

2010



San Diego County
Water Authority



URBAN WATER Management Plan



Prepared by
**San Diego County Water Authority
Water Resources Department**



2010 URBAN WATER MANAGEMENT PLAN

Prepared by:

**San Diego County Water Authority
Water Resources Department**

With assistance provided by the following departments:

General Counsel
MWD Program
Colorado River Program
Water Conservation Program
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Acronyms and Abbreviations

µg/l	micrograms per liter
°F	degrees Fahrenheit
2005 Plan	Updated 2005 Urban Water Management Plan
2010 Plan	2010 Urban Water Management Plan

AAC	All-American Canal
AB	Assembly Bill
Act	Urban Water Management Planning Act
AF/YR	acre-feet per year
AWMP	Agriculture Water Management Program
AWP	Advanced Water Purification

BDCP	Bay Delta Conservation Plan
BiOp	Biological Opinion
Blueprint	Blueprint for Water Conservation
BMPs	best management practices
Board	Board of Directors

CAC	Conservation Action Committee
CAWCD	Central Arizona Water Conservation District
CC	Coachella Canal
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDPH	California Department of Public Health
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CII	commercial, industrial, and institutional
CIMIS	California Irrigation Management Information System
CIP	Capital Improvement Program
CO2	carbon dioxide
CRA	Colorado River Aqueduct
CSP	Carryover Storage Project
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
CVWD	Coachella Valley Water District
CWSRF	Clean Water State Revolving Fund

D/DBP	Disinfection Byproducts
DBPs	disinfection byproducts
Delta	Sacramento–San Joaquin River Delta

DHCCP	Delta Habitat Conservation & Conveyance Program
DOE	U.S. Department of Energy
DPH	Department of Public Health
DWA	Desert Water Agency
DWR	California Department of Water Resources
EIR	environmental impact report
EIS	environment impact statement
EPA	U. S. Environmental Protection Agency
ESA	Endangered Species Acts
ESP	Emergency Storage Project
Forum	Colorado River Basin Salinity Control Forum
GCM	General Circulation Model
GIS	geographic information system
GO	General Obligation
GPCD	gallons per capita per day
GRP	Groundwater Recovery Program
ICP	Integrated Contingency Plan
ID	Irrigation District
IID	Imperial Irrigation District
IPCC	Intergovernmental Panel on Climate Change
IRWM	Integrated Regional Water Management
lb/day	pounds per day
LISA	Local Investigation and Studies Assistance Program
LPP	Local Projects Program
LRP	Local Resources Program
LWSD	Local Water Supply Development
M&I	municipal and industrial
MAIN	Municipal And Industrial Needs
Master Plan Update	2012 Regional Water Facilities Optimization and Master Plan Update
M&I	Municipal and Industrial
Master Plan	2002 Regional Water Facilities Master Plan
MBR	Membrane Bioreactor
MCB Camp Pendleton	Marine Corps Base Camp Pendleton
MCL	Maximum Contaminant Level

mg/l	milligrams per liter
MGD	million gallons per day
Mission RCD	Mission Resource Conservation District
MOU	Memorandum of Understanding
MSCP	Multi-Species Conservation Program
MTBE	Methyl Tertiary Butyl Ether
MW	megawatts
MWD	Municipal Water District
NCCP	Natural Community Conservation Plan
NIMS	National Incident Management System
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OM&R	Operation, Maintenance, and Repair
Otay	Otay Water District
pCi/l	picocuries per liter
PL	Public Law
Poseidon	Poseidon Resources
ppm	parts per million
Project	Carlsbad Desalination Project
PUD	Public Utility District
QSA	Quantification Settlement Agreement
Regional Board	Regional Water Quality Control Board
RFP	Request for Proposal
RO	reverse osmosis
ROD	Record of Decision
RSF	Rate Stabilization Fund
RUWMP	Regional Urban Water Management Plan
RWDF	Recycled Water Development Fund
RWMG	Regional Water Management Group
SANDAG	San Diego Association of Governments
SAWR	Special Agricultural Water Rate
SB	Senate Bill
SBX7-7	Senate Bill 7 of the Seventh Extraordinary Session of 2009 (Water Code §10608); also known as Water Conservation Act of 2009

SCSC	Southern California Salinity Coalition
SDCWA	San Diego County Water Authority
SDGE	San Diego Gas & Electric
SDWA	Safe Drinking Water Act
SEMS	Standardized Emergency Management System
SNWA	Southern Nevada Water Authority
SWA	Source Water Assessment
SWAT	Smart Water Application Technologies
SWP	State Water Project
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
TOC	total organic carbon
Transfer Agreement	Water Authority–IID Water Conservation and
Transfer Agreement	
USBR	U.S. Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
VIP	Voucher Incentive Program
Water Authority	San Diego County Water Authority
WD	Water District
WSAP	Water Supply Allocation plan
WSDM	Water Surplus and Drought Management
WSDRP	Water Shortage and Drought Response Plan
WTP	Water Treatment Plant
WUCA	Water Utility Climate Alliance

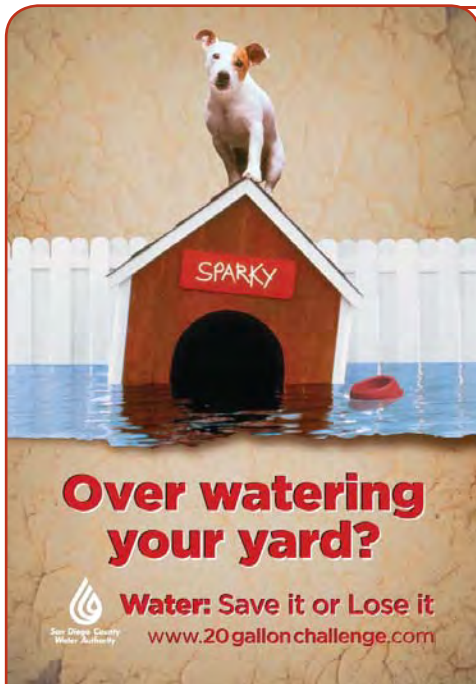
INTRODUCTION



The San Diego County Water Authority's (Water Authority) 2010 Urban Water Management Plan (2010 Plan) has been prepared in accordance and compliance with the Urban Water Management Planning Act (Act) (Water Code §10610 through 10656) and includes the conservation measures, programs and policies required by Water Code §10608.36.

Urban water suppliers are required by the Act to update their Urban Water Management Plan (UWMP) and submit a complete version to the California Department of Water Resources (DWR) every five years. The plan serves as the Water Authority's long-term planning document to ensure a reliable water supply for the region. In accordance with its Administrative Code, the Water Authority will also prepare annual water supply reports commencing in 2012 to provide updated information on development of local and imported water supplies. New for the 2010 Plan are the following sections: the Water Authority's climate change mitigation and adaptation strategies in **Section 1.7.3**; measures, programs, and policies to achieve per capita water use targets as required by Water Code § 10608.36 at both the retail agency level and the Water Authority as a wholesale provider in **Sections 1.2, 2.4.2, and 3**; a discussion on the Water Authority's Integrated Regional Water Management Plan in **Section 8**; the Water Authority's Scenario Planning process to deal with future uncertainties in long-range water planning in **Section 10**; and details on the 2007-2011 water shortage in **Section 11**.

