EXHIBIT "C"

AVEK'S 2010 URBAN WATER MANAGEMENT PLAN

Antelope Valley-East Kern Water Agency, California

2010 Urban Water Management Plan

A PUBLIC AGENCY

Antelope Valley-East Kern Water Agency

List of Acronyms and Abbreviations

AB	Assembly Bill
Act	Urban Water Management Planning Act
AVEK	Antelope Valley-East Kern Water Agency
Baseline	Base daily per capita water use
BMP(s)	Best management practice(s)
BOD	Board of Directors
CBDA	California Bay-Delta Authority1
CEQA	California Environmental Quality Act
CII	Commercial, industrial, and institutional
CUWCC	California Urban Water Conservation Council
CWC	California Water Code
CWSRF	Clean Water State Revolving Fund
Department	California Department of Water Resources
DIRWM	Division of Integrated Regional Water Management
DMM(s)	Demand management measure(s)
DOST	DWR online submittal tool
DWR	California Department of Water Resources
GHG	Greenhouse gas
GPCD	Gallons per capita per day
IRWM	Integrated Regional Water Management
IRWMP(s)	Integrated Regional Water Management Plan(s)
MOU	Memorandum of Understanding
Plan (or UWMP)	Urban Water Management Plan
SB	Senate Bill
State Water Board	State Water Resources Control Board
USC	Urban Stakeholders Committee
UWMP (or Plan)	Urban Water Management Plan
VWS	Verification of Water Supply
WSA	Water Supply Assessment

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The Water supplier is a: **State Water Project Contractor**

The Water supplier is a: **Wholesaler to potable water purveyors & Retailer of untreated agricultural water**

Utility services provided by the water supplier include: **Water**

Is This Agency a Bureau of Reclamation Contractor? **No**

Section 1 Plan Preparation

1.1 Purpose

The California Urban Water Planning Act (California Water Code § 10610 et seq.) requires urban water suppliers to describe and evaluate sources of water supply, efficient uses of water, demand management measures, implementation strategy and schedule, and other relevant information and programs. This information is used by the water agencies to carry out their long term resource planning responsibilities.

1.2 Coordination

1.2.1 Interagency Coordination

Law

10620 (d) (2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

10620 (f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

10621 (a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero.

10621 (b) Every urban water supplier required to prepare a plan pursuant to this part shall notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan…..

AVEK views "interagency coordination" in at least 2 ways, one with respect to the development of UWMP and the second concerns the development of additional water sources such as imported water stored in the groundwater basin. AVEKs draft UWMP was posted on its website www.avek.org for public access and review. AVEKs outreach efforts concerning this UWMP are outlined in **Table 1**.

Table 1
Coordination and Public Involvement

Entities	Coordination and Public Involvement Actions by AVEK				
	Contacted for Assistance (2010 UWMP)	Attended public meetings (2010 UWMP)	Sent notice of available draft for review	Commented on the draft	Sent notice of intention to adopt (Hearing)
Boron CSD			√		√
City of California City			√		√
MPUD			√		√
Rosamond CSD			√		√
California Water Service			√		√
Los Angeles County WWD	√		√		√
Palm Ranch ID			√		√
Palmdale Water District			√		√
Littlerock Creek ID			√		√
Quartz Hill Water District			√		√
Calif. Dept. of Water Resources	√		√		√
City of Palmdale			√		√
City of Lancaster			√		√
Los Angeles County San			√		√
County of Los Angeles			√		√
County of Ventura					
County of Kern			√		√

With respect to the second issue, it should be recognized that AVEK is a supplier of imported water from the State Water Project (SWP) for the Antelope Valley region and that it is not a primary source but a secondary source. Since AVEK wholesales water to area retail purveyors, water sales volumes and predicted future treated and untreated water quantities are the only tools and products available for distribution. See **Appendix C** for Rate Stabilization Fund Discussion. The water provided by DWR through AVEK is used by area consumers in lieu of or in addition to pumped groundwater. The UWMP seeks to optimize water assets and plans for future water shortages. AVEK attempts to maximize use of its surface water product by encouraging retail purveyors to utilize surface water instead of pumped groundwater whenever possible and utilize groundwater recharge as a method for banking water during wet years. AVEK is reducing over drafting of the area aquifers by providing as much of its allocated DWR water to consumers as possible.

Currently, AVEK is actively involved with the initial stages and coordination of a fully regional water banking program. The proposed water banking program would function under a Joint Power Association format and treat all area-wide water interests equally by offering participation to all customers if desired. AVEK currently has a Water Supply Capacity Charge that funds system improvements that will be required for the anticipated growth of AVEKs customers over the next 20 years. See **Appendix D** for list of proposed facility expansions. An improvement identified as a proposed facility expansion includes California Aqueduct turnouts, raw water pipelines and basin inlets that could be used for groundwater recharge.

To develop a successful groundwater banking and storage program, AVEK believes a myriad of issues concerning such a program (eg, legal, technical, financial, policy, etc.) should be addressed at the earliest possible stage by creating a comprehensive institutional framework for the program. Formulating such a framework should create as many stakeholders as possible. AVEK will encourage that appropriate steps be taken to facilitate discussions about this matter among stakeholders.

Finally, AVEKs efforts to conserve and optimize its water resources have been the focus and will continue to be the focus on such programs as 1) provide treated and untreated surface water to area water retailers and farmers for a reasonable cost while maintaining their facilities and trained personnel; and 2) seek to institute programs and policies that deal with the water allocations during the inevitable dry years and spans of dry years. AVEK may assist, when possible, all area retailers in developing their own water conservation methods and policies as well as providing information about water conserving techniques.

AVEK also participated in the preparation of the Antelope Valley Integrated Regional Water Management Plan (See **Appendix J**) that contains information to help take action to meet shared objectives for long term water management for the Antelope Valley. Further water conservation efforts are supported by AVEK through their participation in the Antelope Valley Water Conservation Coalition.

1.2.2 Intra-Agency Coordination

Each year, the Agency considers the outlook for the water supplies for the Agency for the next 12 months. See **Section 4** for more information on the outlook for water supply for the Antelope Valley.

1.3 Adoption and Implementation of Plans

Law

> *10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published ... After the hearing, the plan shall be adopted as prepared or as modified after the hearing.*

1.3.1 Public Participation

The Antelope Valley-East Kern Water Agency (AVEK) has actively encouraged community participation in its urban water management planning efforts by encouraging attendance and participation in the Board of Directors (BOD) public meetings held twice each month. A public hearing was held on June 20, 2011 for review of plan and to receive comments on the draft plan before the AVEK's BOD approval.

A special effort was made to include community and public interest organizations. Legal public notices for each meeting were published in the local newspapers and posted at Agency facilities. Copies of the draft plan were available at Agency office and on the internet at the Agency's website: www.avek.org. See **Appendix A** for participation list.

1.3.2 Plan Adoption

AVEK prepared the initial draft of its Urban Water Management Plan during spring 2011. The final plan was adopted by the BOD on June 20, 2011 and will be submitted to the California Department of Water Resources by **August 1, 2011 (or 30 days after adoption)**. Attached to the cover letter addressed to the Department of Water Resources and as Appendix B are copies of the signed Resolution of UWMP Adoption. This plan includes all information necessary to meet the requirements of California Water Code Division 6, Part 2.6 (Urban Water Management Planning).

Section 2 System Description

2.1 Supplier Service Area Information with 20 Year Projections

Law

10631. (a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

2.1.1 Physical Description

The Antelope Valley is located in the western part of the Mojave Desert, about 50 miles northeast of Los Angeles. The valley is triangular shaped, topographically closed basin covering about 2,200 square miles. Groundwater is an important component of water supply in the Antelope Valley (Leighton, USGS, 1999). Estimates of average natural annual groundwater recharge range from about 40,000 to 58,000 AFY (Snyder, 1955; Bloyd, 1967; Durbin, 1978). Pumping in the valley, primarily for agricultural purposes, peaked in the 1950s when production may have exceeded 400,000 AF annually (Snyder, 1955). Increased urban growth in the 1980s resulted in an increase in the demand for water and an increase in groundwater use. Long-term groundwater withdrawals have caused some land subsidence. The court recently adopted 110,000 AF/year as the maximum annual yield for the Antelope Valley groundwater basin.

2.1.2 Service Area

AVEK has played a major role in the Valley's water system since it was granted a charter by the State legislature in 1959. It succeeded the AV-Feather River Association, which was formed in 1953 to encourage importation of water from the Feather River in northern California. See **Appendix E** for AVEK Boundary Location Map.

In 1962 the AVEK Board of Directors signed a water supply contract with the State Department of Water Resources (DWR) to assure delivery of imported water to supplement Antelope Valley groundwater supplies. AVEK has the third largest allotment of 29 State Water Project (SWP) water agencies in California, following the Metropolitan Water District and the Kern County Water Agency. See **Appendix F** for SWP map. SWP facilities are not fully constructed and until full built-out, SWP facilities are only able to service about 62% of the project's 4.1 million acre-feet.

Financed by a $71 million bond issue, AVEK constructed the Domestic Agricultural Water Network (DAWN), which consists of four water treatment plants with clear water storage and more than 100 miles of pipelines. Four 8-million gallon water storage reservoirs near Mojave and one 3-million gallon reservoir at Vincent Hill Summit complete the DAWN network. The bulk of the imported water is treated and distributed to customers throughout its service area. See **Appendix G** for current list of water purveyors that AVEK serves. The network also provides delivery of untreated water from the Aqueduct to local farmers and ranchers.

The Quartz Hill water treatment plant is capable of producing 90 million gallons per day (mgd) of treated aqueduct water. The Eastside water treatment plant is capable of producing 10 mgd. The Rosamond water treatment plant can produce 14 mgd while the most recently added treatment plant in Acton can make 4 mgd of treated water.

Additional surface water allotments from the SWP exist in the Antelope Valley for Palmdale Water District and Littlerock Creek Irrigation District.

2.1.3 Service Area Population

Lancaster and Palmdale are the largest cities in the Antelope Valley with Mojave, Edwards Air Force Base, Boron, and Littlerock being the larger of the fewer than 10,000 population centers.

AVEK provides service to incorporated and unincorporated areas of Antelope Valley. The population projections include inhabitants from Lancaster, Palmdale, Acton, and Lake Los Angeles of Los Angeles County and California City, Rosamond, Edwards Air Force Base, Mojave, and Boron of Kern County. Since AVEK only serves a portion of Palmdale, the projected values for Palmdale have been adjusted and then included in **Table 2.**

Table 2 indicates population growth projections within the service areas of AVEK. The projections are based on data from California Department of Finance, the Greater Antelope Valley Economic Alliance, and the Southern California Association of Governments. See **Appendix H** for Growth Projection Information.

Table 2.
Population – Current and Projected
(AVEK Area) [1]

Population	2010	2015	2020	2025	2030
Service Area Population	291,063	348,941	417,933	463,174	513,430

[1] Population growth projections include only a portion of the City of Palmdale.

2.2 Past Drought, Water Demand, and Conservation Information

During drought periods, the Agency has met most of its customers' needs through special programs including turn back pool water, dry year water purchases, etc., and by utilizing larger reductions to agricultural users. AVEK has been unable to fulfill demands for SWP water only two times since its formation. See **Appendix F** for a list of the annual SWP water deliveries to AVEK.

Since 1995, the water demand for all water sources has increased by a growth rate of about 4% per year, due in part to a general acceleration in the region's economy. From 1990 to 2000, the population within AVEKs service area increased and new water demand has kept pace with the growth. The area continues to have a modest but growing industrial sector located principally in Palmdale and Lancaster. The commercial sector is increasing more rapidly due to increased numbers of consumers in the area and the general desire to shop closer to home. The agricultural economy is based on carrots, alfalfa, onions, peaches, pears, apple, vineyards and other stone type fruits becoming more common.

2.3 Climate

The area encompassed by AVEK is primarily desert. Vegetation is typical of the western Mojave Desert that includes creosote and desert shrubs. Certain portions of the valley contain large stands of Joshua Trees. Summer temperatures can reach 112°F to while winter temperatures have been known to drop to about 10°F. Typical annual average rainfall is 7 to 8 inches. The perimeter of the Antelope Valley includes low brush covered hills transitioning into the Tehachapi Mountains and San Gabriel Mountains to the west and south. The surface water runoff drainage channels and courses are active only during times of runoff due to precipitation. The water tables are well below the levels needed to sustain year round flowing streams. The area is known for its daily winds, usually from the west. **Table 3** illustrates average rates of evapo-transpiration, temperature, and precipitation of the service area.

Table 3. Climate						
	Jan	Feb	Mar	Apr	May	Jun
Standard Monthly Average EvapoTranspiration (Eto)	1.86	2.80	4.65	6.00	8.06	9.00
Average Rainfall (inches)	1.49	1.82	1.35	0.36	0.12	0.05
Average Temperature (Fahrenheit)	44.3	47.5	52.7	58.3	66.7	75.2

Table 3. (continued) Climate							
	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Standard Monthly Average Eto	9.92	8.68	6.60	4.34	2.70	1.86	66.5
Average Rainfall (inches)	0.10	0.14	0.19	0.35	0.48	1.05	7.51
Avg Temperature (Fahrenheit)	81.1	79.7	73.3	62.6	50.4	43.2	61.3

Rainfall and temperature records based on data reported at the Lancaster station by NOAA.
EvapoTranspiration data based on data reported from CIMIS station zone 17 – High Desert Valleys.

DWRs Draft Water Plan includes an assessment of the impacts of global warming on the State's water supply using a series of computer models and based on decades of scientific research. Model results indicate increased temperature, reduction in Sierra snow depth, early snow melt, and a rise in sea level. These changing hydrological conditions could affect future planning efforts which are typically based on historic conditions. Difficulties that may arise include:

- Hydrologic conditions, variability, and extremes that are different than current water systems were designed to manage
- Changes occurring too rapidly to allow sufficient time and information to permit managers to respond appropriately
- Requiring special efforts or plans to protect against surprises and uncertainties

As such, DWR will continue to provide updated results from these models as further research is conducted.

Section 3 System Demands

Law

10631 (e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:

(A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof;

(2) Agricultural.

(3) The water use projections shall be in the same 5-year increments to 20 years or as far as data is available..

3.1 Water Demands by Customer Type – Past, Present, and Future

Table 4 details water purveyors deliveries for M&I. Population increases as shown in **Table 2** were used to help develop water use projections, except that projections for LA County Waterworks District, Rosamond CSD, and Quartz Hill WD were taken from their draft *2010 Integrated Regional Urban Water Management Plan for the Antelope Valley* dated May 25, 2011. No adjustment is made for potential reductions in per-capita demand through improved conservation or water reuse.

Table 4 Total Water Use (M&I) (AF/YR)						
Water Distributed	**2006**	**2010**	**2015**	**2020**	**2025**	**2030**
Billiton Exploration U.S.A.	22	4	22	22	22	22
Boron CSD	523	927	540	545	550	555
City of California City	1,071	1,045	1,312	1,572	1,742	1,931
Desert Lake CSD	165	15	202	242	268	297
Desert Sage Apartments	6	6	7	9	10	11
Edgemont Acres MWC	193	1	236	283	314	348
Edwards AFB	2,330	1,747	2,855	3,419	3,790	4,201
FPL Energy	1,019	1,269	1,042	1,042	1,042	1,042
Mojave Public Utility District	93	0	114	136	151	168
Rosamond CSD	1,303	262	1,900	2,000	2,600	3,400
US Borax 1625	1,649	1,506	1,649	1,649	1,649	1,649
Antelope Valley Country Club	278	75	278	278	278	278
California Water Service Co	346	161	424	508	563	624
El Dorado MWC	426	1	426	426	426	426
Landale MWC	10	5	12	15	16	18
Los Angeles County Waterworks Districts	49,414	40,638	61,000	61,000	61,000	61,000
Palm Ranch Irrigation District	843	121	1,033	1,237	1,371	1,520
Quartz Hill Water District	4,322	3,534	6,800	6,800	6,800	6,800
Shadow Acres MWC	324	212	397	476	527	584
Sunnyside Farms MWC	232	173	284	340	377	418
Westside Park MWC	28	1	34	41	46	50
White Fence Farms MWC	556	393	681	816	904	1,002
Lake Elizabeth MWC	387	463	474	568	629	698
Sales to water purveyors (M&I)	65,540	53,062	81,725	83,425	85,076	87,043

Table 5 details the additional water uses and losses.

Table 5 Additional Water Uses and Losses (AF/YR)						
	2006	**2010**	**2015**	**2020**	**2025**	**2030**
Raw Water	9,206	6,612	6,612	6,612	6,612	6,612
Unaccounted-for system losses	2,103	1,001	2,738	2,791	2,842	2,903
Total	11,309	7,613	9,350	9,403	9,454	9,515

In case of rationing, the Agency will be able to use its customer database for implementing any possible water reductions.

Table 5 does not include water used for banking. The WSSP-2 project may bank as much as 23,000 AFY, if the water is available. However, as water would be banked only in periods of excess supply, it is not considered to be a demand for determination of water supply reliability.

3.1.1 Agricultural Sector

Agricultural water demand from AVEKs system is projected to have minimal growth in the next ten to fifteen years with a possible decrease over the next twenty to thirty years. The water deliveries indicated in **Table 5** show consistent amounts through 2030. Agricultural land use within the Agency's area is currently

increasing in quantity. Even so, it is projected that in the long term, more agricultural land will eventually be converted to urban uses.

3.2 Water Use Reduction Plan

AVEK as a wholesale supplier will continue to support the retail customers in their efforts to meet their water demand reduction goals. AVEK has not yet identified any water reduction programs but will work closely with the retail customers to help them achieve their goals.

Section 4 Water System Supplies

Law

10631 (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments [to 20 years or as far as data are available.]

4.1 Water Sources

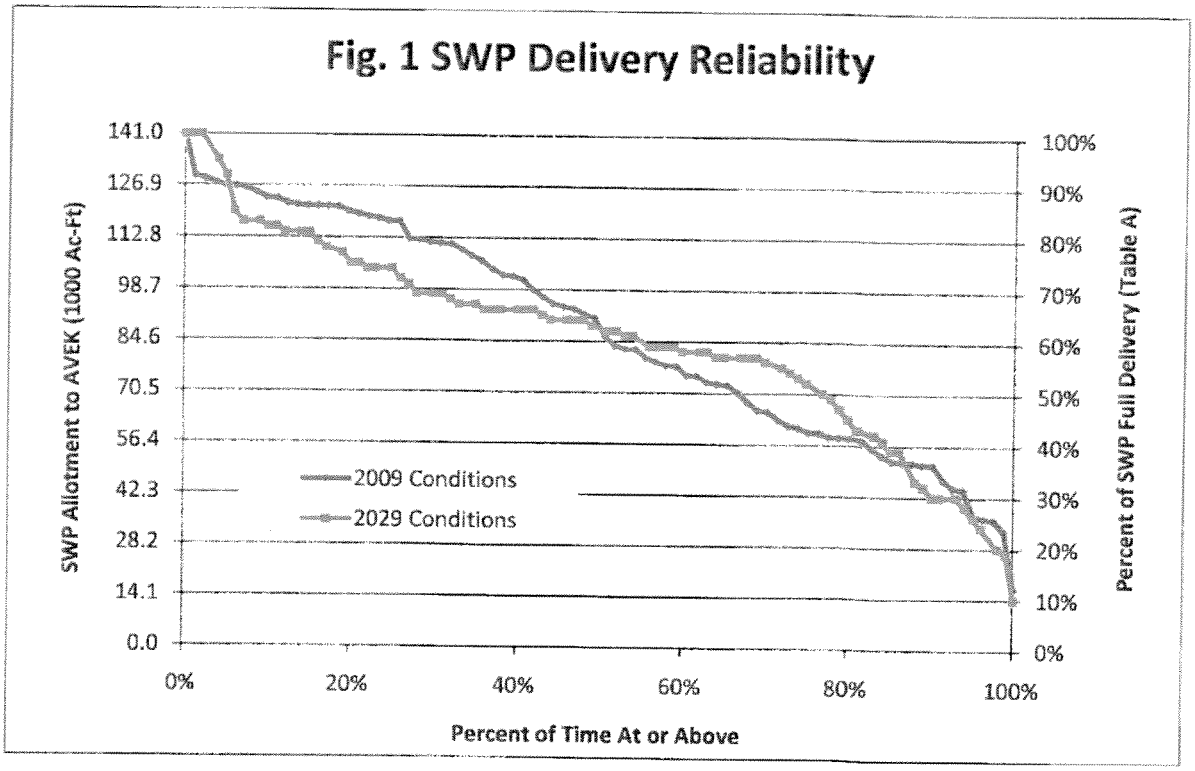
4.1.1 Imported Water

AVEK sells imported water from the DWR California Aqueduct as part of the SWP. Currently, AVEK has an allocation for purchasing up to 141,400 acre-feet of water per year from the SWP.

Each year, the Agency considers the outlook on the water supplies for the Agency for the next 12 months. **Figure 1** indicates AVEKs DWR water deliveries under different availability conditions. **Figure 1** includes information provided by the DWR 2009 State Water Project Delivery Reliability Report (DWR Report) and indicates the probability that a given SWP Table A amount will be delivered from the Delta. Each line is constructed by ranking 83 annual delivery values from lowest to highest and calculating the percentage of values equal to or greater than the delivery value of interest. For a complete description of the scenarios please refer to the DWR Report.

The scenarios developed by DWR include predictions of climate change developed under two different models, the GFDL and PCM models. They also include predictions based upon modifications to Delta flow patterns dictated by environmental concerns. A total of 13 scenarios were developed, using combinations of these models and Delta flow modifications. **Figure 1** depicts two of these scenarios:

1. 2009 conditions
2. 2029 conditions



4.1.2 Groundwater

AVEK does not have production groundwater wells but may include groundwater pumping as a water supply in the future. In previous years, AVEK has made efforts to utilize groundwater to offset imported water deficiencies. These efforts were unwelcomed by several of the larger AVEK purveyors.

