the result by  
18 the aggregate Base Annual Production for all  
19 Producers in the Subarea. The percentage shall be  
20 rounded off to the nearest one ten-thousandth of  
21 one per cent.

22 h. Base Flow - That portion of the total surface flow  
23 measured Annually at Lower Narrows which remains  
24 after subtracting Storm Flow.

25 i. Carry Over Right - The right of a Producer to delay  
26 and accumulate the Production of such Producer's  
27 share of a Subarea Free Production Allowance until  
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1 and only until the following Year free of any  
2 Replacement Water Assessment.

3 j. Consumption or Consumptive Use - The permanent  
4 removal of water from the Mojave Basin Area through  
5 evaporation or evapo-transpiration. The  
6 Consumptive Use rates resulting from particular  
7 types of water use are identified in Paragraph 2 of  
8 Exhibit "F".

9 k. Free Production Allowance - The total amount of  
10 water, and any Producer's share thereof, that may  
11 be Produced from a Subarea each Year free of any  
12 Replacement Obligation.

13 l. Groundwater - Water beneath the surface of the  
14 ground and within the zone of saturation; i.e.,  
15 below the existing water table, whether or not  
16 flowing through known and definite channels.

17 m. Harper Lake Basin - That portion of the Centro  
18 Subarea identified as such on Exhibit "A".

19 n. Lower Narrows - The United States Geological Survey  
20 gauging station "Mojave River near Victorville,  
21 CA."

22 o. Makeup Water - Water needed to satisfy a Minimum  
23 Subarea Obligation.

24 p. Makeup Obligation - The obligation of a Subarea to  
25 pay for Makeup Water to satisfy its Subarea  
26 Obligation.

27 q. Minimal Producer - Any Person whose Base Annual  
28 Production, as verified by MWA is not greater than

1 ten (10) acre-feet. A Person designated as a  
2 Minimal Producer whose Annual Production exceeds  
3 ten (10) acre-feet in any Year following the date  
4 of entry of Judgment is no longer a Minimal  
5 Producer.

6 r. Minimum Subarea Obligation - The minimum Annual  
7 amount of water a Subarea is obligated to provide  
8 to an adjoining downstream Subarea or the  
9 Transition Zone or, in the case of the Baja  
10 Subarea, the minimum Annual Subsurface Flow at the  
11 MWA eastern boundary toward Afton in any Year, as  
12 set forth in Exhibit "G".

13 s. Mojave Basin Area or Basin Area - The area shown on  
14 Exhibit "A" that lies within the boundaries of the  
15 line labelled "Limits of Adjudicated Area" which  
16 generally includes the area tributary to the Mojave  
17 River and its tributaries except for such area not  
18 included within the Mojave Water Agency's  
19 jurisdiction.

20 t. MWA - Cross complainant Mojave Water Agency.

21 u. Overdraft - A condition wherein the current total  
22 Annual Consumptive Use of water in the Mojave Basin  
23 Area or any of its Subareas exceeds the long term  
24 average Annual natural water supply to the Basin  
25 Area or Subarea.

26 v. Party (Parties) - Any Person(s) named in this  
27 action who has intervened in this case or has

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1 become subject to this Judgment either through  
2 stipulation, default, trial or otherwise.

3 w. Person(s) - Any natural person, firm, association,  
4 organization, joint venture, partnership, business,  
5 trust, corporation, or public entity.

6 x. Produce - To pump or divert water.

7 y. Producer(s) - A Person, other than a Minimal  
8 Producer, who Produces water.

9 z. Production - Annual amount of water produced,  
10 stated in acre-feet of water.

11 aa. Production Safe Yield - The highest average Annual  
12 Amount of water that can be produced from a  
13 Subarea: (1) over a sequence of years that is  
14 representative of long-term average annual natural  
15 water supply to the Subarea net of long-term  
16 average annual natural outflow from the Subarea,  
17 (2) under given patterns of Production, applied  
18 water, return flows and Consumptive Use, and (3)  
19 without resulting in a long-term net reduction of  
20 groundwater in storage in the Subarea.

21 bb. Purpose of Use - The broad category of type of  
22 water use including but not limited to municipal,  
23 irrigation, industrial, aquaculture, and lakes  
24 purposes. A change in Purpose of Use includes any  
25 reallocation of water among mixed or sequential  
26 uses, excluding direct reuse of municipal  
27 wastewater.

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cc. Recirculated Water - Water that is Produced but not consumed by the Parties listed in Table B-2 of Exhibit "B" and then returned either to the Mojave River or to the Groundwater basin underlying the place of use.

dd. Replacement Obligation - The obligation of a Producer to pay for Replacement Water for Production from a Subarea in any Year in excess of the sum of such Producer's share of that Year's Free Production Allowance for the Subarea plus any Production pursuant to a Carry Over Right.

ee. Replacement Water - Water purchased by Watermaster or otherwise provided to satisfy a Replacement Obligation.

ff. Responsible Party - The Person designated by a Party as the Person responsible for purposes of filing reports and receiving notices pursuant to the provisions of this Judgment.

gg. Stored Water - Water held in storage pursuant to a Storage Agreement with Watermaster.

hh. Storm Flow - That portion of the total surface flow originating from precipitation and runoff without having first percolated to Groundwater storage in the zone of saturation and passing a particular point of reckoning, as determined annually by the Watermaster.

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1 ii. Subareas - The five Subareas of the Mojave Basin  
2 Area -- Este, Oeste, Alto, Centro and Baja -- as  
3 shown on Exhibit "A".

4 jj. Subarea Obligation - The average Annual amount of  
5 water that a Subarea is obligated to provide to an  
6 adjoining downstream Subarea or the Transition Zone  
7 or, in the case of the Baja Subarea, the average  
8 Annual Subsurface Flow toward Afton at the MWA  
9 eastern boundary as set forth in Exhibit "G".

10 kk. Subsurface Flow - Groundwater which flows beneath  
11 the earth's surface.

12 ll. Supplemental Water - Water imported to the Basin  
13 Area from outside the Basin Area, water that would  
14 otherwise be lost from the Basin Area but which is  
15 captured and made available for use in the Basin  
16 Area, or any Producer's share of Free Production  
17 Allowance that is not Produced and is acquired by  
18 Watermaster pursuant to this Judgment.

19 mm. Transition Zone - The portion of the Alto Subarea,  
20 shown on Exhibit "A", that lies generally between  
21 the Lower Narrows and the Helendale Fault.

22 nn. Watermaster - The Person(s) appointed by the Court  
23 to administer the provisions of this Judgment.

24 5. Exhibits. The following exhibits are attached to this  
25 Judgment and made a part hereof.

26 Exhibit "A" - Map entitled, "Map showing Mojave Water  
27 Agency, Mojave River, Mojave Basin Area and Hydrologic Subareas and  
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1 Limits of Adjudicated Area Together with Geologic and Other  
2 Pertinent Features."

3 Exhibit "B" - Table entitled, "Table B-1: Table Showing  
4 Base Annual Production and Base Annual Production Right of Each  
5 Producer Within Each Subarea, and Free Production Allowances for  
6 Subareas for First Five Years after entry of the Interlocutory  
7 Judgment" and "Table B-2: Table Showing Total Water Production for  
8 Aquaculture and Recreational Lake Purposes."

9 Exhibit "C" - Engineering Appendix.

10 Exhibit "D" - Time Schedules.

11 Exhibit "E" - List of Producers and Their Designees.

12 Exhibit "F" - Transfers of Base Annual Production Rights.

13 Exhibit "G" - Subarea Obligations.

14 Exhibit "H" - Biological Resource Mitigation.

15 Exhibit "I" - Map Showing Potential Groundwater Recharge  
16 Areas

17 B. DECLARATION OF HYDROLOGIC CONDITIONS.

18 6. Mojave Basin Area as Common Source of Supply. The  
19 area shown on Exhibit "A" as the Mojave Basin Area is comprised of  
20 five Subareas. The waters derived from the Mojave River and its  
21 tributaries constitute a common source of supply of the five  
22 Subareas and of the Persons producing therefrom.

23 7. Existence of Overdraft. In each and every Year, for  
24 a period in excess of five (5) years prior to the May 30, 1990  
25 filing date of Plaintiffs' Complaint, the Mojave Basin Area and  
26 each of its respective Subareas have been and are in a state of  
27 Overdraft, and it is hereby found that there is no water available

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1 for Production from the Basin Area or any Subarea therein except  
2 pursuant to this Judgment.

3 C. DECLARATION OF RIGHTS AND OBLIGATIONS.

4 8. Production Rights of the Parties. The Base Annual  
5 Production and Base Annual Production Right of each Party are  
6 declared as set forth in Table B-1 of Exhibit "B". Certain Parties  
7 also have the right to continue to Produce Recirculated Water in  
8 the amounts set forth in Table B-2 of Exhibit "B", subject to the  
9 following:

10 a. Aquaculture. Two of the Producers listed in  
11 Table B-2 of Exhibit "B", California Department of Fish and Game  
12 Mojave River Fish Hatchery (Hatchery) and Jess Ranch Water Company  
13 (Jess), Produce Recirculated Water for Aquaculture. The Hatchery  
14 and Jess or their successors or assignees shall have the right to  
15 continue to Produce up to the amounts listed in Table B-2 of  
16 Exhibit "B" as Recirculated Water for Aquaculture on the property  
17 where it was used in the Year for which Base Annual Production was  
18 verified. Production of such amount of Recirculated water by Jess  
19 shall be free of any Replacement Water Assessments, Makeup Water  
20 Assessments or Administrative Assessments but shall be subject to  
21 Biological Resources Assessments and each Jess well producing  
22 Recirculated Water shall be subject to an Annual administrative fee  
23 equal to the lowest Annual fee paid to MWA by a Minimal Producer.  
24 Neither the Hatchery nor Jess Recirculated Water may be transferred  
25 or used for any other purpose or transferred for use on any other  
26 property, except as provided in Paragraph 7 of Exhibit "F" for the  
27 Hatchery. Any Production of Recirculated Water by Jess in excess  
28 of the amount shown in Table B-2 shall be subject to all

1 Assessments. Production of Recirculated Water by the Hatchery will  
2 be subject to the rules set forth in Paragraph 7 of Exhibit "F".  
3 All Jess Aquaculture Recirculated Water shall be discharged  
4 immediately and directly to the Mojave River.

5 b. Camp Cady. One Producer listed in Table B-2 of  
6 Exhibit "B", California Department of Fish and Game-Camp Cady (Camp  
7 Cady), Produces Recirculated Water for Lakes containing Tui Chub,  
8 an endangered species of fish. Camp Cady or its successors or  
9 assignees shall have the right to continue to Produce up to the  
10 amount listed in Table-B-2 of Exhibit "B" as Recirculated Water at  
11 Camp Cady. Production of each amount of Recirculated water shall  
12 be free of any Assessments. Camp Cady Recirculated Water may not  
13 be transferred or used for any other purpose or transferred for use  
14 on any other property. Any Production of Recirculated Water by  
15 Camp Cady in excess of the amount shown in Table B-2 of Exhibit "B"  
16 shall be subject to all Assessments except Biological Resource  
17 Assessments. All Camp Cady Recirculated Water shall be allowed to  
18 percolate immediately and directly to the Groundwater basin  
19 underlying Camp Cady.

20 c. Recreational Lakes in Baja Subarea. All  
21 Producers listed in Table B-2 of Exhibit "B" except the Hatchery,  
22 Jess and Camp Cady Produce Recirculated Water for recreational  
23 lakes in the Baja Subarea. Such Producers or their successors or  
24 assignees shall have the right to continue to Produce up to the  
25 amounts identified in Table B-2 of Exhibit "B" as Recirculated  
26 Water for use in recreational lakes on the property where it was  
27 used in the Year for which Base Annual Production was verified,  
28 free of any Replacement Water Assessments, Makeup Water

1 Assessments, or Administrative Assessments, but such Production  
2 shall be subject to any Biological Resource Assessment. Each well  
3 producing such Recirculated Water shall be subject to an Annual  
4 administrative fee equal to the lowest Annual fee paid by a Minimal  
5 Producer. Recirculated Water cannot be transferred or used for any  
6 other purpose. All recreational lake Recirculated Water shall be  
7 allowed to percolate immediately and directly to the Groundwater  
8 basin underlying the recreational lake.

9 9. MWA Obligations. The Physical Solution is intended  
10 to provide for delivery and equitable distribution to the  
11 respective Subareas by MWA of the best quality of Supplemental  
12 Water reasonably available. MWA shall develop conveyance or other  
13 facilities to deliver this Supplemental Water to the areas depicted  
14 in Exhibit "I," unless prevented by forces outside its reasonable  
15 control such as an inability to secure financing consistent with  
16 sound municipal financing practices and standards.

17 a. Secure Supplemental Water. MWA, separate and  
18 apart from its duties as the initial Watermaster designated under  
19 this Judgment, shall exercise its authority under Sections 1.5 and  
20 15 of the MWA Act to pursue promptly, continuously and diligently  
21 all reasonable sources to secure Supplemental Water as necessary to  
22 fully implement the provisions of this Judgment.

23 b. Supplemental Water Prices. The MWA shall  
24 establish fair and equitable prices for Supplemental Water  
25 delivered to the Watermaster under this Judgment.

26 c. Supplemental Water Delivery Plan. Not later  
27 than September 30, 1996, MWA shall prepare a report on potential  
28 alternative facilities or methods to deliver Supplemental Water to

1 the areas shown on Exhibit "I." The report shall include, for each  
2 alternative, a development time schedule, a summary of cost  
3 estimates, an analysis of the relative benefits to Producers in  
4 each Subarea and an analysis of alternative methods of financing  
5 and cost allocation, including any state or federal sources of  
6 funding that may be available.

7 d. Water Delivery Cost Allocation. The report  
8 required by subdivision (c) above shall recommend methods of  
9 financing and cost allocation that are based on benefits to be  
10 received. MWA's cost allocation plan shall be subject to Court  
11 review as provided in subdivision (f) below to verify that costs  
12 are allocated fairly and according to benefits to be received. The  
13 MWA financing and cost allocation plan may include a mix of revenue  
14 sources including the following:

15 (1) Developer or connection fees to the  
16 extent MWA can demonstrate a nexus, as  
17 required by law, between the fees and the  
18 impact of the development upon the water  
19 resources of the Mojave Basin Area and  
20 each subarea thereof;

21 (2) Other methods of financing available to  
22 MWA, including but not limited to  
23 property based taxes, assessments or  
24 standby charges;

25 (3) Water sales revenues, but only to the  
26 extent other sources are not available or  
27 appropriate, and in no event shall the  
28 water sales price to cover facility

1 capital costs exceed a rate equal to  
2 fifty percent of the variable cost rate  
3 charged to MWA under its contract for  
4 water delivery from the California State  
5 Water Project;

6 e. Legislative Changes. MWA shall seek promptly  
7 to have enacted amendments to the MWA Act (Water Code Appendix,  
8 Part 97) that allow MWA to implement any methods of governmental  
9 financing available to any public entity in California.

10 f. Court Review and Determination of Benefit. Not  
11 later than September 30, 1996, MWA shall submit its report to the  
12 Court in a noticed motion pursuant to Paragraph 36. The report  
13 shall set forth MWA's recommendations as to the following: (1)  
14 which alternatives should be implemented; (2) methods of cost  
15 allocation for the recommended alternatives; (3) financing for the  
16 recommended alternatives; and (4) a time schedule to complete the  
17 recommended alternatives. The Court may approve or reject the  
18 recommendations. The Court may further order the use of  
19 alternatives and time schedules or it may order additional studies  
20 and resubmittals, as it may deem proper.

21 10. Priority and Determination of Production Rights.  
22 The water rights involved herein are of differing types and  
23 commenced at different times. Many of the rights involved are  
24 devoted to public uses. The Declaration of Water Rights that is  
25 part of the judgment and the Physical Solution decreed herein takes  
26 into consideration the competing priorities which have been  
27 asserted in addition to the equitable principles applicable to  
28 apportionment of water in this situation. The following factors

1 have been considered in the formulation of each Producer's Base  
2 Annual Production Right:

3 a. The Mojave Basin Area and each of its hydrologic  
4 Subareas have continuously for many Years been in a state of  
5 system-wide Overdraft;

6 b. All Producers have contributed to the Overdraft;

7 c. None of the priorities asserted by any of the  
8 Producers is without dispute;

9 d. Under the complex scheme of California water  
10 law, the allocation of water and rights mechanically based upon the  
11 asserted priorities would be extremely difficult, if not  
12 impossible, and would not result in the most equitable  
13 apportionment of water;

14 e. Such mechanical allocation would, in fact,  
15 impose undue hardship on many Parties;

16 f. There is a need for conserving and making  
17 maximum beneficial use of the water resources of the State;

18 g. The economy of the Mojave Basin Area has to a  
19 great extent been established on the basis of the existing  
20 Production;

21 h. The Judgment and Physical Solution take into  
22 consideration the unique physical and climatic conditions of the  
23 Mojave Basin Area, the Consumptive Use of water in the several  
24 sections of the Basin, the character and rate of return flows, the  
25 extent of established uses, the availability of storage water, the  
26 relative benefits and detriments between upstream areas and  
27 downstream areas if a limitation is imposed on one and not the

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1 other, and the need to protect public interest and public trust  
2 concerns.

3 In consideration of the foregoing factors, and in  
4 accordance with the terms and conditions of this Judgment, the  
5 Parties are estopped and barred from asserting special priorities  
6 or preferences.

7 11. Exercise of Carry Over Rights. The first water  
8 Produced by a Producer during any Year shall be deemed to be an  
9 exercise of any Carry Over Right. Such Carry Over Right may be  
10 transferred in accordance with Exhibit "F".

11 12. Production Only Pursuant to Judgment. This  
12 Judgment, and the Physical Solution decreed herein, addresses all  
13 Production within the Mojave Basin Area. Because of the existence  
14 of Overdraft, any Production outside the framework of this Judgment  
15 and Physical Solution will contribute to an increased Overdraft,  
16 potentially damage the Mojave Basin Area and public interests in  
17 the Basin Area, injure the rights of all Parties, and interfere  
18 with the Physical Solution. Watermaster shall bring an action or  
19 a motion to enjoin any Production that is not pursuant to the terms  
20 of this Judgment.

21 13. Declaration of Subarea Rights and Obligations. In  
22 the aggregate, Producers within certain Subareas have rights, as  
23 against those in adjoining upstream Subareas, to receive average  
24 Annual water supplies and, in any one Year, to receive minimum  
25 Annual water supplies equal to the amounts set forth in Exhibit  
26 "G", in addition to any Storm Flows. In turn, in the aggregate,  
27 Producers within certain Subareas have an obligation to provide to  
28 adjoining downstream Subareas such average Annual water supplies in

1 the amounts and in the manner set forth in Exhibit "G". In any one  
2 Year, Producers within certain Subareas have an obligation to  
3 provide to adjoining downstream Subareas such minimum Annual water  
4 supplies in the amounts and in the manner set forth in Exhibit "G".  
5 The Producers in the Baja Subarea have an obligation to provide  
6 average and minimum Subsurface Flows toward Afton at the MWA  
7 eastern boundary equal to the amounts shown in Exhibit "G".  
8 Producers in each of the Subareas have rights in the aggregate, as  
9 against each adjoining downstream Subarea or, in the case of the  
10 Baja Subarea, as against flows at the MWA eastern boundary toward  
11 Afton, to divert, pump, extract, conserve, and use all surface  
12 water and Groundwater supplies originating therein or accruing  
13 thereto, and so long as the adjoining downstream Subarea  
14 Obligations are satisfied under this Judgment and there is  
15 compliance with all of its provisions. Watermaster shall maintain  
16 a continuing account of the status of each Subarea's compliance  
17 with its Subarea Obligation, including any cumulative credits or  
18 debits and any requirement for providing Makeup Water. The  
19 accounting and determinations relative to Subarea Obligations shall  
20 be made in accordance with procedures set forth in Exhibit "G".

21  
22 **III. INJUNCTION**

23 14. Injunction Against Unauthorized Production. Each  
24 and every Party, its officers, agents, employees, successors, and  
25 assigns, is ENJOINED AND RESTRAINED from Producing water from the  
26 Basin Area except pursuant to the provisions of the Physical  
27 Solution in this Judgment.

28 ///

1           15. Injunction Re Change in Purpose of Use Without  
2 Notice Thereof to Watermaster. Each and every Party, its officers,  
3 agents, employees, successors, and assigns, is ENJOINED AND  
4 RESTRAINED from changing its Purpose of Use at any time without  
5 first notifying Watermaster of the intended change.

6           16. Injunction Against Unauthorized Recharge. Each and  
7 every Party, its officers, agents, employees, successors and  
8 assigns, is ENJOINED AND RESTRAINED from claiming any right to  
9 recapture Water that has been recharged in the Basin Area except  
10 pursuant to a Storage Agreement with Watermaster. This provision  
11 does not prohibit Parties from importing Supplemental Water into  
12 the Basin Area for direct use.

13           17. Injunction Against Transportation from Mojave Basin  
14 Area. Except upon further order of the Court, each and every  
15 Party, its officers, agents, employees, successors and assigns, is  
16 ENJOINED AND RESTRAINED from transporting water hereafter Produced  
17 from the Basin Area to areas outside the Basin Area.

18           18. Injunction Against Diverting Storm Flows. No Party  
19 may undertake or cause the construction of any project that will  
20 directly reduce the amount of Storm Flow that would otherwise go  
21 through the naturally occurring hydrologic regime to a downstream  
22 Subarea or that will reduce the surface area over which Storm Flow  
23 currently occurs by alteration to the bed of the Mojave River.  
24 This paragraph shall not prevent any flood control agency or  
25 municipality from taking such emergency action as may be necessary  
26 to protect the physical safety of its residents and its structures  
27 from flooding. Any such action shall be done in a manner that will  
28 minimize any reduction in the quantity of Storm Flows.