The Water Authority's mission is to provide a safe and reliable supply of water to its member agencies serving the San Diego region. This 2010 Plan identifies a diverse mix of water resources projected to be developed over the next 25 years to ensure long-term water supply reliability for the region.



A new portion of the 2010 Plan details the 2007-2011 water shortage in Section 11. An example of the bus transit ads placed around San Diego county during the shortage is seen above.



The Water Authority has contracted rights to 77,700 AF/YR of conserved water from projects to line the All-American (seen above) and Coachella Canals.

Since adopting the Updated 2005 Urban Water Management Plan (2005 Plan), the Water Authority and its member agencies have made great strides in conserving and diversifying its supplies. With an aggressive conservation program, the region has conserved an average of 53,605 acre-feet per year (AF/YR) of water over the last five years when compared to the benchmark year of demand in 1991. Conserved agricultural transfer water from the Imperial Valley will provide 200,000 AF/YR by 2021. The Water Authority has contracted rights to 77,700 AF/YR of conserved water from projects to line the All-American and Coachella Canals. Deliveries of conserved water from the Coachella Canal reached the region in 2007, and deliveries from the All-American Canal reached the region in 2010.

Developing these supplies is key to diversifying the region's supply sources, but other factors are also important, such as member agencies implementing and managing local resources.

Indeed, local surface water, groundwater, and recycled water are all important elements of a diverse water supply portfolio. Also, the Metropolitan Water District of Southern California (Metropolitan) must continue to provide a reliable supply of imported water to the region. The Water Authority, its member agencies, and Metropolitan should work together to ensure a diverse and reliable supply for the region.

1.1 CALIFORNIA URBAN WATER MANAGEMENT PLANNING ACT

The Act requires all urban water suppliers in the state to prepare UWMPs and update them every five years. The Water Authority utilized DWR's *Guidebook to Assist Urban Water Suppliers to Prepare a 2010 UWMP* in preparation of this Plan.

Major amendments made to the Act since preparation of the Water Authority's 2005 Plan include the following:

- ☐ Water Code Section 10631.1 requires a plan by retail water suppliers to include water use projections for single- and multi-family residential housing needed for lower income and affordable households, to assist with compliance with the existing requirement under Section 65589.7 of the Government Code, that suppliers grant a priority for the provision of service to housing units affordable to lower income households.
- ☐ Water Code Section 10621(b) clarifies that every urban water supplier preparing a plan must give at least 60 days advanced notice to any city or county prior to the public hearing on the plan within which the supplier provides water supplies to allow for consultation on the proposed plan.
- ☐ Water Code Section 10631(j) deems water suppliers that are members of the California Urban Water Conservation Council (CUWCC) and comply with the Memorandum of Understanding (MOU), as it may be amended, to be in compliance with the requirement to describe the supplier's water demand management measures in its UWMP.
- ☐ Water Code Section 10631.7 required DWR¹, in consultation with the CUWCC, to convene a technical panel, no later than January 1, 2009, to provide information and recommendations to DWR and the Legislature on new demand management measures, technologies, and approaches. The panel and DWR were to report to the Legislature on their findings no later than January 1, 2010 and each five years thereafter;
- ☐ Water Code Section 10633(d) clarifies that the "indirect potable reuse" of recycled water should be described and quantified in the plan, including a determination regarding the technical and economic feasibility of serving those uses.

¹Due to subsequent changes in the law (see Section 1.2 on Senate Bill 7), DWR has not yet convened this technical panel or submitted a report to the Legislature.



A new law, referred to as SBX7-7, seeks to achieve a 20 percent reduction in urban per capita water use by 2020.

□ Water Code Section 10644(c) requires DWR to recognize exemplary efforts by water suppliers by obligating DWR to identify and report to the technical panel, described above, and “exemplary elements” of individual water suppliers’ plans, meaning any water demand management measures adopted and implemented by specific urban water suppliers that achieve water savings significantly above the levels required to meet the conditions to state grant or loan funding.

Water Code Section 10631.5 was amended to address conditions of eligibility for grants or loans from DWR. DWR will consider whether the urban water supplier has submitted an updated plan when determining eligibility for funds made available pursuant to any program administered by the department.

According to Water Code Section 10610.2(2), “[t]he conservation and efficient use of urban water

supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.”

Appendix A contains the text of the Act.

1.2 SENATE BILL 7 OF THE SEVENTH EXTRAORDINARY SESSION OF 2009

In addition to changes in the Act, the state Legislature passed Senate Bill 7 as part of the Seventh Extraordinary Session, referred to as SBX7-7, on November 10, 2009, which became effective February 3, 2010. This new law was the water conservation component to the Delta legislation package, and seeks to achieve a 20 percent statewide reduction in urban per capita water use in California by December 31, 2020. The law requires each urban retail water supplier to develop urban water use targets to help meet the 20 percent goal by 2020, and an interim water reduction target by 2015.

Urban retail water suppliers must include in their 2010 plans the following information from the bill’s target setting process: (1) baseline daily per capita water use; (2) urban water use target; (3) interim water use target; (4) compliance daily per capita water use, including technical bases and supporting data for those determinations. An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan. (Water Code Section 10608.20.) Wholesale water suppliers must include in their 2010 Plans an assessment of their present and proposed future measures, programs and policies to help retail agencies achieve their water use reduction targets. (Water Code Section 10608.36.) **Appendix A** also contains the text of SBX7-7.

1.3 SENATE BILLS 610 AND 221

Water Code Sections 10910 through 10914 and Government Code Sections 65867.5, 66455.3, and 66473.7 (commonly referred to as SB 610 and SB 221) amended state law to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 requires that the water purveyor of the public water system prepare a water supply assessment to be included in the environmental documentation of certain large proposed projects. SB 221 requires affirmative written verification from the water purveyor of the public water system that sufficient water supplies are available for certain large residential subdivisions of property prior to approval of a tentative map.

Section 4, “San Diego County Water Authority Supplies,” and **Appendix E** of the 2010 Plan contains documentation on the existing and planned water supplies being developed by the Water Authority. This documentation may be used by the Water Authority’s member agencies in preparing the water supply assessments and written verifications required under state law. Specific documentation on member agency supplies and Metropolitan supplies may be found in their respective plans.

1.4 WATER AUTHORITY’S 2010 PLAN PREPARATION AND IMPLEMENTATION



The Urban Water Management Plan Working Group is made up of staff from the Water Authority and its member agencies.

To adequately demonstrate regional water supply reliability over the next 25 years, the 2010 Plan quantifies the regional mix of existing and projected local and imported supplies necessary to meet future retail demands within the Water Authority’s service area. Although the 2010 Plan includes specific documentation regarding development of the Water Authority’s supplies, the plans submitted by the member agencies and Metropolitan will provide details on their supplies that contribute to the diversification and reliability of supplies for the San Diego region.