4.1.3 Recycled Water

AVEK does not provide recycled water. AVEK does not collect or treat wastewater and has no plan to use recycled water as part of their deliveries. The Agency provides service to retail and water purveyors and agricultural customers that may have the opportunity to utilize recycled water as part of deliveries. The Agency supports customers plans that would utilize recycled water within AVEK boundaries. The use of recycled water by AVEK customers is an important part of reducing the demand on AVEKs available water. Los Angeles County Water Works District has estimates for the future availability and location of recycled water and they are included in **Appendix I**.

4.1.4 Water Banking

AVEK is currently implementing a groundwater banking project will improve the reliability of the Antelope Valley Region's water supplies through construction of the necessary infrastructure to store excess water available from the SWP during wet periods and recover and serve it to customers during dry and high demand periods or during a disruption in deliveries from the SWP.

4.2 Current and Projected Water Supplies

Water supplies will have different historical dry year sequences and different yields during multiple year drought conditions based on hydrology, average storage, contract entitlements, etc. Currently, AVEKs only

source of water is SWP water. For planning purposes, **Table 6** reflects the Future Conditions with average year Table A delivery from the Delta in five-year intervals.

Table 6
Current and Planned Water Supplies (AF/Y)

Water Supply Sources	2010	2015	2020	2025	2030
SWP Allocation	141,400	141,400	141,400	141,400	141,400
Projected Delivery Percentages[2]	80%[4]	62%	62%	62%	62%
Projected Delivery by DWR[3]	113,120	87,688	87,688	87,688	87,688
AVEK produced surface water	0	0	0	0	0
Transfers/Exchanges	0	0	0	0	0
Recoverable banked groundwater	0	20,000	20,000	20,000	20,000
Total	113,120	107,688	107,688	107,688	107,688

[2] Projected delivery percentages are based on projections from the DWR 2009 SWP Reliability Report. The average projected delivery percentage for years 2010 through 2030 were taken from DWR-supplied projection spreadsheets. See **Appendix H**.

[3] Projected Delivery is the product of the SWP Allocation of 141,400 AF/Y and the Projected Delivery Percentages provided by the DWR models. For example, in year 2015 the projected delivery of 87,688 AF/Y is the product of 141,400 AF/Y multiplied by the projected delivery percentage of 62%.

[4] Existing 2010 SWP delivery percentage.

Section 5 Water Supply Reliability Planning and Water Shortage Contingency Planning

Law

10631 (c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable and provide data for each of the following:
(1) An probable water year;
(2) A single dry water year; and,
(3) Multiple dry water years.

For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to replace that source with alternative sources or water demand management measures, to the extent practicable.

5.1 Reliability

AVEK considers two aspects of reliability. First, the source reliability is only as reliable as the occurrences of the winter weather storms that deposit snow pack in the higher Sierra Nevada elevations that are part of the SWP watershed. Once the winter rain and snow season have been completed, the snowpack is measured and projected annual water volumes are given to SWP users. Prior to that, a specific volume of water is unpredictable. Based on previous experience, the predicted water values given by the State in the spring have been conservative.

The second aspect of "reliability" is what AVEK forecasts as the available water allocated for each of the water purveyors. AVEK also strives to be as informative as possible on the annual water allocations, and distributes information from the SWP projections to the water purveyors in a timely manner. The demand by water purveyors is greater in the summer months compared to the winter months. AVEK charges higher water rates in peak months to offset water supply deficiencies as a demand management measure.

Reliability planning requires information about: (1) the expected frequency and severity of shortages that occur because of reduction in SWP allocation and failure of transportation facilities; and (2) how available contingency measures can reduce the impact of shortages when they occur.

5.2 Water Shortage Contingency Plan

Law

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

10632 (a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply and an outline of specific water supply conditions which are applicable to each stage.

5.2.1 Stages of Action

5.2.1.1 Rationing Stages and Reduction Goals

The Agency has developed delivery reduction goals to curb demand during water shortages. In the event of water supply shortages the Agency will make water delivery reductions per the Agency law for allocations. Reference is made to **Appendix B**, which includes Ordinance O-07-2, AVEK Water Shortage Contingency Plan.

Stage No.	Water Supply Conditions	% Shortage
1	Reduction in SWP Allocation Below Current Demand	1%
2	Reduction in SWP Allocation Below Current Demand	50%

5.2.1.2 Estimate of Minimum Supply for Next Three years

Law

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

10632 (b) An estimate of the minimum water supply available during each of the next three-water years based on the driest three-year historic sequence for the agency's water supply.

Table 7 presents minimum projected 3-year supply.

Table 7
Projected Supply (Ac-Ft) [1]

Source	Year 1	Year 2	Year 3	Normal
State Water Project	44,900	51,300	51,800	87,668

[1] Based on the years 1931, 1932, and 1933 as reported in *ContractorDRR_2009_rev080510.xlsx*.

5.2.2 Preparation for Catastrophic Water Supply Interruption

Law

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

10632 (c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

5.2.2.1 Water Shortage Emergency Response

Since the Agency began selling water to retailers, AVEK has maintained emergency contingency plans for activities required in the event there is an interruption in the DWR water supply or there is a major mechanical or electrical failure in one of the water treatment plants. The emergency activities that are undertaken by AVEK depend upon the severity of the problem and how quickly the problem can be remedied.

5.2.2.2 SWP Emergency Outage Scenarios

The Department of Water Resources has faced several potential outages along various parts of the SWP, mainly the California Aqueduct, since construction of the SWP in the early 1970s. Notable examples include slippage of side panels into the Aqueduct near Patterson in the mid-1990s, the Arroyo Pasajero flood event in 1995 (which also destroyed part of Interstate 5 near Los Banos), and various subsidence repairs needed along the East Branch of the Aqueduct since the 1980s.

All of these outages were short-term in nature (on the order of weeks or months), and DWRs Operations and Maintenance Division worked diligently to devise methods to keep the Aqueduct in operation while repairs were made. Thus, the SWP contractors experienced no interruption in deliveries.

One of the great design engineering features of the State Water Project is the ability to isolate parts of the system. If one reservoir or portion of the Aqueduct (the Aqueduct is divided into "pools") is damaged in some way, other portions of the system can still remain in operation. Since September 11, 2001, DWR has made significant investments in the security measures protecting all SWP facilities. Security is now coordinated with the California Highway Patrol.

Events could transpire that could result in significant outages and potential interruption of service. Examples of possible nature-caused events include a levee breach in the Sacramento San Joaquin Delta near the Harvey O. Banks Pumping Plant, a; flood or earthquake event that severely damaged the Aqueduct along its San Joaquin Valley traverse, or an earthquake event along either the West or East Branches. Such events could impact all the SWP Contractors south of the Delta.

AVEK and other SWP Contractors response to such events would be highly dependent on where along the SWP an event occurred. Three scenarios are described herein that could impact AVEKs SWP deliveries. For these scenarios it is assumed that a 100 percent reduction for six months would result from these catastrophic events.

Scenario 1: Levee Breach near Banks Pumping Plant

As demonstrated by the June 2004 Jones Tract levee breach, the Deltas levee system is extremely fragile. The SWPs main pumping facilities are located in the southern Delta. Should a major levee in the Delta near these facilities fail catastrophically, salt water from the eastern portions of San Francisco Bay would rush into the Delta, displacing the fresh water runoff that supplies the SWP. All pumping would be disrupted until water quality conditions stabilized and returned to pre-breach conditions. The re-freshening of Delta water quality would require large amounts of additional Delta inflows, which might not be immediately available depending on the timing of the levee breach. The Jones Tract repairs took several weeks to accomplish and months to complete; a more severe breach could take much longer, during which time pumping might not be available on a regular basis.

Annual SWP operations consist of filling San Luis Reservoir, the major SWP storage facility south of the Delta, during the winter and spring months. South of Delta Contractors then take deliveries through San Luis Reservoir for the remainder of the year. Supplies are also stored in Pyramid and Castaic Lakes along the West Branch, as well as in a variety of groundwater banking programs in the southern San Joaquin Valley. Assuming that Banks Pumping Plant would be out of service for six months and that all southern Contractors had to take their supplies from the three reservoirs and from banking programs, coordination between DWR and Contractors would be required.

Scenario 2: Complete Disruption of the Aqueduct in the San Joaquin Valley

The 1995 flood event at Arroyo Pasajero demonstrated vulnerabilities of the Edmund G. "Pat" Brown portion of the California Aqueduct (that portion that traverses the San Joaquin Valley from San Luis Reservoir to Edmonston Pumping Plant). Should a similar flood event or an earthquake damage this portion of the aqueduct, deliveries from San Luis Reservoir could be interrupted for a period of time. DWR has informed the contractors that a four-month outage could be expected in such an event. AVEKs assumption is a six-month outage.

Scenario 3: Complete Disruption of the Aqueduct East Branch

The East Branch of the California Aqueduct begins at a bifurcation of the Aqueduct in the Tehachapi Mountains south of Edmonston Pumping Plant. From the point of bifurcation, it is an open canal. If a major earthquake (an event similar to or greater than the 1994 Northridge earthquake) were to damage a portion of the East Branch, deliveries could be interrupted. The exact location of such damage along the East Branch would be key to determining emergency operations by DWR and the southern California contractors. For this scenario, it is assumed that the East Branch suffered a single-location break and would not be available for deliveries.

If the shortage problem can be resolved within the available water storage time frame, only a few of the larger consumers need to be notified of the temporary decrease in water supply. If there will be a stoppage in the raw water deliveries to the various treatment plants, all customers (M&I and agriculture) will be notified of the stoppage and how soon water deliveries may be resumed.

If raw water deliveries to water treatment plants are temporarily stopped, treated water from other plants may be rerouted to the affected areas in some instances via interconnecting pipeline systems. Damages to the aqueduct will be repaired by DWR. Damaged Agency treatment plant components, whether mechanical or electrical, can usually be circumvented due to the duplicity of pumping and operations systems or the availability of manual over-ride controls. The magnitude of reduced water deliveries and length of time before resumption of full water availability will determine the extent of customer (M&I and agriculture) notification and activities required by the AVEK staff.

Possible Catastrophe:

- Power Outage
- Aqueduct Failure due to Earthquake or other circumstances
- Agency Treatment Plant Shutdown due to vital component failure
- Delta Levee Failure
- Local Earthquake

The following summarizes the actions the water agency will take during a water supply catastrophe.

Response by the agency to a catastrophic event will always include contact and coordination with AVEK's customers. Additionally, in the event of power loss AVEK has permanent emergency power generation that automatically starts to maintain water treatment operations. In the event of an earthquake, AVEK personnel will survey and assess damage and respond accordingly with shutdowns and repairs.

Preparation Actions for a Catastrophe	
Possible Catastrophe	Summary of Actions
Regional power outage	Automatic switch to emergency power; contact customers, assess and respond
Earthquake	Automatic switch to emergency power (if needed); contact customers, assess and respond

5.2.3 Prohibitions, Consumption Reduction Methods and Penalties

Law

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

10632 (d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

10632 (e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its

water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

10632 (f) Penalties or charges for excessive use, where applicable.

5.2.3.1 Mandatory Prohibitions on Water Wasting

AVEK believes that their customers are in the best position to implement no-waste policies. AVEK can and will make recommendations to assist its customers in monitoring water wasting, if AVEKs assistance is requested.

5.2.3.2 Excessive Use Penalties

Penalties for excessive use are imposed by water purveyor customers of AVEK. It is anticipated agricultural users will economize their water usage as required. AVEK has in place provisions for pre-paid ordering as a method of penalizing users who do not take the delivery requested. AVEK does not have powers to implement penalties for excessive use by a retailers customer but encourages all retailers to have such penalties in place.

5.2.3.3 Implementation

AVEK relies on its water retailers to implement water consumption reduction methods to their customers in order to cope with water supply shortages.

5.2.4 Revenue and Expenditure Impacts and Measures to Overcome Impacts

Law

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

10632 (g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments

Revenues collected by the Agency are currently used to fund operation and maintenance of the existing facilities and fund new capital improvements. The Agency will estimate projected ranges of water sales versus shortage stage to best understand the impact each level of shortage will have on projected revenues and expenditures.

Revenue reduction and an increase in expenditure may occur due to reduced sales from implementing the abovementioned programs. The magnitude of the revenue reduction and expenditure increase will be dependent on the severity of the water shortage, with larger and longer water shortages having greater impact on revenues. For minor events, the Agency may be able to absorb the revenue shortfall/increase in expenditures by reallocating existing funds, such as delaying some capital projects. For large events, the Agency may enact a rate adjustment to its customers.

5.2.5 Shortage Contingency Ordinance/Resolution

Law

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of

the urban water supplier:

10632 (h) A draft water shortage contingency resolution

5.2.5.1 AVEK Water Shortage Response/Priority by Use

AVEK has a plan of action in its existing rules and regulations in the event it is necessary to declare a water shortage emergency. AVEK reserves the right at any time if the quantity of water available to the Agency pursuant to the Water Supply Contract between the DWR and AVEK is less than the aggregate of all consumer requests to allocate the quantity of water available to AVEK to the extent permitted by law. See Appendix B for Ordinance O-07-2 to Adopt a Water Shortage Contingency Plan.

5.2.5.2 Health and Safety Requirements

These requirements will be left to the retailing water purveyor agencies. AVEK has no direct control of the final water user actions and activities.

5.2.5.3 Water Shortage and Triggering Mechanisms

AVEK will attempt to provide the minimum health and safety water needs of the service area. It must be recognized that AVEKs water supply is not considered a primary source of water and it is a secondary source of water. The water shortage response plan was designed based on the assumption that during a long term drought DWR will have a reduction in water deliveries.

Rationing stages may be triggered by a shortage in the DWR water source. Although an actual shortage may occur at any time during the year, a shortage (if one occurs) is usually forecasted by the Department of Water Resources on or about April 1 each year. If it appears that it may be a dry year and the water supplies will be reduced, AVEK contacts its agricultural customers in March with confirmation follow up in April, so that the customers can minimize potential financial impacts.

Currently, the Agency's sole water source is imported surface water, but extraction from the AVEK water banking facilities is planned for the future. Rationing stages may be triggered by a supply shortage or by contamination.

5.2.6 Reduction Measuring Mechanism

Law

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

10632 (i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

5.2.6.1 Mechanism to Determine Reductions in Water Use

Under non-emergency water supply conditions, potable water production figures are recorded daily. Totals are reported daily to the Water Treatment Facility Supervisor. Totals are reported monthly to the Board of Directors and incorporated into the water supply report.

During water shortage periods, the Agency will review daily the water demands versus the established reduction goals. Reference is made to **Appendix B**, Ordinance O-07-2 to Adopt Water Storage Contingency Plan. The Agency will take appropriate steps to reduce their deliveries to meet the reduction

goals.

5.3 Recycled Water Plan

Law

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. To the extent practicable, the preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies and shall include all of the following:

10633 (a) A description of the wastewater collection and treatment systems in the supplier's service area, including quantification of the amount of wastewater collected and treated methods of wastewater disposal.

10633 (b) A description of the recycled water currently being used in the supplier's service area, including but not limited to, the type, place and quantity of use.

10633 (c) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

5.3.1 Wastewater Quantity, Quality, and Current Uses

5.3.1.1 AVEK's Recycled Water Use Capabilities

AVEK does not collect or treat wastewater and has no plan to use recycled water as part of their deliveries. The Agency provides service to retail and water purveyors and agricultural customers that may have the opportunity to utilize recycled water as part of deliveries. The Agency supports customers plans that would utilize recycled water within AVEK boundaries. The use of recycled water by AVEK customers is an important part of reducing the demand on AVEKs available water. Los Angeles County Water Works District has estimates for the future availability and location of recycled water and they are included in **Appendix I**.

5.3.1.2 Potential and Projected Use, Optimization Plan with Incentives

Law

10633 (d) A description and quantification of the potential uses of recycled water. …, and a determination with regard to the technical and economic feasibility of serving those uses.

10633. (e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

10633 (f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

10633 (g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated

wastewater that meets recycled water standards, and to overcome any obstacle to achieving that increased use.

5.3.1.3 AVEK's Recycled Water Use Philosophy

AVEK does not collect or treat wastewater and has no plan to use recycled water as part of their deliveries. AVEKs customers should investigate, develop, and implement recycled water usage programs. The Agency encourages the use of recycled water. For example, AVEK is presently assisting both the cities of Lancaster and Palmdale, and the County of Los Angeles with local recycled water projects.

5.4 Water Quality Impacts on Reliability

Law

10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

Currently, the Agency water supply is solely provided by the State Water Project, and its water quality is maintained and governed by the standards established by the Department of Water Resources. As such, the Agency does not expect fluctuation in the water quality that will affect agency water management strategies. See **Appendix I** for the DWR Sanitary Survey Update Report 2001 information and DWR website for State Water Project water quality information.

5.5 Frequency and Magnitude of Supply Deficiencies

The current and future supply projections through 2030 are shown in the above **Table 6**. The future supply projections assume normal inflows from the Sacramento Delta for the SWP. See **Figure 1** for SWP delivery reliability.

According to SWP Delta Table A Delivery Reliability Probability for Year 2009, AVEK is projected to receive an average delivery of 62% of full Table A under current conditions. The percentage of SWP Table A amounts projected to be available is referenced from the *ContractorDRR_2009_rev080510.xlsx* spreadsheet available on the DWR website[1]. AVEK has used the lowest allocation of 12% from the spreadsheet, which includes revised current demands, for calculation of AVEKs single dry year supplies. The multiple dry year demand was based on the 4-year drought values also presented in the spreadsheet. Based on the SWP allotment for AVEK, 62% of full delivery translates to about 87,668 acre-feet of water per year. For the remainder of this study, the value of 87,688 ac-ft will be defined as the baseline supply for a probable year.

5.6 Reliability Comparison

Table 8 details estimated water supply projections associated with several water supply reliability scenarios. Table 8 includes only water supply from the State Water Project and does not consider use of banked water to supplement supplies. Multiple-year drought periods correspond with the with the lowest water deliveries that were available from DWR. For further information on the data, see **Section 6, Demand Management Measures**.

Table 8
Supply Reliability

Unit of Measure: Acre-feet/Year		Multiple Dry Water Years			
Probable Water	**Single Dry Water**	**Year 1**	**Year 2**	**Year 3**	**Year 4**

[1] http://baydeltaoffice.water.ca.gov/swpreliability/index.cfm

Year	Year				
87,668	17,000	44,900	51,300	51,800	44,400
% of Normal Year	**19%**	**51%**	**58%**	**59%**	**51%**

Table 9 Basis of Water Year Data[4]	
Water Year Type	**Base Year(s)**
Probable Water Year	**(see footnote)**
Single Dry Year	**1977**
4-Year	**1931-1934**

[4] A probable water year scenario is defined as 62% of the full SWP allocation (141,400 ac-ft), or 87,668 ac-ft per historical reliability (**Fig.1**). This value coincides with the average percent of SWP allocation delivered as predicted in the *ContractorDRR_2009_rev080510.xlsx* spreadsheet provided by DWR. The model assumes parties entitled to SWP water have adequate storage for capturing excess supplies during wet years. Actual volume of water available may be less if adequate storage is not available. Single and Multiple Dry Years data are cited from the spreadsheet.

5.7 Water Shortage Assessment Plan

Law

> *10635 (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from the state, regional, or local agency population projections within the service area of the urban water supplier.*

5.7.1 Projected Water Supply and Demand

The following compares current and projected water supply and demand. This information is based on continued commitment to conservation programs, conjunctive use programs and use of groundwater and recycled water, by the water purveyors. Probable supply totals for the year 2015 are based on the Agency receiving 62% of its delivery amount from the State Water Project, which is about 87,688 acre-feet of water per year. Additional supply of 20,000 AFY is projected to be available from water banking projects on a limited basis.

Active water efficiency improvements and additional water supply will be necessary to meet the Agency's projected water demand. The Agency will continue to examine supply enhancement options, such as groundwater recharge for Antelope Valley and conjunctive water use as discussed in **Section 1.2.1, Interagency Coordination**.

Projected demand totals are calculated based on projected populations. The following tables will are based on demand projections from **Table 4**. Supply projections are taken from **Table 6**, with additional 20,000 AFY of banked water.

Table 10 Supply and Demand Comparison – Normal Year				
	2015	**2020**	**2025**	**2030**
Supply totals (Table 6)	107,688	107,688	107,688	107,688
Demand Totals	91,075	92,828	94,530	96,558

Difference (Shortfall)	16,593	14,840	13,138	11,110
Difference as % of supply	15.4%	13.8%	12.2%	10.3%
Difference as % of demand	18.2%	16.0%	13.9%	11.5%

The comparison of the projected probable year supply and demand indicates that sufficient supplies are available to meet demand through 2030 in a normal year. These projections assume that the new water banking programs will have sufficient water in storage to provide up to 20,000 AFY.

5.7.2 Projected Single Dry Year Supply and Demand Comparison

Table 11
Projected Single Dry Water Year Supply AF/Y

	2010	2015	2020	2025	2030
Supply totals	17,000	37,000	37,000	37,000	37,000
% of SWP Full Allotment	19%	19%	19%	19%	19%

The projected single dry water year percentages in **Table 11** are based on the minimum delivery by the DWR as reported in the spreadsheet *ContractorDRR_2009_rev080510.xlsx*, supplemented by 20,000 AFY of recovered banked groundwater beginning in 2015.

Table 12 compares projected single dry year supply with demand. **Table 12** assumes availability of 20,000 AFY of banked groundwater to supplement deliveries from the State Water Project.