1 IV. CONTINUING JURISDICTION

2 19. Jurisdiction Reserved. Full jurisdiction, power and  
3 authority are retained by and reserved to the Court for purposes of  
4 enabling the Court upon the application of any Party, by a motion  
5 noticed in accordance with the notice procedures of Paragraph 36  
6 hereof, to make such further or supplemental order or directions as  
7 may be necessary or appropriate for interim operation before the  
8 Physical Solution is fully operative, or for interpretation,  
9 enforcement or carrying out of this Judgment, and to modify, amend  
10 or amplify any of the provisions of this Judgment or to add to the  
11 provisions thereof consistent with the rights herein decreed;  
12 provided, that nothing in this paragraph shall authorize either a  
13 reduction of the Base Annual Production Right of any Party, except  
14 in accordance with the rules set forth in Exhibit "F", or a  
15 reduction of the Base Flow portion of any Subarea Obligation.

16  
17 V. Physical Solution

18 A. GENERAL

19 20. Purpose and Objective. The Court hereby declares  
20 and decrees that the Physical Solution herein contained: 1) is a  
21 fair and equitable basis for satisfaction of all water rights in  
22 the Mojave Basin Area; 2) is in furtherance of the mandate of the  
23 State Constitution and the water policy of the State of California;  
24 and 3) takes into account applicable public trust interests; and  
25 therefore adopts and orders the Parties to comply with the Physical  
26 Solution. As noted in Paragraph 3 of this Judgment, the  
27 declaration of rights and obligations of the Parties and Subareas  
28 is a necessary component of this Physical Solution. The purpose of

1 the Physical Solution is to establish a legal and practical means  
2 for making the maximum reasonable beneficial use of the waters of  
3 the Basin Area by providing for the long-term conjunctive  
4 utilization of all water available thereto to meet the reasonable  
5 beneficial use requirements of water users therein.

6 21. Need for Flexibility. It is essential that this  
7 Physical Solution provide maximum flexibility and adaptability in  
8 order that the Court may be free to use existing and future  
9 technological, social, institutional and economic options in order  
10 to maximize reasonable beneficial use of the waters of the Basin  
11 Area. To that end, the Court's retained jurisdiction may be  
12 utilized where appropriate, to supplement the Physical Solution.

13 22. General Pattern of Operations. The Producers will  
14 be divided into five Subareas for purposes of administration. The  
15 Subarea rights and obligations are herein decreed. A fundamental  
16 premise of the Physical Solution is that all Parties will be  
17 allowed, subject to this Judgment, to Produce sufficient water to  
18 meet their reasonable beneficial use requirements. To the extent  
19 that Production by a Producer in any Subarea exceeds such  
20 Producer's share of the Free Production Allowance of that Subarea,  
21 Watermaster will provide Replacement Water to replace such excess  
22 Production according to the methods set forth herein. To the  
23 extent that any Subarea incurs a Makeup Obligation, Watermaster  
24 will provide Supplemental Water to satisfy such Makeup Obligation  
25 according to the methods set forth herein. For the initial five  
26 (5) full Years after entry of this Judgment (including any  
27 interlocutory Judgment), the Free Production Allowance for each  
28 Subarea shall be set as the amount of water equal to the following

1 percentages of the aggregate Base Annual Production for that  
2 Subarea:

	<u>Judgment Year</u>	<u>Percentage</u>	
3			
4	1993-1994	First Full Year	100
5	1994-1995	Second Full Year	95
6	1995-1996	Third Full Year	90
7	1996-1997	Fourth Full Year	85
8	1997-1998	Fifth Full Year	80

9 The extent of Overdraft now varies between Subareas and the  
10 reasonableness of any physical solution as applied to each Producer  
11 depends in part upon such Producer's foreseeable needs and the  
12 present and future availability of water within the Subarea in  
13 which each Producer is located. The Physical Solution described in  
14 this Judgment in part generally contemplates (i) initially allowing  
15 significant unassessed production on a substantially uniform basis  
16 for all Producers and Subareas and (ii) a phasing in of the  
17 monetary obligations necessary to obtain Supplemental Water. The  
18 above two provisions will affect each Subarea differently, may not  
19 be sufficient to ultimately eliminate the condition of Overdraft in  
20 each Subarea and could result in increased Overdraft within a  
21 Subarea. Any adverse impact to any Subarea caused by the  
22 implementation of the provisions shall be the responsibility of the  
23 Producers in each such Subarea.

24 B. ADMINISTRATION.

25 23. Administration by Watermaster. Watermaster shall  
26 administer and enforce the provisions of the Judgment and any  
27 subsequent instructions or orders of this Court.

28 ///

1           (a) Standard of Performance. Watermaster shall, in  
2 carrying out its duties, powers and responsibilities herein, act in  
3 an impartial manner without favor or prejudice to any Subarea,  
4 Producer, Party or Purpose of Use.

5           (b) Removal of Watermaster. Full jurisdiction, power  
6 and authority are retained and reserved by the Court for the  
7 purpose of enabling the Court on its own motion, or upon  
8 application of any Party, and upon notice in accordance with the  
9 notice procedures of paragraph 36 hereof, and after hearing  
10 thereon, to remove any appointed Watermaster and substitute a new  
11 Watermaster in its place. The Court shall find good cause for the  
12 removal of Watermaster upon a showing that Watermaster has failed  
13 to perform its duties, powers and responsibilities in an impartial  
14 manner, or has otherwise failed to act in the manner consistent  
15 with the provisions set forth in this Judgment or subsequent order  
16 of the Court.

17           (c) MWA Appointed as Initial Watermaster. The MWA is  
18 hereby appointed, until further order of the Court, as Watermaster  
19 to administer and enforce the provisions of this Judgment and any  
20 subsequent orders of this Court issued in the performance of its  
21 continuing jurisdiction. In carrying out this appointment, MWA  
22 shall segregate and separately exercise in all respects the  
23 Watermaster powers delegated by the Court under this Judgment from  
24 MWA's statutory powers. All funds received, held, and disbursed by  
25 MWA as Watermaster shall be by way of separate Watermaster  
26 accounts, subject to separate accounting and auditing. Meetings  
27 and hearings held by the MWA Board of Directors when acting as  
28 Watermaster shall be noticed and conducted separately from MWA

1 meetings. All Watermaster staff and consultant functions shall be  
2 separate and distinct from MWA staff and consultant functions;  
3 provided, however, that pursuant to duly adopted Watermaster rules,  
4 which shall be subject to review according to Paragraph 36 hereof,  
5 Watermaster staff and consultant functions may be accomplished by  
6 MWA staff and consultants, subject to strict time and cost  
7 accounting principles so that Watermaster functions, and the  
8 Assessments provided under this Judgment, do not subsidize, and are  
9 not subsidized by, MWA functions. Subject to these principles, MWA  
10 shall implement practicable cost efficiencies through consolidation  
11 of Watermaster and MWA staff and consultant functions.

12           24.   Powers and Duties. Subject to the continuing  
13 supervision and control of the Court, Watermaster shall have and  
14 may exercise the following express powers, and shall perform the  
15 following duties, together with any specific powers, authority and  
16 duties granted or imposed elsewhere in this Judgment or hereafter  
17 ordered or authorized by the Court in the exercise of its  
18 continuing jurisdiction:

19           a.   Rules and Regulations. To adopt any and all  
20 appropriate rules and regulations for conduct pursuant to this  
21 Judgment after public hearing. Notice of hearing and a copy of the  
22 proposed rules and regulations, and any amendments thereof, shall  
23 be mailed to all Parties thirty days prior to the date of the  
24 hearing thereon.

25           b.   Employment of Experts and Agents. To employ  
26 such administrative personnel, engineering, legal, accounting, or  
27 other specialty services and consulting assistants as may be deemed  
28 appropriate in carrying out the terms of this Judgment.

1 c. Makeup and Replacement Obligations. To  
2 determine the Makeup Obligations for each Subarea and Replacement  
3 Obligations for each Producer and each Subarea, pursuant to the  
4 terms of the Judgment.

5 d. Measuring Devices, etc. To adopt rules and  
6 regulations regarding determination of amounts of Production and  
7 installation of individual water meters. The rules and regulations  
8 shall provide for approved devices or methods to measure or  
9 estimate Production. Producers who meter Production on the date of  
10 entry of this Judgment shall continue to meter Production.  
11 Thereafter, Producers who do not meter Production on the effective  
12 date of entry of this Judgment may be required by Watermaster rules  
13 and regulations to install water meters upon a showing that then  
14 employed measurement devices or methods do not accurately determine  
15 actual Production. The rules and regulations shall require that  
16 within three Years after the date of entry of this Judgment, any  
17 Producer who provides piped water for human Consumption to more  
18 than five service connections shall have installed an individual  
19 water meter on each service connection.

20 e. Hydrologic Data Collection. To install, operate  
21 and maintain such wells, measuring devices and/or meters necessary  
22 to monitor stream flow, precipitation and groundwater levels and to  
23 obtain such other data as may be necessary to carry out the  
24 provisions of this Judgment, including a study of the Basin Area  
25 phreatophyte consumptive use.

26 f. Assessments. To set, levy and collect all  
27 Assessments specified herein.

28 ///

1                   g. Purchase of and Recharge with Supplemental  
2 Water. In accordance with Paragraph 27, to the extent Supplemental  
3 Water is available and is reasonably needed for Replacement Water  
4 or Makeup Water, to use Replacement Water Assessment proceeds to  
5 purchase Replacement Water, and to use Makeup Water Assessment  
6 proceeds to purchase Makeup Water and to have such Replacement  
7 Water and Makeup Water provided to the appropriate Subarea as soon  
8 as practicable. Watermaster may prepurchase Supplemental Water and  
9 apply subsequent Assessments towards the costs of such  
10 prepurchases.

11                   h. Water Quality. To take all reasonable steps to  
12 assist and encourage appropriate regulatory agencies to enforce  
13 reasonable water quality regulations affecting the Basin Area,  
14 including regulation of solid and liquid waste disposal.

15                   i. Notice List. To maintain a current list of  
16 Responsible Parties to receive notice hereunder.

17                   j. Annual Administrative Budget. To prepare a  
18 proposed administrative budget for each Year, hold hearings  
19 thereon, and adopt an administrative budget according to the time  
20 schedule set forth in Exhibit "D". The administrative budget shall  
21 set forth budgeted items and Administrative Assessments in  
22 sufficient detail to show the allocation of the expense among the  
23 Producers. Following the adoption of the budget, expenditures  
24 within budgeted items may thereafter be made by Watermaster in the  
25 exercise of powers herein granted, as a matter of course.

26                   k. Annual Report to Court.

27                   (1) To file an Annual report with this Court  
28 not later than April 1 of each Year beginning April 1 following the

1 first full Year after entry of Judgment. Prior to filing the  
2 Annual report with the Court, Watermaster shall notify all Parties  
3 that a draft of the report is available for review and shall  
4 provide notice of a hearing to receive comments and recommendations  
5 for changes in the report. The public hearing shall be conducted  
6 on the same date and at the same place as the hearings required by  
7 Paragraphs 3 and 4 of Exhibit "D". The notice of hearing may  
8 include such summary of the draft report as Watermaster may deem  
9 appropriate. Watermaster shall also distribute the report to the  
10 Parties requesting copies.

11 (2) The Annual report shall include an Annual  
12 fiscal report of the preceding Year's operation and shall include  
13 details as to operation of each of the Subareas and an audit of all  
14 Assessments and expenditures pursuant to this Physical Solution and  
15 a review of Watermaster activities pursuant to this Judgment. The  
16 Annual report shall include a compilation of at least the  
17 following:

18 Determinations and data required by:

- 19 i) Paragraph 24(c) (Makeup and Replacement Obligations)
- 20 ii) Paragraph 24(e) (Hydrologic Data Collection)
- 21 iii) Paragraph 24(g) (Purchase of and Recharge with  
22 Supplemental Water)
- 23 iv) Paragraph 24(i) (Notice List)

24 Rules and regulations adopted pursuant to:

- 25 v) Paragraph 24(a) (Rules and Regulations)
- 26 vi) Paragraph 24(d) (Measuring Devices, etc.)
- 27 vii) Paragraph 24(s) (Storage Agreements)

28 Reports required by:

- 1 viii) Paragraph 24(j) (Annual Administrative Budget)  
2 ix) Paragraph 24(n) (Transfers)  
3 x) Paragraph 24(o) (Free Production Allowance)  
4 xi) Paragraph 24(p) (Production Reports)  
5 xii) Exhibit "D" (Prior Year Report)  
6 xiii) Exhibit "F" (Transfers of Base Annual Production  
7 Rights)  
8 xiv) Exhibit "G" (Status of Subarea Obligation)  
9 xv) Exhibit "H" (Biological Resource Mitigation)

10 1. Investment of Funds. To hold and invest any  
11 funds in investments authorized from time to time for public  
12 agencies in the State of California.

13 m. Borrowing. To borrow in anticipation of receipt  
14 of Assessment proceeds in an amount not to exceed the Annual amount  
15 of Assessments levied but uncollected.

16 n. Transfers. To prepare on an Annual basis and  
17 maintain a report or record of any transfer of Base Annual  
18 Production Rights. Such report or record shall be available for  
19 inspection by any Party upon reasonable notice to the Watermaster.

20 o. Free Production Allowance. Not later than the  
21 end of the 1997-1998 Water Year, and Annually thereafter, to  
22 recommend in the Watermaster Annual Report an adjustment, if  
23 needed, to the Free Production Allowance for any Subarea. In  
24 making its recommendation, Watermaster shall be guided by the  
25 factors set forth in Exhibit "C", including but not limited to an  
26 annual calculation of the change of water in storage. The Annual  
27 report shall include all assumptions and calculations relied upon  
28 in making its recommendations. Following the 1997-1998 Water Year,

1 or any time thereafter, Watermaster shall obtain prior Court  
2 approval for any increase or reduction of any Subarea's Free  
3 Production Allowance. In no event shall a reduction in any Year  
4 for a Subarea exceed five percent of the aggregate Base Annual  
5 Production of that Subarea. In the event Watermaster recommends in  
6 its report to the Court that the Free Production Allowance for any  
7 Subarea may need to be increased or reduced, the Court shall  
8 conduct a hearing, after notice given by Watermaster according to  
9 paragraph 36, upon Watermaster's recommendations and may order such  
10 changes in Subarea Free Production Allowance. The most recent  
11 Subarea Free Production Allowances shall remain in effect until  
12 revised according to this Paragraph 24(o).

13 p. Production Reports. To require each Producer to  
14 file with Watermaster, pursuant to procedures and time schedules to  
15 be established by Watermaster, a report on a form to be prescribed  
16 by Watermaster showing the total Production of such Party for each  
17 reporting period rounded off to the nearest tenth of an acre foot,  
18 and such additional information and supporting documentation as  
19 Watermaster may require.

20 q. Production Adjustment for Change in Purpose of  
21 Use. If Watermaster determines, using the Consumptive Use rates  
22 set forth in Exhibit "F", that a new Purpose of Use of any  
23 Producer's Production for any Year has resulted in a higher rate of  
24 Consumption than the rate applicable to the original Purpose of Use  
25 of that Producer's Production in the Year for which Base Annual  
26 Production was determined, Watermaster shall use a multiplier (1)  
27 to adjust upward such Production for the purpose of determining the  
28 Producer's Replacement Water Assessment and, (2) to adjust upward

1 the Free Production Allowance portion of such Production for the  
2 purpose of determining the Producer's Makeup Water Assessment. The  
3 multiplier shall be determined by dividing the number of acre feet  
4 of Consumption that occurred under the new Purpose of Use by the  
5 number of acre feet of Consumption that would have occurred under  
6 the original Purpose of Use for the same Production.

7 r. Reallocation of Base Annual Production Rights.

8 To reallocate annually the Base Annual Production Rights in each  
9 Subarea to reflect any permanent transfers of such Rights among  
10 Parties.

11 s. Storage Agreements. To enter into Storage  
12 Agreements with any Party in order to accommodate the acquisition  
13 of Supplemental Water. Watermaster may not enter into Storage  
14 Agreements with non-Parties unless such non-Parties become subject  
15 to the provisions of this Judgment and the jurisdiction of the  
16 Court. Such Storage Agreements shall by their terms preclude  
17 operations which will have a substantial adverse impact on any  
18 Producer. If a Party pursuant to a Storage Agreement has provided  
19 for predelivery or postdelivery of Replacement Water for the  
20 Party's use, Watermaster shall at the Party's request credit such  
21 water to the Party's Replacement Obligation. Watermaster shall  
22 adopt uniformly applicable rules for Storage Agreements.  
23 Watermaster shall calculate additions, extractions and losses of  
24 water stored under Storage Agreements and maintain an Annual  
25 account of all such water.

26 t. Subarea Advisory Committee Meetings. To meet on  
27 a regular basis and at least semi-annually with the Subarea  
28 Advisory Committees to review Watermaster activities pursuant to

1 this Judgment and to receive advisory recommendations from the  
2 Subarea Advisory Committees.

3 u. Unauthorized Production. To bring such action  
4 or motion as is necessary to enjoin unauthorized Production as  
5 provided in Paragraph 12 hereinabove.

6 v. Meetings and Records. To ensure that all  
7 meetings and hearings by Watermaster shall be noticed and conducted  
8 according to then current requirements of the Ralph M. Brown Act,  
9 Government Code Sections 54950, et seq. Watermaster files and  
10 records shall be available to any person according to the  
11 provisions of the Public Records Act, Government Code §§ 6200 et  
12 seq.

13 w. Data, Estimates and Procedures. To rely on and  
14 use the best available records and data to support the  
15 implementation of this Judgment. Where actual records of data are  
16 not available, Watermaster shall rely on and use sound scientific  
17 and engineering estimates. Watermaster may use preliminary records  
18 of measurements, and, if revisions are subsequently made,  
19 Watermaster may reflect such revisions in subsequent accounting.  
20 Exhibit "C" sets forth methods and procedures for determining  
21 surface flow components. Watermaster shall use either the same  
22 procedures or procedures that will yield results of equal or  
23 greater accuracy.

24 x. Biological Resource Mitigation. To implement  
25 the Biological Resource Mitigation measures set forth in Exhibit  
26 "H" herein.

27 ///

28 ///

1 C. ASSESSMENTS

2 25. Purpose. Watermaster shall levy and collect  
3 Assessments from the Parties based upon Production in accordance  
4 with the time schedules set forth in Exhibit "D". Watermaster  
5 shall levy and collect such Assessments as follows:

6 a. Administrative Assessments. Administrative  
7 Assessments to fund the Administrative Budget adopted by the  
8 Watermaster pursuant to Paragraph 24(j) shall be levied uniformly  
9 against each acre foot of Production. A Producer who does not  
10 Produce in a given Year shall pay an Administrative Assessment in  
11 amount equal to the lowest MWA assessment for Minimal Producers for  
12 that Year.

13 b. Replacement Water Assessments. Replacement  
14 Water Assessments shall be levied against each Producer on account  
15 of such Producer's Production, after any adjustment pursuant to  
16 Paragraph 24(q), in excess of such Producer's share of the Free  
17 Production Allowance in each Subarea during the prior Year.

18 c. Makeup Water Assessments. Makeup Water  
19 Assessments shall be levied against each Producer in each Subarea  
20 on account of each acre-foot of Production therein which does not  
21 bear a Replacement Assessment hereunder, after any adjustment  
22 pursuant to Paragraph 24(q), to pay all necessary costs of  
23 satisfying the Makeup Obligation, if any, of that Subarea.

24 d. Biological Resource Assessment. To establish  
25 and, to the extent needed, to maintain the Biological Resource  
26 Trust Fund balance at one million dollars (in 1993 dollars)  
27 pursuant to Paragraph 24(x) and Exhibit "H", a Biological Resource  
28 Assessment in an amount not to exceed fifty cents (in 1993 dollars)

1 for each acre-feet of Production shall be levied uniformly against  
2 each producer except the California Department of Fish and Game.

3 e. MWA Assessment of Minimal Producers. The MWA  
4 shall identify and assess Minimal Producers through its own  
5 administrative procedures, and not acting as Watermaster.

6 26. Procedure. Each Party hereto is ordered to pay the  
7 Assessments herein provided for, which shall be levied and  
8 collected in accordance with the procedures and schedules set forth  
9 in Exhibit "D". Any Assessment which becomes delinquent, as  
10 defined in Paragraph 7 of Exhibit "D", shall bear interest at the  
11 then current San Bernardino County property tax delinquency rate  
12 Said interest rate shall be applicable to any said delinquent  
13 Assessment from the due date thereof until paid. Such delinquent  
14 Assessment, together with interest thereon, costs of suit,  
15 attorneys fees and reasonable costs of collection, may be collected  
16 pursuant to motion giving notice to the delinquent Party only, or  
17 Order to Show Cause proceeding, or such other lawful proceeding as  
18 may be instituted by the Watermaster; and shall, if provided for in  
19 the MWA Act, constitute a lien on the property of the Party as of  
20 the same time and in the same manner as does the tax lien securing  
21 County property taxes. The Watermaster shall Annually certify a  
22 list of all such unpaid delinquent Assessments to the MWA (in  
23 accordance with applicable provisions of the MWA Act). The MWA (in  
24 accordance with applicable provisions of the MWA Act) shall include  
25 the names of those Parties and the amounts of the liens in its list  
26 to the County Assessor's Office in the same manner and at the same  
27 time as it does its administrative assessments. MWA shall account  
28 for receipt of all collections of Assessments collected pursuant to

1 this Judgment, and shall pay such amounts collected pursuant to  
2 this Judgment to the Watermaster. The Watermaster shall also have  
3 the ability to enjoin production of those Persons who do not pay  
4 Assessments pursuant to this Judgment.