Reasonable consistency among the plans of Metropolitan, Water Authority, and its member agencies’ plans is important to accurately identify the projected supplies available to meet regional demands. In order to facilitate coordination within the Water Authority’s service area, the Water

Authority formed an Urban Water Management Plan Working Group made up of staff from the Water Authority and its member agencies. This group provided a forum for exchanging demand and local supply information. The Water Authority further coordinated its efforts by working with the appropriate wastewater

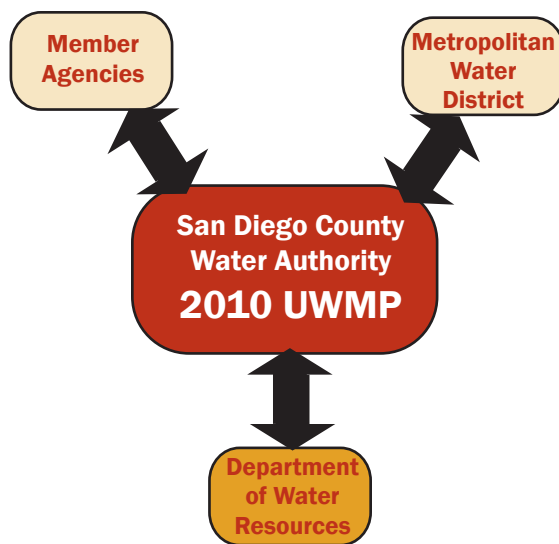
agencies. These agencies helped prepare the water recycling element of the 2010 Plan, which describes the wastewater treatment requirements and water recycling potential. In addition, Water Authority staff participated in Metropolitan's Regional Urban Water Management Plan member agency coordination meeting to discuss and share information pertaining to demands and supplies within their service areas. The Water Authority further coordinated with Metropolitan regarding projected needs for imported water deliveries, and provided Metropolitan with a copy of the draft 2010 Plan. The Water Authority participated in DWR hosted webinars on November 30, 2010, and a special workshop on March 7, 2011, to review the requirements of the Act.

An administrative draft of the Water Authority's 2010 Plan was distributed to the Water Authority's member agencies for technical review, and their comments were incorporated into the public review draft 2010 Plan prior to release. Providing member agencies with an administrative draft Plan, which included water supply projections, satisfies Water Code Section 10631(k).

In accordance with the Act, the Water Authority notified the land use jurisdictions within its service area 60 days prior to a public hearing that it was preparing a 2010 Plan (Water Code Section 10635(b)). In addition, the Water Authority encouraged active involvement within its service area prior to and during preparation of the draft Plan (Water Code Section 10642). The public review draft of the 2010 Plan was distributed to the Water Authority's Board of Directors and public for review and comment on May 6, 2011. The public distribution list included entities such as the San Diego Regional Chamber of Commerce, San Diego County Taxpayer's Association, Sierra Club, San Diego County Farm Bureau, County of San Diego, and cities within the Water Authority's service area. The 2010 Plan was available during public review at the Water Authority's office and on the Water Authority's

internet homepage at www.sdcwa.org. The deadline for receipt of comments on the draft 2010 Plan was June 6, 2011. A public hearing to receive comments on the draft 2010 Plan was held on May 26, 2011. Notice of the Public Hearing was published in two separate publications of the San Diego Union-Tribune, the newspaper designated by the Water Authority for publications of notices, as required by Government Code Section 6066 and Water Code Section 10642. The Water Authority reviewed all of the comments received and revised the plan accordingly. On June 23, 2011, the Water Authority's Board of Directors adopted the 2010 Plan. The Water Authority submitted a copy of the adopted 2010 Plan to DWR, the California State Library, the County of San Diego, and the cities within the Water Authority's service area within 30 days of adoption (Water Code Section 10644 (a)). In addition, a copy of the adopted 2010 Plan is available for review at the Water Authority's office during normal business hours, and a copy of the adopted plan has been posted on the Water Authority's website at www.sdcwa.org/2010-urban-water-management-plan (Water Code Section 10645). A copy of the resolution adopting the 2010 Plan, along with copies of notifications, mailing lists, and other Water Authority 2010 Plan implementation documents, are provided in **Appendix B**.

Plan Consistency with Metropolitan and Member Agencies along with DWR Guidelines



DWR prepared a checklist of items based on the Act that must be addressed in an agency's plan. This checklist allows an agency to identify where in its plan it has addressed each item. The Water Authority has completed the checklist, referencing the sections and appendices included in the 2010 Plan. The completed checklist is included in **Appendix C**.

1.5 HISTORY AND DESCRIPTION OF THE WATER AUTHORITY

1.5.1 History

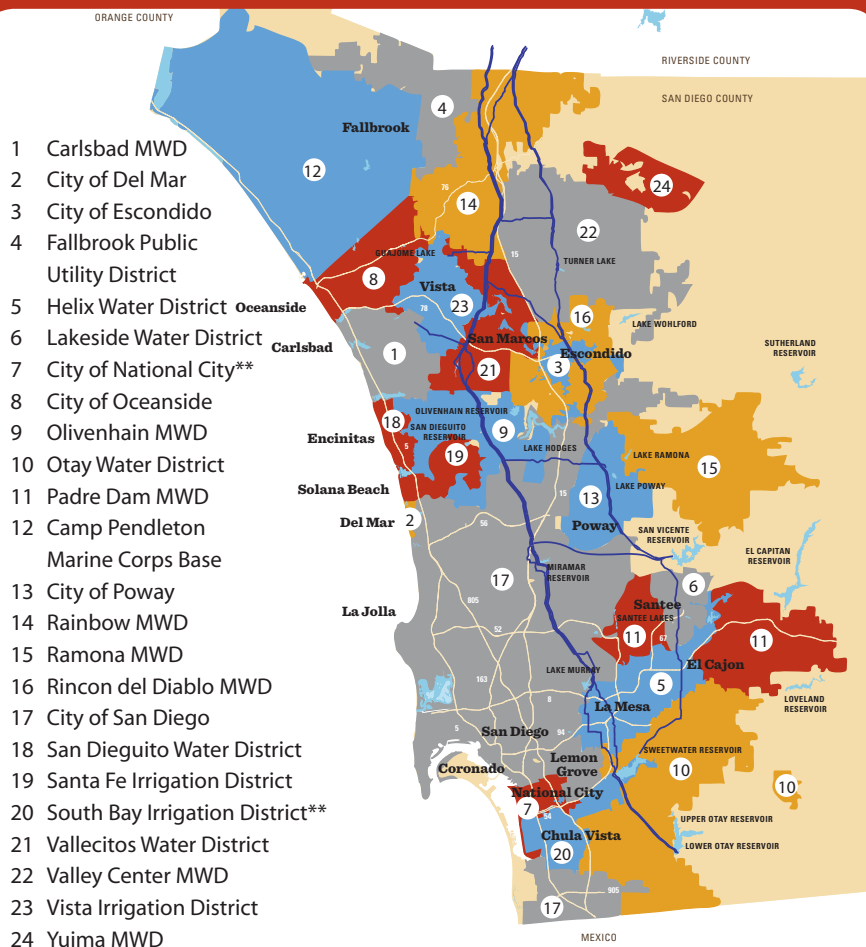
The Water Authority was established pursuant to legislation adopted by the California State Legislature in 1943 to provide a supplemental supply of water as the San Diego region's civilian and military population expanded to meet wartime activities. Because of the strong military presence, the federal government arranged for supplemental supplies from the Colorado River in

the 1940s. In 1947, water began to be imported from the Colorado River via a single pipeline that connected to Metropolitan's Colorado River Aqueduct (CRA) located in Riverside County. To meet the water demand for a growing population and economy, the Water Authority constructed four additional pipelines between the 1950s and early 1980s that are all connected to Metropolitan's distribution system and deliver water to San Diego County. The Water Authority is now the county's predominant source of water, supplying from 75 to 95 percent of the region's needs depending upon weather conditions and yield from surface, recycled, and groundwater projects.