Table 12
Projected Single Dry Year Supply and Demand Comparison AF/Y

	2015	2020	2025	2030
Supply totals	37,000	37,000	37,000	37,000
Demand totals	91,075	92,828	94,530	96,558
Difference (shortfall)	(54,075)	(55,828)	(57,530)	(59,558)
Difference as % Supply	-146.1%	-150.9%	-155.5%	-161.0%
Difference as % Demand	-59.4%	-60.1%	-60.9%	-61.7%

This comparison indicates a shortfall during a single dry year.

In any dry year, the Agency will notify its customers of the potential water shortage for the year.

It is up to the purveying customers of AVEK to direct rationing program and policies to consumers. Therefore, expected changes to demand due to dry years will be provided by the purveying customers.

5.7.3 Projected Multiple Dry Year Supply and Demand Comparison

Table 13 identifies the projected minimum water supply based on the four-year drought historic sequence for water supply as presented in the spreadsheet *ContractorDRR_2009_rev080510.xlsx*. Supply totals assume the availability of 20,000 AFY of supplemental supply from banking projects.

Table 13
Supply and Demand Comparison – Multiple Dry-year Events

		2015	2020	2025	2030
Multiple Dry-Year First Year Supply	Supply Totals	65,587	65,587	65,587	65,587
	Demand Totals	91,075	92,828	94,530	96,558
	Difference (Shortfall)	(25,488)	(27,240)	(28,943)	(30,970)

	Difference as % Supply	-38.9%	-41.5%	-44.1%	-47.2%
	Difference as % Demand	-28.0%	-29.3%	-30.6%	-32.1%
Multiple Dry Year Second Year Supply	Supply Totals	70,847	70,847	70,847	70,847
	Demand Totals	91,075	92,828	94,530	96,558
	Difference (Shortfall)	(20,228)	(21,980)	(23,683)	(25,710)
	Difference as % Supply	-28.6%	-31.0%	-33.4%	-36.3%
	Difference as % Demand	-22.2%	-23.7%	-25.1%	-26.6%
Multiple Dry Year Third Year Supply	Supply Totals	72,601	72,601	72,601	72,601
	Demand Totals	91,075	92,828	94,530	96,558
	Difference (Shortfall)	(18,474)	(20,227)	(21,929)	(23,957)
	Difference as % Supply	-25.4%	-27.9%	-30.2%	-33.0%
	Difference as % Demand	-20.3%	-21.8%	-23.2%	-24.8%

This comparison is based on current usage patterns by the retail purveyors and agriculture users. The short fall in supply does not take into account the reliability of other sources available to water purveyors, such as their use of groundwater, future groundwater banking programs, future conservation efforts, and use of recycled water.

Potential increases in supply in future years depends upon the ability to store sufficient water in new water banks to provide for withdrawals during dry years.

It is up to the purveying customers of AVEK to direct rationing program and policies to their consumers. Therefore, expected changes to demand due to dry years will be provided by the purveying customers. The development and use of other water sources, such as groundwater, conjunctive uses, the use of recycled water, and the storage of Article 21 water when available, are essential measures necessary to meet long-term demands.

5.7.3.1 Three Year Minimum Water Supply Alert

Based on experiences during reductions of State Water Project water, AVEK recognizes that it is better to enter into a water shortage alert early, to establish necessary programs and policies, to gain public support and participation, and to reduce the likelihood of more severe shortage levels later. Improved water use efficiency does mean that water supply reserves must be larger since water use efficiency improvements will be minimal. Water shortage responses must be made early to prevent severe economic and environmental impacts.

In May of each year, the Agency forecasts the minimum water supply availability for its water, and projects its total water supply for the current and three subsequent years. Based on the water shortage, a water shortage condition may be declared. Because shortages can have serious economic and environmental impacts, the Agency will make every effort to provide accurate predictions of water shortages.

5.8 Factors Resulting in Inconsistency of Supply

The likeliest interruptions would be:

1. Reduction of annual SWP allocation due to low precipitation.
2. Reduction in conveyance of annual SWP allocation due to regulatory restrictions in the Delta.
3. A result of loss of power or facility failure in the aqueduct.
4. Failure of Delta levee system.
5. Earthquake
6. Power loss

Response by the agency to any of the above factors will always include contact and coordination with AVEKs customers. Additionally, in the event of power loss AVEK has permanent emergency power

generation that automatically starts to maintain water treatment operations. In the event of an earthquake, AVEK personnel will survey and assess damage and respond accordingly with shutdowns and repairs.

5.9 Transfer or Exchange Opportunities

Law

10631 (d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

5.9.1 Water Transfers

The Agency has in past explored and implemented dry year water transfer options to increase reliability. For example, additional water was acquired by AVEK in 2001; AVEK purchased 3,000 acre-feet of Table A water from Tulare Lake Irrigation District. It is estimated that additional water could be purchased by the Agency as emergency water supply if requested by water purveyors. Other sources of water available to AVEK include the turnback pool, Article 21, and dry-year purchase programs; water that could be acquired for customer use.

Section 6 Demand Management Measures

Law

> *10631 (f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:*
> *(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:*

AVEK is committed to implementing water conservation and this Section discusses AVEK's water conservation efforts.

For responding to the Urban Water Management Planning Act, the Agency will provide documentation for DMM's C, D, J, K, and L. The Agency describes their present and proposed future measures, programs, and policies to help achieve the water use reductions. The Agency has, in good faith, tried to address and comply with all of the BMP targets listed in the California Urban Water Conservation Council (CUWCC) Memorandum of Understanding (MOU) where applicable, even though the Agency is not signatory to the MOU regarding Urban Water Conservation or a member of CUWCC.

DMM C – System Water Audits, Leak Detection and Repair

IMPLEMENTATION DESCRIPTION: AVEK has no formal leak detection or pipeline survey program. AVEK does however audit system losses monthly as part of its normal billing procedures. Pipelines are driven regularly as part of water sample runs during which personnel will note leaks if observed. System losses of less than 3% of total deliveries are considered within the margin of error and normal. The agency repairs leaks promptly on average about twice per year. Below is a table of results.

Results	2006	2007	2008	2009	2010
% of Unaccounted Water	2.2	3.7	3.3	6.1	2.2
Miles Surveyed	100	100	100	100	120
Miles Repaired	<1	<1	<1	<1	<1
Actual Expenditures - $	10,000	10,000	10,000	10,000	15,000
Actual Water Saved - AF/Y	<1	<1	4	4	4

DMM D – Metering with Commodity Rates

IMPLEMENTATION DESCRIPTION: The Agency charges all water purveyor customers based on metered readings and established rate schedules developed by the Agency. All current and new connections including temporary connections are required to be metered and billed per volume-of-use. AVEK has never operated unmetered connections. Additionally, existing meters are checked on a regular basis for leaks and accuracy.

DMM J – Wholesale Agency Programs

IMPLEMENTATION DESCRIPTION: AVEK is a wholesale agency for water and the DMMs are identified and discussed in this section.

Existing Programs	Number of agencies assisted/Estimated AF per Year Savings					
Program Activities	2005	2006	2007	2008	2009	2010
Water Surveys	0/0	0/0	0/0	0/0	0/0	0/0
Residential Retrofit	0/0	0/0	0/0	0/0	0/0	0/0
System Audits	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000
Metering-Commodity Rates	55/55	55/55	55/55	55/55	55/55	55/55
Landscape Programs	0/0	0/0	0/0	0/0	1/100	1/100
Washing Machines	0/0	0/0	0/0	0/0	0/0	0/0
Public Information	1/10	1/10	1/10	1/10	2/50	2/50
School Education	0/0	0/0	0/0	0/0	0/0	1/10
Water Waste	0/0	0/0	0/0	0/0	0/0	0/0
CII WC / ULF	0/0	0/0	0/0	0/0	0/0	0/0
Pricing	0/0	0/0	0/0	0/0	0/0	0/0
WC Coordinator	0/0	0/0	0/0	0/0	20/20	20/50
ULFT Replacement	0/0	0/0	0/0	0/0	0/0	0/0
Actual Expenditures - $	$13,000	$13,000	$13,000	$13,000	$18,000	$20,000

Planned Programs	No. of agencies to be assisted/ Est AF per Year Savings				
Program Activities	2011	2012	2013	2014	2015
Water Surveys	0/0	0/0	0/0	0/0	0/0
Residential Retrofit	0/0	0/0	0/0	0/0	0/0
System Audits	1/1000	1/1000	1/1000	1/1000	1/1000
Metering-Commodity Rates	55/55	55/55	55/55	55/55	55/55
Landscape Programs	1/100	1/100	1/100	1/100	1/100
Washing Machines	0/0	0/0	0/0	0/0	0/0
Public Information	2/50	2/50	2/50	2/50	2/50
School Education	1/10	1/10	1/10	1/10	1/10
Water Waste	0/0	0/0	0/0	0/0	0/0
CII WC / ULF	0/0	0/0	0/0	0/0	0/0
Pricing	N/A	N/A	N/A	N/A	N/A
WC Coordinator	20/50	20/50	20/50	20/50	20/50
ULFT Replacement	0/0	0/0	0/0	0/0	0/0
Estimated Expenditures - $	$20,000	$20,000	$25,000	$25,000	$25,000

DMM K – Conservation Pricing

IMPLEMENTATION DESCRIPTION: AVEK does not have a conservation pricing structure. AVEK maintains a standard pricing structure to all water purveyor customers regardless of water usage but does have water pricing structures that include variations in pricing based on time of year (winter versus summer). The winter versus summer pricing is to encourage use of AVEK imported water during the off peak time of year instead of purveyors using groundwater. AVEK does not provide sewer service.

Table K2 - WHOLESALERS	
Water Rate Structure	None
Year rate effective	N/A

6.1 Agricultural Water Conservation Programs

AVEK does not implement any agricultural water conservation programs, but encourages their agricultural customers to participate in water conservation.

6.2 Planned Future Supply Projects

AVEK does not currently have any planned future projects to increase water supply.

Non-implemented & Not scheduled DMM / Planned Water Supply Project Name	Per-AF Cost ($)
N/A	

6.3 Development of Desalinated Water

Due to the Agency's distance from coastal areas, AVEK does not have the opportunity to implement a desalination program.

APPENDIX A

- **LIST OF GROUPS WHO PARTICIPATED IN THE DEVELOPMENT OF THIS PLAN**
- **NOTIFICATION LETTER**
- **NOTIFICATION LIST**

List of Groups Who Participated In the Development Of This Plan

AVEK board members and staff
Retail water purveyor customers
Members of the public, advisory groups, etc

Notification Letter

To: AVEK UWMP Notification List

Re: AVEK DRAFT Urban Water Management Plan 2010

Antelope Valley – East Kern Water Agency (AVEK) has updated their Urban Water Management Plan (UWMP) for 2010 and has set a Public Hearing for June 20, 2011 in the consideration of its adoption. AVEK has actively encouraged community participation in its urban water management planning efforts by encouraging attendance and participation in the Board of Directors (BOD) public meetings held twice each month.

This Public Hearing on June 20, 2011 will offer the opportunity for you and/or your agency to submit comments on the draft plan before AVEK BOD approval. To assist with this, AVEK has posted the Draft UWMP 2010 on our website for public access and review at: www.avek.org/uwmp.html.

Public Hearing Information:
AVEK Public Hearing – UWMP 2010
June 20, 2011 6:30 PM
AVEK Administration Building, Board Room
6500 West Avenue N
Palmdale, Ca 93551

If you would like to submit comments on the plan prior to the Public Hearing on June 20, 2011, you may do so by contacting Tom Barnes at AVEK (see below). Please have all comments submitted by 5:00 PM on June 20, 2011.

Comments:
Tom Barnes
661-943-3201 Phone
661-943-3204 Fax
tbarnes@avek.org

Thank you,

AVEK Water Agency

UWMP Notification List:

City of California City
21000 Hacienda Blvd.
California City, CA 93505

City of Lancaster
Public Works
44933 Fern Avenue
Lancaster, CA 93534

Los Angeles County
Department of Public Works
P. O. Box 7508
900 S. Fremont Avenue
Alhambra, CA 91802

Supervisor Michael D. Antonovich
Antelope Valley Field Office
113 W. Avenue M-4 Suite A
Palmdale, CA 93551

City of Palmdale
Public Works
38250 N. Sierra Highway
Palmdale, CA 93550

Building Industry Association
43423 Division Street, Suite 401
Lancaster, CA 93535

Kern County Planning Department
2700 "M" Street
Bakersfield, CA 93301

Billiton Exploration U.S.A.
PO Box 576
Room 4156
Houston, TX 77001-0576

Boron CSD
PO Box 1060
Boron, CA 93596

Desert Lake CSD
PO Box 567
Boron, CA 93596

Desert Sage Apartments
1101 Salisbury
La Canada, Ca. 91011

Edgemont Acres MWC
PO Box 966
North Edwards, CA 93523-0966

Edwards AFB (Main Base)
95 CEG/CERF – Main Base Water Delivery
225 N. Rosamond Blvd, Building 3500
Edwards AFB, CA 93524

Edwards AFB (Phillips Lab)
95 CEG/CERF – Propulsion Lab Water
225 N. Rosamond Blvd, Building 3500
Edwards AFB, CA 93524

FPL Energy
41100 Highway 395
Boron, CA 93516

Mojave Public Utility District
15844 K Street
Mojave, CA 93501

Rosamond CSD
3179 35th Street West
Rosamond, CA 93560

Rio Tinto Minerals/US Borax
14486 Borax Rd
Boron, CA 93516

Antelope Valley Country Club
39800 Country Club Dr
Palmdale, CA 93551

California Water Service Co
Antelope Valley District
5015 West Avenue L-14
Quartz Hill, CA 93536

El Dorado MWC
PO Box 900519
Palmdale, CA 93590

Landale MWC (Operated by California Water Service Co)
PO Box 5808
Lancaster, CA 93539

Palmdale Water District
2029 East Avenue Q
Palmdale, CA 93550

Palm Ranch Irrigation District
4871 West Avenue M (Columbia Way)
Quartz Hill, CA 93536

Quartz Hill Water District
PO Box 3218
Quartz Hill, CA 93586

Shadow Acres MWC
PO Box 900669
Palmdale, CA 93590

Sunnyside Farms MWC
PO Box 901025
Palmdale, CA 93590

Westside Park MWC
40317 11th Street West
Palmdale, CA 93551-3024

White Fence Farms MWC
41901 20th Street West
Palmdale, CA 93551

White Fence Farms MWC #3
2606 West Avenue N-8
Palmdale, CA 93551

Los Angeles County Waterworks Districts
PO Box 7508
Alhambra, CA 91802-7508

Lake Elizabeth MWC
14960 Elizabeth Lake Rd
Elizabeth Lake, CA 93532

APPENDIX B

- **RESOLUTION R-11-09: TO ADOPT THE 2010 URBAN WATER MANAGEMENT PLAN**
- **ORDINANCE O-07-2: AVEK WATER SHORTAGE CONTINGENCY PLAN**

RESOLUTION R-11-09: ADOPTION OF THE URBAN WATER MANAGEMENT PLAN

ANTELOPE VALLEY-EAST KERN WATER AGENCY

RESOLUTION NO. R-11-09
TO ADOPT THE 2010 URBAN WATER MANAGEMENT PLAN

The Board of Directors of the Antelope Valley-East Kern Water Agency ("AVEK") do hereby resolve as follows:

I.
RECITALS

WHEREAS, the Antelope Valley-East Kern Water Agency was formed in 1959 by an act of the State Legislature. AVEK's powers, duties, authorities and other matters are set forth in its enabling act, which is codified at California Water Code, Uncodified Acts, Act 9095 (the "AVEK Enabling Act"); and

WHEREAS, AVEK's jurisdictional boundaries cover portions of three counties, Los Angeles, Ventura County and Kern County, and is more particularly described in Appendix E in the 2010 Urban Water Management Plan ("AVEK's Jurisdictional Boundaries"); and

WHEREAS, AVEK was formed for the purpose of providing water received from the State Water Project ("SWP") as a supplemental source of water to retail water purveyors and other water interests within AVEK's Jurisdictional Boundaries on a wholesale basis; and

WHEREAS, in order to effectuate the above-referenced purpose, AVEK, among other things, entered into a contract with the Department of Water Resources ("DWR"), which operates the SWP, in order for AVEK to receive water from the SWP ("SWP Water"); and

WHEREAS, AVEK has entered into contracts with various retail purveyors and other water interests in AVEK's Jurisdictional Boundaries that govern AVEK's delivery of SWP Water to those purveyors and other water interests (the "AVEK's Water Supply Contracts"). Article 19 in those contracts provide that "substantial uniformity" in those contracts is "desirable" and that AVEK will "attempt to maintain such uniformity" between such contracts; and

WHEREAS, AVEK does not provide SWP Water directly to any person or entity for domestic or municipal purposes; and

WHEREAS, AVEK does not own or operate any facilities that can produce reclaimed water from any area in AVEK's Jurisdictional Boundaries, and neither does AVEK possess any contractual right or matured water right to produce such waters; and

WHEREAS, the Urban Water Management Planning Act, California Water Code Section 10610 *et seq.* ("UWMP Act"), mandates that every supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre feet of water annually, prepare an Urban Water Management Plan; and

WHEREAS, the UWMP Act further provides that such plans shall be periodically reviewed and normally updated by the supplier once every five years no later than December 31st of each calendar year ending in zero and five; and

WHEREAS, State Law has extended the deadline for the 2010 UWMP to July 1, 2011; and

WHEREAS, AVEK has reviewed and updated its UWMP based on the impacts of the State Water Project reliability presented in the Department of Water Resources' 2009 State Water Project Reliability Report; and

WHEREAS, AVEK has circulated drafts of its proposed 2010 Urban Water Management Plan ("2010 UWMP") to the public for review and comment; and

WHEREAS, AVEK's Board of Directors ("AVEK Board") held a duly noticed public hearing on its proposed 2010 UWMP on June 20, 2011; and

WHEREAS, the AVEK Board received no written or verbal comment from the public or others concerning its proposed 2010 UWMP; and

WHEREAS, AVEK retained technical and legal consultants to provide expert assistance concerning its 2010 UWMP; and

WHEREAS, AVEK has adopted Ordinance No. O-07-2 that adopts a water shortage contingency plan.

II.
FINDINGS

THEREFORE, AVEK finds as follows:

1. AVEK's 2010 UWMP complies with all applicable laws and regulations, including but not limited to the UWMP Act, the AVEK Enabling Act, and the Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan issued by the DWR and dated March 2011.

2. AVEK's 2010 UWMP is consistent with the intent and terms of the AVEK's Water Supply Agreements.

3. The AVEK Board's adoption of the 2010 UWMP is supported by substantial evidence, which evidence is contained in the administrative record received by the AVEK Board for this matter.

4. Each of the recitals contained in this Resolution is approved as a finding of fact.

III.

ADOPTION OF 2010 UWMP

THEREFORE, be it resolved and ordained by the AVEK Board as follows:

1. The 2010 UWMP is approved and adopted. The President of the AVEK Board authorized and directed to file the 2010 UWMP with the entities specified in the UWMP Act by the dates specified therein.

ADOPTED this 20th day of June, 2011, by the following vote:

AYES:	NOES:	ABSENT:	ABSTAIN:
7	0	0	0

George M. Lane
President of the Board of Directors
Antelope Valley-East Kern Water Agency

ATTEST: _____
Agency Secretary

ORDINANCE O-07-2: AVEK WATER SHORTAGE CONTINGENCY PLAN

ANTELOPE VALLEY-EAST KERN WATER AGENCY
ORDINANCE NO. O-07-2

AN ORDINANCE OF THE ANTELOPE VALLEY-EAST KERN WATER AGENCY TO ADOPT A WATER SHORTAGE CONTINGENCY PLAN

WHEREAS, the Board of Directors of the Antelope Valley-East Kern Water Agency ("AVEK") hereby finds:

I.
RECITALS

WHEREAS, the Antelope Valley-East Kern Water Agency was formed in 1959 by an act of the State Legislature. AVEK's powers, duties, authorities and other matters are set forth in its enabling act, which is codified at California Water Code, Uncodified Acts, Act 9095 (the "AVEK Enabling Act"); and

WHEREAS, AVEK's jurisdictional boundaries cover portions of three counties, Los Angeles, Ventura County and Kern County, and is more particularly described in Appendix E in the 2005 Urban Water Management Plan ("AVEK's Jurisdictional Boundaries"); and

WHEREAS, AVEK was formed for the purpose of providing water received from the State Water Project ("SWP") as a supplemental source of water to retail water purveyors and other water interests with AVEK's Jurisdictional Boundaries on a wholesale basis; and

WHEREAS, in order to effectuate the above-referenced purpose, AVEK, among other things, entered into a contract with the Department of Water Resources ("DWR"), which operates the SWP, in order for AVEK to receive water from the SWP ("SWP Water"); and

WHEREAS, AVEK has entered into contracts with various retail purveyors and other water interests in AVEK's Jurisdictional Boundaries that govern AVEK's delivery of SWP Water to those purveyors and other water interests (the "AVEK's Water Supply Contracts"). Article 19 in those contracts provides that "substantial uniformity" in those contracts is "desirable" and that AVEK will attempt to maintain such "uniformity" between such contracts; and

WHEREAS, AVEK does not provide SWP Water directly to any person or entity for domestic or municipal purposes; and

WHEREAS, AVEK does not own or operate any facilities that can produce reclaimed water or native groundwater from any area in AVEK's Jurisdictional Boundaries, and neither does AVEK possess any contractual right or matured water right to produce such waters; and

WHEREAS, the Urban Water Management Planning Act, California Water Code Section 10610 *et seq.* ("UWMP Act") provides that urban water management plans shall include a resolution or ordinance by the supplier that sets forth a water shortage contingency plan; and

WHEREAS, Section 61.1 of t he AVEK Enabling Act sets forth guiding principles for AVEK's distribution of SWP Water, which principles can be drawn upon in allocating such water in times of shortage (the provisions of Section 61.1 of the AVEK Enabling Act are set forth in Exhibit A to this Ordinance); and

WHEREAS, real property related taxes have been paid to AVEK since 1959 by entities in AVEK's Jurisdictional Boundaries.