5           27.     Availability of Supplemental Water.       All  
6 Replacement and Makeup Water Assessments collected by the  
7 Watermaster shall be used to acquire Supplemental Water from MWA.  
8 Watermaster shall determine when to request Supplemental Water from  
9 MWA and shall determine the amount of Supplemental Water to be  
10 requested. MWA shall use its best efforts to acquire as much  
11 Supplemental Water as possible in a timely manner. If MWA  
12 encounters delays in the acquisition of Supplemental Water which,  
13 due to cost increases, results in collected assessment proceeds  
14 being insufficient to purchase all Supplemental Water for which the  
15 Assessments were made, MWA shall purchase as much water as the  
16 proceeds will allow when the water becomes available. If available  
17 Supplemental Water is insufficient to meet all Makeup and  
18 Replacement Water obligations, Watermaster shall allocate the  
19 Supplemental Water for delivery to the Subareas on an equitable and  
20 practicable basis pursuant to duly adopted Watermaster rules and  
21 regulations, giving preference to: First, Transition Zone  
22 Replacement Water Obligations as set forth in Exhibit "G"; Second,  
23 Makeup Water Obligations; and Third, other Replacement Water  
24 Obligations. MWA may acquire Supplemental Water at any time. MWA  
25 shall be entitled to enter into a Storage Agreement with  
26 Watermaster to store water MWA acquires prior to being paid to do  
27 so by Watermaster. Such water, including such water acquired and  
28 stored prior to the date of this Judgment or prior to the entry of

1 a Storage Agreement, may later be used to satisfy MWA's duty under  
2 this paragraph.

3 28. Use of Replacement Water Assessment Proceeds and  
4 Makeup Water Assessment Proceeds. The Proceeds of Replacement  
5 Water Assessments and any interest accrued thereon shall only be  
6 used for the purchase of Replacement Water for that Subarea from  
7 which they were collected. In addition, the proceeds of  
8 Replacement Water Assessments collected on account of Production in  
9 the Transition Zone, except as provided in Exhibit "G", shall only  
10 be used for the purchase of Replacement Water for the Transition  
11 Zone, and the proceeds of Replacement Water Assessments collected  
12 on account of Production in that portion of the Baja Subarea  
13 downstream of the Calico-Newberry fault shall only be used for the  
14 purchase of Replacement Water for that portion of the Baja Subarea  
15 downstream of the Calico-Newberry fault. The proceeds of Makeup  
16 Water Assessments and any interest accrued thereon shall only be  
17 used for the purchase of Makeup Water to satisfy the Makeup  
18 Obligation for which they are collected.

19 29. MWA Annual Report to the Watermaster. MWA shall  
20 Produce and deliver to Watermaster an Annual written report  
21 regarding actions of MWA required by the terms of this Judgment.  
22 The report shall contain: 1) a summary of the actions taken by MWA  
23 in identifying and assessing Minimal Producers, including a report  
24 of Assessments made and collected; 2) a summary of other MWA  
25 activities in collecting Assessment on behalf of Watermaster; 3) a  
26 report of water purchases and water distribution for the previous  
27 Year; 4) actions taken to implement its Regional Water Management  
28 Plan, including actions relating to conveyance facilities referred

1 to in this Judgment. The MWA report will be provided to  
2 Watermaster not less than 30 days prior to the Annual Watermaster  
3 report to the Court required by this Judgment.

4 D. SUBAREA ADVISORY COMMITTEES.

5 30. Authorization. The Producers in each of the five  
6 Subareas are hereby authorized and directed to cause committees of  
7 Producer representatives to be organized and to act as Subarea  
8 Advisory Committees.

9 31. Composition and Election. Each Subarea Advisory  
10 Committee shall consist of five (5) Persons who shall be called  
11 advisors. In the election of advisors, every Party shall be  
12 entitled to one vote for every acre-foot of Base Annual Production  
13 for that Party in that particular Subarea. Parties may cumulate  
14 their votes and give one candidate a number of votes equal to the  
15 number of advisors to be elected multiplied by the number of votes  
16 to which the Party is normally entitled, or distribute the Party's  
17 votes on the same principle among as many candidates as the Party  
18 thinks fit. In any election of advisors, the candidates receiving  
19 the highest number of affirmative votes of the Parties are elected.  
20 Elections shall be held upon entry of this Judgment and thereafter  
21 every third year. In the event a vacancy arises, a temporary  
22 advisor shall be appointed by unanimous decision of the other four  
23 advisors to continue in office until the next scheduled election.  
24 The California Department of Fish and Game shall serve as a  
25 permanent ex-officio member of the Alto and Baja Subarea Advisory  
26 Committees. Rules and regulations regarding organization, meetings  
27 and other activities shall be at the discretion of the individual

28 ///

1 Subarea Advisory Committees, except that all meetings of the  
2 committees shall be open to the public.

3 32. Compensation. The Subarea Advisory Committee  
4 members shall serve without compensation.

5 33. Powers and Functions. The Subarea Advisory  
6 Committee for each Subarea shall act in an advisory capacity only  
7 and shall have the duty to study, review and make recommendations  
8 on all discretionary determinations made or to be made hereunder by  
9 Watermaster which may affect that Subarea.

10 E. TRANSFERABILITY.

11 34. Assignment, Transfer, etc. of Rights. In order to  
12 further the purposes of this Judgment and Physical Solution, any  
13 Base Annual Production Right, or any portion thereof, may be sold,  
14 assigned, transferred, licensed or leased pursuant to the rules and  
15 procedures set forth in Exhibit "F".

16 F. MISCELLANEOUS PROVISIONS.

17 35. Water Quality. Nothing in this Judgment shall be  
18 interpreted as relieving any Party of its responsibilities to  
19 comply with state or federal laws for the protection of water  
20 quality or the provisions of any permits, standards, requirements,  
21 or orders promulgated thereunder.

22 36. Review Procedures. Any action, decision, rule or  
23 procedure of Watermaster pursuant to this Judgment shall be subject  
24 to review by the Court on its own motion or on timely motion by any  
25 Party, as follows:

26 a. Effective Date of Watermaster Action. Any  
27 order, decision or action of Watermaster pursuant to this Judgment  
28 on noticed specific agenda items shall be deemed to have occurred

1 on the date of the order, decision or action.

2 b. Notice of Motion. Any Party, may, by a  
3 regularly noticed motion, petition the Court for review of  
4 Watermaster's action or decision pursuant to this Judgment. The  
5 motion shall be deemed to be filed when a copy, conformed as filed  
6 with the Court, has been delivered to Watermaster together with the  
7 service fee established by Watermaster sufficient to cover the cost  
8 to photocopy and mail the motion to each Party. Watermaster shall  
9 prepare copies and mail a copy of the motion to each Party or its  
10 designee according to the official service list which shall be  
11 maintained by Watermaster according to Paragraph 37. A Party's  
12 obligation to serve notice of a motion upon the Parties is deemed  
13 to be satisfied by filing the motion as provided herein. Unless  
14 ordered by the Court, any such petition shall not operate to stay  
15 the effect of any Watermaster action or decision which is  
16 challenged.

17 c. Time for Motion. A motion to review any  
18 Watermaster action or decision shall be filed within ninety (90)  
19 days after such Watermaster action or decision, except that motions  
20 to review Watermaster Assessments hereunder shall be filed within  
21 thirty (30) days of mailing of notice of the Assessment.

22 d. De Novo Nature of Proceeding. Upon filing of a  
23 petition to review Watermaster action, the Watermaster shall notify  
24 the Parties of a date when the Court will take evidence and hear  
25 argument. The Court's review shall be de novo and the Watermaster  
26 decision or action shall have no evidentiary weight in such  
27 proceeding.

28 ///

1 e. Decision. The decision of the Court in such  
2 proceeding shall be an appealable Supplemental Order in this case.  
3 When the same is final, it shall be binding upon Watermaster and  
4 the Parties.

5 f. Payment of Assessments. Payment of Assessments  
6 levied by Watermaster hereunder shall be made pursuant to the time  
7 schedule in Exhibit "D"; notwithstanding any motion for review of  
8 Watermaster actions, decisions, rules or procedures, including  
9 review of Watermaster Assessments.

10 37. Designation of Address for Notice and Service. Each  
11 Party shall designate the name and address to be used for purposes  
12 of all subsequent notices and service herein, either by its  
13 endorsement on the Stipulation for Judgment or by a separate  
14 designation to be filed within thirty (30) days after Judgment has  
15 been entered. Said designation may be changed from time to time by  
16 filing a written notice of such change with Watermaster. Any Party  
17 desiring to be relieved of receiving notices of Watermaster  
18 activity may file a waiver of notice on a form to be provided by  
19 Watermaster. Watermaster shall maintain at all times a current  
20 list of Parties to whom notices are to be sent and their addresses  
21 for purposes of service. Watermaster shall also maintain a full  
22 current list of names and addresses of all Parties or their  
23 successors, as filed herein. Copies of such lists shall be  
24 available to any Person. If no designation is made, a Party's  
25 designee shall be deemed to be, in order of priority: i) the  
26 Party's attorney of record; ii) if the Party does not have an  
27 attorney of record, the Party itself at the address on the  
28 Watermaster list.

1           38. Service of Documents. Delivery to or service upon  
2 any Party by Watermaster, by any other Party, or by the Court, of  
3 any document required to be served upon or delivered to a Party  
4 under or pursuant to the Judgment shall be deemed made if made by  
5 Deposit thereof (or by copy thereof) in the mail, first class,  
6 postage prepaid, addressed to the designee of the Party and at the  
7 address shown in the latest designation filed by that Party.

8           39. No Abandonment of Rights. It is in the interest of  
9 reasonable beneficial use of the Basin Area and its water supply  
10 that no Party be encouraged to take and use more water in any Year  
11 than is actually required. Failure to Produce all of the water to  
12 which a Party is entitled hereunder shall not, in and of itself, be  
13 deemed or constitute an abandonment of such Party's right, in whole  
14 or in part.

15           40. Intervention After Judgment. Any person who is not  
16 a Party or successor to a Party and who proposes to Produce water  
17 from the Basin Area may seek to become a Party to this Judgment  
18 through a Stipulation for Intervention entered into with  
19 Watermaster. Watermaster may execute said Stipulation on behalf of  
20 the other Parties herein but such Stipulation shall not preclude a  
21 Party from opposing such Intervention at the time of the Court  
22 hearing thereon. Said Stipulation for Intervention must thereupon  
23 be filed with the Court, which will consider an order confirming  
24 said intervention following thirty (30) days' notice to the  
25 Parties. Thereafter, if approved by the Court, such intervenor  
26 shall be a Party bound by this Judgment and entitled to the rights  
27 and privileges accorded under the Physical Solution herein.

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1           41. Recordation of Notice. MWA shall within sixty (60)  
2 days following entry of this Judgment record in the Office of the  
3 County Recorder of the County of San Bernardino a notice  
4 substantially complying with the notice content requirements set  
5 forth in Section 2529 of the California Water Code.

6           42. Judgment Binding on Successors, etc. Subject to  
7 specific provisions hereinbefore contained, this Judgment and all  
8 provisions thereof are applicable to and binding upon and inure to  
9 the benefit of not only the Parties to this action, but as well to  
10 their respective heirs, executors, administrators, successors,  
11 assigns, lessees, licensees and to the agents, employees and  
12 attorneys in fact of any such Persons.

13           43. Costs. No Party stipulating to this Judgment shall  
14 recover any costs or attorneys fees in this proceeding from another  
15 stipulating Party.

16           44. Entry of Judgment. The Clerk shall enter this  
17 Judgment.

18 Dated: **JAN 10** 1996

19  
20 **E. MICHAEL KAISER**

21 E. Michael Kaiser, Judge  
22 Superior Court of the State  
23 of California for the  
24 County of Riverside  
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EXHIBIT A

MAP OF MOJAVE BASIN AREA

[INDEX MAP AND DETAIL SHEET CONSISTING OF 42  
1" = 4,000' SCALE MAPS COVERING THE BASIN  
AREA; THE MAP IS ON DISPLAY AT THE OFFICE OF  
THE MOJAVE WATER AGENCY, 22450 HEADQUARTERS,  
APPLE VALLEY, CA 92307 AND ON FILE WITH THE  
COURT]

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EXHIBIT B

PRODUCTION TABLES

CONTENTS

TABLE B-1: TABLE SHOWING BASE ANNUAL PRODUCTION AND BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN EACH SUBAREA AND FREE PRODUCTION ALLOWANCES FOR EACH SUBAREA FOR THE FIRST FIVE YEARS AFTER ENTRY OF THE INTERLOCUTORY JUDGMENT

TABLE B-2: TABLE SHOWING TOTAL VERIFIED PRODUCTION, BASE ANNUAL PRODUCTION AND RECIRCULATED WATER PRODUCTION FOR AQUACULTURE AND FOR RECREATIONAL LAKES

~~12/30/92~~  
~~01/30/93~~  
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09/25/95

EXHIBIT B  
TABLE B-1  
TABLE SHOWING BASE ANNUAL PRODUCTION AND  
BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN ESTE SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

ESTE SUBAREA PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
ABSHIRE, DAVID V	24	0.1093	24	22	21	20	19
ANDERSON, ROSS C & BETTY J	34	0.1548	34	32	30	28	27
BAR H MUTUAL WATER COMPANY	53	0.2414	53	50	47	45	42
BELL, CHUCK	494	2.2497	494	469	444	419	395
BURNS, BOBBY J & EVELYN J	1,300	5.9204	1,300	1,235	1,170	1,105	1,040
CASA COLINA FOUNDATION	90	0.4099	90	85	81	76	72
CENTER WATER CO	40	0.1822	40	38	36	34	32
CLUB VIEW PARTNERS	1,276	5.8111	1,276	1,212	1,148	1,084	1,020
CROSS, LAWRENCE E	23	0.1047	23	21	20	19	18
CRYSTAL HILLS WATER COMPANY	194	0.8835	194	184	174	164	155
DAHLQUIST, GEORGE R	594	2.7052	594	564	534	504	475
DELPERDANG, ROBERT H	56	0.2550	56	53	50	47	44
DESERT DAWN MUTUAL WATER COMPANY	15	0.0683	15	14	13	12	12
GABTA, TRINIDAD	512	2.3317	512	486	460	435	409
GAYJIKIAN, SAMUEL & HAZEL	102	0.4645	102	96	91	86	81
GRACETOWN INVESTMENT CO - JETCO PROP FUND	752	3.4247	752	714	676	639	601
GUBLER, HANS	30	0.1366	30	28	27	25	24
HAL-DOR LTD	23	0.1047	23	21	20	19	18
HANDLEY, DON R & MARY ANN	73	0.3325	73	69	65	62	58
HART, MERRILL W	473	2.1541	473	449	425	402	378
HERT, SCOTT	276	1.2569	276	262	248	234	220
HI-GRADE MATERIALS	442	2.0129	442	419	397	375	353
HITCHIN LUCERNE, INC	16	0.0729	16	15	14	13	12
JAMS RANCH	28	0.1275	28	26	25	23	22

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EXHIBIT B  
TABLE B-1  
TABLE SHOWING BASE ANNUAL PRODUCTION AND  
BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN ESTE SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

ESTE SUBARBA PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
JUBILEE MUTUAL WATER COMPANY	142	0.6467	142	134	127	120	113
JUNIPER RIVIERA COUNTY WATER DISTRICT	37	0.1685	37	35	33	31	29
LEE, DOO HWAN	78	0.3552	78	74	70	66	62
LOPEZ, BALTAZAR	385	1.7533	385	365	346	327	308
LUA, ANTONIO	348	1.5848	348	330	313	295	278
LUCERNE VALLEY MUTUAL WATER COMPANY	54	0.2459	54	51	48	45	43
LUCERNE VALLEY PARTNERS	1,213	5.5242	1,213	1,152	1,091	1,031	970
LUCERNE VISTA WATER CO	21	0.0956	21	19	18	17	16
MITSUBISHI CEMENT CORPORATION	1,299	5.9158	1,299	1,234	1,169	1,104	1,039
MONACO INVESTMENT COMPANY	70	0.3188	70	66	63	59	56
MOSS, LAWRENCE W & HELEN J	43	0.1958	43	40	38	36	34
PARK, CHANHO	597	2.7188	597	567	537	507	477
PARK, JEONG, IL & HEA JA	96	0.4372	96	91	86	81	76
PEREZ, EVA	247	1.1249	247	234	222	209	197
PETTIGREW, DAN	1,422	6.4760	1,422	1,350	1,279	1,208	1,137
PETTIGREW, HOWARD L	1,500	6.8312	1,500	1,425	1,350	1,275	1,200
PLUESS-STAUFER CALIFORNIA INC	23	0.1047	23	21	20	19	18
REED, MIKE	58	0.2641	58	55	52	49	46
ROGERS, ROY	1,449	6.5990	1,449	1,376	1,304	1,231	1,159
SAN BERNARDINO CO SERVICE AREA 29	21	0.0956	21	19	18	17	16
SEALS, LAWRENCE	113	0.5146	113	107	101	96	90
SON'S RANCH	140	0.6376	140	133	126	119	112
SOUTHERN CALIFORNIA WATER COMPANY	178	0.8106	178	169	160	151	142
SPECIALTY MINERALS, INC	42	0.1913	42	39	37	35	33

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EXHIBIT B  
TABLE B-1  
TABLE SHOWING BASE ANNUAL PRODUCTION AND  
BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN ESTE SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

ESTE SUBAREA  PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION  (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
SPILLMAN, JAMES R & NANCY J	23	0.1047	23	21	20	19	18
STEWART WATER COMPANY	54	0.2459	54	51	48	45	43
STRINGER, W EDWARD	573	2.6095	573	544	515	487	458
THE CUSHENBURY TRUST, C/O SPECIALTY MINERALS, INC	10	0.0455	10	9	9	8	8
TURNER, LOYD & CAROL	77	0.3507	77	73	69	65	61
VISOSKY, JOSEPH F JR	1,120	5.1006	1,120	1,064	1,008	952	896
WEISER, SIDNEY & RAQUEL	90	0.4099	90	85	81	76	72
WILLOW WELLS MUTUAL WATER COMPANY	30	0.1366	30	28	27	25	24

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EXHIBIT B  
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BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN ESTE SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

ESTE SUBAREA PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
MINIMAL PRODUCER POOL	2,000	9.1083	2,000	1,900	1,800	1,700	1,600
UNIDENTIFIED/UNVERIFIED PRODUCER POOL	1,485	6.7629					
ESTE SUBAREA TOTALS =	21,958	100					

- 1 Base Annual Production is the reported maximum year production for each producer for the five year period 1986-1990. These values reflect the maximum production determined by one or more of the following: Southern California Edison records, site inspection, land use estimates from 1987 and 1989 aerial photography and responses to special interrogatories. All values are subject to change if additional information is made available, or if any value reported herein is found to be in error.
- 2 Base Annual Production Right expressed as a percentage of the Total Base Annual Production.
- 3 Values based on production ramp down of five percent (5%) per year. Free Production Allowance for the fifth year is equal to eighty percent (80%) of the Base Annual Production.

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EXHIBIT B  
TABLE B-1  
TABLE SHOWING BASE ANNUAL PRODUCTION AND  
BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN OESTE SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

OESTE SUBAREA PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
AEROCHEM, INC	660	5.3645	660	627	594	561	528
BROWN, DOUG & SUE	46	0.3739	46	43	41	39	36
CHAMISAL MUTUAL	96	0.7803	96	91	86	81	76
DAVIS, PAUL	19	0.1544	19	18	17	16	15
DOSSEY, D A	14	0.1138	14	13	12	11	11
MEADOWBROOK DAIRY	2,335	18.9791	2,335	2,218	2,101	1,984	1,868
RESSEGUE, JOHN & BILL	259	2.1052	259	246	233	220	207
SAN BERNARDINO CO SERVICE AREA 70G	110	0.8941	110	104	99	93	88
SAN BERNARDINO CO SERVICE AREA 70L	1,306	10.6153	1,306	1,240	1,175	1,110	1,044
THORESON, ROBERT F & A KATHLEEN	40	0.3251	40	38	36	34	32
TROGER, RICHARD H	112	0.9103	112	106	100	95	89
VAN DAM BROTHERS	1,860	15.1183	1,860	1,767	1,674	1,581	1,488

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TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

OESTE SUBAREA  PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION  (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
MINIMAL PRODUCER POOL	1,500	12.1921	1,500	1,425	1,350	1,275	1,200
UNIDENTIFIED/UNVERIFIED PRODUCER POOL	3,946	32.0735					
OESTE SUBAREA TOTALS =	12,303	100					

- 1 Base Annual Production is the reported maximum year production for each producer for the five year period 1986-1990. These values reflect the maximum production determined by one or more of the following: Southern California Edison records, site inspection, land use estimates from 1987 and 1989 aerial photography and responses to special interrogatories. All values are subject to change if additional information is made available, or if any value reported herein is found to be in error.
- 2 Base Annual Production Right expressed as a percentage of the Total Base Annual Production.
- 3 Values based on production ramp down of five percent (5%) per year. Free Production Allowance for the fifth year is equal to eighty percent (80%) of the Base Annual Production.