1.5.2 Service Area

The Water Authority's boundaries extend from the border with Mexico in the south, to Orange and Riverside counties in the north, and from the Pacific Ocean to the foothills that terminate the coastal plain in the east. With a total of 951,000 acres (1,486 square miles), the Water Authority's service area encompasses the western third of San Diego County. Figure 1-1 shows the Water Authority's service area, its member agencies, and aqueducts (shown as blue lines).

Figure 1.1 Water Authority Service Area and Member Agencies



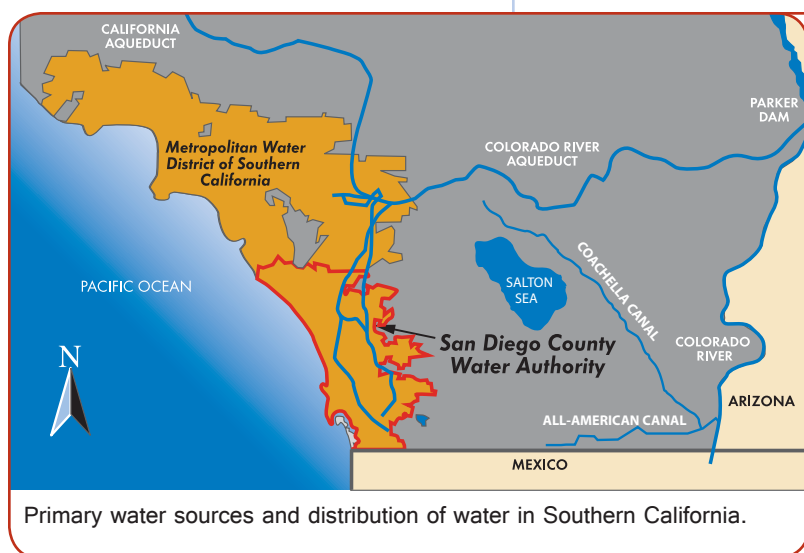
A member of the San Diego County Board of Supervisors also serves as a representative to the Water Authority board of directors.

** The Sweetwater Authority is a service organization for the city of National City and the South Bay Irrigation District.

1.5.3 Member Agencies

The Water Authority's 24 member agencies purchase water from the Water Authority for retail distribution within their service territories. A 36-member Board of Directors (Board) comprised of member agency representatives governs the Water Authority. The member agencies' six cities, five water districts, eight municipal water districts, three irrigation districts, a public utility district, and a federal military reservation have diverse and varying water needs.

In terms of land area, the city of San Diego is the largest member agency with 210,726 acres. The smallest is the city of Del Mar, with 1,159 acres. Some member agencies, such as the cities of National City and Del Mar, use water almost entirely for municipal and industrial purposes. Others, including Valley Center, Rainbow, and Yuima Municipal Water Districts, deliver water that is used mostly for agricultural production.



1.6 WATER AUTHORITY PHYSICAL WATER DELIVERY SYSTEM

The Water Authority was organized for the primary purpose of supplying imported water to San Diego County for wholesale distribution to its member agencies. These imported water supplies consist of water purchases from Metropolitan, core water transfers from Imperial Irrigation District (IID) and canal lining projects that are wheeled through Metropolitan's conveyance facilities, and spot water transfers that are pursued on an as-needed basis to offset reductions in supplies from Metropolitan. The largest single-year of imported water sales recorded by the Water Authority was 661,300 AF in fiscal year 2007.

1.6.1 Aqueduct System

Imported water supplies are delivered to the Water Authority member agencies through a system of large-diameter pipelines, pumping stations, and reservoirs. The pipelines deliver supplies from Metropolitan are divided into two aqueduct alignments, both of which originate at Lake Skinner in southern Riverside County and run in a north to south direction through the Water Authority service area. Metropolitan's ownership of these pipelines extends to a "delivery point" six miles into San Diego County. From there, Pipelines 1 and 2 comprise the First San Diego Aqueduct, which reaches from the delivery point to the San Vicente Reservoir. These two pipelines share five common tunnels and operate as a single unit to provide 180 cubic feet per second (cfs) of conveyance capacity. Pipelines 3, 4, and 5 form the Second San Diego Aqueduct. These pipelines, which are located several miles to the west of the First San Diego Aqueduct, have delivery point capacities as follows: Pipeline 3 provides 280 cfs; Pipeline 4 provides 470 cfs; and Pipeline 5 provides 500 cfs.

TABLE 1-1. WATER AUTHORITY PIPELINES

Pipelines	Length (miles)	Diameter (in)
FIRST SAN DIEGO AQUEDUCT:		
Pipeline 1 and Pipeline 2	64.4	48–72
La Mesa-Sweetwater Extension	16.4	18–42
Moreno-Lakeside Pipeline	4.5	54–60
SECOND SAN DIEGO AQUEDUCT:		
Pipeline 3	57.0	66–75
Pipeline 4	75.0	69–108
Pipeline 5	33.3	96–108
Crossover Pipeline	7.5	66
North County Distribution Pipeline	4.5	72
Tri-Agencies Branch Pipeline	6.4	21–42
Ramona Pipeline	7.2	36–57
Valley Center Pipeline	4.5	66
Olivenhain Pipeline	4.5	78
Olivenhain-Hodges Pipeline	1.5	120

In addition to the above north–south pipelines, there are several east–west pipelines that extend service to multiple member agencies. A listing of the pipelines owned and operated by the Water Authority is provided in Table 1-1, with the pipeline locations shown in Figure 1-1.

Although most of the water conveyed through the aqueduct system is by gravity flow, the Water Authority also maintains several pumping stations that enhance the operational flexibility of the pipeline system to meet daily, seasonal, and emergency needs. The Water Authority-owned pump stations are listed in Table 1-2.

Three of the water pump stations are for untreated water and are sized to protect the region from poten-

TABLE 1-2. WATER AUTHORITY PUMP STATIONS

Pump Stations	Capacity (cfs)
Escondido Pump Station	20
Valley Center Pump Station	20
Miramar Pump Station	85
Olivenhain Pump Station	314
San Vicente Pump Station	444
Olivenhain-Hodges Pumped Storage ¹	760

¹Under construction

tial disruptions of imported water supplies. If a supply disruption occurs, the untreated water pump stations will deliver emergency water supplies from newly expanded or existing local storage reservoirs. For more information on emergency facilities and a description of the Emergency Storage Project (ESP), please refer to **Section 11.1.2**.