WHEREAS, AVEK has circulated drafts of its proposed 2005 UWMP and the water shortage contingency plan set forth in this Ordinance ("WSC Plan") to the public for review and comment; and

WHEREAS, AVEK's Board of Directors ("AVEK Board") held duly noticed public hearings on its proposed 2005 UWMP on November 15, 2005 and December 20, 2005, and a public meeting on the WSC Plan on December 20. 2005; and

WHEREAS, the AVEK Board received written and verbal testimony and evidence from the public and others concerning its proposed 2005 UWMP and WSC Plan.

II.
FINDINGS

THEREFORE, AVEK finds as follows:

1. AVEK finds that there is a need to adopt a water shortage contingency plan given, among other things, the requirements of the UWMP Act and the potential that the amount of SWP Water made available to AVEK by DWR may not satisfy the demands for SWP Water by AVEK's customers (even though such demand for SWP water has only exceeded the available supply of SWP Water once since AVEK was formed).

2. The WSC Plan complies with all applicable laws and regulations, including but not limited to the UWMP Act, the AVEK Enabling Act, and the Guidebook to Assist Water Suppliers in the Preparation of a 2005 Urban Water Management Plan issued by

DWR and dated as of January 18, 2005.

3. AVEK finds that the WSC Plan is fair and equitable.

4. The WSC Plan is consistent with the intent and terms of the AVEK's Water Supply Agreement and the AVEK Enabling Act.

5. Each of the recitals contained in the Ordinance is approved as a finding of fact.

III.
ADOPTION OF WATER SHORTAGE CONTINGENCY PLAN

Therefore, be it resolved and ordained by the AVEK Board as follows:

1. AVEK adopts a WSC Plan that would be implemented when the aggregate amount of SWP Water reasonably ordered by AVEK's customers in any water year exceeds the amount of SWP Water that DWR makes available to AVEK on that same water year (a "SWP Water Shortage Year"). When that contingency occurs (which contingency will be deemed to occur under both stages listed in Appendix 1 hereto), AVEK plans to allocate that amount of available SWP Water as follows:

(a) The available SWP Water shall first be allocated per each county (the "County Allocation of SWP Water") in AVEK's Jurisdictional Boundaries based on a running historical average of the amount of taxes paid to AVEK by entities in each particular county since the formation of AVEK in 1959. (Attached as Exhibit B to this Ordinance is the historical amount of such taxes paid by county through June 30, 2005.) AVEK shall annually update and publish that running historical average of taxes paid to AVEK by county.

(b) Each County's Allocation of SWP Water shall be further allocated to each AVEK customer within that particular county based on its average annual percentage of SWP Water received in the two water years prior to the SWP Water Shortage Year relative to the amount of SWP Water received by all other AVEK customers in that particular county in those two prior water years. (For illustrative purposes, attached as Exhibit C to this Ordinance is a list of such relative percentages by AVEK customers by county for 2004.)

(c) In determining the amount of SWP Water that should be delivered by AVEK to any customer in any SWP Water Shortage Year, AVEK will fill orders for SWP Water that will be used by the AVEK customer(s) for consumptive or agricultural uses in

that same water year prior to filling any order for SWP Water that would be used by an AVEK customer for banking or storage purposes.

(d) AVEK reserves the right to allocate SWP Water that it receives from DWR in a SWP Water Shortage Year in a manner that differs from the provisions of this WSC Plan based on a finding by the AVEK Board of unique or unusual circumstances or needs.

This Ordinance shall be in full force and effect upon the date of adoption, and shall be published in full in a newspaper of general circulation within ten (10) days from the date of adoption.

Passed and adopted this 19th day of June, 2007, by the following vote:

AYES: 6 **NOES:** 0 **ABSENT:** 1 **ABSTAIN:** 0

Andy D. Rutled, President
Board of Directors
Antelope Valley-East Kern Water Agency

ATTEST: _____ **Agency Secretary**

EXHIBIT A

§ 61.1 Distribution and apportionment of water purchased from State, etc. The agency shall whenever practicable, distribute and apportion the water purchased from the State of California or water obtained from any other source as equitably as possible on the basis of total payment by a district or geographical area within the agency regardless of its present status, of taxes, in relation that such payment bears to the total taxes and assessments collected from all other areas. It is the intent of this section to assure each area or district its fair share of water based upon the amounts paid into the agency, as they bear relation to the total amount collected by the agency.

EXHIBIT B

AVEK Water Agency
Taxes Collected from Inception through 06/30/07

Description	Los Angeles City Taxes collected by Fiscal Year	Kern City Taxes collected by Fiscal Year	Ventura County Taxes collected by Fiscal Year	TOTALS
FYE 06/30/1961	58,306.69	20,846.13		79,152.82
FYE 06/30/1962	55,138.24	19,372.90		74,511.14
FYE 06/30/1963	156,220.27	53,906.15		210,126.42
FYE 06/30/1964	221,396.82	81,444.27		302,841.09
FYE 06/30/1965	174,560.93	69,835.70		244,396.63
FYE 06/30/1966	195,498.90	87,105.93		282,604.83
FYE 06/30/1967	417,054.54	234,620.40	201.75	651,876.69
FYE 06/30/1968	787,195.00	371,132.00	3,066.00	1,161,393.00
FYE 06/30/1969	969,673.00	396,253.00	3,319.00	1,369,245.00
FYE 06/30/1970	1,227,662.00	547,964.00	4,642.00	1,780,268.00
FYE 06/30/1971	1,233,111.00	600,115.00	3,556.00	1,836,781.00
FYE 06/30/1972	1,825,460.00	854,406.00	4,560.00	2,684,426.00
FYE 06/30/1973	1,848,561.00	862,025.00	2,512.00	2,713,098.00
FYE 06/30/1974	2,047,586.00	808,490.00	2,309.00	2,858,385.00
FYE 06/30/1975	2,586,924.00	890,533.00	9,396.00	3,486,853.00
FYE 06/30/1976	2,029,787.00	862,676.00	3,821.00	2,896,284.00
FYE 06/30/1977	1,720,809.00	721,466.00	3,770.00	2,446,045.00
FYE 06/30/1978	1,607,795.00	774,212.00	5,121.00	2,387,118.00
FYE 06/30/1979	1,784,843.00	997,363.00	8,663.00	2,785,869.00
FYE 06/30/1980	4,171,081.00	892,189.00	3,511.00	5,066,781.00
FYE 06/30/1981	4,995,491.00	1,351,056.00	4,834.00	6,351,381.00
FYE 06/30/1982	3,115,496.00	1,222,927.00	6,544.00	4,344,967.00
FYE 06/30/1983	4,311,370.00	1,722,635.00	8,196.00	6,042,201.00
FYE 06/30/1984	6,689,690.00	1,501,127.00	4,279.00	7,195,096.00
FYE 06/30/1985	9,769,574.00	3,575,437.00	18,208.00	13,363,219.00
FYE 06/30/1986	12,776,020.00	3,633,507.00	13,154.00	16,422,681.00
FYE 06/30/1987	12,790,938.00	3,073,226.00	10,767.00	15,874,931.00
FYE 06/30/1988	12,076,802.00	2,805,666.00	5,427.00	14,887,895.00
FYE 06/30/1989	13,700,634.00	2,928,709.00	48,066.00	16,677,409.00
FYE 06/30/1990	16,337,060.00	2,924,143.00	3,950.00	19,313,153.00
FYE 06/30/1991	14,757,446.00	3,236,690.00	0	17,994,136.00
FYE 06/30/1992	14,730,586.00	2,987,854.00	722.00	17,719,164.00
FYE 06/30/1993	14,796,789.00	2,595,327.00	722.00	17,391,838.00
FYE 06/30/1994	10,374,628.00	2,408,372.00	732.00	12,783,830.00
FYE 06/30/1995	11,757,693.00	2,215,878.00	747.00	13,974,218.00
FYE 06/30/1996	11,706,148.00	1,445,898.00	730.00	13,151,776.00
FYE 06/30/1997	9,078,884.00	1,843,601.00	721.00	10,923,206.00
FYE 06/30/1998	10,287,808.00	1,899,125.00	734.00	12,188,667.00
FYE 06/30/1999	8,853,825.00	2,623,064.00	674.00	11,617,563.00
FYE 06/30/2000	15,687,808.00	2,094,870.00	676.00	17,783,352.00
FYE 06/30/2001	10,233,359.00	2,184,558.00	685.00	12,418,602.00
FYE 06/30/2002	10,096,249.00	2,069,703.00	353.00	12,166,305.00
FYE 06/30/2003	10,853,001.00	3,394,512.00	269.00	14,247,782.00
FYE 06/30/2004	12,011,832.00	1,987,130.00	280.00	13,999,242.00
FYE 06/30/2005	12,276,847.00	2,290,255.00	0.00	14,566,102.00
FYE 06/30/2006	12,375,808.89	2,467,652.61	0.00	14,843,483.50
FYE 06/30/2007	12,548,965.69	2,783,514.23	260.29	15,332,740.21
FYE 06/30/2008	13,061,271.22	3,259,389.60	263.62	16,320,924.44
FYE 06/30/2009	14,880,936.81	3,615,857.26	269.44	18,277,065.51
FYE 06/30/2010	11,621,706.78	3,347,303.49	230.39	14,969,242.64
	382,601,932.76	86,383,874.67	186,040.49	448,711,847.92

EXHIBIT C

Kern County	%
Billiton Exploration U.S.A.	0.24
Boron CSD	4.66
City of California City	9.88
Desert Lake CSD	1.47
Desert Sage Apartments	0.09
Edgemont Acres MWC	0.31
Edwards AFB	37.79
Mojave Public Utility District	1.01
Rosamond CSD	17.88
US Borax	26.67

Los Angeles County	%
Antelope Valley Country Club	0.35
California Water Service Co	0.58
Landale MWC	0.13
Los Angeles County Waterworks Districts	84.98
Palm Ranch Irrigation District	0.71
Quartz Hill Water District	8.42
Shadow Acres MWC	0.61
Sunnyside Farms MWC	0.59
White Fence Farms MWC	1.71
Lake Elizabeth MWC	1.91

Appendix 1 to the Water Shortage Contingency Plan

Water Supply Shortage Stages and Conditions

Stage No.	Water Supply Conditions	% Shortage
1	Reduction in SWP Allocation Below Current Demand	1 %
2	Reduction in SWP Allocation Below Current Demand	50%

APPENDIX C

- RATE STABILIZATION FUND DISCUSSION

The Agency uses as its rate stabilization fund the Agency's reserve fund to stabilize rates during periods of water shortages or disasters affecting water supply.

Appendix D

- WATER SUPPLY CAPACITY CHARGE IMPROVEMENTS

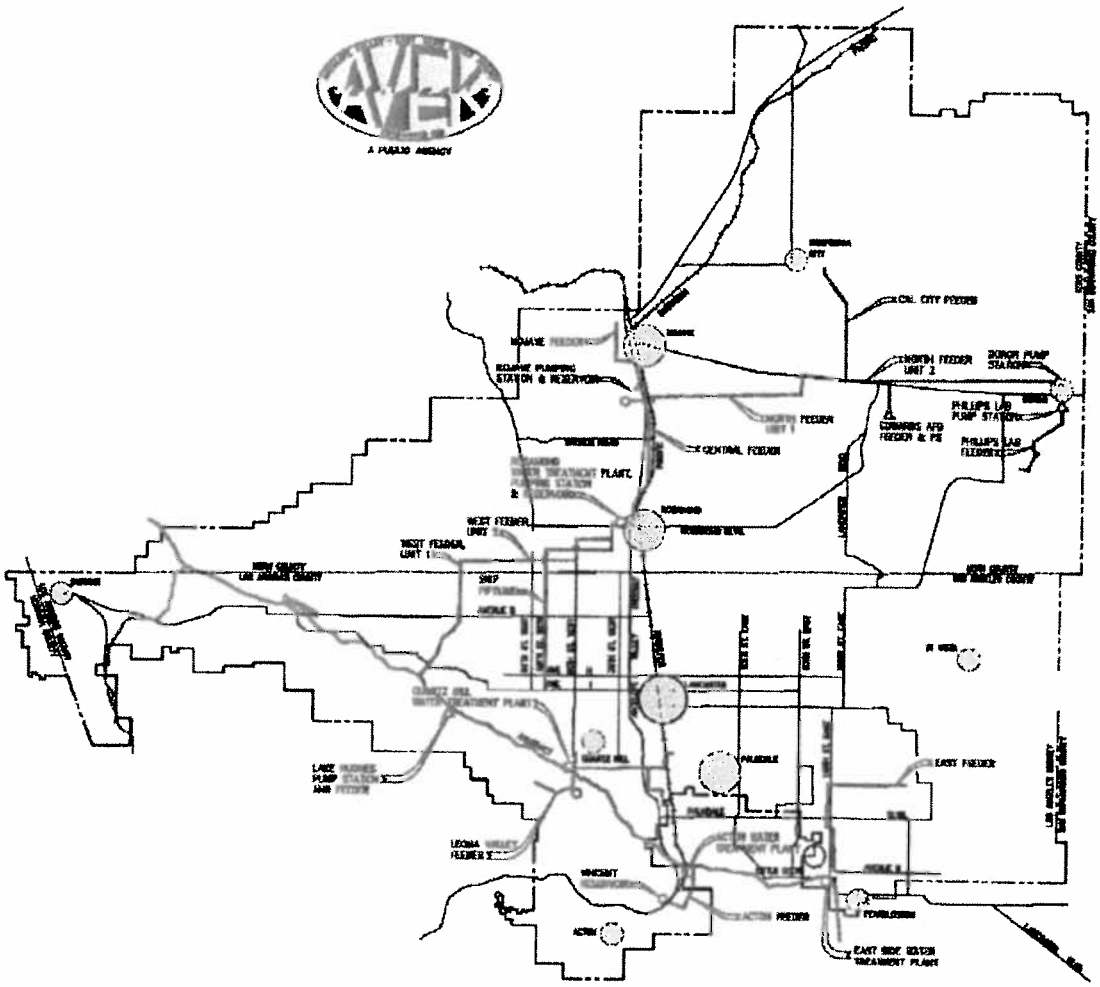
Proposed Expansions

Eastside WTP (10 mgd to 25 mgd)
QHWTP (Phase II – second 9 MG reservoir)
Acton WTP (4 mgd to 8 mgd)
Rosamond WTP (4 mgd to 8 mgd)
Westside Water Treatment Plant #1 (15 mgd)
Westside Water Treatment Plant #2 (3 mgd)
East Feeder/South Feeder – Interconnect Pipeline
East Feeder/South Feeder – Interconnect Pump Station
Mojave Pump Station Addition
QHWTP/Westside WTP #I – Interconnect Pipeline
QHWTP/Westside WTP #2 – Interconnect Pump Station
Westside WTP I Feeder Pipeline
West WTP I Feeder Pump Station
East Feeder Parallel Pipeline
Lake Hughes Feeder Parallel Pipeline
Lake Hughes Feeder Pump Station
Leona Valley Feeder Parallel Pipeline
Leona Valley Feeder Pump Station
QHWTP/RWTP Intercon. Pipeline
QHWTP/RWTP Intercon. Pump Station
Area Raw Water Turnouts, Pipelines and Basin Inlets
North Feeder Pump Station

Abbreviation Legend"
QH = Quartz Hill, R = Rosamond, WTP = Water Treatment Plant

Appendix E

- AVEK BOUNDARY LOCATION MAP



APPENDIX E

Appendix F

- MAP OF SWP
- WATER DELIVERIES TO AVEK

STATE WATER PROJECT FEATURES

AVEK's Historical SWP Deliveries

Year	Ac-Ft
1962	0
1963	0
1964	0
1965	0
1966	0
1967	0
1968	0
1969	0
1970	0
1971	0
1972	53
1973	20
1974	1,259
1975	8,068
1976	27,782
1977	11,202
1978	33,137
1979	60,493
1980	72,407
1981	79,375
1982	50,291
1983	32961
1984	32,662
1985	37,064
1986	32,449
1987	33,875
1988	34,079
1989	45,191
1990	47,206
1991	7,568
1992	28,041
1993	41,452
1994	47,663
1995	47,286
1996	56,356
1997	61,752
1998	52,926
1999	69,073
2000	84,016
2001	63,508
2002	59,888
2003	61162
2004	61252
2005	60401
2006	81485
2007	80384
2008	49821
2009	47018
2010	59674

Appendix G

- AVEK TREATED M&I CUSTOMER LIST / UWMP CONTACTED AGENCIES LIST

AVEK Treated M&I Customer List:

City of California City
21000 Hacienda Blvd.
California City, CA 93505

Billiton Exploration U.S.A.
PO Box 576
Room 4156
Houston, TX 77001-0576

Boron CSD
PO Box 1060
Boron, CA 93596

Desert Lake CSD
PO Box 567
Boron, CA 93596

Desert Sage Apartments
1101 Salisbury
La Canada, Ca. 91011

Edgemont Acres MWC
PO Box 966
North Edwards, CA 93523-0966

Edwards AFB (Main Base)
95 CEG/CERF – Main Base Water Delivery
225 N. Rosamond Blvd, Building 3500
Edwards AFB, CA 93524

Edwards AFB (Phillips Lab)
95 CEG/CERF – Propulsion Lab Water
225 N. Rosamond Blvd, Building 3500
Edwards AFB, CA 93524

FPL Energy
41100 Highway 395
Boron, CA 93516

Mojave Public Utility District
15844 K Street
Mojave, CA 93501

Rosamond CSD
3179 35th Street West
Rosamond, CA 93560

Rio Tinto Minerals/US Borax
14486 Borax Rd
Boron, CA 93516

Antelope Valley Country Club
39800 Country Club Dr
Palmdale, CA 93551

California Water Service Co
Antelope Valley District
5015 West Avenue L-14
Quartz Hill, CA 93536

El Dorado MWC
PO Box 900519
Palmdale, CA 93590

Landale MWC (Operated by California Water Service Co)
PO Box 5808
Lancaster, CA 93539

Palmdale Water District
2029 East Avenue Q
Palmdale, CA 93550

Palm Ranch Irrigation District
4871 West Avenue M (Columbia Way)
Quartz Hill, CA 93536

Quartz Hill Water District
PO Box 3218
Quartz Hill, CA 93586

Shadow Acres MWC
PO Box 900669
Palmdale, CA 93590

Sunnyside Farms MWC
PO Box 901025
Palmdale, CA 93590

Westside Park MWC
40317 11th Street West
Palmdale, CA 93551-3024

White Fence Farms MWC
41901 20th Street West
Palmdale, CA 93551

White Fence Farms MWC #3
2606 West Avenue N-8
Palmdale, CA 93551

Los Angeles County Waterworks Districts
PO Box 7508
Alhambra, CA 91802-7508

Appendix H

- ASSUMPTIONS FOR POPULATION GROWTH PROJECTIONS
- DWR SPREADSHEET ContractorDRR_2009_rev080510.XLSX PRESENTING STATE WATER SUPPLY FORECAST FOR AVEK

The population growth projections encompass water purveyors located in areas currently served by AVEK primarily around the Antelope Valley and portions of eastern Kern County. This includes the City of Lancaster, portions of the City of Palmdale, various communities in Kern County, and two unincorporated areas in Los Angeles County. Communities in Kern County include the cities of Mojave, Boron, Edwards, and Rosamond, and the Edwards Air Force Base. Unincorporated communities in Los Angeles County include Acton and Lake LA area.

The base population shown in this report is taken from years 1990 and 2000 census data provided by California Department of Finance (DoF). Documentation can be retrieved at the following web link - http://www.dof.ca.gov/HTML/DEMOGRAP/CALHIST2a.XLS.

Lancaster:
Population growth projections were based on the average growth rate of Palmdale from 2000 to 2020 as reported by Southern California Association of Government (SCAG) Documentation can be retrieved at their website - http://www.scag.ca.gov/forecast/downloads/2004GF.xls and from the Economic Roundtable Report produced by the Greater Antelope Valley Economic Alliance.

Palmdale:
Population growth projection provided by SCAG. Documentation can be retrieved at their website - http://www.scag.ca.gov/forecast/downloads/2004GF.xls and from the Economic Roundtable Report produced by the Greater Antelope Valley Economic Alliance. Since AVEK boundaries encompasses approximately 50% of the City of Palmdale, only 50% of the projected population have been included in the tables and figures of this report.

Kern County:
Data for population growth projections are also provided by the DoF. Documentation for the projections can be retrieved at their website at - www.dof.ca.gov/HTML/DEMOGRAP/DRU_Publications/Projections/P3/KERN.XLS. The DoF projections did not separate the cities mentioned above with the remaining cities in Kern County. Therefore, population growth data was extrapolated using year 2000 census data of the areas served by AVEK and the projected kern county growth rates from this DoF document. The population from this area accounts for approximately 11%-15% of the total population served by AVEK.

Los Angeles County:
Data for population growth projections are provided by the Economic Roundtable Report produced by the Greater Antelope Valley Economic Alliance. The projections did not separate the areas served by AVEK with the remaining unincorporated cities in Los Angeles County. Therefore, population growth data was extrapolated using year 2000 census data and the projected growth rate of 'Unincorporated LA County' as provided in the Economic Roundtable Report. The population from this area accounts for approximately 6%-7% of the total population base served by AVEK.