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EXHIBIT B  
TABLE B-1  
TABLE SHOWING BASE ANNUAL PRODUCTION AND  
BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN ALTO SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

ALTO SUBARRA PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
ABBOND, EDWARD & GRACE	28	0.0229	28	26	25	23	22
ABBOTT, LEONARD C	284	0.2321	284	269	255	241	227
ADELANTO, CITY OF	1,573	1.2855	1,573	1,494	1,415	1,337	1,258
ADELANTO, CITY OF - GEORGE A F B	3,433	2.8055	3,433	3,261	3,089	2,918	2,746
AGCON, INC	384	0.3138	384	364	345	326	307
APPLE VALLEY COUNTRY CLUB	709	0.5794	709	673	638	602	567
APPLE VALLEY DEVELOPMENT	724	0.5917	724	687	651	615	579
APPLE VALLEY FOOTHILL CO WATER DISTRICT	167	0.1365	167	158	150	141	133
APPLE VALLEY HEIGHTS COUNTY WATER DISTRICT	125	0.1022	125	118	112	106	100
APPLE VALLEY RANCHOS WATER COMPANY	13,022	10.6419	13,022	12,370	11,719	11,068	10,417
APPLE VALLEY RECREATION & PARKS	45	0.0368	45	42	40	38	36
APPLE VALLEY VIEW MUTUAL WATER CO	36	0.0294	36	34	32	30	28
APPLE VALLEY, TOWN OF	298	0.2435	298	283	268	253	238
ARC LAS FLORES	6,331	5.1739	6,331	6,014	5,697	5,381	5,064
BACA, ENRIQUE	74	0.0605	74	70	66	62	59
BALDY MESA WATER DISTRICT	1,495	1.2218	1,495	1,420	1,345	1,270	1,196
BASS, NEWTON T	514	0.4201	514	488	462	436	411
BASTIANON, REMO	77	0.0629	77	73	69	65	61
BASURA, STEVE	25	0.0204	25	23	22	21	20
BEINSCHROTH, A J	90	0.0736	90	85	81	76	72
BOYCE, KENNETH & WILLA	102	0.0834	102	96	91	86	81
BROWN, BOBBY G & VALERIA R	42	0.0343	42	39	37	35	33
BURNS, ULYSSES & ANNIE L	164	0.1340	164	155	147	139	131
CARDOZO, MANUEL & MARIA	909	0.7429	909	863	818	772	727

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BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN ALTO SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

ALTO SUBAREA  PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION  (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
CDFG - MOJAVE NARROWS REGIONAL PARK	2,107	1.7219	2,107	2,001	1,896	1,790	1,685
CDFG - MOJAVE RIVER FISH HATCHERY	20	0.0163	20	19	18	17	16
CLARK, KENNETH R	223	0.1822	223	211	200	189	178
CLEAR VIEW FARMS	501	0.4094	501	475	450	425	400
COPELAND, ET AL (C/O DON W. LITTLE)	175	0.1430	175	166	157	148	140
CRAMER, MARGARET MUIR	280	0.2288	280	266	252	238	224
CUNNINGHAM, WILLIAM	29	0.0237	29	27	26	24	23
DEXTER, CLAIR F	175	0.1430	175	166	157	148	140
DEXTER, J P	515	0.4209	515	489	463	437	412
DIBERNARDO, JOHN	203	0.1659	203	192	182	172	162
DOLCH, ROBERT & JUDY	426	0.3481	426	404	383	362	340
DOMBROWSKI, MICHAEL W & SUSAN M	19	0.0155	19	18	17	16	15
DOWSE, PHILIP	20	0.0163	20	19	18	17	16
EVENSON, EDWIN H & JOYCELAINE	70	0.0572	70	66	63	59	56
FISHER, DOLORES DR	48	0.0392	48	45	43	40	38
FISHER, JEROME	633	0.5173	633	601	569	538	506
FITZWATER, R E	291	0.2378	291	276	261	247	232
GARCIA, SONIA L	288	0.2354	288	273	259	244	230
GOMBZ, CIRIL - LIVING TRUST	330	0.2697	330	313	297	280	264
GREEN ACRES ESTATES	25	0.0204	25	23	22	21	20
GULBRANSON, MERLIN	163	0.1332	163	154	146	138	130
HELENDALE SCHOOL DISTRICT	18	0.0147	18	17	16	15	14
HESPERIA GOLF AND COUNTRY CLUB	678	0.5541	678	644	610	576	542
HESPERIA WATER DISTRICT	12,213	9.9808	12,213	11,602	10,991	10,381	9,770

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EXHIBIT B  
TABLE B-1  
TABLE SHOWING BASE ANNUAL PRODUCTION AND  
BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN ALTO SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

ALTO SUBAREA  PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION  (ACRE- FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
HI-GRADE MATERIALS	149	0.1218	149	141	134	126	119
HODGE, STANLEY W	67	0.0548	67	63	60	56	53
HOLWAY, ROBERT	88	0.0719	88	83	79	74	70
HRUBIK, THOMAS A	3,862	3.1561	3,862	3,668	3,475	3,282	3,089
INDUSTRIAL ASPHALT	109	0.0891	109	103	98	92	87
JESS RANCH WATER COMPANY	7,480	6.1129	7,480	7,106	6,732	6,358	5,984
JOHNSON, LARRY & CARLEAN	82	0.0670	82	77	73	69	65
JOHNSON, RONALD	31	0.0253	31	29	27	26	24
JOHNSTON, HARRIET AND LARRY W	127	0.1038	127	120	114	107	101
KEMPER CAMPBELL RANCH	473	0.3865	473	449	425	402	378
LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT	658	0.5377	658	625	592	559	526
LAWSON, ERNEST & BARBARA	15	0.0123	15	14	13	12	12
LENHERT, RONALD & TONI	37	0.0302	37	35	33	31	29
LEWIS HOMES OF CALIFORNIA	1,693	1.3836	1,693	1,608	1,523	1,439	1,354
LONGMAN, JACK	115	0.0940	115	109	103	97	92
LOUNSBURY, J PETER & CAROLYN	208	0.1700	208	197	187	176	166
LOW, ROBERT	399	0.3261	399	379	359	339	319
LUCKEY, MANLEY J	800	0.6538	800	760	720	680	640
LUTH, KEN	27	0.0221	27	25	24	22	21
MARIANA RANCHOS COUNTY WATER DISTRICT	245	0.2002	245	232	220	208	196
MCCALL, REX	44	0.0360	44	41	39	37	35
MCINNIS, WILLIAM S	30	0.0245	30	28	27	25	24
MITCHELL, ROBIN & JUDITH	36	0.0294	36	34	32	30	28
MURPHY, BERNARD H	25	0.0204	25	23	22	21	20

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TABLE SHOWING BASE ANNUAL PRODUCTION AND  
BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN ALTO SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

ALTO SUBAREA  PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION  (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
MURPHY, BERNARD TRUST	162	0.1324	162	153	145	137	129
MURPHY, KENNETH	42	0.0343	42	39	37	35	33
MUTUAL FUNDING CORP	101	0.0825	101	95	90	85	80
NAVAJO MUTUAL WATER CO	88	0.0719	88	83	79	74	70
NUNN, DONALD & PEARL	66	0.0539	66	62	59	56	52
O'BRYANT, ROBERT C & BARBARA	107	0.0874	107	101	96	90	85
ORMSBY, HARRY G	386	0.3154	386	366	347	328	308
PALISADES RANCH	824	0.6734	824	782	741	700	659
PARKER, DAVID E	37	0.0302	37	35	33	31	29
PEARL, ALICE	147	0.1201	147	139	132	124	117
PEARSON, DERYL B	22	0.0180	22	20	19	18	17
PERRY, THOMAS A	35	0.0286	35	33	31	29	28
PETTIS TRUST	126	0.1030	126	119	113	107	100
PHENIX PROPERTIES LTD	652	0.5328	652	619	586	554	521
PITTMAN, LEROY W	148	0.1209	148	140	133	125	118
POLICH, LEE & DONNA	65	0.0531	65	61	58	55	52
RANCHERITOS MUTUAL WATER CO	169	0.1381	169	160	152	143	135
RIVERSIDE CEMENT CO - ORO GRANDE PLANT	3,452	2.8211	3,452	3,279	3,106	2,934	2,761
ROGERS, ROY (ORO GRANDE RANCH)	115	0.0940	115	109	103	97	92
RUDMAN, ROBERT T	300	0.2452	300	285	270	255	240
RUE RANCH	30	0.0245	30	28	27	25	24
SAN BERNARDINO CO SERVICE AREA 42	465	0.3800	465	441	418	395	372
SAN BERNARDINO CO SERVICE AREA 64	3,822	3.1234	3,822	3,630	3,439	3,248	3,057
SAN BERNARDINO CO SERVICE AREA 70C	2,346	1.9172	2,346	2,228	2,111	1,994	1,876

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EXHIBIT B  
TABLE B-1  
TABLE SHOWING BASE ANNUAL PRODUCTION AND  
BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN ALTO SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

ALTO SUBAREA PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
SAN BERNARDINO CO SERVICE AREA 70J	1,005	0.8213	1,005	954	904	854	804
SAN BERNARDINO CO SERVICE AREA 70L	355	0.2901	355	337	319	301	284
SAN FILIPPO, JOSEPH & SHELLEY	35	0.0286	35	33	31	29	28
SILVER LAKES ASSOCIATION	3,987	3.2583	3,987	3,787	3,588	3,388	3,189
SOUTHDOWN, INC	1,519	1.2414	1,519	1,443	1,367	1,291	1,215
SOUTHERN CALIFORNIA WATER COMPANY	940	0.7682	940	893	846	799	752
SPRING VALLEY LAKE ASSOCIATION	3,056	2.4974	3,056	2,903	2,750	2,597	2,444
SPRING VALLEY LAKE COUNTRY CLUB	977	0.7984	977	928	879	830	781
STORM, RANDALL	62	0.0507	62	58	55	52	49
SUDMEYER, GLENN W	121	0.0989	121	114	108	102	96
SUMMIT VALLEY RANCH	452	0.3694	452	429	406	384	361
TATRO, RICHARD K & SANDRA A	280	0.2288	280	266	252	238	224
TATUM, JAMES B	829	0.6775	829	787	746	704	663
TAYLOR, ALLEN C / HAYMAKER RANCH	456	0.3727	456	433	410	387	364
THOMAS, S DALE	440	0.3596	440	418	396	374	352
THOMAS, WALTER	36	0.0294	36	34	32	30	28
THOMPSON, JAMES A	418	0.3416	418	397	376	355	334
THOMPSON, RODGER	76	0.0621	76	72	68	64	60
THRASHER, GARY	373	0.3048	373	354	335	317	298
THUNDERBIRD COUNTY WATER DISTRICT	118	0.0964	118	112	106	100	94
TURNER, ROBERT	70	0.0572	70	66	63	59	56
VAIL, JOSEPH B & PAULA B	126	0.1030	126	119	113	107	100
VAN BURGER, CARL	710	0.5802	710	674	639	603	568
VAN LEEUWEN FAMILY TRUST	341	0.2787	341	323	306	289	272

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TABLE B-1  
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BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN ALTO SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

ALTO SUBAREA  PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION  (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
VANNI, MIKE	54	0.0441	54	51	48	45	43
VICTOR VALLEY COMMUNITY COLLEGE DIST	240	0.1961	240	228	216	204	192
VICTOR VALLEY WATER DISTRICT	13,354	10.9133	13,354	12,686	12,018	11,350	10,683
VICTORVILLE, CITY OF	12	0.0098	12	11	10	10	9
VOGLER, ALBERT H	132	0.1079	132	125	118	112	105
WACKERN, CAESAR	1,635	1.3362	1,635	1,553	1,471	1,389	1,308
WAKULA, JOHN	291	0.2378	291	276	261	247	232
WARD, KEN & BARBARA	65	0.0531	65	61	58	55	52
WEBER, DAVE	80	0.0654	80	76	72	68	64
WEST, CAROLYN & SMITH, RICHARD	24	0.0196	24	22	21	20	19
WEST, HOWARD & SUZY	72	0.0588	72	68	64	61	57
WHITTINGHAM, RICHARD V	15	0.0123	15	14	13	12	12
YEAGER, E L - CONSTRUCTION COMPANY INC	34	0.0278	34	32	30	28	27

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ALTO SUBAREA PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
MINIMAL PRODUCER POOL	4,000	3.2689	4,000	3,800	3,600	3,400	3,200
UNIDENTIFIED/UNVERIFIED PRODUCER POOL	4,967	4.0592					
ALTO SUBAREA TOTALS =	122,365	100					

- 1 Base Annual Production is the reported maximum year production for each producer for the five year period 1986-1990. These values reflect the maximum production determined by one or more of the following: Southern California Edison records, site inspection, land use estimates from 1987 and 1989 aerial photography and responses to special interrogatories. All values are subject to change if additional information is made available, or if any value reported herein is found to be in error.
- 2 Base Annual Production Right expressed as a percentage of the Total Base Annual Production.
- 3 Values based on production ramp down of five percent (5%) per year. Free Production Allowance for the fifth year is equal to eighty percent (80%) of the Base Annual Production.

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EXHIBIT B  
TABLE B-1  
TABLE SHOWING BASE ANNUAL PRODUCTION AND  
BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN CENTRO SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

CENTRO SUBAREA  PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION  (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST <sup>3</sup> YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
AGCON, INC	0	0.0000	0	0	0	0	0
AGUAYO, JEANETTE L	212	0.3742	212	201	190	180	169
ATCHISON, TOPEKA, SANTA FE RAILWAY CO	120	0.2118	120	114	108	102	96
AVDEEF, THOMAS	34	0.0600	34	32	30	28	27
AZTEC FARM DEVELOPMENT COMPANY	220	0.3883	220	209	198	187	176
BARNES, FAY - EXECUTOR OF ESTATE OF WAYNE BARNES	243	0.4289	243	230	218	206	194
BROMMER, HARVIN	361	0.6372	361	342	324	306	288
BURNS, RITA J & PAMELA E	16	0.0282	16	15	14	13	12
CHAFI, LARRY R	96	0.1694	96	91	86	81	76
CHOI, YONG IL & JOUNG AE	38	0.0671	38	36	34	32	30
CHRISTISON, JOEL	75	0.1324	75	71	67	63	60
COOK, KWON W	169	0.2983	169	160	152	143	135
DE VRIES, NEIL	3,800	6.7070	3,800	3,610	3,420	3,230	3,040
DESERT COMMUNITY BANK	156	0.2753	156	148	140	132	124
DURAN, FRANK T	50	0.0883	50	47	45	42	40
GAINES, JACK	117	0.2065	117	111	105	99	93
GBSIRIECH, WAYNE	121	0.2136	121	114	108	102	96
GORMAN, VIRGIL	138	0.2436	138	131	124	117	110
GRIEDER, RAYMOND H & DORISANNE	30	0.0530	30	28	27	25	24
GRILL, NICHOLAS P & MILLIE D	21	0.0371	21	19	18	17	16
GROEN, CORNELIS	1,043	1.8409	1,043	990	938	886	834
HANIFY, DBA - WHITE BEAR RANCH	152	0.2683	152	144	136	129	121
HARMSEN, JAMES & RUTH ANN	1,522	2.6863	1,522	1,445	1,369	1,293	1,217
HARPER LAKE COMPANY	1,433	2.5293	1,433	1,361	1,289	1,218	1,146

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FOR FIRST FIVE YEARS OF THE JUDGMENT

CENTRO SUBAREA  PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION  (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
HI DESERT MUTUAL WATER CO	34	0.0600	34	32	30	28	27
HILEMAN, KATHERINE	19	0.0335	19	18	17	16	15
HILL, MELVIN	2,335	4.1213	2,335	2,218	2,101	1,984	1,868
HOY, MIKE	632	1.1155	632	600	568	537	505
JORDAN, RAYMOND	460	0.8119	460	437	414	391	368
JUSTICE, CHRIS	421	0.7431	421	399	378	357	336
KING, GENEVIEVE E	69	0.1218	69	65	62	58	55
LEE, SEPOONG ETAL & WOO POONG	77	0.1359	77	73	69	65	61
LEYERLY, GENEVA	65	0.1147	65	61	58	55	52
LEYERLY, RICHARD	862	1.5214	862	818	775	732	689
LUDINGTON, JAMES E & JO ANN	58	0.1024	58	55	52	49	46
LYON, LOUIS & BRIKA	130	0.2295	130	123	117	110	104
MARTIN, LENDELL	14	0.0247	14	13	12	11	11
MCCOLLUM, CHARLES L	347	0.6125	347	329	312	294	277
MEAD, G C	90	0.1589	90	85	81	76	72
MEYERS, LONNIE	27	0.0477	27	25	24	22	21
MITCHELL, CHARLES A	201	0.3548	201	190	180	170	160
MOFFITT, THOMAS R & EDITH I	62	0.1094	62	58	55	52	49
MOST, MILTON W	9,660	17.0500	9,660	9,177	8,694	8,211	7,728
NELSON, MILDRED L	52	0.0918	52	49	46	44	41
NEWBERRY SPRINGS COMPANY, INC	2,489	4.3931	2,489	2,364	2,240	2,115	1,991
OHAI, REYNOLDS & DOROTHY	137	0.2418	137	130	123	116	109
OROPEZA, JOSE M	190	0.3354	190	180	171	161	152
OSTERKAMP, GEROLD	260	0.4589	260	247	234	221	208

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EXHIBIT B  
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BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN CENTRO SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

CENTRO SUBAREA  PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION  (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
OWL ROCK PRODUCTS COMPANY	466	0.8225	466	442	419	396	372
PG & B	1,657	2.9246	1,657	1,574	1,491	1,408	1,325
REDDY, BOMMI V & KARUNA V	24	0.0424	24	22	21	20	19
ROWLAND, JAMES & HELEN	22	0.0388	22	20	19	18	17
RUISCH, DALE W	650	1.1473	650	617	585	552	520
SHIRKEY, ALAN G & MARY E	35	0.0618	35	33	31	29	28
SMITH, ROBERT A	43	0.0759	43	40	38	36	34
SOPPELAND, WAYNE	783	1.3820	783	743	704	665	626
SOUTHERN CALIFORNIA WATER COMPANY	11,309	19.9605	11,309	10,743	10,178	9,612	9,047
SPINK, WALTHALL	44	0.0777	44	41	39	37	35
ST CHARLES, DONALD B	609	1.0749	609	578	548	517	487
SUN 'N SKY COUNTRY CLUB	337	0.5948	337	320	303	286	269
TALLAKSON, WILLIAM V	17	0.0300	17	16	15	14	13
TILLEMA, HAROLD	874	1.5426	874	830	786	742	699
VAN DAM, ELBERT & SUSAN	722	1.2743	722	685	649	613	577
VAN LEEUWEN, JOHN	1,922	3.3923	1,922	1,825	1,729	1,633	1,537
VAN VLIET, HENDRIKA	820	1.4473	820	779	738	697	656
VANHOF, LUTHER C	23	0.0406	23	21	20	19	18
VERNOLA, PAT	3,116	5.4998	3,116	2,960	2,804	2,648	2,492
VISSER, ANNIE	91	0.1606	91	86	81	77	72
YANG, YOUNG MO	371	0.6548	371	352	333	315	296
YKEMA HARMSSEN DAIRY	1,000	1.7650	1,000	950	900	850	800

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FOR FIRST FIVE YEARS OF THE JUDGMENT

CENTRO SUBAREA PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
MINIMAL PRODUCER POOL	2,000	3.5300	2,000	1,900	1,800	1,700	1,600
UNIDENTIFIED/UNVERIFIED PRODUCER POOL	864	1.5250					
CENTRO SUBAREA TOTALS =	56,657	100					

- 1 Base Annual Production is the reported maximum year production for each producer for the five year period 1986-1990. These values reflect the maximum production determined by one or more of the following: Southern California Edison records, site inspection, land use estimates from 1987 and 1989 aerial photography and responses to special interrogatories. All values are subject to change if additional information is made available, or if any value reported herein is found to be in error.
- 2 Base Annual Production Right expressed as a percentage of the Total Base Annual Production.
- 3 Values based on production ramp down of five percent (5%) per year. Free Production Allowance for the fifth year is equal to eighty percent (80%) of the Base Annual Production.