At other times, except for the Miramar Pump Station, all the Water Authority-owned pumping stations can be used to move water supplies into and out of storage reservoirs to meet seasonal delivery needs

and to augment daily supplies to the member agencies. The Miramar Pump Station is mainly used to deliver treated water via the aqueduct system from the city's Miramar Water Treatment Plant to city service connections south of the treatment plant.

1.6.2 Storage Facilities

Storage facilities are used by the Water Authority to both manage daily operations and provide reserves for seasonal, drought, and emergency storage needs. System Regulatory Storage facilities, which consist of enclosed reinforced concrete storage tanks, are available to manage the daily balance of treated and untreated water deliveries. System Regulatory Storage within the aqueduct system currently totals 56 million gallons, with the bulk of this amount in storage tanks located in Twin Oaks Valley and the Mission Trail Regional Park.



Upon completion of the San Vicente Dam Raise (shown above) and the Olivenhain-Hodges Pumped Storage Project, surface water storage capacity will increase to a total 192,000 AF.

Water Authority seasonal, drought, and emergency storage capacity currently includes 24,300 AF of in-region surface water storage at the Olivenhain Reservoir and 70,000 AF of out-of-region leased groundwater storage in the San Joaquin Valley. The groundwater storage includes 30,000 AF of storage and capacity rights acquired in June 2008 in the Semitropic Water Bank, and 40,000 AF of storage provided by the Semitropic-Rosamond Water Bank Authority that was acquired in August 2008.

As part of its ESP, the Water Authority is set to significantly increase its in-region surface water storage capacity. Upon completion of the San Vicente Dam Raise (estimated completion 2013) and the Olivenhain-Hodges Pumped Storage project (estimated completion 2011), surface water storage capacity will increase to a total 192,000 AF. Of this amount, a rolling two month average of consumptive demand is considered emergency storage, which will be available to offset complete loss of imported water supplies from Metropolitan during an extended shutdown

or outage of the aqueduct system. The balance of the in-region storage is for carryover, seasonal, or operational storage needs. Carryover storage helps to ensure supply reliability for the region during periods of potential shortages resulting from drought conditions and when pumping restrictions may impact deliveries from Metropolitan and the State Water Project.

Until the San Vicente and Olivenhain-Hodges storage projects are complete, and as a response to recent drought conditions and State Water Project pumping restrictions, the Water Authority entered into short-term agreements with the Sweetwater Authority and the city of San Diego giving it the right to use available storage space within local reservoirs. As of January 2011, the Water Authority had approximately 40,000 AF of carryover storage into Sweetwater and city of San Diego reservoirs. When the construction is complete on the San Vicente Dam Raise, the Water Authority will maintain its in-region carryover storage in San Vicente Reservoir.

1.6.3 Water Treatment

Up until 2008, the Water Authority purchased its treated water supplies from Metropolitan and from member agencies that own and operate local water treatment plants. As early as 2001, the supplies from Metropolitan were being constrained by increasing treated water demands on the Metropolitan system and insufficient treated water pipeline conveyance capacity. As a result, in June 2004, the Water Authority began construction of the 100 million gallons per day (MGD) Twin Oaks Valley Water Treatment Plant (WTP). This WTP was completed and placed in service in April 2008, and now produces high-quality drinking water serving mainly northern San Diego County.

In addition to the Twin Oaks Valley WTP, the Water Authority entered into an agreement with the Helix Water District to purchase 36 MGD of treatment capacity from the R.M. Levy WTP. Water from the Levy plant supplements treated water service to eastern San Diego County. The balance of treated water supplies comes from member agency owned and operated water treatment plants. A list of all in-region water treatment plants is shown in Table 1-3.

TABLE 1-3. IN-REGION TREATMENT PLANT CAPACITY

Member Agency	Water Treatment Plant	Capacity (MGD)
Escondido, city of/Vista Irrigation District	Escondido/Vista	65
Helix Water District	Levy	106
Olivenhain Municipal Water District	Olivenhain	34
Oceanside, city of	Weese	25
Poway, city of	Berglund	24
Ramona Municipal Water District	Bargar	4
San Diego, city of	Alvarado	120
San Diego, city of	Miramar	140
San Diego, city of	Lower Otay	40
San Diego County Water Authority	Twin Oaks Valley	100
San Dieguito Water District/Santa Fe Irrigation District	Badger	40
Sweetwater Authority	Perdue	30
Total In-Region Treatment Plant Capacity		728

1.6.4 Capital Improvement Program

The Water Authority's Capital Improvement Program (CIP) can trace its beginnings to a report approved by the Board in 1989 entitled, *The Water Distribution Plan, a Capital Improvement Program through the Year 2010*. The Water Distribution Plan included ten projects designed to increase the capacity of the aqueduct system, increase the yield from existing water treatment plants, obtain additional supplies from Metropolitan, and increase the reliability and flexibility of the aqueduct system. Since that time the Water Authority has made numerous additions to the list of projects included in its CIP as the region's infrastructure needs and water supply outlook have changed.

The current list of projects included in the CIP is based on the results of planning studies, including the 2005 UWMP and the 2002 Regional Water Facilities Master Plan. These CIP projects, which are most recently described in the Water Authority's *Adopted Multi-Year Budget, Fiscal Years 2010 and 2011*, include 47 projects valued at \$3.85 billion. These 47 CIP projects are designed to meet projected water supply and delivery needs of the member agencies through 2030. The projects include a mix of new facilities that will add capacity to existing conveyance, storage, and treatment facilities, as well as repair and replace aging infrastructure. Table 1-4 provides an overview of the CIP based on the following categories:

- ❑ **Asset Management** – The primary components of the asset management projects include relining and replacing existing pipelines and updating and replacing metering facilities.
- ❑ **New Facilities** – These projects will expand the capacity of the aqueduct system, complete the projects required under the Quantification Settlement Agreement (QSA), and evaluate new supply opportunities.
- ❑ **Emergency Storage Project** – Projects remaining to be completed under the ongoing ESP include the San Vicente Dam Raise, the Lake Hodges projects, and a new pump station to extend ESP supplies to the northern reaches of the Water Authority service area.
- ❑ **Other Projects** – This category includes out-of-region groundwater storage, increased local water treatment plant capacity, and projects that mitigate environmental impacts of the CIP.



As part of the Asset Management program, workers weld the joints between pipe sections.