SWP Table A Deliveries for 2009 Study					Probability Curve 2009			
Year	Delivery w/o Article 56 Carryover (taf)	Article 56 Carryover (taf)	Total Table A Delivery (taf)	Percent of SWP Maximum Delivery (Table A)	Year	SWP Total Table A Delivery (taf)	Exceedence Frequency (%)	2009
1922	52.0	0.0	52.0	37%	1939	140.6	0%	99%
1923	72.9	52.0	124.9	89%	1998	129.6	1%	92%
1924	24.5	11.6	36.1	26%	1953	128.7	2%	91%
1925	57.2	0.8	58.0	41%	1938	127.6	4%	90%
1926	62.9	7.9	70.8	50%	1928	126.9	5%	90%
1927	54.2	7.4	61.6	44%	2000	126.8	6%	90%
1928	72.7	54.2	126.9	90%	2003	126.2	7%	89%
1929	37.1	10.1	47.2	33%	1923	124.9	9%	88%
1930	49.6	2.5	52.1	37%	1981	123.5	10%	87%
1931	39.9	5.0	44.9	32%	1971	123.4	11%	87%
1932	48.9	2.4	51.3	36%	1952	122.0	12%	86%
1933	49.7	2.1	51.8	37%	1996	121.6	14%	86%
1934	39.4	5.0	44.4	31%	1959	121.4	15%	86%
1935	55.8	2.7	58.4	41%	1968	121.4	16%	86%
1936	63.0	39.3	102.2	72%	1966	121.3	17%	86%
1937	62.7	28.1	90.8	64%	1957	121.1	19%	86%
1938	70.7	56.9	127.6	90%	1976	120.0	20%	85%
1939	69.9	70.7	140.6	99%	1964	119.1	21%	84%
1940	69.2	16.8	86.0	61%	1942	118.5	22%	84%
1941	62.0	18.1	80.0	57%	1997	118.0	23%	83%
1942	56.5	62.0	118.5	84%	1999	117.3	25%	83%
1943	56.2	53.3	109.5	77%	1979	117.2	26%	83%
1944	58.9	52.3	111.2	79%	1983	112.3	27%	79%
1945	52.9	6.9	59.8	42%	1975	112.2	28%	79%
1946	53.5	52.9	106.4	75%	1985	111.5	30%	79%
1947	65.2	42.7	107.9	76%	1944	111.2	31%	79%
1948	68.8	24.5	93.3	66%	1974	111.1	32%	79%
1949	72.9	9.5	82.4	58%	1943	109.5	33%	77%
1950	66.3	11.7	78.0	55%	1947	107.9	35%	76%
1951	54.5	4.1	58.6	41%	1946	106.4	36%	75%
1952	67.5	54.5	122.0	86%	1970	104.1	37%	74%
1953	61.2	67.5	128.7	91%	1962	102.6	38%	73%
1954	70.3	30.9	101.2	72%	1936	102.2	40%	72%
1955	62.9	9.7	72.6	51%	1954	101.2	41%	72%
1956	61.9	3.9	65.8	47%	1994	98.5	42%	70%
1957	59.2	61.9	121.1	86%	1984	96.4	43%	68%
1958	70.7	8.2	78.9	56%	1980	94.6	44%	67%
1959	60.2	61.2	121.4	86%	1986	93.9	46%	66%
1960	66.9	8.3	75.2	53%	1948	93.3	47%	66%
1961	58.7	9.3	67.9	48%	1969	91.9	48%	65%
1962	67.8	34.8	102.6	73%	1937	90.8	49%	64%
1963	51.6	9.4	61.0	43%	1940	86.0	51%	61%
1964	67.5	51.6	119.1	84%	1987	83.3	52%	59%
1965	52.7	20.7	73.4	52%	1949	82.4	53%	58%
1966	68.6	52.7	121.3	86%	1972	82.4	54%	58%
1967	56.4	18.9	75.3	53%	1941	80.0	56%	57%
1968	65.0	56.4	121.4	86%	1958	78.9	57%	56%
1969	70.7	21.2	91.9	65%	1950	78.0	58%	55%
1970	54.5	49.6	104.1	74%	1982	77.8	59%	55%
1971	68.8	54.5	123.4	87%	1967	75.3	60%	53%
1972	72.9	9.5	82.4	58%	1960	75.2	62%	53%
1973	49.6	10.1	59.7	42%	1965	73.4	63%	52%
1974	61.5	49.6	111.1	79%	1995	73.0	64%	52%
1975	50.7	61.5	112.2	79%	1955	72.6	65%	51%
1976	69.3	50.7	120.0	85%	1926	70.8	67%	50%
1977	7.4	9.6	17.0	12%	1961	67.9	68%	48%
1978	82.6	0.5	83.2	45%	1956	65.8	69%	47%
1979	54.6	62.6	117.2	83%	1990	65.4	70%	46%
1980	64.6	30.0	94.6	67%	1978	63.2	72%	45%
1981	60.5	63.0	123.5	87%	1927	61.6	73%	44%
1982	70.7	7.1	77.8	55%	1963	61.0	74%	43%
1983	70.7	41.6	112.3	79%	1945	59.8	75%	42%
1984	54.7	41.7	96.4	68%	1973	59.7	77%	42%
1985	56.8	54.7	111.5	79%	1951	58.6	78%	41%
1986	61.4	32.5	93.9	66%	1993	58.5	79%	41%
1987	48.8	34.5	83.3	59%	1935	58.4	80%	41%
1988	28.3	4.6	32.9	23%	1925	58.0	81%	41%
1989	49.2	2.0	51.2	36%	2002	55.7	83%	39%
1990	27.4	38.0	65.4	46%	2001	53.7	84%	38%
1991	35.7	1.7	37.3	26%	1930	52.1	85%	37%
1992	34.2	2.4	36.5	26%	1922	52.0	86%	37%
1993	56.2	2.2	58.5	41%	1933	51.8	88%	37%
1994	57.9	40.7	98.5	70%	1932	51.3	89%	36%
1995	65.0	8.0	73.0	52%	1989	51.2	90%	36%
1996	56.6	65.0	121.6	86%	1929	47.2	91%	33%
1997	61.4	56.6	118.0	83%	1931	44.9	93%	32%
1998	68.2	61.4	129.6	92%	1934	44.4	94%	31%
1999	54.2	63.0	117.3	83%	1991	37.3	95%	26%
2000	73.4	53.4	126.8	90%	1992	36.5	96%	26%
2001	43.6	10.2	53.7	38%	1924	36.1	98%	26%
2002	52.6	3.0	55.7	39%	1988	32.9	99%	23%
2003	73.5	52.6	126.2	89%	1977	17.0	100%	12%
Average	57.8	29.5	87.3	62%		87.3		62%
Maximum	73.5	70.7	140.6	99%		140.6		99%
Minimum	7.4	0.0	17.0	12%		17.0		12%

SWP Table A Deliveries for 2029 Study					Probability Curve			
Year	Delivery w/o Article 56 Carryover (taf)	Article 56 Carryover (taf)	Total Table A Delivery (taf)	Percent of Maximum Table A (141.4 taf)	Year	SWP Total Table A Delivery (taf)	Exceedence Frequency (%)	Percent of Maximum Table A (141.4 taf)
1922	90.6	0.0	90.6	64%	1983	141.4	0%	100%
1923	86.9	0.0	86.9	61%	1969	141.4	1%	100%
1924	28.3	0.0	28.3	20%	1938	141.4	2%	100%
1925	58.8	0.0	58.8	42%	1982	135.0	4%	95%
1926	73.1	0.0	73.1	52%	1958	130.3	5%	92%
1927	101.7	0.0	101.7	72%	1995	119.8	6%	85%
1928	90.7	0.0	90.7	64%	1980	117.9	7%	83%
1929	46.8	0.0	46.8	33%	1998	116.7	9%	83%
1930	58.5	0.0	58.5	41%	1956	115.8	10%	82%
1931	41.8	0.0	41.8	30%	1952	115.8	11%	82%
1932	54.5	0.0	54.5	39%	1967	115.1	12%	81%
1933	54.7	0.0	54.7	39%	1987	114.3	14%	81%
1934	45.1	0.0	45.1	32%	1997	114.3	15%	81%
1935	93.6	0.0	93.6	66%	1986	111.2	16%	79%
1936	92.7	0.0	92.7	66%	1978	110.0	17%	78%
1937	114.3	0.0	114.3	81%	1984	109.0	19%	77%
1938	141.4	0.0	141.4	100%	1941	105.8	20%	75%
1939	63.3	0.0	63.3	45%	1945	105.6	21%	75%
1940	89.7	0.0	89.7	63%	1974	104.8	22%	74%
1941	105.8	0.0	105.8	75%	1943	104.6	23%	74%
1942	90.2	0.0	90.2	64%	1951	104.5	25%	74%
1943	104.6	0.0	104.6	74%	1927	101.7	26%	72%
1944	70.8	0.0	70.8	50%	1999	100.8	27%	71%
1945	105.6	0.0	105.6	75%	1975	98.0	28%	69%
1946	83.8	0.0	83.8	59%	1970	97.4	30%	69%
1947	80.5	0.0	80.5	57%	1979	97.3	31%	69%
1948	82.5	0.0	82.5	58%	1985	95.6	32%	68%
1949	79.3	0.0	79.3	56%	1965	95.1	33%	67%
1950	83.9	0.0	83.9	59%	2002	94.7	35%	67%
1951	104.5	0.0	104.5	74%	1962	93.8	36%	66%
1952	115.8	0.0	115.8	82%	1935	93.6	37%	66%
1953	81.2	0.0	81.2	57%	1973	93.6	38%	66%
1954	82.2	0.0	82.2	58%	1993	93.1	40%	66%
1955	60.6	0.0	60.6	43%	1996	92.9	41%	66%
1956	115.8	0.0	115.8	82%	1936	92.7	42%	66%
1957	75.9	0.0	75.9	54%	2000	92.0	43%	65%
1958	130.3	0.0	130.3	92%	1964	90.9	44%	64%
1959	68.7	0.0	68.7	49%	1928	90.7	46%	64%
1960	66.3	0.0	66.3	47%	1922	90.6	47%	64%
1961	74.3	0.0	74.3	53%	1942	90.2	48%	64%
1962	93.8	0.0	93.8	66%	1940	89.7	49%	63%
1963	81.7	0.0	81.7	58%	1976	87.9	51%	62%
1964	90.9	0.0	90.9	64%	1966	87.5	52%	62%
1965	95.1	0.0	95.1	67%	1923	86.9	53%	61%
1966	87.5	0.0	87.5	62%	2003	86.6	54%	61%
1967	115.1	0.0	115.1	81%	1950	83.9	56%	59%
1968	78.3	0.0	78.3	55%	1989	83.8	57%	59%
1969	141.4	0.0	141.4	100%	1946	83.8	58%	59%
1970	97.4	0.0	97.4	69%	1971	82.9	59%	59%
1971	82.9	0.0	82.9	59%	1948	82.5	60%	58%
1972	81.3	0.0	81.3	57%	1954	82.2	62%	58%
1973	93.6	0.0	93.6	66%	1963	81.7	63%	58%
1974	104.8	0.0	104.8	74%	1972	81.3	64%	57%
1975	98.0	0.0	98.0	69%	1981	81.2	65%	57%
1976	87.9	0.0	87.9	62%	1994	81.2	67%	57%
1977	13.5	0.0	13.5	10%	1953	81.2	68%	57%
1978	110.0	0.0	110.0	78%	1947	80.5	69%	57%
1979	97.3	0.0	97.3	69%	1949	79.3	70%	56%
1980	117.9	0.0	117.9	83%	1968	78.3	72%	55%
1981	81.2	0.0	81.2	57%	1957	75.9	73%	54%
1982	135.0	0.0	135.0	95%	1961	74.3	74%	53%
1983	141.4	0.0	141.4	100%	1926	73.1	75%	52%
1984	109.0	0.0	109.0	77%	1944	70.8	77%	50%
1985	95.6	0.0	95.6	68%	1959	68.7	78%	49%
1986	111.2	0.0	111.2	79%	1960	66.3	79%	47%
1987	37.0	0.0	37.0	26%	1939	63.3	80%	45%
1988	41.9	0.0	41.9	30%	1955	60.6	81%	43%
1989	83.8	0.0	83.8	59%	1925	58.8	83%	42%
1990	27.5	0.0	27.5	19%	1930	58.5	84%	41%
1991	39.8	0.0	39.8	28%	1933	54.7	85%	39%
1992	34.1	0.0	34.1	24%	1932	54.5	86%	39%
1993	93.1	0.0	93.1	66%	1929	46.8	88%	33%
1994	81.2	0.0	81.2	57%	1934	45.1	89%	32%
1995	119.8	0.0	119.8	85%	2001	42.8	90%	30%
1996	92.9	0.0	92.9	66%	1988	41.9	91%	30%
1997	114.3	0.0	114.3	81%	1931	41.8	93%	30%
1998	116.7	0.0	116.7	83%	1991	39.8	94%	28%
1999	100.8	0.0	100.8	71%	1987	37.0	95%	26%
2000	92.0	0.0	92.0	65%	1992	34.1	96%	24%
2001	42.8	0.0	42.8	30%	1924	28.3	98%	20%
2002	94.7	0.0	94.7	67%	1990	27.5	99%	19%
2003	86.6	0.0	86.6	61%	1977	13.5	100%	10%
Average	85.7	0.0	85.7	61%		85.7		61%
Maximum	141.4	0.0	141.4	100%		141.4		100%
Minimum	13.5	0.0	13.5	10%		13.5		10%

Appendix I

- EXCERPT FROM LOS ANGELES COUNTY WATERWORKS DISTRICT RECYCLED WATER SUPPLY ASSESSMENT
- SANITARY SURVEY UPDATE REPORT 2001
- WATER QUALITY WEBSITE INFORMATION

2.3 Recycled Water Supplies

Another source of water that is available to the Antelope Valley but is not yet being utilized by the Study Area is recycled water. District No. 40 is currently leading an effort to develop a Recycled Water Facilities Plan for the Antelope Valley. This Facilities Plan recommends a backbone recycled water system to serve the Study Area.

2.3.1 Source Characteristics

Lancaster Water Reclamation Plant (LWRP), Palmdale Water Reclamation Plant (PWRP) and Rosamond Wastewater Treatment Plant (RWWTP) are three wastewater treatment plants in the Study Area. These three plants primarily provide secondary treated effluent. Currently, the only recycled water in the Study Area that is treated to a tertiary level is a small percentage of the wastewater at the LWRP through additional onsite facilities known as the Antelope Valley Tertiary Treatment Plant (AVTTP). Effluent management is challenging in Antelope Valley because the area is a closed basin with no river or other outlet to the Pacific Ocean. Effluent management options are restricted to methods such as reuse, evaporation, and percolation. LWRP, PWRP and RWWRP will all provide tertiary treated effluent with future upgrades. A description of each of the three treatment plants that may provide recycled water to the Study Area is provided below.

2.3.1.1 Lancaster Water Reclamation Plant (LWRP)

The LWRP, built in 1959 and located north of the City of Lancaster, is owned, operated, and maintained by the Los Angeles County Sanitation District No. 14 (District No. 14). LWRP, which has a permitted capacity of 16.0 mgd, treated an average flow of 13.3 mgd in 2004 to secondary standards for use agricultural irrigation, wildlife habitat, and recreation. Additionally, 0.6 mgd is currently treated to tertiary standards and used for landscape irrigation at the Apollo Lakes Regional County Park.

District No. 14 plans to upgrade the existing LWRP for a total capacity of 21 mgd by 2008 with a proposed future upgrade to 26 mgd by 2014. Tertiary treated effluent from the upgraded LWRP will be available for municipal reuse in addition to the existing uses.

2.3.1.2 Palmdale Water Reclamation Plant (PWRP)

PWRP, built in 1953 and located on two sites adjacent to the City of Palmdale, is owed, operated, and maintained by the Los Angeles County Sanitation District No. 20 (District No. 20). PWRP, which has a permitted capacity of 15.0 mgd, treated an average flow of 9.4 mgd in 2004 to secondary standards for land application or agricultural irrigation.

A recent revision to the Waste Discharge Requirements due to concerns of nitrate in the groundwater, requires District No. 20 to eliminate their existing practice of land application and agricultural irrigation above agronomic rates of treated effluent by October 15, 2008. By November 15, 2009, District No. 20 is required to prevent the discharge of nitrogenous compounds to the groundwater at levels that create a condition of pollution or violate the water quality objectives identified in the 1994 Water Quality Control Plan for the Lahontan Region (1994 Basin Plan). In response, the treatment capacity of the PWRP will be increased to 22.4 mgd and tertiary treatment added. Tertiary treated water is anticipated to be fully used for municipal purposes.

2.3.1.3 Rosamond Wastewater Treatment Plant (RWWTP)

RWWTP, located in the City of Rosamond, is owned, operated, and maintained by the RCSD. RWWTP, which has a permitted capacity of 1.3 mgd, treated an average flow of 1.1 mgd to undisinfected secondary standards for landscape irrigation on-site.

RCSD plans to increase the capacity to 1.8 mgd in 2010 through the addition of 0.5 mgd tertiary treatment facility. The tertiary treatment facility will then be upgraded to 1.0 mgd in 2018.

Design for the proposed treatment plant improvements is complete and has been approved by the State of California. Construction is currently delayed due to lack of funding. Once constructed, the plant would provide tertiary treated recycled water for landscape irrigation at median strips, parks, schools, senior complexes and new home developments.

2.3.2 Availability of Supply

For the purpose of this study, wastewater flow projections are being used to define the amount of recycled water available to the Study Area. These projections were determined from the Draft Facilities Plan and are for tertiary treated water only. They also consider recycled water that has already been contracted out to users outside of the Study Area. Table 2-7 provides a summary of the recycled water flow projections for the Study Area through 2030. The flow projections for LWRP and PWRP in 2005 include secondary treated effluent because the tertiary treatment plant upgrades are not yet constructed.

TABLE 2-7
RECYCLED WATER AVAILABILITY TO STUDY AREA 2005 – 2030

	2005	2010	2015	2020	2025	2030
LWRP[a] (mgd)	12	14.8	19	23	27.1	31.2
PWRP[b] (mgd)	10.0	13.2	16.4	19.5	22.4	25.5
RWWTP[b] (mgd)	0	0.5	1.0	1.0	1.0	1.0
Study Area (mgd)	22.0	28.5	36.4	43.5	50.5	57.7
Study Area (AFY)	24,700	32,000	40,800	48,800	56,700	64,800

Notes:
(a) Obtained from the *Lancaster Water Reclamation Plant 2020 Facilities Plan*, prepared by the Sanitation Districts of Los Angeles County, May 2004, less the 3.03 mgd already committed to contract.
(b) Obtained from the *Draft Palmdale Water Reclamation Plant 2025 Facilities Plan and Environmental Impact Report*, prepared by the Sanitation Districts of Los Angeles County, April 2005.
(c) Obtained from documentation and phone calls provided by RCSD in May 2005 and a RCSD fax received in August 2005.

Although Table 2-7 provides the volumes of recycled water available, actual use of recycled water is limited to demand. Table 2-8 provides the projections of recycled water demand for the Study Area assuming 100 percent delivery of Table A and existing groundwater pumping rates. The projections are based on a recycled water market assessment and are generally for agricultural irrigation, landscape irrigation, and wildlife habitat. Due to delays in funding, RCSD has yet to determine their recycled water demand or identify any recycled water users. Thus, for purposes of this report, a conservative estimate of zero demand was assumed. District No. 40 recycled water demands were determined from the addition of the City of Lancaster and City of Palmdale demands from the Facilities Plan. Use of recycled water would be encouraged through the use of financial incentives (i.e., recycled water would be available at a lower cost than the existing potable water supply).

TABLE 2-8
PROJECTED FUTURE USE OF RECYCLED WATER IN THE STUDY AREA (AFY)

	2010	2015	2020	2025	2030
District No. 40	2,720	5,440	8,160	10,880	13,600
Percent of Total Supply	2	4	6	8	10
Rosamond CSD	0	0	0	0	0
Percent of Total Supply	0	0	0	0	0
Quartz Hill WD	0	0	0	0	0
Percent of Total Supply	0	0	0	0	0
Study Area	2,720	5,440	8,160	10,880	13,600
Percent of Total Supply	2	4	5	7	8

2.3.3 Water Quality

The current and projected water quality of the treated wastewater at LWRP, PWRP and RWWTP that will be used for recycled water purposes is expected to meet tertiary treated standards as defined in California Water Code Title 22 regulations. Furthermore, the use of recycled water would allow for more potable water to available with the same water quality as

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Introduction and Background

1.1 Purpose of the Watershed Sanitary Survey Update

The California Department of Health Services (DHS), under California Surface Water Treatment regulations, requires that all water purveyors perform a sanitary survey of their water source watersheds and update it every 5 years. These regulations implement the federal Surface Water Treatment Rule (SWTR), which became effective on 31 December 1990.

The purpose of a watershed sanitary survey is to:

- Describe control and management practices,
- Describe potential contaminant sources or activities (PCSs) and their effect on drinking water source quality,
- Determine if appropriate treatment is provided, and
- Identify actions and recommendations to improve or control contaminant sources.

1.2 History of the SWP Sanitary Survey Update 2001

After completion of the initial State Water Project (SWP) *Sanitary Survey* in 1990, a SWP Sanitary Survey Action Committee (SSAC) was formed. It consisted of staff from the California Department of Water Resources (DWR) and DHS's Drinking Water Program, reprsentatives of the State Water Contractors and consultants. The SSAC's role was to follow up on the report's recommendations. The SSAC's work resulted in the State Water Project Action Plan. This action committee has continued to meet over the years, and although individual membership has changed, the SSAC makeup has remained the same.

The SSAC has taken on the task of providing guidance for the 5-year updates of the *Sanitary Survey*. The *Sanitary Survey Update Report 1996* focused on changes in SWP watersheds and water quality since 1990. The update also provided information from site visits to watersheds—Del Valle, San Luis, Pyramid, Castaic, Silverwood, Perris, Barker Slough/North Bay Aqueduct watershed, and the open channel section of Coastal Aqueduct. An emphasis was placed on the occurrence of coliforms and the pathogens *Giardia* and *cryptosporidium*. The *Update 1996*, completed in May 1996, included the results of an extensive database search on toxic sites within SWP watersheds.