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EXHIBIT B  
TABLE B-1  
TABLE SHOWING BASE ANNUAL PRODUCTION AND  
BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN BAJA SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

BAJA SUBAREA PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
AKE, CHARLES J & MARJORIE M	23	0.0333	23	21	20	19	18
ANGERSER, ROBERT J & PEGGY	24	0.0347	24	22	21	20	19
ANTELOPE VALLEY DAIRY	5,430	7.8597	5,430	5,158	4,887	4,615	4,344
ARGUELLES, ALFREDO	1,047	1.5155	1,047	994	942	889	837
ATCHISON, TOPEKA, SANTA FE RAILWAY CO	80	0.1158	80	76	72	68	64
BAGLEY, ROY	20	0.0289	20	19	18	17	16
BALDERRAMA, ALFRED & LINDA	250	0.3619	250	237	225	212	200
BALL, DAVID P	81	0.1172	81	76	72	68	64
BARAK, RICHARD	132	0.1911	132	125	118	112	105
BARBER, JAMES B	167	0.2417	167	158	150	141	133
BARSTOW CALICO K O A	24	0.0347	24	22	21	20	19
BAUR, KARL & RITA	26	0.0376	26	24	23	22	20
BEDINGFIELD, LYNDLELL & CHARLENE	56	0.0811	56	53	50	47	44
BENTON, PHILIP G	35	0.0507	35	33	31	29	28
BORGOGNO, STEVEN & LILLIAN B	1,844	2.6691	1,844	1,751	1,659	1,567	1,475
BOWMAN, EDWIN L	31	0.0449	31	29	27	26	24
BROWN, RONALD A	1,080	1.5632	1,080	1,026	972	918	864
BROWY, ORVILLE & LOUISE	33	0.0478	33	31	29	28	26
BRUINS, NICHOLAS	29	0.0420	29	27	26	24	23
CALICO LAKES HOMEOWNERS ASSOCIATION	1,031	1.4923	1,031	979	927	876	824
CALIF DEPT OF TRANSPORTATION	71	0.1028	71	67	63	60	56
CAMPBELL, M A & DIANNE	22	0.0318	22	20	19	18	17
CARTER, JOHN THOMAS	746	1.0798	746	708	671	634	596
CDFG - CAMP CADY	14	0.0203	14	13	12	11	11

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EXHIBIT B  
TABLE B-1  
TABLE SHOWING BASE ANNUAL PRODUCTION AND  
BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN BAJA SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

BAJA SUBAREA  PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION  (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
CHANG, TIMOTHY & JANE	18	0.0261	18	17	16	15	14
CHASTAIN, W C	100	0.1447	100	95	90	85	80
CHEYENNE LAKE, INC	122	0.1766	122	115	109	103	97
CHIAO MEI DEVELOPMENT	451	0.6528	451	428	405	383	360
CHO BROTHERS RANCH	758	1.0972	758	720	682	644	606
CHUANG, MARSHAL	70	0.1013	70	66	63	59	56
CONNER, WILLIAM H	25	0.0362	25	23	22	21	20
COOL WATER RANCH	76	0.1100	76	72	68	64	60
CRYSTAL LAKES PROPERTY OWNERS ASSOCIATION	447	0.6470	447	424	402	379	357
DAGGETT COMMUNITY SERVICES DISTRICT	235	0.3402	235	223	211	199	188
DALJO CORPORATION	31	0.0449	31	29	27	26	24
DAVIS, RONALD & DONNA	53	0.0767	53	50	47	45	42
DE JONG, ALAN L	1,648	2.3854	1,648	1,565	1,483	1,400	1,318
DENNISON, QUENTIN D	29	0.0420	29	27	26	24	23
DESERT LAKES CORPORATION - (LAKE DOLORES)	483	0.6991	483	458	434	410	386
DOCIMO, DONALD P & PATRICIA J	23	0.0333	23	21	20	19	18
DONALDSON, JERRY & BEVERLY	90	0.1303	90	85	81	76	72
ELLISON, SUSAN	15	0.0217	15	14	13	12	12
EVKHANIAN, JAMES H	110	0.1592	110	104	99	93	88
FAWCETT, EDWARD C	20	0.0289	20	19	18	17	16
FELIX, ALAN E & CAROL L	36	0.0521	36	34	32	30	28
PERRO, DENNIS & NORMA	32	0.0463	32	30	28	27	25
FRIEND, JOSEPH & DEBORAH	60	0.0868	60	57	54	51	48
FUNDAMENTAL CHRISTIAN ENDRAVOR	285	0.4125	285	270	256	242	228

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EXHIBIT B  
 TABLE B-1  
 TABLE SHOWING BASE ANNUAL PRODUCTION AND  
 BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN BAJA SUBAREA  
 TOGETHER WITH FREE PRODUCTION ALLOWANCES  
 FOR FIRST FIVE YEARS OF THE JUDGMENT

BAJA SUBAREA PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
GARCIA, DANIEL	23	0.0333	23	21	20	19	18
GOLD, HAROLD	249	0.3604	249	236	224	211	199
GRAVES, CHESTER B	32	0.0463	32	30	28	27	25
HAIGH, WHILLYN & MARGARET	32	0.0463	32	30	28	27	25
HALL, LARRY	23	0.0333	23	21	20	19	18
HARALIK, BESS & ROBERT	27	0.0391	27	25	24	22	21
HARDESTY, LESLIE E & BECKY J	47	0.0680	47	44	42	39	37
HARSON, NICHOLAS & MARY	30	0.0434	30	28	27	25	24
HARTER FARMS	1,083	1.5676	1,083	1,028	974	920	866
HARTER, JOE & SUE	738	1.0682	738	701	664	627	590
HARTLEY, LONNIE	19	0.0275	19	18	17	16	15
HARVEY, FRANK	38	0.0550	38	36	34	32	30
HENDLEY, RICK & BARBARA	48	0.0695	48	45	43	40	38
HIETT, PATRICIA J	16	0.0232	16	15	14	13	12
HILARIDES, FRANK	1,210	1.7514	1,210	1,149	1,089	1,028	968
HOLLISTER, ROBERT H & RUTH M	44	0.0637	44	41	39	37	35
HONG, PAUL B & MAY	95	0.1375	95	90	85	80	76
HORTON'S CHILDREN'S TRUST	106	0.1534	106	100	95	90	84
HORTON, JOHN MD	183	0.2649	183	173	164	155	146
HOSKING, JOHN W & JEAN	94	0.1361	94	89	84	79	75
HUBBARD, ESTER & MIZUNO, ARLEAN	28	0.0405	28	26	25	23	22
HUNT, RALPH M & LILLIAN F	31	0.0449	31	29	27	26	24
HUTCHISON, WILLIAM O	901	1.3042	901	855	810	765	720
HYATT, JAMES & BRENDA	210	0.3040	210	199	189	178	168

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EXHIBIT B  
TABLE B-1  
TABLE SHOWING BASE ANNUAL PRODUCTION AND  
BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN BAJA SUBARRA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

BAJA SUBARRA PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
IRVIN, BERTRAND W	29	0.0420	29	27	26	24	23
J V A AIR INC	54	0.0782	54	51	48	45	43
JACKSON, RAY	20	0.0289	20	19	18	17	16
JOHNSON, JAMES R	247	0.3575	247	234	222	209	197
JUSTICE, CHRIS	6	0.0087	6	5	5	5	4
KAPLAN, ABRAHAM M	76	0.1100	76	72	68	64	60
KASNER, ROBERT	1,001	1.4489	1,001	950	900	850	800
KATCHER, AUGUST M & MARCELYNE	23	0.0333	23	21	20	19	18
KEMP, ROBERT & ROSE	32	0.0463	32	30	28	27	25
KIEL, MARY	34	0.0492	34	32	30	28	27
KIM, JOON HO	764	1.1059	764	725	687	649	611
KOSHAREK, JOHN & JOANNE	54	0.0782	54	51	48	45	43
LAKE JODIE PROPERTY OWNERS ASSOCIATION	254	0.3677	254	241	228	215	203
LAKE WAIKIKI	98	0.1419	98	93	88	83	78
LAKE WAINANI OWNERS ASSOCIATION	202	0.2924	202	191	181	171	161
LANGLEY, MICHAEL R	20	0.0289	20	19	18	17	16
LAWRENCE, WILLIAM W	45	0.0651	45	42	40	38	36
LBE, MOON & OKBEA	49	0.0709	49	46	44	41	39
LBE, VIN JANG T	630	0.9119	630	598	567	535	504
LESHIN, CONNIE & SOL	1,416	2.0496	1,416	1,345	1,274	1,203	1,132
LESHIN, SOL	1,997	2.8906	1,997	1,897	1,797	1,697	1,597
LEVINE, DR LESLIE	1,637	2.3695	1,637	1,555	1,473	1,391	1,309
LONG, BALLARD	35	0.0507	35	33	31	29	28
M BIRD CONSTRUCTION	41	0.0593	41	38	36	34	32

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EXHIBIT B  
TABLE B-1  
TABLE SHOWING BASE ANNUAL PRODUCTION AND  
BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN BAJA SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

BAJA SUBAREA  PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
	(ACRE-FEET)	(PERCENT)	FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
MAHJOUBI, APSAR S	63	0.0912	63	59	56	53	50
MALIN, LILY	54	0.0782	54	51	48	45	43
MALONEY, JANICE	36	0.0521	36	34	32	30	28
MARCROFT, JAMES A & JOAN	38	0.0550	38	36	34	32	30
MARSHALL, CHARLES	20	0.0289	20	19	18	17	16
MAYBERRY, DONALD J	41	0.0593	41	38	36	34	32
MILBRAT, IRVING	73	0.1057	73	69	65	62	58
MITCHELL, CHARLOTTE	115	0.1665	115	109	103	97	92
MITCHELL, JAMES L & CHERYL A	155	0.2244	155	147	139	131	124
MOORE, WAYNE G & JULIA H	103	0.1491	103	97	92	87	82
MORRIS, KARL	304	0.4400	304	288	273	258	243
MULLIGAN, ROBERT & INEZ	35	0.0507	35	33	31	29	28
NEWBERRY COMMUNITY SERVICE DIST	23	0.0333	23	21	20	19	18
NU VIEW DEVELOPMENT, INC	2,899	4.1962	2,899	2,754	2,609	2,464	2,319
O P D L INC	109	0.1578	109	103	98	92	87
O'KEEFE, SARAH-LEE & JOKE E	50	0.0724	50	47	45	42	40
P & H ENGINEERING & DEV CORP	667	0.9654	667	633	600	566	533
PARKER, GEORGE R	144	0.2084	144	136	129	122	115
PATHFINDER INVESTORS	472	0.6832	472	448	424	401	377
PAYAN, PAUL	32	0.0463	32	30	28	27	25
PERKO, BERT K	132	0.1911	132	125	118	112	105
PITTS, JOE	30	0.0434	30	28	27	25	24
POHL, ANDREAS & CATHLYN	17	0.0246	17	16	15	14	13
POLAND, JOHN R & SANDRA M	92	0.1332	92	87	82	78	73

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EXHIBIT B  
TABLE B-1  
TABLE SHOWING BASE ANNUAL PRODUCTION AND  
BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN BAJA SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

BAJA SUBAREA  PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION  (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
PRICE, ALAN E	37	0.0536	37	35	33	31	29
PRICE, DONALD	42	0.0608	42	39	37	35	33
PUCKHABER, WILLIAM F TRUST	63	0.0912	63	59	56	53	50
PURCIO, THOMAS F & PATRICIA A	80	0.1158	80	76	72	68	64
RANDOLPH, JOAN E	24	0.0347	24	22	21	20	19
REEVES, RICHARD	230	0.3329	230	218	207	195	184
RICE, DANIEL & MARY	121	0.1751	121	114	108	102	96
RICE, HENRY C & DIANA	24	0.0347	24	22	21	20	19
RIBGER, WALTER M	62	0.0897	62	58	55	52	49
RIKUO CORPORATION	1,517	2.1958	1,517	1,441	1,365	1,289	1,213
ROSSI, JAMES L & NAOMI I	614	0.8887	614	583	552	521	491
ROTEX CONSTRUCTION COMPANY	2,529	3.6606	2,529	2,402	2,276	2,149	2,023
SAN BERNARDINO COUNTY BARSTOW - DAGGETT AIRPORT	168	0.2432	168	159	151	142	134
SANTUCCI, ANTONIO & WILSA	30	0.0434	30	28	27	25	24
SCOGGINS, JERRY	105	0.1520	105	99	94	89	84
SHEPPARD, THOMAS & GLORIA	217	0.3141	217	206	195	184	173
SHORT, CHARLES & MARGARET	54	0.0782	54	51	48	45	43
SHORT, JEFF	30	0.0434	30	28	27	25	24
SILVER VALLEY RANCH, INC	109	0.1578	109	103	98	92	87
SMITH, WILLIAM E	19	0.0275	19	18	17	16	15
SNYDER, KRYL K & ROUTH, RICHARD J	64	0.0926	64	60	57	54	51
SOUTHERN CALIFORNIA EDISON CO - AGRICULTURE	5,858	8.4792	5,858	5,565	5,272	4,979	4,686
SOUTHERN CALIFORNIA EDISON CO - INDUSTRIAL	4,565	6.6076	4,565	4,336	4,108	3,880	3,652
SOUTHERN CALIFORNIA GAS COMPANY	98	0.1419	98	93	88	83	78

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EXHIBIT B  
TABLE B-1  
TABLE SHOWING BASE ANNUAL PRODUCTION AND  
BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN BAJA SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

BAJA SUBAREA  PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION  (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
ST ANTONY COPTIC ORTHODOX MONASTERY	130	0.1882	130	123	117	110	104
STEWART, STANLEY & PATRICIA	27	0.0391	27	25	24	22	21
SUGA, TAKRAKI	154	0.2229	154	146	138	130	123
SUNDOWN LAKES, INC	168	0.2432	168	159	151	142	134
SWARTZ, ROBERT & IRENE	50	0.0724	50	47	45	42	40
TAPIE, RAYMOND & MURIEL	18	0.0261	18	17	16	15	14
TAYLOR, TOM	503	0.7281	503	477	452	427	402
THAYER, SHARON	58	0.0840	58	55	52	49	46
THE 160 NEWBERRY RANCH CALIFORNIA, LTD	1,033	1.4952	1,033	981	929	878	826
TRIPLE H PARTNERSHIP	993	1.4373	993	943	893	844	794
UNION PACIFIC RAILROAD COMPANY	249	0.3604	249	236	224	211	199
VAN BASTELAAR, ALPHONSE	78	0.1129	78	74	70	66	62
VAN DIEST, CORNELIUS	934	1.3519	934	887	840	793	747
VAN LEEUWEN, JOHN	1,084	1.5690	1,084	1,029	975	921	867
VANDER DUSSEN, AGNES	1,792	2.5938	1,792	1,702	1,612	1,523	1,433
VAUGHT, ROBERT E & KAREN M	43	0.0622	43	40	38	36	34
VERNOLA, PAT	1,310	1.8962	1,310	1,244	1,179	1,113	1,048
WARD, ERNEST & LAURA	38	0.0550	38	36	34	32	30
WARD, RONNY H	130	0.1882	130	123	117	110	104
WEBER, F R & JUNELL	96	0.1390	96	91	86	81	76
WEBSTER, THOMAS M & PATRICIA J	24	0.0347	24	22	21	20	19
WEIDKNECHT, ARTHUR J & PEGGY A	79	0.1143	79	75	71	67	63
WESTERN HORIZON ASSOCIATES INC	1,188	1.7196	1,188	1,128	1,069	1,009	950
WESTERN ROCK PRODUCTS	31	0.0449	31	29	27	26	24

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EXHIBIT B  
TABLE B-1  
TABLE SHOWING BASE ANNUAL PRODUCTION AND  
BASE ANNUAL PRODUCTION RIGHT OF EACH PRODUCER WITHIN BAJA SUBAREA  
TOGETHER WITH FREE PRODUCTION ALLOWANCES  
FOR FIRST FIVE YEARS OF THE JUDGMENT

BAJA SUBAREA PRODUCER	BASE ANNUAL <sup>1</sup> PRODUCTION (ACRE-FEET)	BASE ANNUAL <sup>2</sup> PRODUCTION RIGHT (PERCENT)	FREE PRODUCTION ALLOWANCES (ACRE-FEET)				
			FIRST YEAR	SECOND <sup>3</sup> YEAR	THIRD <sup>3</sup> YEAR	FOURTH <sup>3</sup> YEAR	FIFTH <sup>3</sup> YEAR
WET SET, INC	129	0.1867	129	122	116	109	103
WITTE, E DANIEL	27	0.0391	27	25	24	22	21
WLSR INC	133	0.1925	133	126	119	113	106
WORSEY, REVAE	29	0.0420	29	27	26	24	23
YARD, BETTY	26	0.0376	26	24	23	22	20
YERMO WATER COMPANY	453	0.6557	453	430	407	385	362
YOUNG, KRITH O - (DESERT TURF)	312	0.4516	312	296	280	265	249
MINIMAL PRODUCER POOL	3,500	5.0661	3,500	3,325	3,150	2,975	2,800
UNIDENTIFIED/UNVERIFIED PRODUCER POOL	320	0.4632					
BAJA SUBAREA TOTALS =	69,087	100					

- 1 Base Annual Production is the reported maximum year production for each producer for the five year period 1986-1990. These values reflect the maximum production determined by one or more of the following: Southern California Edison records, site inspection, land use estimates from 1987 and 1989 aerial photography and responses to special interrogatories. All values are subject to change if additional information is made available, or if any value reported herein is found to be in error.
- 2 Base Annual Production Right expressed as a percentage of the Total Base Annual Production.
- 3 Values based on production ramp down of five percent (5%) per year. Free Production Allowance for the fifth year is equal to eighty percent (80%) of the Base Annual Production.

EXHIBIT B  
TABLE B-2  
TABLE SHOWING TOTAL WATER PRODUCTION  
FOR AQUACULTURE AND RECREATIONAL LAKE PURPOSES  
ALTO SUBAREA

PRODUCER	TOTAL WATER <sup>1</sup> PRODUCTION	BASE ANNUAL <sup>2</sup> PRODUCTION	RECIRCULATED <sup>3</sup> WATER
(ACRE-FEET)			
CDFG - MOJAVE RIVER FISH HATCHERY	10,678	20	10,658
JESS RANCH WATER COMPANY	18,625	7,480	11,145
ALTO SUBAREA TOTALS =	29,303	7,500	21,803

Total Water Production is the reported maximum year production for each producer for the five year period 1986-1990.

These values reflect the maximum production determined by one or more of the following: Southern California Edison records; James C. Hanson site inspection; land use estimates from 1989 aerial photography; responses to special interrogatories. All values are subject to change if additional information is made available, or if any value reported herein is found to be in error.

2 Base Annual Production as shown on Table B-1.

3 Amount shown is the difference between the Total Water Production and the Base Annual Production.

EXHIBIT B  
TABLE B-2  
TABLE SHOWING TOTAL WATER PRODUCTION  
FOR AQUACULTURE AND RECREATIONAL LAKE PURPOSES  
BAJA SUBAREA

PRODUCER	TOTAL WATER <sup>1</sup> PRODUCTION	BASE ANNUAL <sup>2</sup> PRODUCTION	RECIRCULATED <sup>3</sup> WATER
	(ACRE-FEET)		
BROWY, ORVILLE & LOUISE	210	33	177
CALICO LAKES HOMEOWNERS ASSOCIATION	2,513	1,031	1,482
CDFG - CAMP CADY	102	14	88
CHEYENNE LAKE, INC	638	122	516
CRYSTAL LAKES PROPERTY OWNERS ASSOCIATION	6,575	447	6,128
DESERT LAKES CORPORATION - (LAKE DOLORES)	928	483	445
FUNDAMENTAL CHRISTIAN ENDEAVOR	440	285	155
HORTON'S CHILDREN'S TRUST	1,291	106	1,185
HORTON, JOHN MD	672	183	489
KIEL, MARY	188	34	154
LAKE JODIE PROPERTY OWNERS ASSOCIATION	2,805	254	2,551
LAKE WAIKIKI	400	98	302
LAKE WAINANI OWNERS ASSOCIATION	1,420	202	1,218
LEE, MOON & OKBEA	171	49	122
O F D L INC	434	109	325
RICE, DANIEL & MARY	614	121	493
SCOGGINS, JERRY	922	105	817
SILVER VALLEY RANCH, INC	455	109	346
SMITH, WILLIAM E	153	19	134
SUNDOWN LAKES, INC	1,109	168	941
TAPIE, RAYMOND & MURIEL	108	18	90
THAYER, SHARON	159	58	101
WET SET, INC	441	129	312
WLSR INC	678	133	545

EXHIBIT B  
TABLE B-2  
TABLE SHOWING TOTAL WATER PRODUCTION  
FOR AQUACULTURE AND RECREATIONAL LAKE PURPOSES  
BAJA SUBAREA

PRODUCER	TOTAL WATER <sup>1</sup> PRODUCTION	BASE ANNUAL <sup>2</sup> PRODUCTION	RECIRCULATED <sup>3</sup> WATER
(ACRE-FEET)			
BAJA SUBAREA TOTALS =	23,426	4,310	19,116

- 1 Total Water Production is the reported maximum year production for each producer for the five year period 1986-1990. These values reflect the maximum production determined by one or more of the following: Southern California Edison records; James C. Hanson site inspection; land use estimates from 1989 aerial photography; responses to special interrogatories. All values are subject to change if additional information is made available, or if any value reported herein is found to be in error.
- 2 Base Annual Production as shown on Table B-1.
- 3 Amount shown is the difference between the Total Water Production and the Base Annual Production.

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EXHIBIT C

ENGINEERING APPENDIX

CONTENTS

- A. ADJUSTMENT OF FREE PRODUCTION ALLOWANCES
- B. DETERMINATION OF SURFACE FLOW COMPONENTS

TABLE C-1: MOJAVE BASIN AREA ADJUDICATION SUBAREA HYDROLOGICAL INVENTORY BASED ON LONG-TERM AVERAGE NATURAL WATER SUPPLY AND OUTFLOW AND CURRENT YEAR IMPORTS AND CONSUMPTIVE USE



1 total measured surface flow at Lower Narrows was Storm Flow and  
2 what portion was Base Flow.

3 The Parties in reaching the physical solution provided for in  
4 the Judgment, used certain procedures to separate the Storm Flow  
5 and Base Flow components of the total measured surface flow at  
6 Lower Narrows. Hydrographs of the mean daily discharge at Lower  
7 Narrows were plotted for the Year under consideration together with  
8 corresponding rainfall data obtained from the National Oceanic and  
9 Atmospheric Administration (NOAA) for Lake Arrowhead. Hydrographs  
10 were also plotted for the combined flow of West Fork Mojave River  
11 and Deep Creek which together with the Lake Arrowhead precipitation  
12 data served as a guide for interpreting those periods during which  
13 Storm Flow was likely to have occurred at Lower Narrows.

14 Other factors considered included:

15 \* Occurrences of Storm Flow at Barstow and Afton Canyon,  
16 \* Precipitation at Victorville and Barstow,  
17 \* Consideration of the time of Year and temperature, &  
18 \* Shape of hydrographs for Years having similar Base Flow  
19 characteristics.

20 Based on interpretation of all of the foregoing information,  
21 the flows occurring on those days during which Storm Flow most  
22 likely occurred were "scalped" by projecting an estimated Base Flow  
23 Curve through the Storm Flow Period. The Base Flow component of  
24 the total monthly flow was then determined as follows:

25 a. For those periods during which there was obviously no  
26 Storm Flow, the entire recorded mean daily flows were assumed to be  
27 Base Flow.  
28

1           b. For the remaining Storm Flow periods, the Base Flow  
2 component was taken as the area under the Base Flow Curve, except  
3 that for those days within the Storm Flow period when the actual  
4 mean daily discharge is less than the amount indicated by the Base  
5 Flow Scalping Curves, then the actual recorded amount is used.