TABLE 1-4. CIP COST SUMMARY BY CATEGORY

Project Category	Project Cost ¹
Asset Management	\$864,443,000
New Facilities	\$1,538,693,000
Emergency Storage Project	\$1,266,411,000
Other Projects	<u>\$95,411,000</u>
Subtotal – Active and Future Projects	\$3,764,958,000
Completed Projects	<u>\$84,025,500</u>
Total for Capital Improvement Program	\$3,848,983,500

¹Source: Adopted Multi-Year Budget, Fiscal Years 2010 and 2011



PRESSURE CONTROL &
HYDROELECTRIC FACILITY

1.6.5 Hydroelectric Facilities

The Water Authority has long supported efforts to develop renewable energy resources that are compatible with water operations. The Water Authority's in-line conduit hydroelectric facilities at Alvarado, Miramar, and Rancho Peñasquitos are able to generate electricity from the available elevation gradient in the aqueduct system to produce an environmentally friendly, clean, and sustainable energy supply. These facilities also generate additional revenues that help offset the cost of imported water supplies. The Alvarado and Miramar facilities are currently out of service but will be evaluated for re-operation under the 2012 Regional Water Facilities Optimization and Master Plan Update. The Rancho Peñasquitos facility has been in continuous operation since 2006 and typically generates enough power to meet the needs of nearly 5,000 county households. The Water Authority's Olivenhain-Hodges facility will provide the region with 40 megawatts (MW) of energy storage, making this power supply available to meet peak demands during high energy use periods. A listing of the Water Authority's hydroelectric facilities is presented in Table 1-5.

TABLE 1-5. WATER AUTHORITY HYDROELECTRIC FACILITIES

Hydroelectric Facilities	Rated Output (MW)
Alvarado (currently out of service)	2.0
Miramar (currently out of service)	0.8
Rancho Peñasquitos	4.5
Olivenhain-Hodges Pumped Storage ¹	40.0
Total Rated Output	47.3

¹Under Construction

1.6.6 2012 Regional Water Facilities Optimization and Master Plan

The 2012 Regional Water Facilities Optimization and Master Plan will update the supply and infrastructure development concepts previously proposed under the Water Authority's initial 2002 Master Plan document, which was finalized in 2003. This initial plan has served as the principal guide for all new facilities implemented by the Water Authority, including the Twin Oaks WTP, the expansion of San Vicente Reservoir to provide carryover storage, recent increases to aqueduct system capacity, and the completion of high-priority pipeline relining projects. For the 2012 Master Plan, prevailing themes will center on (1) optimizing existing regional conveyance, treatment, and storage facilities; (2) matching new infrastructure needs with the water demand and supply projections included in the 2010 Plan; and (3) developing a project prioritization strategy that assures timely and cost effective project implementation through a 2035 planning horizon. Update of the 2012 Plan has been initiated and completion is anticipated at the end of 2012.

1.7 SERVICE AREA CHARACTERISTICS

The Water Authority's service area characteristics have undergone significant changes over the last several decades. Driven by an average annual population increase of 50,000 people per year, large swaths of rural land were shifted to urban uses to accommodate the growth in population. This shift in land use has resulted in the region's prominent urban and suburban



Based on the 2009 Crop Statistics and Annual Report by the San Diego County Department of Agricultural Weights and Measures, the region has 6,687 farms – more than any other county in the nation.

character. San Diego County also has a rich history of agriculture, beginning with the large cattle ranches established in the 18th century and continuing through the diverse range of crops and products grown today. Although the total number of agricultural acres under production has declined, the region maintains a significant number of high value crops, such as cut-flowers, ornamental trees and shrubs, nursery plants, avocados, and citrus. Based on the 2009 Crop Statistics and Annual Report by the San Diego County Department of Agricultural Weights and Measures, the region has 6,687 farms – more than any other county in the nation. San Diego County agriculture is a \$1.5 billion dollar per year industry, and ranks first in the state in gross value of agricultural production for flowers, foliage, and nursery products.

1.7.1 Regional Economy and Demographics

San Diego's economy was subject to two nationwide recessions in the past ten years. First, by a mild recession in 2001 – the aftermath of the dotcom bubble in which many traditional business models were abandoned in favor of business expansion before profitability. This unsustainable business approach resulted in the failure of numerous internet companies and ultimately caused the NASDAQ Composite Index to lose 78 percent of its value.

In late-2007, the national economy plunged into another recession driven by the collapse of large financial institutions, the bailout of banks by the federal government, and a downturn in the housing market. This second recession had more severe and sustained impacts on the local economy, which included reduced home prices, elevated foreclosure rates, and higher job losses. Although June 2009 marked the official end of the recession, its lingering effects are still evident in the diminished number of new housing permits issued in 2010 and double-digit unemployment rate.

However, the San Diego region has shown some resilience in part due to defense-related spending. As the home of the largest concentration of U.S. military forces in the world, San Diego has reaped the leveling effect that Defense Department spending has on undulating economic cycles. Pentagon

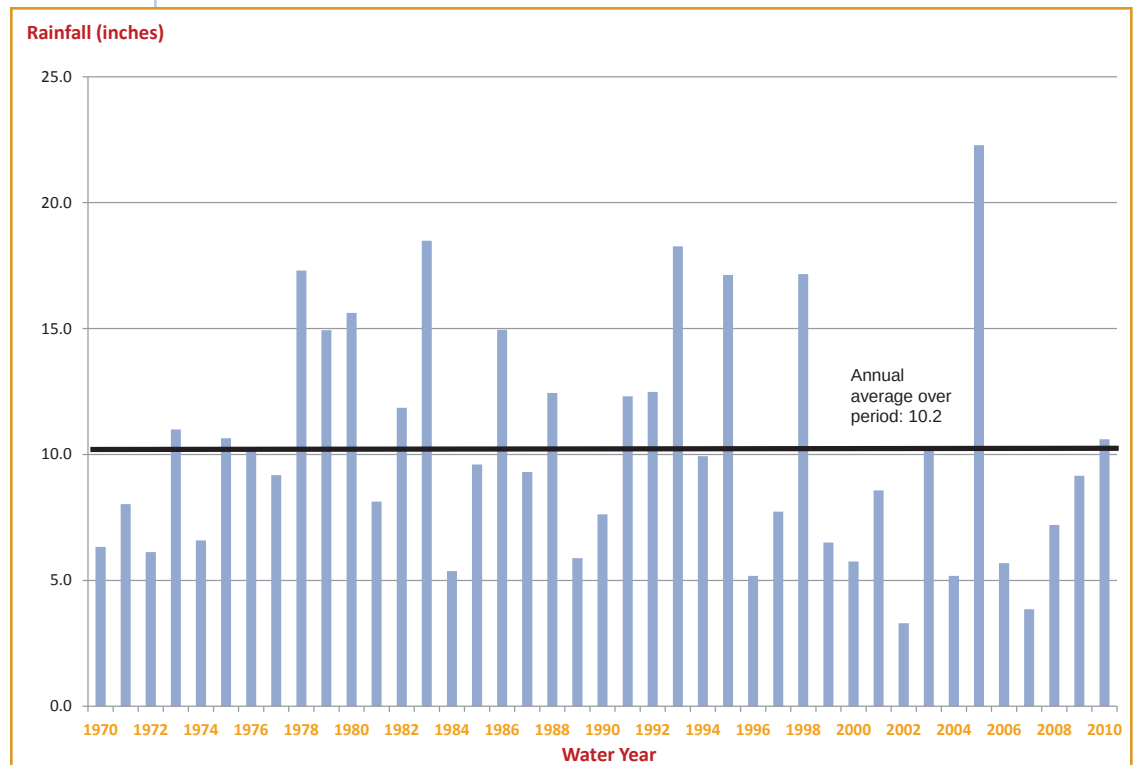
spending is estimated to pump over \$17 billion into the local San Diego economy. In the private sector, San Diego also saw the largest employment growth of the state's main biomedical clusters. Despite the economic recession, San Diego's biomedical sector experienced a 2.5 percent increase in jobs – expanding faster than the San Francisco Bay Area or Los Angeles County.