1.3 Coordination with Stakeholders

Preparation for the *Sanitary Survey Update Report 2001* began July 1999 with SSAC meetings to discuss and develop a work plan and scope of work. The SSAC approved a draft work plan and schedule in September 1999 and adopted the final work plan in December 1999.

In May 2000, SSAC members with specific expertise and/or access volunteered to work as a subgroup to expedite the information retrieval, evaluation, and feedback process for the 2001 update. Those seven members represented DHS, SWP contractors, Metropolitan Water District of Southern California (MWDSC), Santa Clara Valley Water District (SCVWD), DWR's Operations and Maintenance Division (O&M), and the California Urban Water Agencies (CUWA).

Following work plan development, DWR's Municipal Water Quality Investigations (MWQI) management and staff, DHS staff, and the SSAC established agreements to help assure adequate progress, the obtainment of necessary information, and feedback on document content quality.

In conjunction with the agreements, this group—SSAC subgroup, MWQI and DHS staff—held frequent and focused meetings and conference calls

to track progress, discuss schedule and resource issues, and prioritize tasks.

DHS granted a schedule extension, which was requested because of staffing resource issues and difficulty in obtaining available information. The original delivery date of January 2001 for the final review draft was eventually changed to 4 May 2001. Because of time constraints, not all chapters were reviewed by the SSAC prior to the release of the final review draft. The SSAC, DHS, and DWR staff conducted a thorough review of the final review draft chapters and after a review of the comments, the document was edited to achieve technical accuracy and consistent formatting.

1.4 2001 Sanitary Survey Assessment Approach

Sanitary Survey Update Report 2001 offers detailed evaluations of study areas and issues that were selected based on actions and recommendations from previous reports and concerns stemming from new data and information. Findings and recommendations in *Update 1996* led to extensive studies of the Barker Slough watershed and pathogens in source waters. Each of these follow-up activities is covered in detail in its own chapter.

The SSAC work plan specified that *Sanitary Survey Update 2001* would rely on existing data and information from DWR, MWDSC, and other agencies and would require extensive coordination and cooperation to obtain relevant information from several federal, State, and local sources.

During work plan development, it was agreed to provide information in *Sanitary Survey Update 2001* to make it useful for SWP utilities in complying with the California Drinking Water Source Assessment and Protection (DWSAP) Program. The relationship of the *Sanitary Survey Update 2001* to the DWSAP Program is discussed in section 1.8. *Sanitary Survey Update 2001* is not required by the DWSAP Program but much of its PCS information is readily available for incorporation into a source water assessment as required by the DWSAP Program.

A key task in the work plan was the preparation of a sanitary survey questionnaire and its distribution to SWP contractors. This approach was also used for the *Sanitary Survey Update 1996*. The questionnaire was used to obtain information in the most efficient and direct way possible on contaminant sources, available data, and major water quality issues. Of the 29 contractors, 12 responded to the questionnaire (several contractors were not using SWP water at the time).

1.5 Scope of Work for Each SWP Watershed

During the development process for *Sanitary Survey Update 2001*, DWR stated that new field reconnaissance surveys and additional monitoring studies would not be performed specifically for the update. The exception was a 4-year study of the Barker Slough watershed because *Sanitary Survey Update 1996* recommended an investigation.

The major *Sanitary Survey Update 2001* tasks performed for each watershed study include:

- Review and evaluation of the results from the questionnaire sent to SWP contractors,
- Personal communication with staff of various agencies and review of pertinent reports and data about major water quality issues,
- Delineation and mapping of each source watershed area.
- Evaluation of areas and contaminants of known or suspected concern, as directed by DHS and the SSAC,
  - Development of inventories of PCSs and activities in each area.
  - Determination of the susceptibility of the water supplies of each area to those contaminant sources and activities.
- Reports and summaries of the results; identification and rating of significant PCSs and development of recommended actions to reduce the susceptibility of water supplies to existing and future water quality problems.

1.6 Selection and Evaluation of Potential Contaminant Sources

The general types of PCSs used in the *Sanitary Survey Update 2001* were developed with SSAC input and the *American Water Works Association Guidance Manual*. They are presented below.

- Recreation
- Wastewater treatment/facilities (includes treatment plant effluent discharges, storage, transport, treatment, disposal to land, and septic systems)
- Urban runoff
- Animal populations (includes grazing, dairies, and wild animal populations)
- Algal blooms
- Agricultural activities (includes agricultural cropland use, pesticide/herbicide use, and agricultural drainage)
- Mining
- Solid or hazardous waste disposal facilities
- Logging

- Unauthorized activity (includes illegal dumping, leaking underground tank)
- Traffic accidents/spills
- Groundwater discharges
- Seawater intrusion
- Geologic hazards (landslides, earthquakes, floods)
- Fires
- Land use changes

Different PCSs can require different approaches and types of data for evaluation. In general, susceptibility to PCSs in a given watershed was determined through the questionnaire and information and data obtained in response to the following criteria:

- Frequency of drinking water regulations (maximum contaminant levels) being actually or nearly exceeded at the water treatment plant intakes, reservoirs, and in the treated water, including complaints about taste and odor.
- Constituents of concern (COC) causing additional water treatment costs or affecting treatment operations (for example, TOC removal requirement).
- Proximity of PCS to source waters (for example, reservoirs, streams) and/or treatment plant intakes.
- Beach closures due to high bacteria counts or wastes or spills associated with certain PCSs (for example, water recreation, sewage spills, septic tank leaks).
- Available water quality data on receiving water downstream of PCS areas and upstream of the nearest water supply diversions. Comparison between these locations, including at the water supply intake.
- The lack of data or the need to do a more thorough assessment of the susceptibility of the watershed to 1 or more PCSs.

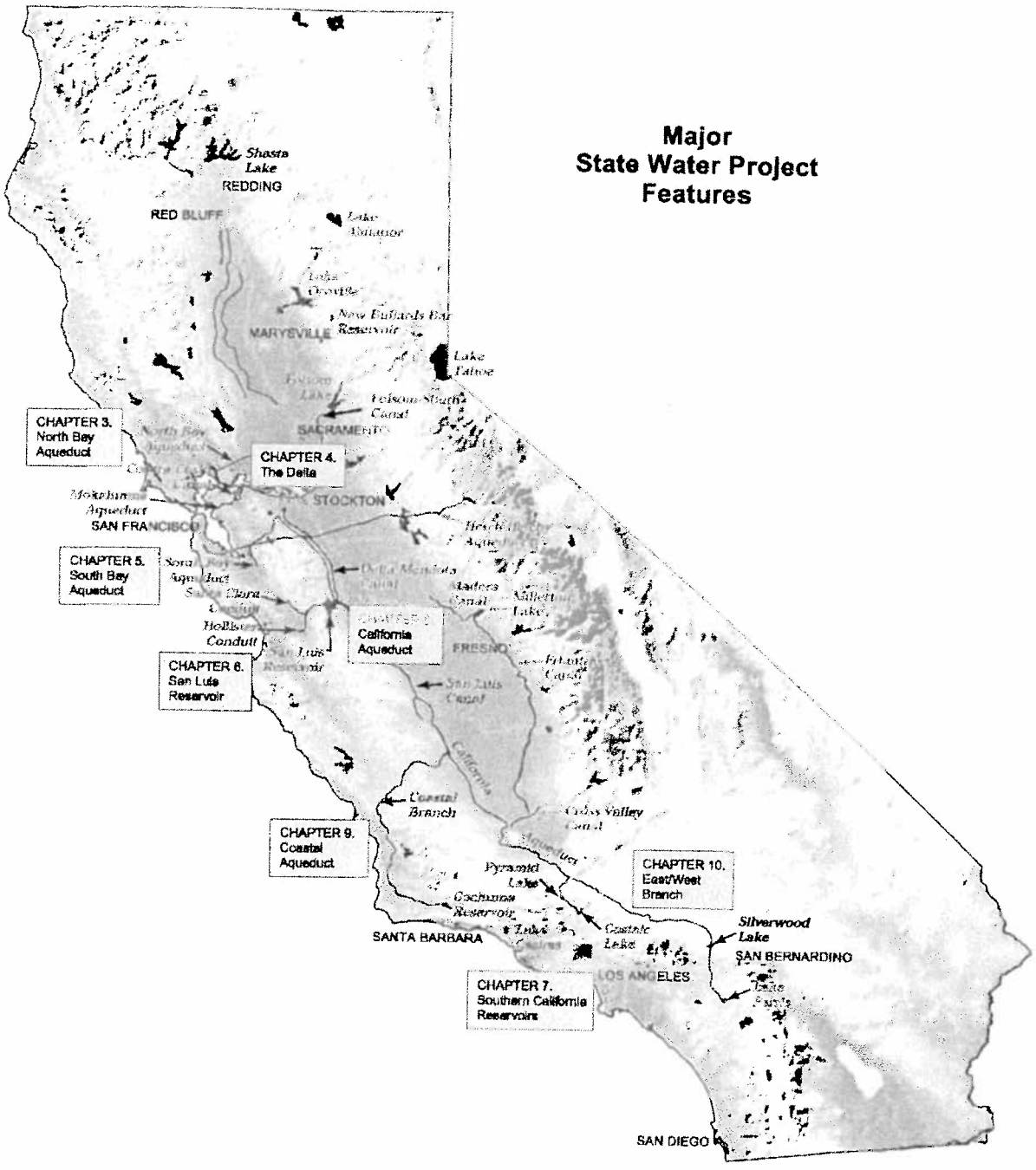
1.7 REPORT ORGANIZATION

1.7.1 CHAPTER PRESENTATION

The *Sanitary Survey Update 2001* watershed chapters are organized by geographical areas, such as the 4 Southern California reservoirs, or by spatial connection, such as the 5 sections of the California Aqueduct. Figure 1-1 shows the approximate geographical location of the watersheds covered in the chapters and their corresponding sections of the SWP. The following SWP structures and their corresponding watersheds are covered in *Sanitary Survey Update 2001*:

- SWP reservoirs
  - Pyramid Lake
  - Castaic Lake
  - Silverwood Lake
  - Lake Perris
  - San Luis Reservoir
  - Lake Del Valle
- SWP aqueducts
  - North Bay Aqueduct (Barker Slough watershed)
  - South Bay Aqueduct
  - California Aqueduct sections:
    - H. O. Banks Pumping Plant to O'Neill Forebay/ Check 13
    - O'Neill Forebay
    - O'Neill Forebay to Avenal
    - Avenal to Kern River Intertie (Check 28)
    - Kern River Intertie to East/West Bifurcation (Check 41)
  - Coastal Branch
  - East Branch and West Branch
- Harvey O. Banks Delta Pumping Plant
  - The Sacramento San Joaquin Delta and watersheds of the Sacramento and San Joaquin rivers

Figure 1-1 Sanitary Survey Chapters and Corresponding Watersheds



At the beginning of each watershed section, a summary matrix shows the assessed threat a PCS poses for that particular watershed and water supply system. The matrix also shows the chapter section where the PCS is presented in detail. The chapter then presents the following information:

- Descriptions of land use, geology and soils, vegetation, and hydrology of each watershed area or descriptions of the SWP aqueduct branches for the water supply system site.
- Identification of PCSs for each area.
- Summary of water quality data.
- Discussion of the significance of the PCS(s) to each area.
- Watershed management practices.

Including this introductory chapter, 5 chapters do not focus on a particular watershed. Chapter 2 summarizes current laws and regulations for drinking water. Chapter 11 describes the SWP Emergency Action Plan and related information. Chapter 12 presents and discusses pathogen data, which DHS and the SSAC considered necessary to include in this report. Chapter 13 contains conclusions and recommendations for the PCSs and water quality issues presented in chapters 3 through 10.

1.7.2 SIGNIFICANCE MATRICES

Significance matrices provide a new approach for the SWP *Sanitary Survey* to give the reader a visual summary of the relative importance of PCSs in a watershed. Each watershed chapter begins with a matrix, which operates as a "road map" by providing a quick assessment of the most important PCSs and directing the reader to corresponding chapter sections. The matrices are not absolute ratings of importance. A chapter should be read completely to gain a full understanding of the potential threats to drinking water quality. Each PCS that threatens drinking water contamination of a water supply system was rated as follows:

● PCS is a highly significant threat to drinking water quality

◒ PCS is a medium threat to drinking water quality

⊙ PCS is a potential threat, but available information is inadequate to rate the threat.

○ PCS is a minor threat to drinking water quality

In each matrix, symbols represent ratings, and numbers stand for the chapter section in which the PCS is discussed. The ratings were based on data and information collected during research for *Sanitary Survey Update 2001*. Some data provided a clear connection between the PCS and its potential to contaminate drinking water. Some information was anecdotal and based on the collective knowledge and experience of the author investigating a source, as well as other SS Update authors and staff of the DWR Water Quality Assessment Branch.. In some cases, where a PCS was a clear source of the contaminant but the linkage as a threat was unclear, the PCS was given a medium rating. Sometimes a PCS was a clear source of the contaminant, but evidence and data indicated the source was not a threat to drinking water. In these cases, the PCS received a minor threat rating, for example, pesticides in the Delta watersheds.

Chapter headings for PCSs initially were drawn from a master list approved by the SSAC work team in fall 1999. The list had to be varied and expanded because of the extreme variation in geographical areas and settings for each chapter.

1.7.3 DEVELOPMENT OF CONCLUSIONS AND RECOMMENDATIONS

Conclusions and recommendations in chapter 13 were developed at 5 workshops where SSAC and other staff reviewed and discussed authors' drafts and provided extensive input and revision. Detail of the process and content is provided in the introduction to chapter 13. It must be emphasized that chapter 13 is not a "stand-alone" chapter and that each chapter must be reviewed to obtain a complete picture of the status of a particular watershed. Only significant PCSs were included in chapter 13's conclusions and recommendations.

1.8 RELATIONSHIP WITH DHS'S DRINKING WATER SOURCE ASSESSMENT AND PROTECTION (DWSAP) PROGRAM

Under the 1996 reauthorization of the Safe Drinking Water Act (SDWA), all states must complete a source water assessment (SWA) for public water systems by 2003. A SWA document is prepared to determine the existence of PCSs, to determine the appropriate monitoring needed, to inform the public, and to assist in the development of watershed protection programs. The DWSAP Program presents a set of standardized procedures for conducting a SWA. The DHS allows watershed sanitary surveys, like the *Sanitary Survey Update Report 2001*, as alternative methods of determining a water source's vulnerability.

While its requirements are similar, *Sanitary Survey Update Report 2001* contains more information than a SWA. Because of the vast size of the SWP, many subwatersheds interconnect with it. The major tasks of developing this sanitary survey consisted of separate assessments for each of the subwatersheds selected for inclusion. The DWSAP Program assessment and vulnerability summary of sources that are part of the SWP may be based on the information contained in this *Sanitary Survey Update.*

DHS will use the *Sanitary Survey Update Report 2001* as the basis of the DWSAP Program's source water assessment for SWP facilities and for the preparation of vulnerability summaries for those facilities. DHS will work with contractors and water utilities to complete the SWAs. Water utilities then will be required to include information about the assessments and vulnerability summary language in their Consumer Confidence Reports (Walker pers. comm).

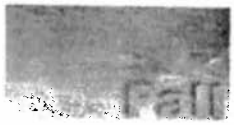
There are 6 information requirements that SWP contractors will be required to supply for their DWSAP Program assessments. Contractors will prepare their own DWSAP Program assessments for DHS, based on *Sanitary Survey Update 2001* information, to include the following:

1) Location of Supply Source.
2) Delineation of Source Areas and/or Protection Zones—Watershed will be designated as the source area/protection zone. This sanitary survey will provide the detailed information on the watershed, so each contractor's SWA can refer to the *2001 Sanitary Survey Update Report.*
3) Evaluation of Physical Barrier Effectiveness—DHS will provide standard language on this.
4) Inventory of Possible Contaminating Activities—This is identified in the *2001 Sanitary Survey Update Report.* Water contractors can refer to the update and provide limited description in DWSAP Program document.
5) Vulnerability Ranking—After review of raw water quality data provided by DWR and the water contractors, a consistent approach for each contractor to use in assessing vulnerability will be developed.
6) Assessment Map—*2001 Sanitary Survey Update Report* contains maps of watershed showing major land uses pipelines, any intakes, etc.

Reference

PERSONAL COMMUNICATION

Walker, Leah, Senior Engineer, Department of Health Services, Drinking Water Program. 1999. E-mail to Mike Zanoli, DWR. Nov 23.



Mission:

To manage the water resources of California in cooperation with other agencies, to benefit the State's people, and to protect, restore, and enhance the natural and human environments.

1416 9th Street,
Sacramento, CA 95814

Mailing Address:
P. O. Box 942836,
Sacramento, CA 94236

DWR

Water Quality

- Water Quality
  - State Water Project Water Quality - *Division of Operations and Maintenance*
    The State Water Project water quality program collects detailed information on concentrations and distribution of chemical, physical, and biological parameters at more than thirty sites in the California Aqueduct and associated reservoirs.
  - Municipal Water Quality - *Division of Environmental Services*
    Site includes publications, program resources, projects and data related to drinking water quality.
  - Office of Water Quality - *Division of Environmental Services*
    Meet the overall water quality needs of DWR and to provide a central focal point for the collection and dissemination of water quality information.
  - Bay-Delta Hearing and Program Development - *State Water Project Analysis Office*
    Includes water rights hearings information, workshops, and Environmental Impact Reports.
  - South Delta Improvement Project (SDIP) - *Bay-Delta Office*
    The SDIP works to incrementally maximize diversion capability into Clifton Court Forebay, while providing an adequate water supply for diverters within the SDWA, and reducing the effects of State Water Project exports on both aquatic resources and direct fish losses in the South Delta.
  - North Delta Improvement Project (NDIP) - *Bay-Delta Office*
    The NDIP works to implement flood control improvements in a manner that benefits aquatic and terrestrial habitats, to the extent practicable.
  - Northern District Water Quality - *Division of Planning and Local Assistance*
    Water bodies are assessed for water quality characteristics, risks to beneficial uses, and effects of watershed management.
  - Central District Water Quality - *Division of Planning and Local Assistance*
    Assists local agencies and watershed groups with the collection, analysis, and storage of water quality data from rivers, streams, lakes, and reservoirs throughout its district boundaries.
  - San Joaquin District Water Quality - *Division of Planning and Local Assistance*
    Provide assistance and technical advice to local water agencies and to the general public on water quality conditions and on water well standards.
  - Southern District Water Quality - *Division of Planning and Local Assistance*
    Technical assessments are conducted that provide unique and consistent information on the status, trends, and causes of groundwater and surface water quality conditions.
  - Southern Field Division Water Quality Programs - *Division of Operations and Maintenance*

Monitors the water quality of its four Southern California reservoirs to provide its State Water Project contractors with the most current reservoir conditions.

- Water Data Library - *Division of Planning and Local Assistance*
  Grab sample water quality data collected by DWR.
- California Data Exchange Center (CDEC) - *Division of Flood Management*
  Real-time decision support system to DWR Flood Management and other flood emergency response organizations, providing operational and historical hydrologic and meteorologic data, forecasts, and reports.
- San Joaquin River Real-time Program - *Division of Planning and Local Assistance*
  The Real-time Water Quality Management Program uses telemetered stream stage, salinity data and computer models to simulate and forecast water quality conditions along the lower San Joaquin River.