6           2. Determination of Surface Flow Components at Waterman  
7 Fault. The total amount of surface flow passing the Waterman Fault  
8 (under current riverbed conditions) is considered to be Storm Flow  
9 and can be estimated from the Storm Flow passing the USGS gauging  
10 station Mojave River at Barstow. The following table was developed  
11 to provide a method for estimating flow at Waterman Fault:

12	Storm Flow At Barstow Gage <sup>1</sup> 13 <u>(Acre-Feet)</u>	Estimated Surface Flow at Waterman Fault 14 <u>(Acre-Feet)</u>
14	2,000	0
15	10,000	6,200
16	20,000	14,300
17	30,000	22,600
18	40,000	31,400
19	50,000	40,500
20	60,000	49,200
21	70,000	58,400
22	80,000	67,800
23	90,000	76,800
24	100,000	85,400

25  
26  
27 <sup>1</sup>From Recorded Flow at USGS Gaging Station Mojave River at  
28 Barstow. Relationship is based on single storm events. More than  
one storm event separated by more than five day of zero flow will  
be considered as separate storms.

1                   3.    Determination of Surface Flow Components at Afton.

2   Records available for the discharge of the Mojave River at Afton,  
3   California, provide data on the total amount of surface flow and  
4   since storm runoff occurs during and immediately following a major  
5   storm event in the watershed area tributary to the Baja Basin below  
6   Barstow or in the event of large Storm Flows at Barstow which reach  
7   Afton, it was necessary to determine what portion of the total  
8   measured surface flow at Afton is Storm Flow and what portion of  
9   Base Flow.

10           The Parties, in reaching the physical solution provided for in  
11   the Judgment, used certain procedures to separate the Storm Flow  
12   and Base Flow components of the total measured surface flow at  
13   Afton. Hydrographs of the mean daily discharge at Afton were  
14   plotted for the water Year under consideration. In the absence of  
15   Storm Flow, the Base Flow curve at Afton was generally a relatively  
16   constant amount. Storm Flows were evidenced by sharp spikes or  
17   abrupt departures from the antecedent Base Flow and a fairly rapid  
18   return to pre-storm Base Flow Condition. The hydrograph of flows  
19   at Barstow served as a guide for identifying those periods during  
20   which Storm Flow was likely to have occurred at Afton.

21           Based on interpretation of all of the foregoing information,  
22   the flows occurring on those days during which Storm Flow most  
23   likely occurred were "scalped" by projecting an estimated Base Flow  
24   Curve through the Storm Flow Period. The Base Flow component of  
25   the total monthly flow was then determined as follows:

26           a. For those periods during which there is obviously no  
27   Storm Flow, the entire recorded mean daily flows were assumed to be  
28   Base Flow.

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b. For the remaining Storm Flow periods, the Base Flow component was taken as the area under the Base Flow Curve except that for those days within the Storm Flow period when the actual mean daily discharge was less than the amount indicated by the Base Flow Scalping Curves, then the actual recorded amount was used.

4. Engineers' Work Papers. These procedures are reflected in the Work Papers of the Engineers, copies of which are filed with the Watermaster.

**TABLE C-1**  
**Mojave Basin Area Adjudication**  
**Subarea Hydrological Inventory Based On**  
**Long-Term Average Natural Water Supply and Outflow**  
**and Current Year Imports and Consumptive Use**  
**(All Amounts in Acre-Feet)**

<b>WATER SUPPLY</b>	<b>Este</b>	<b>Oeste</b>	<b>Alto</b>	<b>Centro</b>	<b>Baja</b>	<b>Basin Totals</b>
Surface Water Inflow						
Gaged	0	0	65,000	0	0	65,000 <sup>1</sup>
Ungaged	1,700	1,500	3,000	37,300 <sup>1</sup>	14,300 <sup>2</sup>	6,500 <sup>3</sup>
Subsurface Inflow	0	0	1,000	2,000	1,200	0 <sup>4</sup>
Deep Percolation of Precipitation	0	0	3,500	0	100	3,600
Imports						
Lake Arrowhead CSD	0	0	1,500	0	0	1,500
Big Bear ARWWA	2,000	0	0	0	0	2,000
<b>TOTAL</b>	<b>3,700</b>	<b>1,500</b>	<b>74,000</b>	<b>39,300</b>	<b>15,600</b>	<b>78,600</b>
<b>CONSUMPTIVE USE AND OUTFLOW</b>						
Surface Water Outflow						
Gaged	0	0	0	0	8,200	8,200
Ungaged	0	0	37,300 <sup>1</sup>	14,000 <sup>5</sup>	0	0
Subsurface Outflow	200	800	2,000	1,200	0	0
Consumptive Use						
Agriculture	6,800	2,900	16,300	20,300	30,200	76,500
Urban	1,900	1,200	36,300	9,500	9,700	58,600 <sup>6</sup>
Phreatophytes	0	0	5,100	900	1,500	7,500
Exports	0	0	0	0	0	0
<b>TOTAL</b>	<b>8,900</b>	<b>4,900</b>	<b>97,000</b>	<b>45,900</b>	<b>49,600</b>	<b>150,800</b>
Surplus / (Deficit)	(5,200)	(3,400)	(23,000)	(6,600)	(34,000)	(72,200)
Total Estimated Production (Current Year) <sup>7</sup>	15,700	7,600	98,900	46,500	54,300	223,000
<b>PRODUCTION SAFE YIELD (Current Year)<sup>7</sup></b>	<b>10,500</b>	<b>4,200</b>	<b>75,900</b>	<b>39,900</b>	<b>20,300</b>	<b>150,800</b>

<sup>1</sup> Estimated from reported flows at USGS gaging station, Mojave River at Victorville Narrows.

<sup>2</sup> Includes 14,000 acre-feet of Mojave River surface flow across the Waterman Fault estimated from reported flows at USGS gaging station, Mojave River at Barstow, and 300 acre-feet of local surface inflow from Kane Wash.

<sup>3</sup> Represents the sum of Este (1,700 af), Oeste (1,500 af), Alto (3,000 af) and Baja (300 af from Kane Wash).

<sup>4</sup> Inter subarea subsurface flows do not accrue to the total basin water supply.

<sup>5</sup> Estimated from reported flows at USGS gaging station, Mojave River at Barstow.

<sup>6</sup> Estimated by Bookman-Edmonston.

<sup>7</sup> For purposes of this Table, the current year is 1990.

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EXHIBIT D  
  
TIME SCHEDULES



1 Production Allowance, Watermaster shall notify all Parties as to  
2 its recommendation not later than February 1, shall hold a public  
3 hearing thereon not later than March 1, and shall submit any such  
4 recommendation, which may be revised pursuant to the public  
5 hearing, to the Court not later than April 1.

6 5. Payment of Administrative Assessments and Biological  
7 Resource Assessments. Each Producer shall submit quarterly along  
8 with the Production report required by Paragraph 24 (p) an  
9 Administrative Assessment payment in an amount equal to the current  
10 Year Administrative Assessment Rate multiplied times the acre-feet  
11 of water Produced during the quarter and a Biological Resource  
12 Assessment payment in an amount equal to the current Year  
13 Biological Resource Assessment Rate multiplied times the acre-feet  
14 of water Produced during the quarter.

15 6. Payment of Replacement Water Assessments and Makeup Water  
16 Assessments. Replacement Water Assessments and Makeup Water  
17 Assessments for the prior Year shall be due and payable on July 1.

18 7. Delinquency of Assessments. Any assessment payable  
19 pursuant to this Judgment shall be deemed delinquent: i) if paid in  
20 Person, if not paid within five (5) days of the date due; ii) if  
21 paid by electronic funds transfer, if not paid within three (3)  
22 banking days of the date due; or iii) if paid by any other means,  
23 if not paid within ten (10) days of the date due. "Payment" shall  
24 occur when good and sufficient funds have been received by the  
25 Watermaster. Any assessment shall also be deemed delinquent in the  
26 event that any attempted payment is by funds that are not good and  
27 sufficient.

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EXHIBIT E

LIST OF PRODUCERS AND THEIR DESIGNEES

EXHIBIT E

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PARK, HEA JA & JEONG IL  
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EXHIBIT F  
TRANSFERS OF BASE ANNUAL PRODUCTION RIGHTS.

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EXHIBIT F  
TRANSFERS OF  
BASE ANNUAL PRODUCTION RIGHTS

1. Transferability. Any Base Annual Production Right, including any Carryover Right (Right) or any portion thereof may be sold, assigned, transferred, licensed or leased subject to the rules set forth in this Exhibit "F".

2. Consumptive Use Adjustments. A transferred Right shall be adjusted so as not to cause an increased Consumptive Use of water. For either inter Subarea or intra Subarea transfers, if the transferee's Consumptive Use of water Produced under the transferred Right would be at a higher rate than that of transferor, the transferred Right shall be reduced by Watermaster to a level that equalizes the Consumptive Use to that of transferor. Any such adjustments by Watermaster shall be made using the following Consumptive Use rates. If a transfer would cause the same or a decreased Consumptive Use, no adjustment shall be made.

Type of Water Use	Consumptive Use Rate
Municipal	50%
Irrigation	50%
Industrial	case by case
Lakes or Aquaculture	surface acres x 7 ft.

For mixed or sequential uses of water excluding direct reuse of municipal wastewater, the total acre-feet of Consumptive Use shall be the sum of Consumptive Uses for each use.

1           3.   Notice to Watermaster. No transfer shall become operable  
2 until the Parties to the transfer have jointly notified Watermaster  
3 of the terms and conditions of the transfer, the price to be paid  
4 by the transferee, the name of the Responsible Party and the name  
5 of the Person who will pay any applicable Assessments. Intra-  
6 Subarea transfers shall not require Watermaster authorization after  
7 giving notice. No inter-Subarea transfer shall become operable  
8 until authorized by Watermaster after giving notice. Watermaster  
9 shall authorize such transfers in the order of the date of notice,  
10 provided that funds are available as set forth in Paragraph 4 of  
11 this Exhibit "F".

12           4.   Inter Subarea Transfers of Rights. A Party's Right in a  
13 (Source) Subarea may be transferred (by lease only) to a Party in  
14 another (Use) Subarea provided that in any Year the resulting  
15 unconsumed water in the Source Subarea due to all such transfers  
16 shall not be greater than the Replacement Water requirement of the  
17 Source Subarea in the preceding Year. Watermaster shall replace  
18 the resulting Consumptive Use in the Use Subarea that is  
19 attributable to the transfer, utilizing Replacement Water  
20 Assessments from the Source Subarea.

21           5.   Transfers to Meet Replacement Water or Makeup Water  
22 Obligations. Watermaster may use Assessment proceeds to purchase  
23 or lease Rights in a Subarea in order to obtain water to meet an  
24 Obligation. The water so obtained shall be equal to the  
25 Consumptive Use portion of the transferred and unproduced Rights.  
26 No such purchases of leases of Rights in the Harper Lake Basin may  
27 be used to satisfy Obligations in other parts of the Centro  
28 Subarea.

1           6.    Inter Subarea Transfers of Water.  Water Produced in one  
2 (source) Subarea and exported to another Subarea for use or  
3 disposal shall bear a Replacement Water Obligation equal to the sum  
4 of the Production in excess of the Producer's share of the Free  
5 Production Allowance in the source Subarea plus the amount of water  
6 exported that would normally have been returned to the source  
7 Subarea.  Such exported water shall be credited to the appropriate  
8 Subarea Obligation unless it has been purchased or leased as  
9 Replacement Water pursuant to a transfer agreement.

10           7.    Verde Ranch Producers.  Together the Spring Valley Lake  
11 Country Club ("the Country Club"), the Spring Valley Lake  
12 Association ("the Association"), the California Department of Fish  
13 and Game (DFG) Mojave Narrows Regional Park ("the Park") the Kemper  
14 Campbell Ranch ("the Ranch") comprise a group herein called the  
15 Verde Ranch Producers.  Each Verde Ranch Producer has the ability  
16 physically both to Produce Groundwater and to Produce water that  
17 originated as tailwater flowing from the DFG Mojave River Fish  
18 Hatchery.  DFG Producer Groundwater to supply the Hatchery, and  
19 Hatchery tailwater can be discharged in part or entirely to the  
20 Mojave River or in part or entirely to a lined channel that conveys  
21 tailwater to points where the Verde Ranch Producers can Produce it.  
22 The present flow regimen is as follows:  Hatchery Production flows  
23 through the Hatchery and is then discharged to the River and/or the  
24 lined channel.  Water discharged to the lined channel flows to a  
25 Country Club lake.  The Country Club Produces Groundwater that is  
26 discharged to the Country Club lake.  The Country Club property is  
27 irrigated by pumping from the Country Club lake.  Water overflowing  
28 from the Country Club lake flows through a lined channel and

1 through other Country Club lakes, and finally is discharged to  
2 Spring Valley Lake. The Association Produces Groundwater that is  
3 discharged to Spring Valley Lake. Water overflowing from Spring  
4 Valley Lake flows to lakes in the Park. The Park Produces  
5 Groundwater that is discharged to the lakes in the Park. The Park  
6 also Produces Groundwater that is used directly for irrigation of  
7 the Park. The Park is also irrigated by pumping from the lakes in  
8 the Park. Water overflowing from the lakes in the Park is  
9 discharged to the Mojave River. Some water from the lakes in the  
10 Park also flows to a lake on the Ranch. The Ranch also Produces  
11 Groundwater. The Ranch is irrigated from the lake on the Ranch.  
12 No water flows on the surface from the Ranch property to the Mojave  
13 River.

14 In order to continue the present arrangements among the  
15 Hatchery and the Verde Ranch Producers while assuring that they  
16 participate fairly in the Physical Solution the following rules  
17 shall apply:

18 a. Total Production by the Country Club will be  
19 calculated as the sum of Country Club Groundwater Production plus  
20 inflow of Hatchery tailwater minus outflow to Spring Valley Lake.  
21 The Country Club shall monitor and report to Watermaster the  
22 amounts of such Groundwater Production, inflow and outflow.

23 b. Total Production by the Association will be  
24 calculated as the sum of Association Groundwater Production plus  
25 inflow from the Country Club minus outflow to the Park. The  
26 Association shall monitor and report to Watermaster the amounts of  
27 such Groundwater Production, inflow and outflow.

28

1           c.    Total Production by the Park will be calculated as  
2 the sum of Park Groundwater Production plus inflow from the  
3 Association minus outflow to the Ranch minus outflow to the Mojave  
4 River. The Park shall monitor and report to Watermaster as to such  
5 Groundwater Production, inflow and outflows.

6           d.    Total Production by the Ranch will be calculated as  
7 the sum of Ranch Groundwater Production plus inflow from the Park.  
8 The Ranch shall monitor and report to Watermaster the amounts of  
9 such Groundwater Production and inflow.

10          e.    Hatchery Production up to 10,678 acre-feet per Year  
11 will be permitted free of any Assessments against the Hatchery.  
12 The Hatchery shall monitor and report to Watermaster its  
13 Groundwater Production and the amounts of tailwater discharged to  
14 the River and to the artificial channel. In any Year the Hatchery  
15 may Produce more than 10,678 acre-feet free of any Assessments  
16 against the Hatchery, provided such Production in excess of 10,678  
17 acre-feet is reported as Groundwater Production by one or more of  
18 the Verde Ranch Producers in the same Year pursuant to operating  
19 agreements by and between the Hatchery and such Producer(s) filed  
20 with the Watermaster. The operating agreement shall specify the  
21 responsibility for payment of assessments. In the operating  
22 agreement, the Verde Ranch Producers may elect to have assessments  
23 be based on the aggregate Production of the Verde Ranch Producers,  
24 and may freely transfer Base Annual Production Rights internally,  
25 provided that the aggregate consumptive use of the Verde Ranch  
26 Producers shall not be increased. In the absence of such operating  
27 agreements, or if the operating agreements do not otherwise  
28 allocate responsibility for payment of Assessments, the Hatchery

1 shall be liable for Administrative, Replacement Water and  
2 Biological Resource Assessments on the amount of water Produced by  
3 the Hatchery in excess of 10,678 acre-feet in any Year. In the  
4 event that Verde Ranch Producer who is allocated responsibility for  
5 payment of Assessments pursuant to an operating agreement is  
6 delinquent in making any such payment, the Hatchery shall not be  
7 liable therefor.

8 f. In any Year, if the total discharge to the River  
9 from the Hatchery and the Verde Ranch Producers exceeds the  
10 Groundwater Production by the Hatchery, such excess discharge shall  
11 be subject to Administrative, Replacement Water and, except for the  
12 Park, Biological Resource Assessments. Such Assessments shall be  
13 levied against individual Verde Ranch Producers in proportion to  
14 the extent that outflow from each Producer exceeds inflow to that  
15 Producer.

16 g. The Hatchery and the Verde Ranch Producers shall  
17 install all stage recorders, meters or other measuring devices  
18 necessary to determine inflows, outflows and Production that they  
19 are responsible for monitoring and reporting to Watermaster. Such  
20 stage recorders, meters or other measuring devices shall be  
21 installed, calibrated and operated in manner satisfactory to  
22 Watermaster.

23 h. Any change in the flow regimen described above will  
24 be subject to the same general rules set forth in this Paragraph 7.  
25 Any such change shall be reported to Watermaster in advance.

26 8. Harper Lake Basin. No Producer in the Harper Lake Basin  
27 may transfer any Base Annual Production Right or any portion  
28 thereof to Producers outside of Harper Lake Basin except by

1 physically conveying the water in compliance with the rules set  
2 forth in this Exhibit "F".

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EXHIBIT G

SUBAREA OBLIGATIONS



1 e. Alto Subarea Producers--an average Annual combined  
2 Subsurface Flow and Base Flow of 23,000 acre-feet per Year to the  
3 Transition Zone. For the purposes of Paragraph 6 of this Exhibit  
4 G, the Subsurface Flow component shall be deemed to be 2,000 acre-  
5 feet per Year. In any Year Alto Subarea Producers shall have an  
6 obligation to provide to the Transition Zone a minimum combined  
7 Subsurface Flow and Base Flow as follows:

8 i. If the accounting pursuant to Paragraph 5, below,  
9 reflects a net cumulative credit at the beginning of the Year,  
10 the combined minimum flow obligation shall be 18,400 acre-feet  
11 minus any net cumulative credit, but shall be not less than  
12 15,000 acre-feet.

13 ii. If the accounting pursuant to Paragraph 5, below,  
14 does not reflect a net cumulative credit at the beginning of  
15 the Year, the combined minimum flow obligation shall be 18,400  
16 acre-feet plus one-third of any net cumulative debit plus any  
17 additional amount of water required to reduce the net  
18 cumulative debit to 23,000 acre-feet.

19 2. Obligation for Transition Zone Replacement Water.

20 a. Until the Court approves Groundwater levels to be  
21 established and maintained pursuant to Subparagraph 2b of this  
22 Exhibit, Watermaster shall provide Replacement Water in the  
23 Transition Zone equal to Production in the Transition Zone that is  
24 in excess of the Transition Zone Producers' share of the Alto  
25 Subarea Free Production Allowance for that Year. All such  
26 Replacement Water shall be provided as soon as practicable during  
27 the next ensuing Year.  
28

1           b. As soon as is practicable, the MWA shall establish  
2 key wells to be used to monitor Groundwater levels in the  
3 Transition Zone and, subject to approval by the Court, Watermaster  
4 shall establish minimum water levels to be maintained in the key  
5 wells.

6           c. After water level elevations have been established  
7 pursuant to Subparagraph 2b of this Exhibit, Watermaster shall  
8 provide Replacement Water in the Transition Zone as necessary to  
9 maintain the minimum water levels. Water purchased with  
10 Replacement Water Assessments paid by Producers in the Transition  
11 Zone in excess of the quantity of water needed to maintain said  
12 water levels shall be provided elsewhere in the Alto Subarea.

13           3. Other Water. "Other Water" that may be credited to a  
14 Subarea Obligation may include water conveyed and discharged across  
15 a boundary or Free Production Allowance water that is not Produced.  
16 Water other than Base Flow, Subsurface Flow or Storm Flow that is  
17 conveyed and discharged across a boundary between Subareas other  
18 than pursuant to a transfer agreement, shall be credited or  
19 debited, as appropriate, to the pertinent Subarea Obligation during  
20 the Year in which it is so conveyed and discharged. Any portion of  
21 the Subarea's Free Production Allowance that is allowed to remain  
22 unproduced in a Subarea pursuant to transfer agreements in order to  
23 satisfy a Subarea Obligation shall be credited to the pertinent  
24 Subarea Obligation in accordance with the terms of the transfer  
25 agreements.

26           4. Makeup Water. Assessments for Makeup Water shall be paid  
27 in accordance with the time schedule set forth in Exhibit D.  
28

1 Makeup Water shall be credited to the Subarea Obligation at the end  
2 of the Year in which the Makeup Water Assessment is paid.

3 5. Accounting. Watermaster shall Annually not later than  
4 February 1 cause to be prepared a report of the status of each  
5 Subarea Obligation as of the end of the prior Year. The report  
6 shall set forth at least the following information for each Subarea  
7 Obligation:

8 a. The cumulative total of the average Annual Subarea  
9 Obligations since the Judgment was entered as of the beginning of  
10 the prior Year;

11 b. The cumulative total of all water credited to the  
12 Subarea Obligation since the Judgment was entered as of the  
13 beginning of the prior Year;

14 c. The net cumulative credit or debit [the difference  
15 between (a) and (b)] as of the beginning of the prior Year;

16 d. The amounts of water credited to the Subarea  
17 Obligation during the prior Year including, as appropriate, Base  
18 Flow, Subsurface Flow, Other Water and Makeup Water;

19 e. The cumulative total of the average Annual Subarea  
20 Obligations as of the end of the prior Year;

21 f. The cumulative total of all water credited to the  
22 Subarea Obligation as of the end of the prior Year;

23 g. The net cumulative credit or debit as of the end of  
24 the prior Year;

25 h. Any Makeup Water Obligation;

26 i. The Minimum Subarea Obligation for the current Year.