1.7.2 Climate

Climatic conditions within the county area are characteristically Mediterranean along the coast, with mild temperatures year-round. Inland area weather patterns are more extreme, with summer temperatures often exceeding 90 degrees Fahrenheit (°F) and winter temperatures occasionally dipping below freezing. Average annual rainfall is approximately 10 inches per year on the coast and in excess of 33 inches per year in the inland mountains. More than 80 percent of the region's rainfall occurs between December and March.

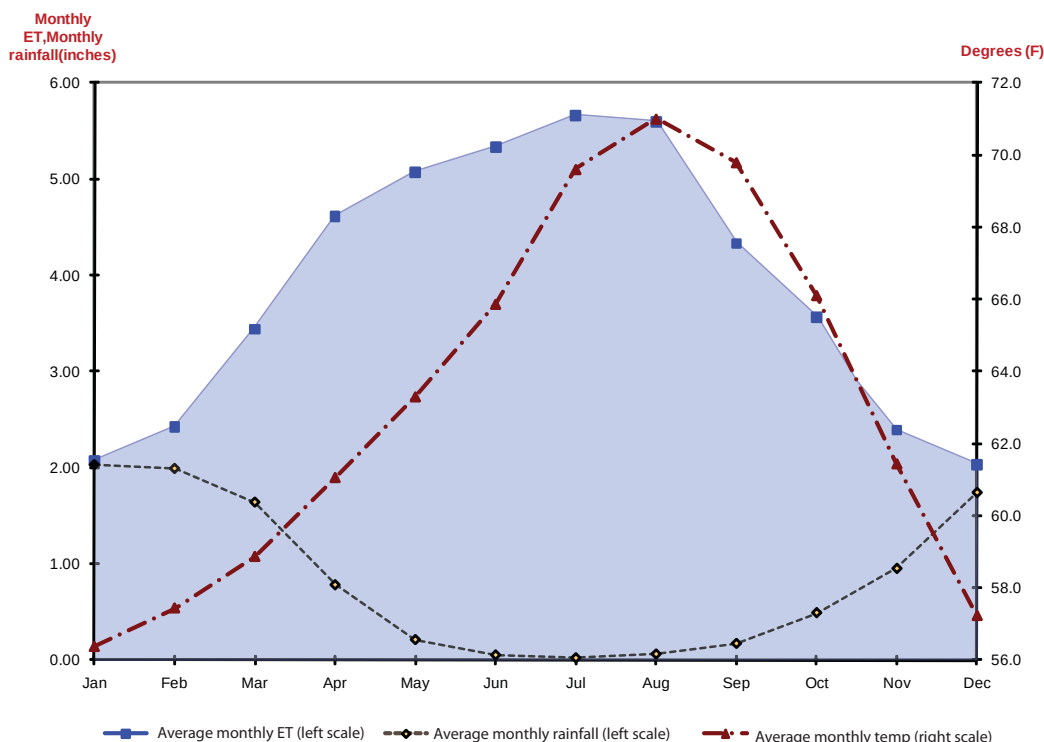
Variations in weather patterns affect regional short-term water requirements, causing reductions in water use during wet cycles and demand spikes during hot, dry periods. Over the last seven years, San Diego has experienced the latter event. Since 1999, local rainfall exceeded the historic annual average only twice (Figure 1-2). These predominantly dry conditions resulted in record level demands during fiscal year 2004, with total local and imported water use surpassing 715,700 AF. With record rainfall in fiscal year 2005, total demands decreased to 642,152 AF. On a monthly basis, water requirements tend to increase during the summer months when a decrease in rainfall combines with an increase in temperatures and an increase in evapotranspiration levels (Figure 1-3).

FIGURE 1-2: LINDBERGH FIELD ANNUAL RAINFALL
Water Years 1970 - 2010



¹Source: Western Regional Climate Center

FIGURE 1-3: AVERAGE MONTHLY VARIABLES
Average Monthly Rainfall, Temperature and Evapotranspiration
(Lindbergh Field, CIMIS Station #184)



¹Source: California Irrigation Management Information System (CIMIS), Western Regional Climate Center

1.7.3 Climate Change Research Efforts and Greenhouse Gas Mitigation

This section discusses the Water Authority’s efforts with regard to studies and research on climate change as well as greenhouse gas mitigation measures. The Scenario Planning process outlined in **Section 10** deals with adapting to potential supply and demand impacts due to climate change. Climate change has become an increasingly important issue to water utilities and both the state and federal legislators. Changes in weather patterns which deviate from historical cycles could significantly affect water supply planning. Irrespective of the debate associated with the sources and cause of increasing concentrations of greenhouse gasses (GHGs), research identifies potential future risks to water resources. The Water Authority recognizes the importance of adapting to climate change and being a leader in sustainability and stewardship. Since 2008, the Water Authority’s business plan has included its Climate Change & Sustainability Program within the core business area. The key issues identified within this program include advocating for improvement in modeling to provide precipitation data on a local and regional scale, encouraging focused scientific research on climate change to identify the impacts on the region’s water supply, and partnering with other water utilities to incorporate the impacts of climate change on water supply planning and the development of decision support tools. The Water Authority recognizes the challenges that climate change poses to our region and is committed to proactively addressing the issue.

1.7.3.1 San Diego County Water Authority's Activities Related to Climate Change Concerns

Knowledge Sharing and Research Support

The Water Authority is an active and founding member of the Water Utility Climate Alliance (WUCA). WUCA consists of ten of the nation's largest water providers collaborating on climate change adaptation and GHG mitigation issues. As part of this effort, WUCA pursues a variety of activities on multiple fronts. WUCA monitors development of climate change-related research, technology, programs, and federal legislation. Activities to date include such things as:

- ☐ Letter of support for Western Water Assessment's continued funding as a Regional Integrated Sciences and Assessments team under the National Oceanic and Atmospheric Administration (NOAA)
- ☐ Letter of support for the 2009 Kerry-Boxer Water Utilities Mitigation and Adaptation Partnerships congressional bill addendum
- ☐ Regular communication and consultations with federal agencies on the U.S. Environmental Protection Agency's Climate Ready Water Utility Working Group
- ☐ NOAA Climate Service and January 2010 International Climate Change Forum



In addition to supporting federal and regional efforts, WUCA released a white paper entitled "Options for Improving Climate Modeling to Assist Water Utility Planning for Climate Change" in January 2010. The purpose of the paper was to assess Global Circulation Models, identify key aspects for water utility planning, and make seven initial recommendations for how climate modeling and downscaling techniques can be improved so that these tools and techniques can be more useful for the water sector.