* Land & Water Use
* Ecosystem/Watershed Restoration
* Sacramento-San Joaquin Delta
* Drainage
* Environmental Analysis & Review
* Ecological Studies
* Environmental Compliance & Evaluation
* Environmental Documentation
* Invasive Species

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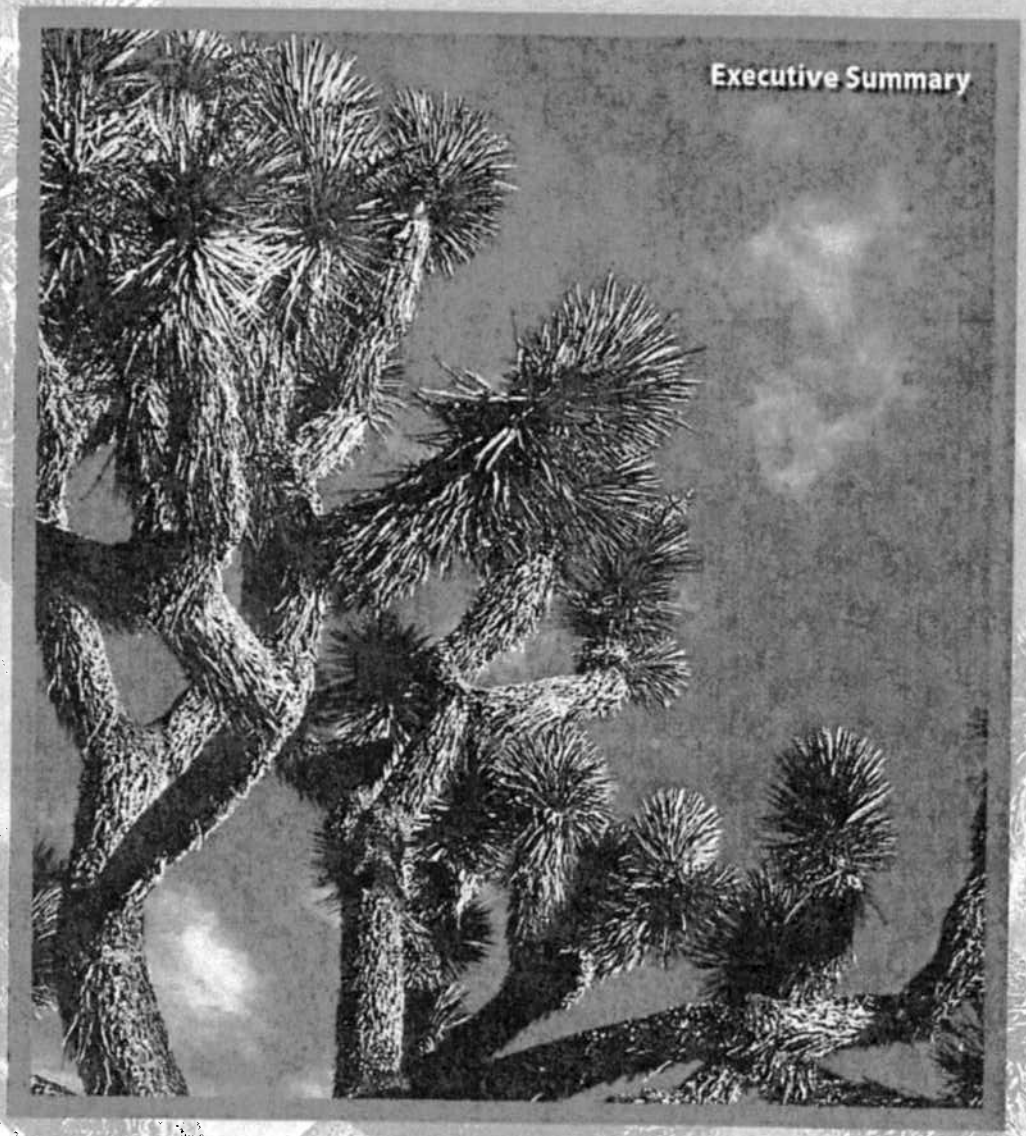
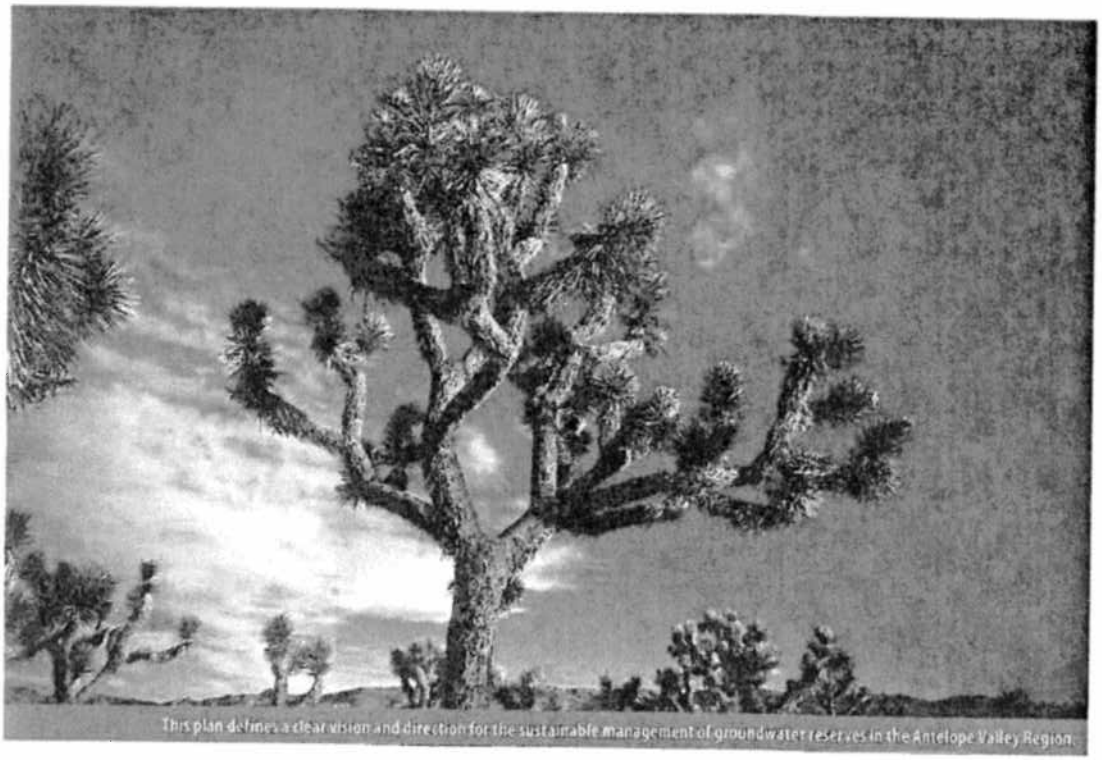
Appendix J

- ANTELOPE VALLEY INTEGRATED REGIONAL WATER MANAGEMENT PLAN (IRWMP) EXECUTIVE SUMMARY


Executive Summary



This plan defines a clear vision and direction for the sustainable management of groundwater reserves in the Antelope Valley Region.

Executive Summary

ANTELOPE VALLEY INTEGRATED REGIONAL WATER MANAGEMENT PLAN OVERVIEW

The California Water Plan 2005 update is the basis for all Integrated Regional Water Management (IRWM) planning efforts underway throughout the State, including this IRWM Plan for the Antelope Valley Region. It represents a fundamental transition in how the State looks at water resource management, and how the State government needs to be more involved at a local and regional level with governing agencies and interest groups to better identify and address State-wide water concerns.

The State recognizes that there is a need to consider a broader range of resource management issues, competing water demands, new approaches to ensuring water supply reliability, and new ways of financing.

IRWM planning was derived from Proposition 50 which was passed by California voters in November 2002, authorizing $3.4 billion in general obligation bonds to fund a variety of specified water and wetlands projects. It set aside $380 million for grants related to the implementation of IRWM Plans and is jointly administered by the California Department of Water Resources (DWR) and the State Water Resources Control Board (SWRCB).

Proposition 50 states that IRWM Plans should include a description of the region and participants, regional objectives and priorities, water management strategies, implementation, impacts and benefits, data management, financing, stakeholder involvement, relationship to local planning, and state and federal coordination. This Antelope Valley Integrated Regional Water Management (IRWM) Plan includes a discussion of the specified elements, as summarized below.

INTRODUCTION (SECTION 1)

Several years ago, leaders and agencies in the Antelope Valley Region recognized the need for regional cooperation and planning. In an effort to represent the broad interests within the Antelope Valley Region, a number of organizations joined to form a Regional Water Management Group (RWMG) to work together and create this IRWM Plan. Members of the RWMG include the Antelope Valley-East Kern Water Agency (AVEK), Antelope Valley State Water Contractors Association (AVSWCA), City of Lancaster, City of Palmdale, Littlerock Creek Irrigation District, Los Angeles County Sanitation District (LACSD) Nos. 14 and 20, Los Angeles County Waterworks District No. 40 (LACWWD 40), Palmdale Water District (PWD), Quartz Hill Water District (QHWD), and Rosamond Community Services District (RCSD). These agencies agreed to contribute funds to help develop the AV IRWM Plan, provide and share information, review and comment on drafts, adopt the final AV IRWM Plan, and assist in future grant applications for the priority projects identified in this IRWM Plan.

> *"We have a responsibility for future generations, and we have a responsibility just as responsible citizens, to protect this groundwater resource and make sure that we use it in the best way possible."*
>
> – Adam Ariki,
> Los Angeles County Waterworks District No. 40

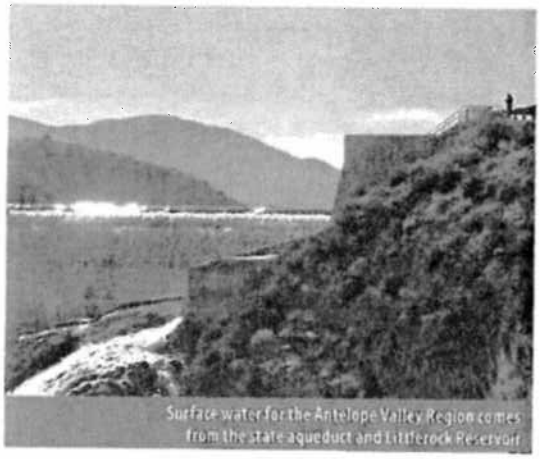
In January 2007, the RWMG and other community participants (the Stakeholders) set about developing a broadly supported water resource management plan that defines a meaningful course of action to meet the expected demands for water within the entire Antelope Valley Region through 2035. They chose to create the water resource management plan consistent with the State sponsored Integrated Regional Water Management Program that makes grant funds available to support sound regional water management. The goals of the AV IRWM Plan are to address:

- How municipal and industrial (M&I) purveyors can reliably provide the quantity and quality of water that will be demanded by a growing population;
- Options to satisfy agricultural users' demand for reliable supplies of reasonable cost irrigation water; and
- Opportunities to protect and enhance the current water resources (including groundwater) and the environmental resources within the Antelope Valley Region.

The RWMG acknowledged that a separate process (called adjudication) related to groundwater management was also underway. Members of the RWMG and other stakeholders discussed at length whether it was possible (and if possible, how) to develop a Regional Water Management Plan before the adjudication was settled. The members of the RWMG agreed that since the IRWM Plan and the adjudication were focused on different aspects of water management, they could proceed in parallel. This IRWM Plan contains information to help take action to meet shared objectives for long-term water management for the entire region. The results of the adjudication will help provide important clarity and certainty between groundwater users about how the groundwater resources will be managed, but other important water management actions can and should be taken without waiting for a final adjudicated solution. Members of the RWMG agreed that no information developed for the purposes of the IRWM Plan should be interpreted to interfere in any way with the adjudication process. The data provided in this report were not prepared in a manner suitable to answer the questions being addressed in the adjudication.

REGION DESCRIPTION (SECTION 2)

The Antelope Valley Region of California is home to over 444,000 people living in many different communities. Residents within this Region have experienced tremendous changes over the past generation due to a rapid increase in population coming from nearby large cities. Current forecasts of population growth suggest even larger changes



Surface water for the Antelope Valley Region comes from the state aqueduct and Littlerock Reservoir

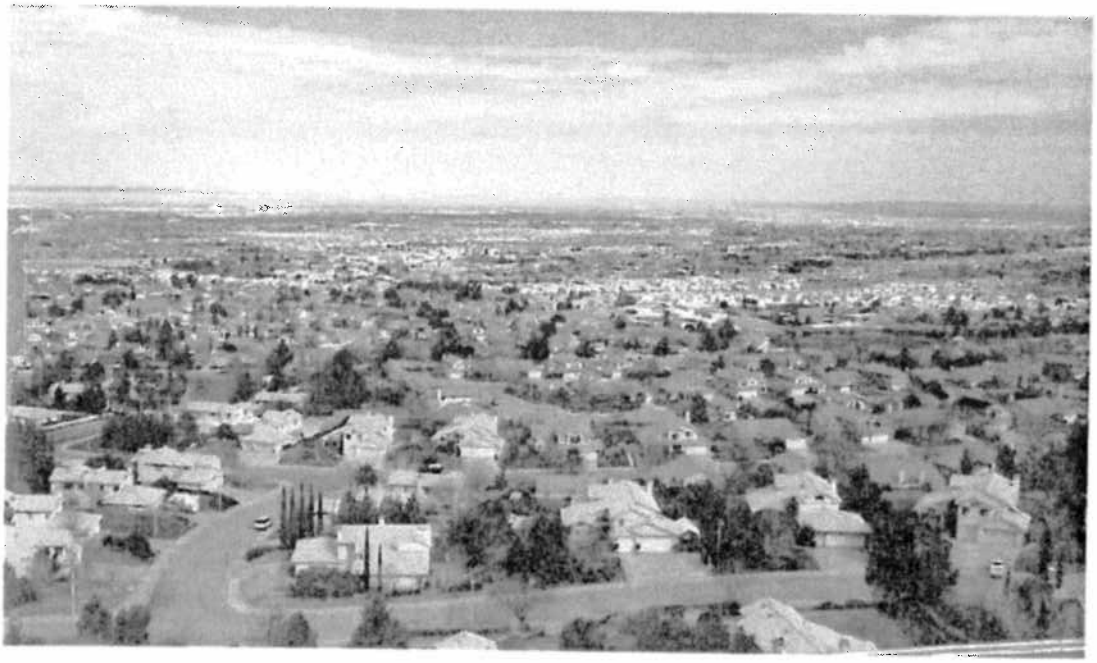
will occur before 2035. Water plays a central role in the health and well being of all residents within the Antelope Valley Region. People use water for drinking, bathing, household and outdoor activities, agriculture, business endeavors, recreation, and to sustain and enhance natural habitats. This common need for water links communities together in many ways. When anyone uses water, the ability of other people to use water within the Antelope Valley Region can be affected.

The Antelope Valley Region encompasses approximately 2,400 square miles in northern Los Angeles County, southern Kern County, and western San Bernardino County. Major communities within the Antelope Valley Region include Boron, California City, Edwards Air Force Base, Lancaster, Mojave, Palmdale and Rosamond. All of the water currently used in the Antelope Valley Region comes from two sources: (1) naturally occurring water within the Antelope Valley Region (surface water and groundwater accumulated from rain and snow that falls in the Antelope Valley and surrounding mountains), and (2) State Water Project water (surface water that is collected in northern California and imported into the Antelope Valley and other areas around the state).

"This plan is going to provide a long-range benefit to the Antelope Valley and will be able to continue to provide for economic development, particularly with residential development throughout the Antelope Valley Region."

– Gretchen Gutierrez,
Antelope Valley Building Industry Association

The number of residents within the Antelope Valley Region expanded more than 330 percent between 1970 and 2005, growing from 103,000 people in 1970 to 444,000 people in 2005. Forecasters expect the population to continue to swell, potentially reaching 1,174,000 residents by the year 2035. As the number of people living and working in the



Antelope Valley Region increases, the competition for water supply increases, and the challenge of maintaining good water quality and managing the interconnected water cycle becomes more challenging.

Creation of a proactive, "smart" design for the fast-developing Antelope Valley Region makes this IRWM Plan essential to efficient and effective water management.

ISSUES AND NEEDS (SECTION 3)

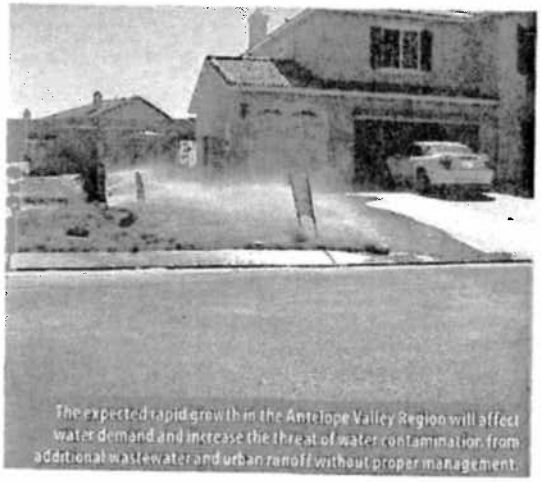
Water managers and local planners face many daunting challenges related to supporting the well being of the Antelope Valley Region. Past activities have created problems that need to be addressed and expected increases in population growth make resolving these problems even more difficult. In order to help address the broad challenges, the AV IRWM Plan was organized to address issues and needs in the following categories. Section 3 of the Plan describes these issues and needs in detail.

Supplies are Variable and Uncertain

Determining the amount of water available for use at any given time (now or in the future) is more challenging than one might imagine. The amount of water supply available varies considerably due to changes in weather, rain and snow, and other conditions. All water supplies within the Antelope Valley Region come from two sources: (1) local rain and snow, or (2) imports of water from outside the Antelope Valley Region. The local water supplies come from rainfall and snowmelt that percolate into the groundwater aquifers or are captured in Littlerock Reservoir. Current estimates of water supplies made available from local rainfall and snowmelt vary widely (30,300 to 81,400 acre-feet per year (AFY).[1,2] Imported water comes from the State Water Project, which has historically varied. The currently available supplies from imported water can also vary widely from year to year (6,400 to 74,300 AFY).

Demand is Greater than Supply

One fundamental challenge in the Antelope Valley Region is that demand for water exceeds available supplies. The



The expected rapid growth in the Antelope Valley Region will affect water demand and increase the threat of water contamination from additional wastewater and urban runoff without proper management.

demand for water clearly exceeds even the higher estimates of currently available supplies. By 2010 the demand for water in an average year by 2010 will be 274,000 AFY and by 2035 could be 447,000 AFY. Even using the higher estimates of available supply, this means demand could exceed supply by 73,600 AFY in 2010 and by 236,800 AFY in 2035. The expected imbalance between supply and demand in 2035 is about the same as currently available supplies. If communities do not begin conserving water more effectively, the Region will need twice the water as it currently has in order to meet demand in 2035.

Historically, water supplies within the Antelope Valley Region have been used primarily for agriculture; however, due to population growth, water demands from residential and business uses have increased significantly and this trend is expected to continue. The expected continuation of rapid growth in the Antelope Valley Region will affect water demand and increase the threat of water contamination from additional wastewater and urban runoff. More residents will also lead to higher demand for water-based recreation.

Much of the water used within the Antelope Valley Region is extracted from groundwater aquifers. The amount of water pumped within the Antelope Valley Region has varied tremendously since the early 1900s. The United States Geological Survey estimated that groundwater pumping in 1919 was about 29,000 AFY and reached as high as 400,000 AFY in the 1950's. For many of those years, the amount of water being pumped was greater than the amount of water being replenished, creating an imbalance within the groundwater aquifers. Because the amounts pumped were greater than the amounts being replenished, groundwater levels have declined significantly throughout the Antelope Valley Region. The long-term depletion of aquifers cannot be continued indefinitely without serious

1 An acre-foot per year is enough water to cover an acre of land one foot deep and meet the water needs of a family of four for one year.

2 The analyses provided in the IRWM Plan are strictly for long-term planning purposes and have not been conducted to answer the questions being addressed within the adjudication. Once the detailed analysis of available local water supply are completed within the adjudication, the supply numbers for the IRWM Plan will need to be updated.

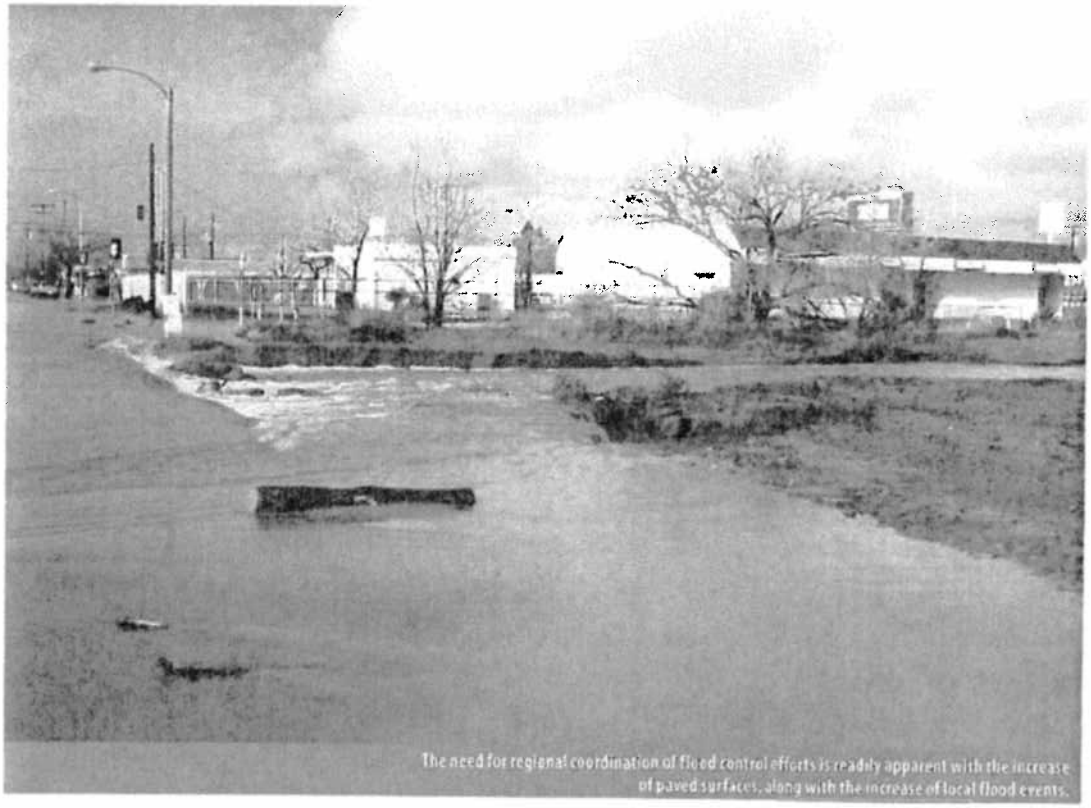
consequences. The historical declines in groundwater levels within the Antelope Valley Region have caused permanent damage to aquifers in some areas through land subsidence, or sinking.

In order to prevent further damage from declining groundwater levels, many water providers and managers within the Antelope Valley Region recognize the need to balance the water being pumped from the aquifers with the water being put back. In response to this need, a legal process called adjudication is currently underway. If the adjudication process is successful, groundwater users within the Antelope Valley Region will create and abide by a plan to stabilize groundwater levels and prevent further damage that can result from declining groundwater levels. While determining a method to balance groundwater use with the amount of water being replenished is a necessary piece to creating a viable water management strategy within the Antelope Valley Region, the adjudication likely will not provide any additional water supplies needed to meet the growing demands within the Antelope Valley Region.