27 6. Subsurface Flow Assumptions. Some Subarea Obligations  
28 are expressed as average Annual or minimum Annual Subsurface Flow.

1 In all cases the Subsurface Flow obligations have been established  
2 initially at amounts equal to the estimated historical average  
3 Subsurface Flow across Subarea boundaries. Not later than two  
4 Years following entry of this Judgment MWA shall begin to install  
5 monitoring wells to be used to obtain data to enable improved  
6 estimates of Subsurface Flow at each Subarea boundary where there  
7 is a Subsurface Flow obligation and to develop methodology for  
8 future determinations of actual Subsurface Flow. Not later than  
9 ten years following entry of this Judgment Watermaster shall  
10 prepare a report setting forth the results of the monitoring  
11 program and the future methodology. Following opportunity for  
12 review of Watermaster's report by all Parties, Watermaster shall  
13 prepare a recommendation to the Court as to the likely accuracy of  
14 the estimated historical Subsurface Flows and any revision of  
15 Subarea Obligations that may be indicated. Pending Watermaster's  
16 report to the Court, Subsurface Flows shall be assumed to be equal  
17 to the Subsurface Flow obligations for purposed of accounting for  
18 compliance therewith.

19 7. Example Calculation. Table G-1 sets forth an example of  
20 Subarea Obligation accounting procedures using hypothetical flows.  
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TABLE G-1  
 HYPOTHETICAL EXAMPLE  
 ACCOUNTING FOR COMPLIANCE WITH SUBAREA OBLIGATIONS

OBLIGATION OF SUBAREA A TO SUBAREA B

AVERAGE ANNUAL: 23,000 AFA (21,000 AFA BASEFLOW + 2,000 AFA SUBSURFACE FLOW)

MINIMUM ANNUAL: 18,400 AFA + 1/3 OF ANY NET CUMULATIVE DEBIT; OR 18,400 AFA - ANY NET CUMULATIVE CREDIT, BUT NOT LESS THAN 15,000 AFA

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF
<b>STATUS AT BEGINNING OF YEAR</b>										
CUMULATIVE OBLIGATION	0	23,000	46,000	69,000	92,000	115,000	138,000	161,000	184,000	207,000
CUMULATIVE FLOW	0	17,000	32,600	50,000	69,067	87,067	107,111	139,978	168,378	198,978
<b>NET CUMULATIVE CREDIT (DEBIT)</b>										
	0	(6,000)	(13,400)	(18,200)	(22,933)	(27,933)	(30,889)	(21,022)	(15,622)	(8,022)
<b>FLOW DURING THE YEAR (HYPOTHETICAL)</b>										
BASE FLOW	8,000	5,000	4,000	4,000	2,000	2,000	15,000	18,000	20,000	23,000
SUBSURFACE FLOW	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
OTHER WATER	7,000	7,200	7,400	7,600	7800	8,000	8,200	8,400	8,600	8800
MAKEUP WATER PURCHASED	0	1,400	4,800	4,667	6,200	8,044	7,667	0	0	0
<b>TOTAL FLOW</b>										
	17,000	15,600	18,200	18,267	18,000	20,044	32,867	28,400	30,600	33,800
<b>MINIMUM OBLIGATION DURING THE YEAR</b>										
	18,400	20,400	22,867	24,467	26,044	27,711	28,696	25,407	23,607	21,074
<b>MAKEUP OBLIGATION INCURRED</b>										
	1,400	4,800	4,667	6,200	8,044	7,667	0	0	0	0
<b>STATUS AT END OF YEAR</b>										
CUMULATIVE OBLIGATION	23,000	46,000	69,000	92,000	115,000	138,000	161,000	184,000	207,000	230,000
CUMULATIVE FLOW	17,000	32,600	50,000	69,067	87,067	107,111	139,978	168,378	198,978	232,778
<b>NET CUMULATIVE CREDIT (DEBIT)</b>										
	(6,000)	(13,400)	(18,200)	(22,933)	(27,933)	(30,889)	(21,022)	(15,622)	(8,022)	2,778
<b>FOLLOWING YEAR MINIMUM OBLIGATION</b>										
18,400 + 1/3 OF NET CUM. DEBIT	20,400	22,867	24,467	26,044	27,711	28,696	25,407	23,607	21,074	0
ADDITIONAL TO REDUCE DEBIT TO 23,000	0	0	0	0	0	0	0	0	0	0
18,400 - CUM. CREDIT, BUT NOT 15,000	0	0	0	0	0	0	0	0	0	15,622
<b>MINIMUM OBLIGATION</b>										
	20,400	22,867	24,467	26,044	27,711	28,696	25,407	23,607	21,074	15,622

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**EXHIBIT H**

**BIOLOGICAL RESOURCE MITIGATION**



1 Allowance, shall compare the Free Production Allowance with the  
2 estimated Production Safe Yield. In the event the Free Production  
3 Allowance exceeds the estimated Production Safe Yield by five  
4 percent or more, Watermaster shall recommend a reduction of the  
5 Free Production Allowance equal to a full five percent of the  
6 aggregate Subarea Base Annual Production. In considering whether  
7 to increase or decrease the Free Production Allowance in a Subarea,  
8 Watermaster shall, among other factors, take into consideration for  
9 the areas shown on Figure H-1 the Consumptive Use of water by  
10 riparian habitat, the protection of public trust resources,  
11 including the species listed in Table H-1 and the riparian habitat  
12 areas shown on Figure H-1, and whether an increase would be  
13 detrimental to the protection of public trust resources.

14 b. If, pursuant to Paragraph 27, Watermaster buys or  
15 leases Free Production Allowance in the Baja Subarea below the  
16 Calico-Newberry Fault to satisfy the need for Replacement Water,  
17 priority shall be given to purchases or leases that will result in  
18 reducing Production in or near the area described in Subparagraph  
19 1(c) of this Exhibit.

20 c. Pursuant to Paragraph 2 of Exhibit "G", Watermaster  
21 shall purchase Replacement Water to maintain Groundwater levels in  
22 the Transition Zone.

23 3. Additional Protection Pursuant to Trust Fund Established  
24 by Watermaster Using the Proceeds of Biological Resource  
25 Assessments.

26 a. Watermaster shall establish a Biological Resources  
27 Trust Fund account for the benefit of the riparian habitat areas  
28 shown on Figure H-1 and the species listed on Table H-1. To

1 establish and maintain the Trust Fund Watermaster shall levy  
2 against each acre-foot of Production within the Basin Area, other  
3 than Production by the California Department of Fish and Game  
4 (DFG), a Biological Resource Assessment of fifty cents (\$0.50)  
5 (1993 dollars) to be collected at the same time and in the same  
6 manner as the Administrative Assessment, except that no Biological  
7 Resources Assessment shall be levied whenever the Trust Fund  
8 account balance exceeds \$1,000,000 (1993 dollars).

9           b. Watermaster shall make funds held in the Biological  
10 Resources Trust Fund available to DFG only in the event that  
11 Groundwater levels are not maintained as set forth in Table H-2.  
12 Watermaster shall take action to acknowledge any proposed  
13 expenditure from the Biological Resources Trust Fund by DFG. Such  
14 Watermaster action shall be subject to the review procedures set  
15 forth in Paragraph 36 of the Judgment, provided that any motion  
16 made pursuant thereto and any Court disapproval of such Watermaster  
17 action and proposed DFG expenditure may be based only: 1) on the  
18 ground that the Groundwater levels set forth in Table H-2 are being  
19 maintained; and/or 2) the ground that the proposed expenditure is  
20 not for any of the purposes set forth in Subparagraphs 3.b.(i),  
21 (ii), or (iii) below in this Exhibit. The Biological Resources  
22 Trust Fund may be used only for the following purposes and only in  
23 the three areas identified on Figure H-1:

24           i. not to exceed \$100,000 for the preparation by DFG of  
25 a DFG habitat water supply management plan, which plan shall  
26 include the water needs of the species listed in Table H-1 and  
27 the riparian habitat areas shown on Figure H-1.  
28

1           ii. the purchase or lease by DFG of Supplemental Water  
2 or the lease or purchase of DFG of Base Annual Production  
3 Rights to be used to meet riparian habitat water needs of the  
4 species listed in Table H-1 and the riparian habitat areas  
5 shown on Figure H-1.

6           iii. the construction, repair and replacement of wells or  
7 other facilities identified in the plan prepared pursuant to  
8 Subparagraph (i), above, and/or any other measures necessary  
9 to implement the plan.

10 DFG shall not prepare or make any expenditure from the trust fund  
11 for the payment of administrative overhead or staff of DFG.

12           4. DFG agrees that absent substantial changed circumstances,  
13 DFG shall not seek to modify the provisions of this Judgment in any  
14 way to add to or change the above-stated measures to protect the  
15 referenced species or habitat. Nothing stated in this Judgment or  
16 in this Exhibit "H" is intended nor shall be deemed to relieve any  
17 Party hereto from any obligation or obligations not specifically  
18 referenced in this Exhibit H. Nothing in this Judgment or in this  
19 Exhibit H is intended or shall be construed to be a waiver by the  
20 State or any of its departments or agencies, including DFG, of its  
21 rights and obligations under the common law, the public trust  
22 doctrine, the constitution, statutes and regulations to preserve,  
23 protect or enhance the natural resources of the State including  
24 rare, threatened or endangered species or species of concern.



TABLE H-1

LIST OF SPECIES  
(CONT'D)

SPECIES	ALTO			CENTRO		BAJA		
	Forks Dam to Upper Narrows	Upper Narrows to Lower Narrows	Lower Narrows to Helendale	Helendale to Hodge	Hodge to Barstow	Barstow to Harvard Road	Harvard Road to Mannix Wash	Afton Canyon
Yellow Warbler	9							
Yellow-breasted Chat	8	8			8	8		
Summer Tanager	8	8						8
Pale Big Eared Bat	8							
Mohave Ground Squirrel	4, 6		4, 6	4, 6				
Mohave Vole			6	6				
Nelson's Bighorn Sheep					10	10		10
TOTAL NUMBER OF SPECIES = 30								
TOTAL NUMBER OF SPECIES IN EACH AREA:	25	11	7	8	7	8	3	5

- 1 = Federally Endangered
- 2 = Federally Threatened
- 3 = State Endangered
- 4 = State Threatened
- 5 = Federal Category: 1
- 6 = Federal Category: 2
- 7 = Federal Category: 3b
- 8 = State: Special Concern
- 9 = State: Sensitive
- 10 = State: Fully Protected

**TABLE H-2**

**RIPARIAN HABITAT MONITORING WELL  
WATER LEVEL CRITERIA**

<b>ZONE</b>	<b>WELL NUMBER</b>	<b>MAXIMUM DEPTH BELOW GROUND</b>
Victorville/Alto	H1-1	Seven (7) Feet
Victorville/Alto	H1-2	Seven (7) Feet
Lower Narrows/Transition	H2-1	Ten (10) Feet
Harvard/Eastern Baja Riparian Forest Habitat	H3-1	Seven (7) Feet
Harvard/Eastern Baja Surface Water Habitat	H3-2	Plus One (1) Foot (1705 Ft msl)*

- \* Surface Water Habitat water surface elevation of 1705 ft. msl is approximate pending ground elevation survey.

# FIGURE H-1 VICTORVILLE - ALTO RIPARIAN ZONE

## LEGEND



Water Table Monitoring well

H-2



Riparian Forest Habitat Area

## SCALE



# FIGURE H-1: LOWER NARROWS TRANSITION RIPARIAN ZONE

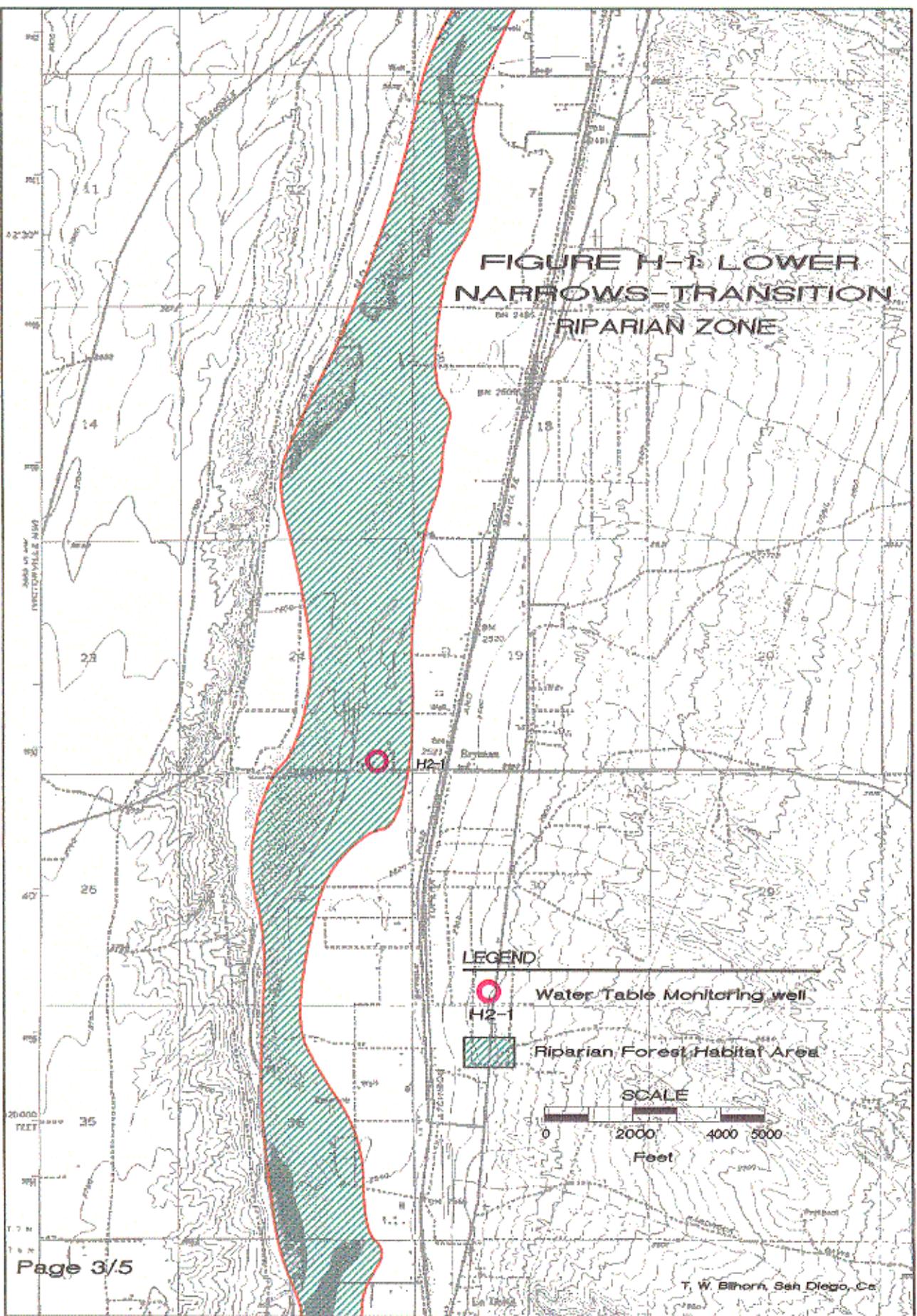
## LEGEND

-  Water Table Monitoring well  
H1-1
-  Riparian Forest Habitat Area

## SCALE



**FIGURE H-1: LOWER  
NARROWS-TRANSITION  
RIPARIAN ZONE**



**LEGEND**

-  Water Table Monitoring well  
H2-1
-  Riparian Forest Habitat Area

**SCALE**



# FIGURE HI TRANSITION RIPARIAN ZONE

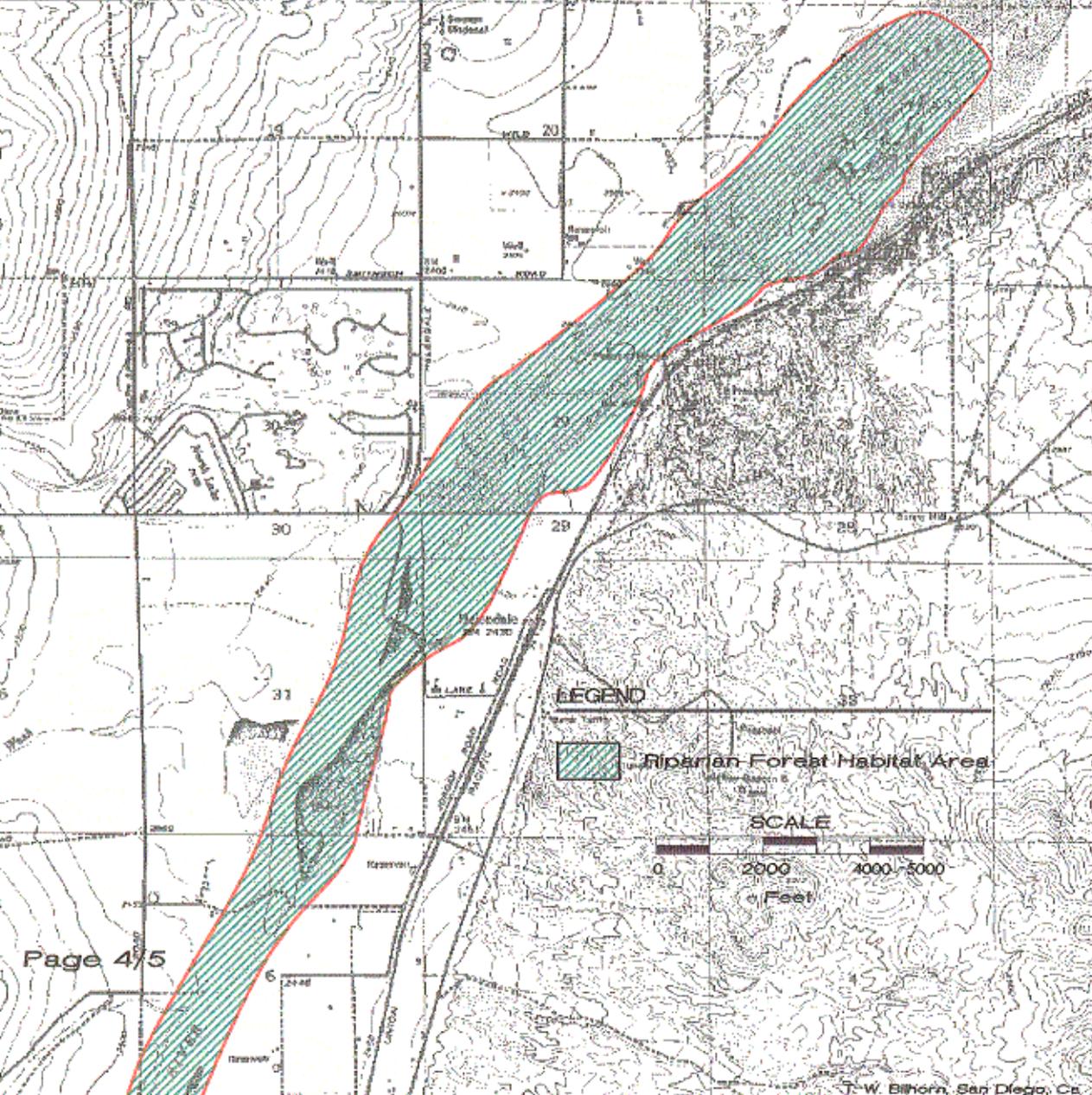
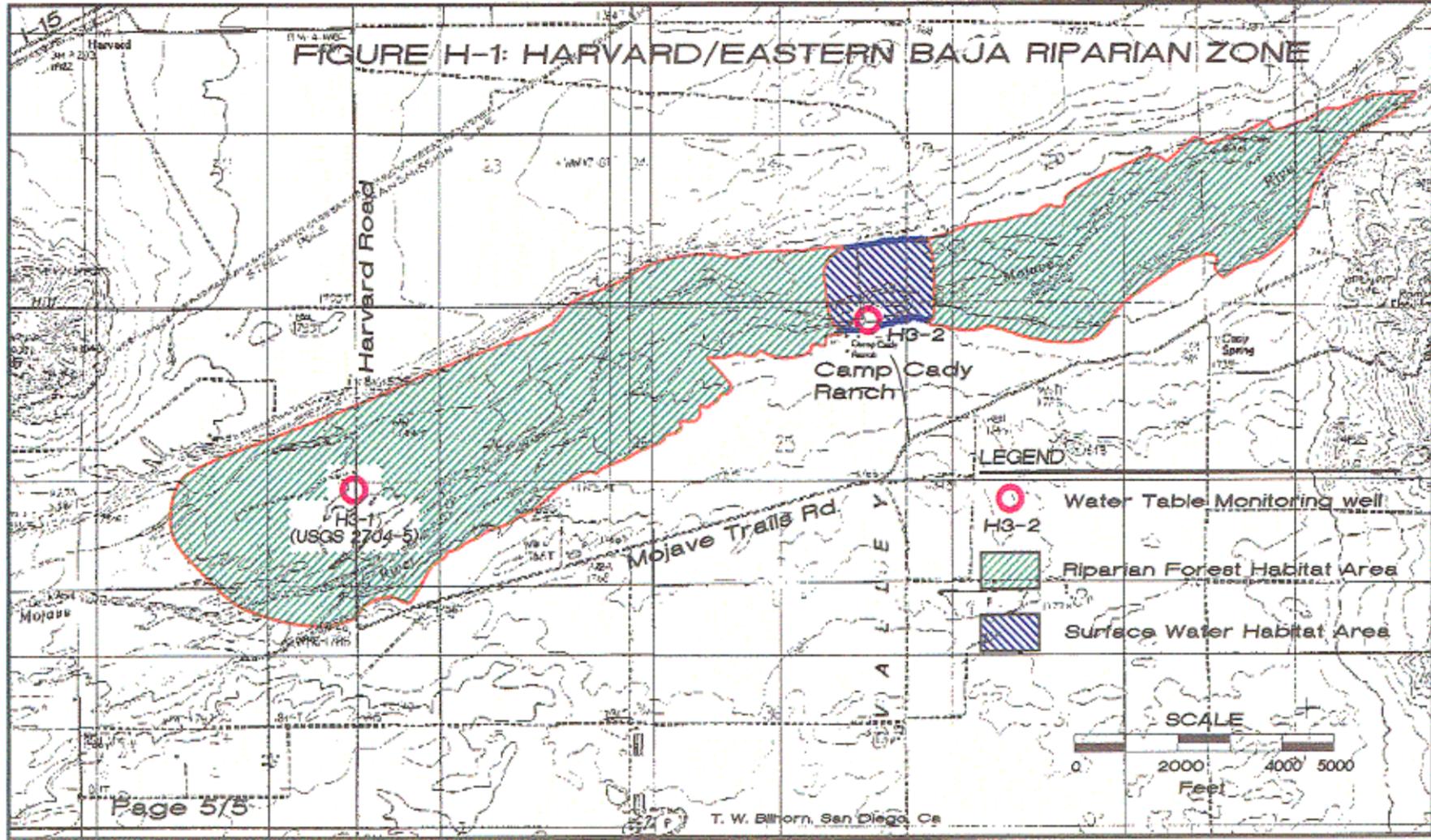


FIGURE H-1: HARVARD/EASTERN BAJA RIPARIAN ZONE



LEGEND

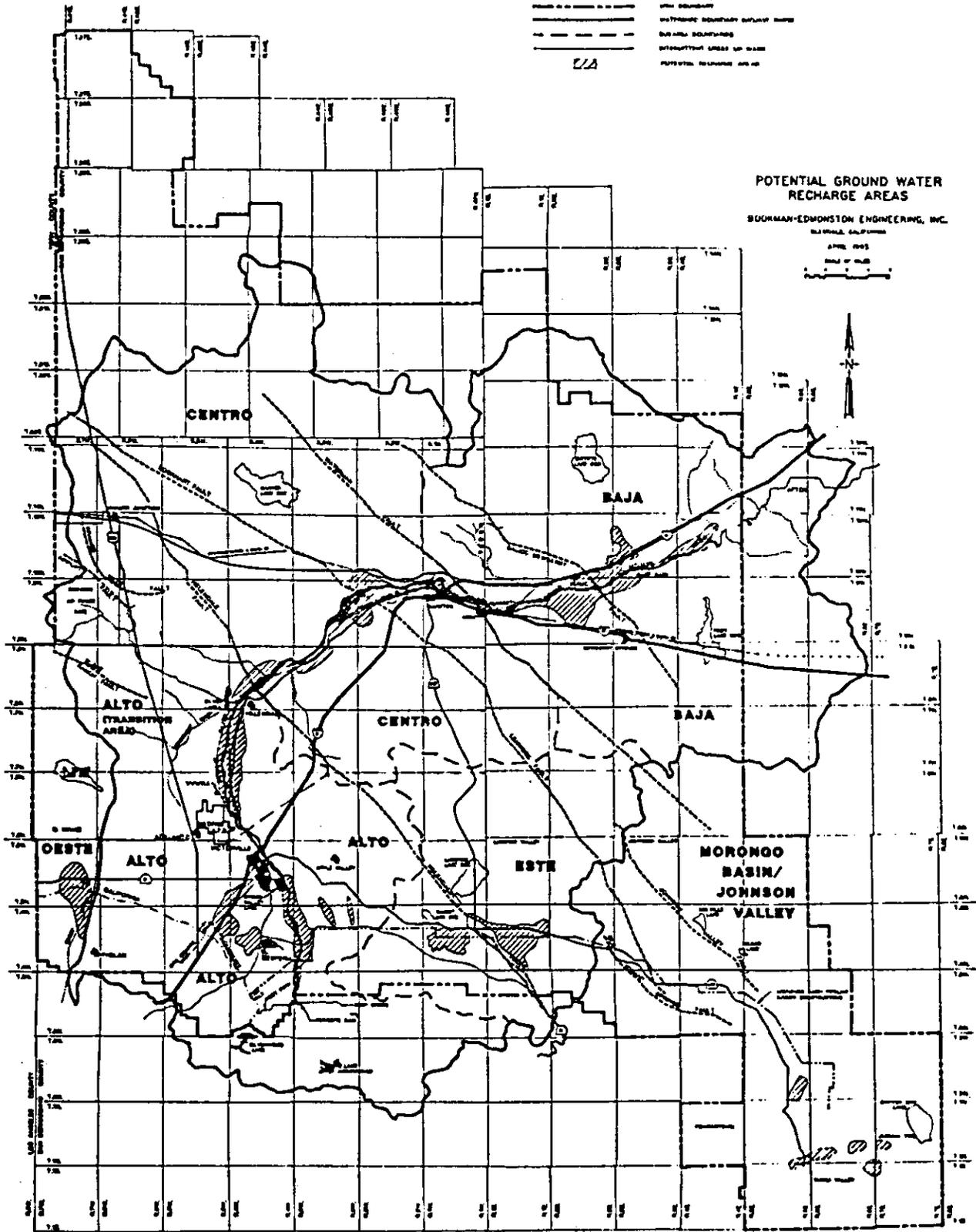
- STATE BOUNDARY
- INTERNATIONAL BOUNDARY
- COUNTY BOUNDARY
- DISTRICT/TRACT BOUNDARY
- POTENTIAL RECHARGE AREA

POTENTIAL GROUND WATER RECHARGE AREAS

BOOKMAN-EDMONSTON ENGINEERING, INC.  
NATIONAL CITY, CALIFORNIA

APRIL 1995

SCALE OF 1:50,000



MOJAVE WATER AGENCY

REGIONAL WATER MANAGEMENT PLAN

## **APPENDIX B**

### **Supply Source Projections for AVR**

**Prepared in Support of the  
Hacienda at Fairview Valley Specific Plan  
Water Resources Study and Water Supply Assessment**

**Contains:**

1. Pre-purchase Claim Agreement Letter between AVR and MWA
2. Table 1: Showing the Historical Average Annual Leased Water Availability to AVR
3. Table 2: Showing the Revised Supply/ Demand Projections for AVR through 2030
4. Chart 1: AVR water Supply and Projected Replacement Water through 2030



22450 Headquarters Drive ♦ Apple Valley, California 92307-4304  
Phone (760) 946-7000 ♦ Fax (760) 240-2642 ♦ [www.mojavewater.org](http://www.mojavewater.org)

March 30, 2007

Apple Valley Ranchos Water Company  
Attn: Jack L. Clarke  
P. O. Box 7005  
Apple Valley, CA 92307

Subject: Mojave Water Agency Inventory Claim Program

Dear Mr. Clarke:

The Mojave Water Agency (MWA) has accepted your offer to purchase water under the MWA Inventory Claim Program as authorized by Resolution No. 826-06. Payment has been received and the Agency will therefore record a future claim against water that MWA previously stored in the Alto Subarea as specified in the table below. The claims you purchased may be used by Apple Valley Ranchos Water Company to meet future Alto Subarea Replacement Water Obligations under the Mojave Basin Area Judgment. Your ability to use the water purchased will become effective on January 1 of the Calendar Year indicated for the amounts specified.

<u>YEAR</u>	<u>ACRE-FEET</u>
2008	442
2010	442
2012	442
2014	7,293

Please contact me or Valerie Wiegenstein if you have any questions regarding this program.

Sincerely,

Norman Caouette  
Assistant General Manager

c: Valerie Wiegentstein

**Table 1**  
**AVR's Historical Leased Water Availability**  
**(Acre-Feet)**

<b>Water Year</b>	<b>BAP</b>	<b>Carryover</b>	<b>FPA</b>	<b>In Lieu</b>	<b>Jess Ranch Lease</b>	<b>Lease w/o Jess Ranch</b>
2007-08	0	4,079	0	1,639	1,561	2,518
2006-07	0	7,243	3	0	3,200	4,043
2005-06	43	7,098	7	0	3,400	3,698
2004-05	158	5,556	0	0	2,000	3,556
2003-04	0	6,760	4	0	2,500	4,260
<b>5 Yr Totals</b>	201	30,736	14	1,639	12,661	18,075
<b>Average</b>		6,147			2,532	3,615

Source: Provided by Apple Valley Ranchos Water Company, June 2009.

**Table 2**  
**WSA Normal Water Year**  
**Supply and Demand Projections**

Year	Demand				Supply						
	AVR Water Use <sup>1</sup>	Water Savings <sup>2</sup>	Hacienda Specific Plan Use <sup>3</sup>	Total Demand with Water Savings	AVR FPA <sup>4</sup>	Jess Ranch Water Contract <sup>5</sup>	Pre-Purchased Claim Rights <sup>6</sup>	Leased Water Rights <sup>7</sup>	Supply Subtotal	Replacement Water Purchased from MWA <sup>8</sup>	Purchased MWA Water as Percent of Supply
2008	21,582	0	0	21,582	7,934	2,532	392	3,600	14,458	7,124	33%
2009	22,272	0	0	22,272	7,934	2,532	392	3,600	14,458	7,814	35%
<b>2010</b>	<b>23,018</b>	<b>1,151</b>	<b>83</b>	<b>21,950</b>	<b>7,934</b>	<b>2,532</b>	392	<b>3,600</b>	<b>14,458</b>	<b>7,493</b>	<b>34%</b>
2011	24,119	1,568	166	22,718	7,934	2,532	392	3,600	14,458	8,260	36%
2012	25,220	2,018	250	23,452	7,934	2,532	392	3,600	14,458	8,995	38%
2013	26,322	2,501	333	24,154	7,934	2,532	392	3,600	14,458	9,696	40%
2014	27,423	3,017	416	24,822	7,934	2,532	392	3,600	14,458	10,365	42%
<b>2015</b>	<b>28,524</b>	<b>3,566</b>	<b>499</b>	<b>25,458</b>	<b>7,934</b>	<b>1,988</b>	392	<b>3,600</b>	<b>13,914</b>	<b>11,544</b>	<b>45%</b>
2016	29,767	4,167	582	26,182	7,934	1,988	392	3,600	13,914	12,268	47%
2017	31,010	4,806	666	26,869	7,934	1,988	392	3,600	13,914	12,955	48%
2018	32,252	5,483	749	27,518	7,934	1,988	392	3,600	13,914	13,605	49%
2019	33,495	6,197	832	28,131	7,934	1,988	392	3,600	13,914	14,217	51%
<b>2020</b>	<b>34,738</b>	<b>6,948</b>	<b>915</b>	<b>28,706</b>	<b>7,934</b>	<b>1,988</b>	392	<b>3,600</b>	<b>13,914</b>	<b>14,792</b>	<b>52%</b>
2021	36,149	7,230	998	29,918	7,934	1,988	392	3,600	13,914	16,004	53%
2022	37,560	7,512	1,082	31,130	7,934	1,988	392	3,600	13,914	17,216	55%
2023	38,971	7,794	1,165	32,342	7,934	1,988	392	3,600	13,914	18,428	57%
2024	40,382	8,076	1,248	33,554	7,934	1,988	392	3,600	13,914	19,640	59%
<b>2025</b>	<b>41,793</b>	<b>8,359</b>	<b>1,331</b>	<b>34,766</b>	<b>7,934</b>	<b>1,988</b>	392	<b>3,600</b>	<b>13,914</b>	<b>20,852</b>	<b>60%</b>
2026	42,644	8,529	1,331	35,446	7,934	1,988	392	3,600	13,914	21,532	61%
2027	43,494	8,699	1,331	36,127	7,934	1,988	392	3,600	13,914	22,213	61%
2028	44,345	8,869	1,331	36,807	7,934	1,988	392	3,600	13,914	22,893	62%
2029	45,195	9,039	1,331	37,488	7,934	1,988	392	3,600	13,914	23,574	63%
<b>2030</b>	<b>46,046</b>	<b>9,209</b>	<b>1,331</b>	<b>38,168</b>	<b>7,934</b>	<b>1,988</b>	392	<b>3,600</b>	<b>13,914</b>	<b>24,254</b>	<b>64%</b>

1) Hacienda at Fairview Valley WSA: Appendix C

2) Water Savings are realized through AVR's aggressive water conservation program which is estimated to reduce demand by 5% in 2010 and by an additional 1.5% per year through 2020, so that in year 2015 conservation represents 12.5% of demand, and in 2020 conservation represents 20% of demand. Subsequent years, 2021 through 2030 also recognize an estimated water savings of 20% of demand.

3) Estimated Project Demand is based on Appendix A of the WSA, which quantifies estimated water demand for the proposed project. Figures assume demand beginning in 2010 with a linear increase through buildout in 2025.

4) Free Production Allowance as determined by the Watermaster for Apple Valley Ranchos Water Company.

5) Based on Table 1 historical deliveries from Jess Ranch through 2014, including Contract water and leased water. Assuming that Jess Ranch buildout in 2015 and utilized 2,500 acre-feet per year and the remaining 1,988 acre-feet is made available to AVR.

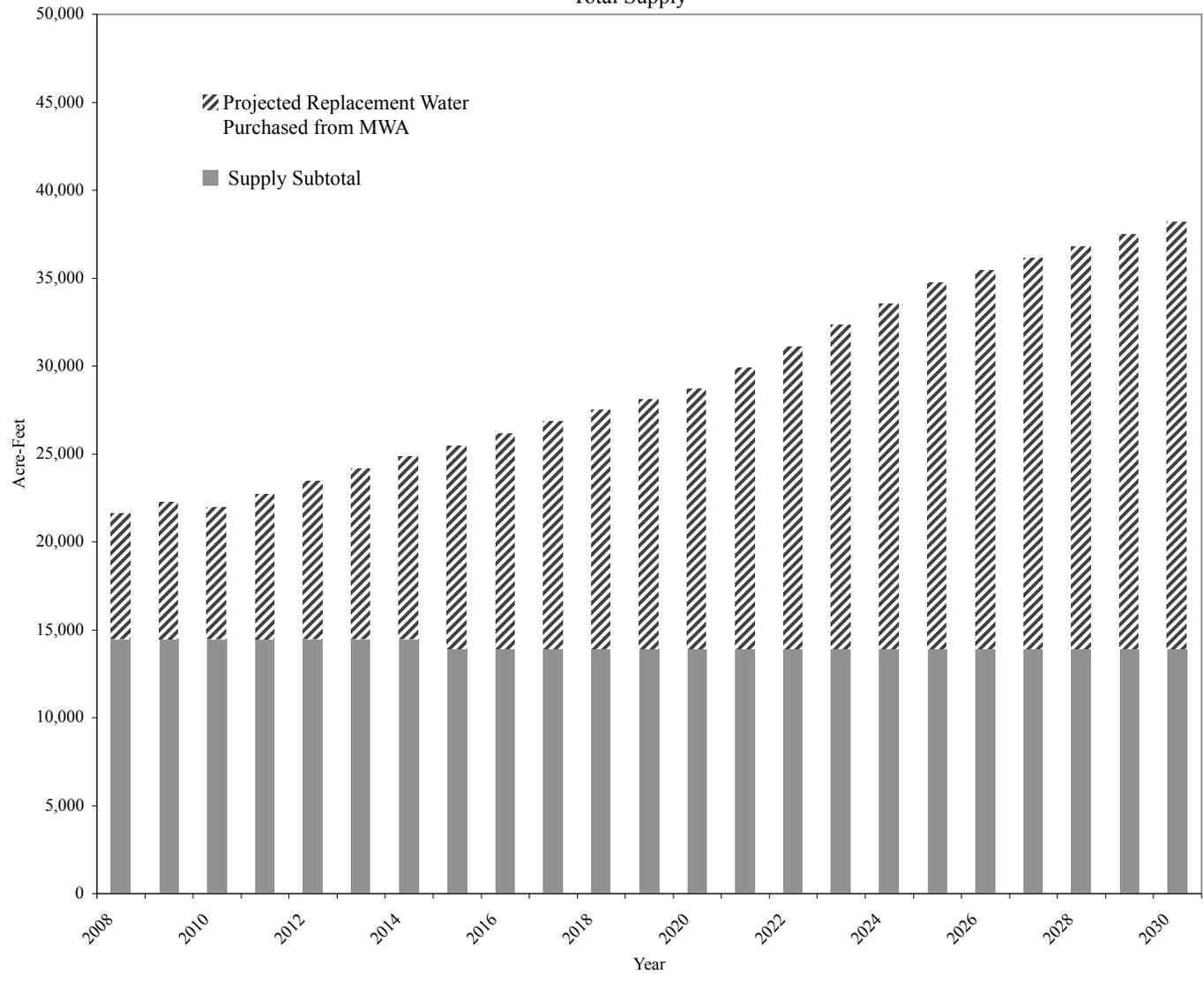
6) Based on the agreement letter between AVR and MWA dated March 30, 2007 (Included in this Appendix). The total allotment of 8,619 acre-feet was evenly distributed over the 22-year period, for a annual rate of 392 acre-feet per year.

7) Leased Water Rights are based on historical deliveries over the past 5 years as presented in Table 1 and shown in Appendix E of the Watermaster Annual Report. These figures do not include any water from Jess Ranch.

8) Replacement Water to be Purchased from MWA is the difference between projected demand, including water savings through conservation efforts, and all supply sources. AVR has indicated that demand projections are conservative and probably overstate actual future demand increases.

Note: Values for each five year increment between 2010 and 2025 (in bold) are derived from AVR UWMP and combined with figures from the updated NAVISP, annual values are extrapolated assuming a linear growth rate within each five year increment.

Chart 1  
Normal Water Year  
Total Supply



## **APPENDIX C**

### **Apple Valley Ranchos Water Company Endorsement Letter**

**Attached in Support of the  
Hacienda at Fairview Valley Specific Plan  
Water Resources Study and Water Supply Assessment**

# APPLE VALLEY RANCHOS WATER CO.

P.O. BOX 7005  
21760 OTTAWA ROAD  
APPLE VALLEY, CA 92307  
(760) 247-6484 • FAX (760) 247-1654



July 21, 2009

John Criste  
Terra Nova Planning & Research, Inc.  
400 South Farrell, B-205  
Palm Springs, California 92262

Re: Water Resources Study for the Hacienda at Fairview Valley Specific Plan

Dear Mr. Criste:

As you know, on November 19, 2008 the Apple Valley Ranchos Water Company ("AVR") adopted the Water Supply Assessment and Water Supply Verification ("WSA") for the proposed Hacienda at Fairview Valley Specific Plan ("Project") in accordance with Water Code section 10910 et seq. and other applicable statutes. Since that time, several events have occurred pertaining to California's water supplies and water supply planning efforts, including, but not limited to: issuance of the December 15, 2008 United States Fish and Wildlife Service Biological Opinion for delta smelt; the February 27, 2009 proclamation of statewide drought emergency by Governor Schwarzenegger; and the issuance of the June 4, 2009 National Marine Fisheries Service Biological Opinion for salmon and other anadromous species in the Sacramento-San Joaquin Delta.

Additionally, the quantity of water available to AVR is contingent upon the ability of the Mojave Water Agency ("MWA") to provide sufficient replacement water consistent with MWA's representations in its 2005 Urban Water Management Plan ("UWMP"), and its obligations under the Judgment entered in *City of Barstow v. City of Adelanto, et al*, Riverside County Superior Court, Case No. 208568 ("the Judgment").

Under the Judgment, AVR has the right to extract a certain amount of groundwater each year within the Basin. To the extent AVR exceeds its allotted free production allowance in any year, the Judgment provides that AVR shall purchase and MWA will provide replacement water to replenish the Basin and compensate for the excess production. This court-ordered management structure is designed to enable parties to the Judgment to satisfy water demand while maintaining a safe water balance within the Basin and each subarea therein. AVR is currently required to pump in excess of its free production allowance to meet the water demands within its service area.

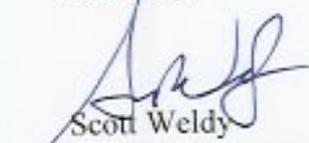
According to MWA's 2005 UWMP, MWA expects there will be sufficient replacement water supplies available to enable AVR's purchase of replacement water to accommodate water service for the proposed Hacienda at Fairview Valley Specific Plan. However, as stated above, since 2005, multiple events have transpired placing significant constraints on the availability of water supplies throughout the State. MWA has not updated its 2005 UWMP to address the foregoing and other developments affecting the availability of water supplies.

AVR staff has considered these developments and related information in light of the WSA that was prepared for the Project and has determined that the fundamental analyses and conclusions of the WSA remain intact, due in large part to aggressive conservation and regional demand management efforts being implemented in AVR and throughout Southern California. Moreover, staff has reviewed the July 2009 Water Resources Study prepared for the Project by Terra Nova Planning & Research, Inc. to address the various factors occurring after AVR's adoption of the WSA. The detailed information and analyses set forth in the Study add further support to the WSA's conclusion that the total projected water supplies available to AVR during normal, single-dry, and multiple dry water years during a 20-year projection are sufficient to meet the projected water demand associated with the proposed Project, in addition to AVR's existing and planned future uses, including agricultural and manufacturing uses.

Assuming MWA will be able to satisfy its obligations under the Judgment and as stated in its 2005 UWMP, AVR anticipates adequate water supplies will be available to AVR's service area.

Should you have any questions or concerns in regard to the foregoing, please feel free to contact me at (760) 247-6484.

Sincerely,



Scott Weldy  
General Manager

Apple Valley Ranchos Water Company