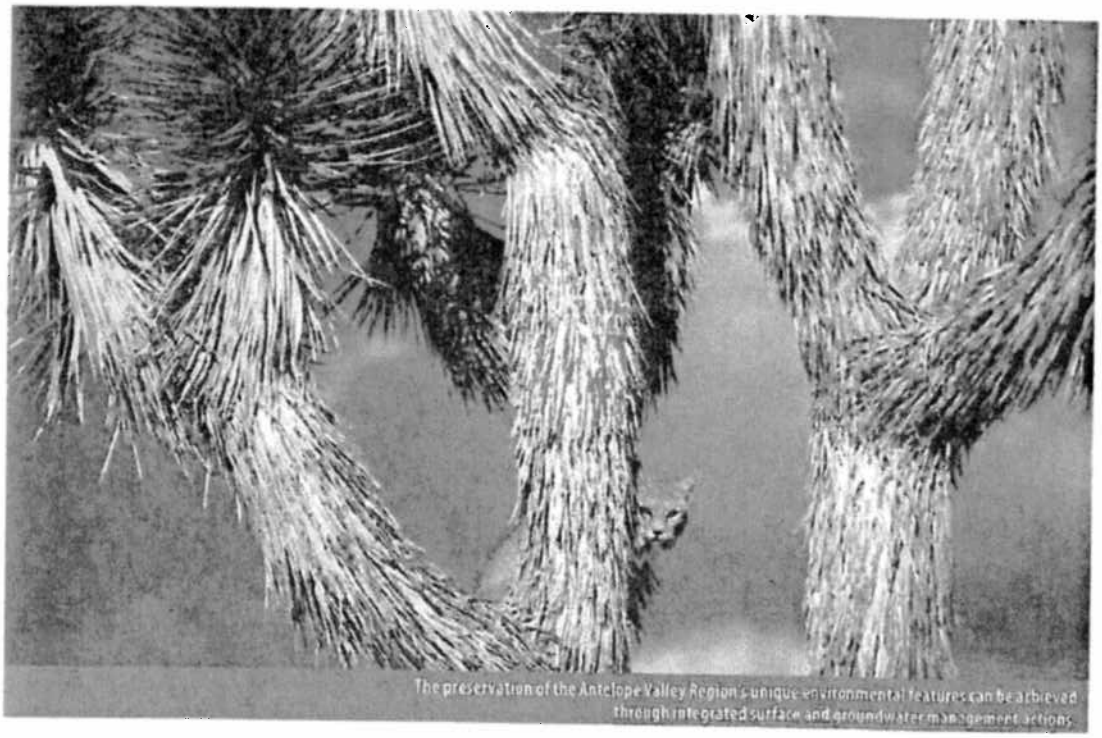
Recognizing the need to identify meaningful actions beyond the adjudication, members of the Group and other community participants agreed to focus on actions beyond the adjudication in the Plan. Participants in developing the AV IRWM Plan encourage a quick and collaborative settlement of the adjudication process, but the contents of the AV IRWM Plan identify and recommend actions that go well beyond the adjudication. The actions identified in the AV IRWM Plan can help meet the larger needs of the Antelope Valley Region but will require a solution from the adjudication to stabilize groundwater levels. Nothing in the IRWM Plan shall be interpreted to interfere in any way with the adjudication process.

Water Quality and Flood Management

The groundwater basin within the Antelope Valley Region is an undrained, closed basin, meaning there is no outlet for water to flow to the ocean. When water enters a closed basin, any minerals or chemicals in the water typically accumulate in the basin. Currently, groundwater quality is excellent within the principal aquifer but is not as good toward the northern portion of the dry lake areas. Some portions of the basin contain groundwater with high fluoride, boron, total dissolved solids, and nitrate concentrations. Arsenic is another emerging contaminant of concern in the Antelope Valley Region and has been observed in LACWWD 40, PWD, Boron, and QHWD wells. Research conducted by the LACWWD and the United States Geological Survey has shown the problem to reside primarily in the deep aquifer,



The need for regional coordination of flood control efforts is readily apparent with the increase of paved surfaces, along with the increase of local flood events.



The preservation of the Antelope Valley Region's unique environmental features can be achieved through integrated surface and groundwater management actions.

and it is not anticipated that the existing arsenic problem will lead to future loss of groundwater as a water supply resource for the Antelope Valley.

Portions of the Antelope Valley Region are also subject to flooding from uncontrolled runoff in the nearby foothills, which can be aggravated by lack of proper drainage facilities and defined flood channels. This runoff can negatively affect the water quality of the underlying groundwater basin, and can create stagnant ponds in places where clay soils beneath the surface do not allow for percolation to occur. The need for regional coordination of flood control efforts becomes more readily apparent as urban development and paved surfaces increase throughout the Antelope Valley Region, along with the frequency of local flood events.

Environmental Resources

The Antelope Valley Region has many unique environmental features, and several plant and animal species are only found in this area. As the pressure for growth expands out into undeveloped or agricultural lands, the need to balance industry and growth against protection of endangered species and sensitive ecosystems requires difficult decisions and trade-offs, each resulting in a variety of unique impacts on water demands and supplies in the Region. The actions identified in the AV IRWM Plan can help to preserve open space and natural habitats in the greater the Antelope Valley Region while maximizing surface water and groundwater management efforts.

Water Management and Land Use

What people do on the land of the Antelope Valley and how they do it directly impacts many aspects of life, including the water cycle, within the Antelope Valley Region. Historically throughout California, land use planning and water use planning have been done almost independently of one another. The challenges identified within the Plan clearly show a need for much closer collaboration between

The expected rapid growth in the Antelope Valley Region will affect water demand and increase the threat of water contamination from additional wastewater and urban runoff without proper management.

land use planning efforts and water management planning efforts. Continued development within the Antelope Valley Region depends heavily on the successful completion of the objectives presented in the Plan to meet the growing demand for recreational opportunities while minimizing or avoiding the loss of local culture and values.


Stephen Sorenson County Park, a community recreation facility within the Antelope Valley, is home to "Lovejoy Springs" as it is known by the community.

OBJECTIVES (SECTION 4)

The Stakeholders worked together to identify clear objectives and planning targets they want to accomplish by implementing the AV IRWM Plan (see Table ES-1). Although the AV IRWM Plan is intended to address the Antelope Valley Region's water resource management needs, this document also identifies several open space, recreation, and habitat targets as well. Refer to Section 4 of the AV IRWM Plan for details on how the objectives and targets were determined.

These objectives and planning targets represent the most important things the Stakeholders have chosen to work together to accomplish over the next several years. Everything done within the context of this IRWM Plan should contribute in some way to achieving these objectives. Also, because the planning targets are measurable, residents within the Antelope Valley Region can monitor how well the Plan is being implemented.

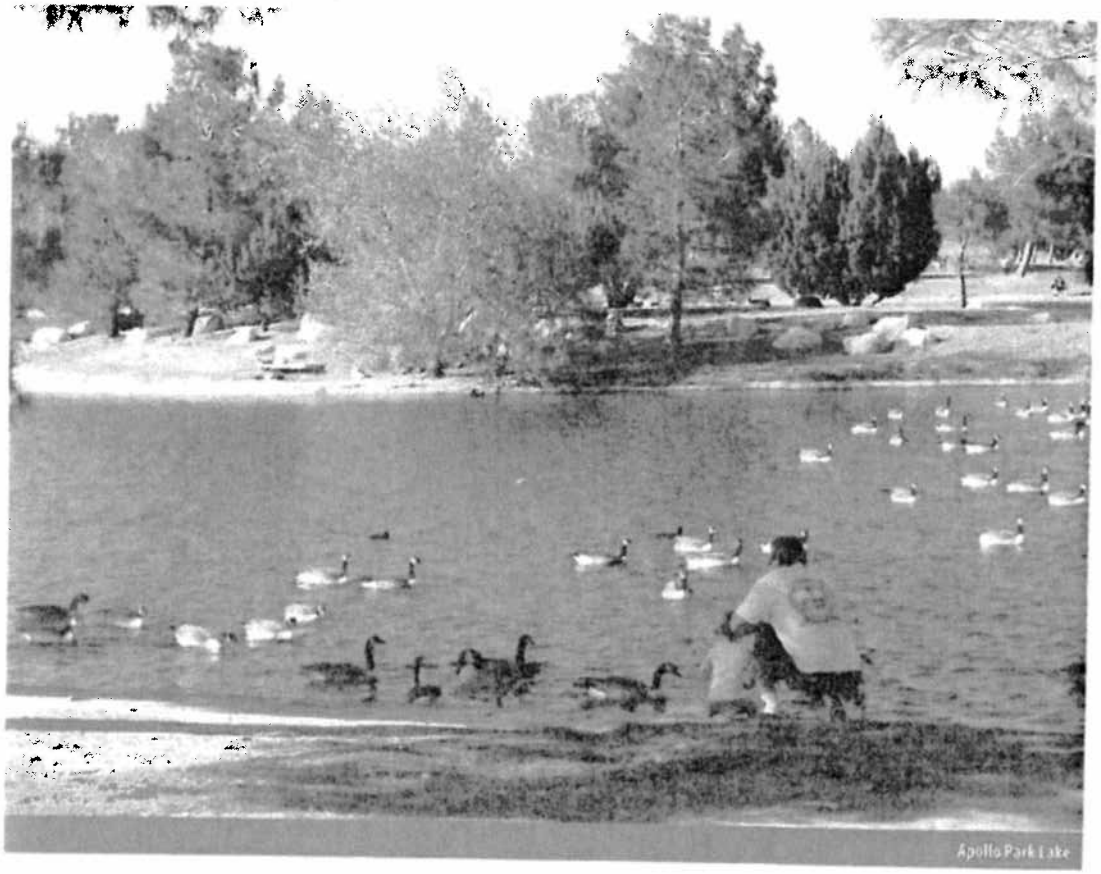

Apollo Park Lake

Table ES-1 Antelope Valley Region Objectives and Planning Targets

Objectives	Planning Targets
Water Supply Management	
Provide reliable water supply to meet the Antelope Valley Region's expected demand between now and 2035.	Reduce (73,600 to 236,800 AFY) mismatch of expected supply and demand in average years by providing new water supply and reducing demand, starting 2009.
	Provide adequate reserves (50,600 to 57,400 AFY) to supplement average condition supply to meet demands during single-dry year conditions, starting 2009.[3]
	Provide adequate reserves (0 to 62,000 AF/4 year period) to supplement average condition supply to meet demands during multi-dry year conditions, starting 2009.[4]
Establish a contingency plan to meet water supply needs of the Antelope Valley Region during a plausible disruption of SWP water deliveries.	Demonstrate ability to meet regional water demands without receiving SWP water for 6 months over the summer, by June 2010.
Stabilize groundwater levels at current conditions.	Manage groundwater levels throughout the basin such that a 10-year moving average of change in observed groundwater levels is greater than or equal to 0, starting January 2010.
Water Quality Management	
Provide drinking water that meets customer expectations.	Continue to meet Federal and State water quality standards as well as customer standards for taste and aesthetics throughout the planning period.
Protect aquifer from contamination.	Prevent unacceptable degradation of aquifer according to the Basin Plan throughout the planning period.
	Map contaminated sites and monitor contaminant movement, by December 2008.
	Identify contaminated portions of aquifer and prevent migration of contaminants, by June 2009.
Protect natural streams and recharge areas from contamination.	Prevent unacceptable degradation of natural streams and recharge areas according to the Basin Plan throughout the planning period.
Maximize beneficial use of recycled water.	Increase infrastructure and establish policies to use 33% of recycled water to help meet expected demand by 2015, 66% by 2025, and 100% by 2035.
Flood Management	
Reduce negative impacts of stormwater, urban runoff, and nuisance water.	Coordinate a regional flood management plan and policy mechanism by the year 2010.
Environmental Resource Management	
Preserve open space and natural habitats that protect and enhance water resources and species in the Antelope Valley Region.	Contribute to the preservation of an additional 2,000 acres of open space and natural habitat, to integrate and maximize surface water and groundwater management by 2015.
Land Use Planning/Management	
Maintain agricultural land use within the Antelope Valley Region.	Preserve 100,000 acres of farmland in rotation[5] through 2035.
Meet growing demand for recreational space.	Contribute to local and regional General Planning documents to provide 5,000 acres[6] of recreational space by 2035.
Improve integrated land use planning to support water management.	Coordinate a regional land use management plan by the year 2010.

3 Dry year reserves determined by taking the dry year mismatch and adding the average year supplement. Assumes that the average year supplement equals the average year mismatch for any given year. Range determined from the maximum and minimum reserves.

4 As with single-dry year, multi-dry year reserves determined by summing the 4-year dry year mismatch and adding the 4-year average year supplement. Assumes that the average year supplement equals the average year mismatch for any given year. Range determined from the maximum and minimum reserves.

5 The phrase "in-rotation" means that not all 100,000 acres will be in agricultural production at one time rather the land will be rotated in cycles to make most efficient use of the land.

6 The City of Palmdale and City of Lancaster's General Plans provide a standard of 5 acres of parkland per 1,000 City residents. The Kern County General Plan provides a standard of 2.5 acres per 1,000 residents. The other local and regional General Plans do not provide a standard for "recreation or parkland" preservation. This planning target assumes a 2035 population of 1.17 million residents in the Antelope Valley Region.

WATER MANAGEMENT STRATEGIES (SECTION 5)

An overview and description of each of the Proposition 50 Water Management Strategies required to be considered in the AV IRWM Plan is provided in Section 5. These water management strategies include those that are currently utilized by the agencies and organizations in the Antelope Valley Region on an ongoing basis, the strategies now being implemented, and those that are planned for the future.

Additionally, in the AV IRWM Plan, the 20 different water management strategies identified in the IRWM Plan Guidelines (CWC §§ 79562.5 and 79564) were compared with those identified in the California Water Plan and then grouped into the AV IRWM Plan's five regional and broad-based water management strategy areas: water supply management; water quality management; flood management; environmental resource management; and land use management.

To help identify the many potential projects in the Antelope Valley Region and to assess the contribution of these projects towards meeting the AV IRWM Plan objectives and planning targets (as identified in Table ES-1, above), a "Call for Projects" form was sent out to all the Stakeholders to give them the opportunity to submit their project concepts for consideration. The Call for Projects provided an avenue to engage the Stakeholders in the information-sharing aspect of Plan development, and resulted in identification of many projects that provide multiple benefits that span more than one water management strategy.

IRWM PLAN AND PROJECTS INTEGRATION, EVALUATION AND PRIORITIZATION (SECTIONS 6 AND 7)

Many local agencies and other community participants have worked well together to create a Plan that identifies challenging issues and needs being faced by all Antelope Valley residents. Fortunately, this IRWM Plan also identifies actions that can help meet the objectives for the Antelope Valley Region and identifies methods for cooperative implementation of those actions.

Table ES-2 lists the projects and actions that the Stakeholders believe will help meet the Regional objectives. Implementing the high priority actions will require focused effort, broad community support, political resolve, and money. The Stakeholders are actively pursuing financial assistance through several grant programs to help leverage local investments. The RWMG is also working to establish a secure and long-lasting way to coordinate resources to meet the growing needs of the entire Antelope Valley Region.

Table ES-2 Stakeholder Prioritized Projects

Priority	Project	Project Sponsor
Water Supply Groundwater Recharge/Banking Infrastructure Projects		
High	Antelope Valley Water Bank	Western Development and Storage
	Aquifer Storage and Recovery Project - Injection Well Development	LACWWD 40
	Upper Amargosa Creek Recharge, Flood Control & Riparian Habitat Restoration Project	City of Palmdale, AVEK
	Water Supply Stabilization Project – Westside	AVEK/AVSWCA/ LACWWD 40
Medium	Aquifer Storage and Recovery Project: Additional Storage Capacity	LACWWD 40
	Lower Amargosa Creek Recharge & Flood Control Project	J. Goit/City of Palmdale
	Water Supply Stabilization Project – Eastside Project	AVEK
Water Infrastructure Projects		
High	Avenue K Transmission Main, Phases I-IV	LACWWD 40
	Littlerock Dam Sediment Removal Project	PWD
	Wastewater Pipeline	RCSD
Low	Avenue M and 60th Street West Tanks	LACWWD 40
	Place Valves and Turnouts on Reclaimed Water Pipeline	RCSD

Table ES-2 Stakeholder Prioritized Projects (continued)

Priority	Project	Project Sponsor
Recycled Water Projects		
High	Antelope Valley Recycled Water Project Phase 2	LACWWD 40/Palmdale/ LACSD
	Groundwater Recharge Using Recycled Water Project	City of Lancaster
Medium	Groundwater Recharge – Recycled Water Project	PWD
	Kern County and Los Angeles County Interconnection Pipeline	RCSD
	Regional Recycled Water Project Phase 3	LACWWD 40/Palmdale/LACSD
	Tertiary Treated Water Conveyance and Incidental Groundwater Recharge of Amargosa Creek Avenue M to Avenue H	City of Lancaster
Low	Regional Recycled Water Project Phase 4	LACWWD 40/Palmdale/ LACSD
Water Conservation/Water Use Efficiency		
High	Comprehensive Water Conservation/Efficient Water Use Program	Antelope Valley Water Conservation Coalition/ LACWWD/PWD
Water Quality Projects		
High	Lancaster Water Reclamation Plan Stage V	LACSD
	Palmdale Water Reclamation Plan Existing Effluent Management Sites	LACSD
	Palmdale Water Reclamation Plan Stage V	LACSD
	Partial Well Abandonment of Groundwater Wells for Arsenic Mitigation	LACWWD 40
Medium	Lancaster Water Reclamation Plan Stage VI	LACSD
	Lancaster Water Reclamation Plan Proposed Effluent Management Sites	LACSD
	Palmdale Water Reclamation Plan Stage VI	LACSD
	Palmdale Water Reclamation Plan Proposed Effluent Management Sites	LACSD
	Palmdale Water District New Treatment Plant	PWD
Low	42nd Street East, Sewer Installation	City of Palmdale
Flood Management Projects		
High	Development of Coordinated Antelope Valley Flood Control Plan	Cities of Lancaster, Palmdale, Los Angeles Department of Public Works (LADPW), Kern County
Medium	Quartz Hill Storm Drain	LADPW
	Anaverde Detention Basin, Dam & Spillway at Pelona Vista Park	City of Palmdale
	Barrel Springs Detention Basin and Wetlands	City of Palmdale
	Hunt Canyon Groundwater Recharge and Flood Control Basin	City of Palmdale
Low	45th Street East Flood Control Basin (Q East Basin)	City of Palmdale
	Avenue Q and 20th Street East Basin (Q West Basin)	City of Palmdale
	Storm water Harvesting	Leona Valley Town Council
Environmental Resource Management Projects		
High	Ecosystem and Riparian Habitat Restoration of Amargosa Creek; Avenue J to Avenue H	City of Lancaster
Medium	Tropico Park Pipeline Project	RCSD
Land Use Management Projects		
High	Development of a Coordinated Land Use Management Plan	Cities of Lancaster, Palmdale, LADPW, Kern County /Antelope Valley Conservancy
	Amargosa Creek Pathways Project	City of Lancaster

FRAMEWORK FOR IMPLEMENTATION (SECTION 8)

The AV IRWM Plan is a dynamic document that identifies monitoring guidelines and sets forth procedures for measuring the success, benefits, and impacts of the AV IRWM Plan. An ongoing management process is proposed for evaluating, updating and maintaining the Plan, and a comprehensive implementation framework has been developed to establish and identify a capital improvement program and financial plan for both construction and operation and maintenance of the projects and management actions selected as "high priority" (see Table ES-2, for a list of the high priority projects).

The 11 public agencies that have joined together to create the RWMG have recognized the value of working collectively towards meeting the regional goals identified in this Plan. In order to do this, they have signed a Memorandum of Understanding (MOU) to define what their roles and responsibilities are in developing and moving forward with implementation of the AV IRWM Plan. The decision-making structure of the MOU provides the RWMG with the responsibility to make formal decisions regarding the scope and content of the AV IRWM Plan. While the structure and approach has been successful to create the plan, the RWMG discussed whether the MOU and facilitated broad agreement approach would work well to implement and update the Plan after it is adopted. Several potential options were discussed including selection of one willing existing agency within the RWMG, (the City of Palmdale for example), that would serve on behalf of the entire stakeholder group, or creation of a new legal entity, such as a new Joint Powers Authority (JPA) to lead the collaboration with the stakeholder group and help implement the IRWM Plan.

The stakeholders decided that they would like to continue using the current approach of facilitated broad agreement to implement and update the AV IRWM Plan. However, several of the RWMG Members expressed a desire to form a more formal governance structure to implement the Plan over the next several years. The stakeholders understand that creating a new, more formal governance structure that will maintain the positive momentum the group has demonstrated during the past year until the year 2035 will likely require a few years.

Implementation of the high priority projects in the IRWM Plan is currently the responsibility of the individual lead agency with the jurisdictional authority to approve the project. The Stakeholders and RWMG have chosen these projects because they want to take action on them within the next two to three years, and they directly address the objectives and targets of better management of resources within the Antelope Valley Region. Furthermore, implementing the projects together yield greater benefits to the Region then if each agency implemented on their own.

The collection, management, distribution and use of data collected as part of this IRWM Planning effort, and through implementation, are essential to making this a sustainable effort that will benefit the Antelope Valley Region for years to come. Data regarding water quantity and quality are currently collected and distributed by a number of different agencies. The Stakeholders have identified strategies in this IRWM Plan to ensure quick identification of data gaps, avoiding duplicative (and costly) studies that result in the same information, and integrating with other important regional, statewide programs, and federal needs.

This IRWM Plan identifies performance measures that will be used to evaluate strategy performance, monitoring systems that will be used to gather actual performance data, and mechanisms to change these strategies if the data collected shows the Antelope Valley Region's IRWM planning targets are not being met. The Stakeholders also recognized that additional technical detail is needed for several of the IRWM Plan's performance measures to be properly implemented and measurable. The Stakeholder group has agreed to continue to refine these performance measures as the AV IRWM Plan is implemented.

This IRWM Plan is necessarily a Stakeholder-driven Plan. The RWMG invites the public and interested Stakeholders to become active participants in the Region's ongoing efforts to:

- Identify, evaluate, prioritize, and implement solutions to the Region's complex water management issues, challenges, and conflicts; and
- Continue the development and evolution of this Plan.

The San Gabriel Mountains provide a beautiful, natural backdrop to many Antelope Valley households.