To address water provider-specific needs, WUCA focused on how best to incorporate knowledge from the above white paper into water planning, which was more thoroughly explored in a second white paper also released January 2010 entitled "Decision Support Planning Methods: Incorporating Climate Change Uncertainties into Water Planning." This paper assessed five known decision support tools for applicability in incorporating climate change uncertainty in water utility planning and identified additional research needs in the area of decision support methodologies. The Water Authority utilized and modified one of these decision support tools, "Scenario Planning" in its long-range planning for the 2010 Plan, which was the basis of **Section 10**, "Scenario Planning: Managing an Uncertain Future," below.

The Water Authority and the other member agencies of WUCA annually share individual agency actions to mitigate GHG emissions to facilitate further implementation of these programs. At a September 2009 summit at the Aspen Global Change Institute, WUCA members met with global climate modelers, along with federal agencies, academic scientists, and climate researchers to establish collaborative directions to progress climate science and modeling efforts. The Water Authority, through its membership with WUCA, continues to pursue these opportunities and partnerships with other water providers, climate scientists, federal agencies, research centers, academia, and key stakeholders.

Planned Research

The Water Authority in cooperation with the Scripps Institution of Oceanography and San Diego State University, and with partial funding from the Blasker Environmental Fund at the San Diego Foundation began a project in 2010 to better understand the uncertainties of climate change and the influence climate change may have on water supply and demand for the San Diego Region. This project will (a) provide a better understanding of the range of uncertainties of climate change and the influence that climate change will have on water supply and demand for the region, (b) improve the quantification of the likely availability of water supplies from the Sierra Nevada, (c) narrow the range of uncertainty of the impacts on the Colorado River basin and the reduction of flows under a range of climate change scenarios in the region, and (d) result in the development of municipal and rural demand models to include climatic influences – including higher temperatures, greater evaporative losses, storm-time conditions and hydrologic response – along with the evaluation of social and economic impacts of changing demand and supply in the region.

Implementation of Programs and Policies

The Water Authority has made great efforts to implement GHG mitigation programs and policies for its facilities and operations. To date, these programs and policies have focused on the following:

- ☐ Exploring water supply/energy relationships and opportunities to increase efficiencies to lower GHG emissions
- ☐ Joining the Climate Registry; the Water Authority is currently developing its baseline GHG inventory from calendar year 2009
- ☐ Reducing the number of vehicles in the fleet and replacing vehicles with hybrids when possible
- ☐ Developing solar power at three Water Authority sites, including the Twin Oaks Valley Water Treatment Plant, the Escondido Operations Center, and the San Diego Headquarters



1.7.4 Population

When the Water Authority was formed in 1944, the population within its service area was estimated at roughly 260,000 people. By 2010, Water Authority service area population reached 3.2 million, or an approximate 12-fold increase. The city of San Diego represents the largest population of any member agency, with just under 1.4 million people. The Yuima Municipal Water District has the smallest population, at approximately 1,500 people. The average population density in 2010 was 3.0 per acre, with National City having the highest density (12.0 per acre) and Yuima Municipal Water District the lowest (0.1 per acre).

The population of San Diego County is projected to increase by 844,800 people between 2010 and 2035, for a total county population in excess of 4.0 million. This change represents an average annual increase of about 33,800 people, or roughly 1.1 percent annually. These regional growth projections are based on the San Diego Association of Governments (SANDAG) 2050 Regional Growth Forecast, adopted by its Board on February 26, 2010.

Water Authority service area population projections are also based on SANDAG's 2050 Regional Growth Forecast and are presented in Table 1-6. Water Authority member agencies are projected to have varying future growth. Some, such as the Santa Fe Irrigation District and the city of Del Mar, are expected to experience relatively modest growth. Others, including the Otay Water District and the city of San Diego, anticipate sizeable increases in both population and water demand.

**TABLE 1-6. WATER AUTHORITY SERVICE AREA
POPULATION FORECAST (2015-2035)**

Year	Population
2015	3,271,773
2020	3,438,837
2025	3,599,952
2030	3,758,933
2035	3,906,718
Average Annual Growth	31,747

Source: SANDAG 2050 Regional Growth Forecast

WATER DEMANDS



Demand for water in the Water Authority's service area falls into two classes of service: municipal and industrial (M&I), and agricultural demand. M&I uses currently constitute about 80 to 85 percent of regional water consumption. The remaining 15 to 20 percent of demand has historically been attributable to agricultural water use, primarily for irrigation of nurseries, groves, and crops. This section describes these use categories along with the total historic, current, and projected water demands. By 2035, total normal water demands are projected to reach 785,685 AF (including future conservation, demand associated with projected near-term annexations, and accelerated forecasted growth), which represents a 20 percent increase from the average 648,030 AF of demand that occurred over the period 2005-2010.



Residential water consumption covers both indoor and outdoor uses. Indoor water uses include sanitation, bathing, laundry, cooking and drinking.

2.1 MUNICIPAL AND INDUSTRIAL WATER DEMAND

Total retail M&I demand encompasses a wide range of water uses that include residential demand (water used for human consumption in the home, domestic purposes, and outdoor residential landscaping) and water used for commercial, industrial, and institutional purposes.

2.1.1 Residential Demand

Residential water consumption covers both indoor and outdoor uses. Indoor water uses include sanitation, bathing, laundry, cooking, and drinking. Most outdoor water use entails landscaping irrigation requirements. Other minor outdoor uses include car washing, surface cleaning, and similar activities. For single-family homes and rural areas, outdoor demands may constitute up to 60 percent of total residential use.

The estimated composition of San Diego's 2010 regional housing stock was approximately 60 percent single-family homes, 36 percent multi-family homes, and 4 percent mobile homes. Single-family residences generally contain larger landscaped areas, predominantly planted in turf, and require more water for outdoor application in comparison to other types of housing. The general characteristics of multi-family and mobile homes limit outdoor landscaping and water use, although some condominium and apartment developments do contain green belt areas.

2.1.2 Commercial and Industrial Demand



Major commercial users include service industries, such as hotels, restaurants, car washes, laundries, and golf courses.

Commercial water demands generally consist of uses that are necessary for the operation of a business or institution, such as drinking, sanitation, and landscape irrigation. Major commercial water users include service industries, such as restaurants, car washes, laundries, hotels, and golf courses. Economic statistics developed by the San Diego Regional Chamber of Commerce indicate that almost half of San Diego's residents are employed in commercial (trade and service) industries.

Industrial water consumption consists of a wide range of uses, including product processing and small-scale equipment cooling, sanitation, and air conditioning. Water-intensive industrial uses in the city of San Diego, such as electronics manufacturing and aerospace manufacturing, typically require smaller amounts of water when compared to other water-intensive industries found elsewhere in Southern California, such as petroleum refineries, smelters, chemical processors, and canneries.

The tourism industry in San Diego County affects water usage within the Water Authority's service area not only by the number of visitors, but also through expansion of service industries and attractions, which tend to be larger outdoor water users. Tourism is primarily concentrated in the summer months and affects seasonal demands and peaking. SANDAG regional population forecasts do not specifically account for tourism, but tourism is reflected in the economic forecasts and affects per capita water use.

2.2 AGRICULTURAL WATER DEMAND

The moderate and virtually frost-free coastal and inland valley areas of the county are able to support a wide variety of subtropical crops, making the San Diego region a unique agricultural region. The introduction of relatively low-cost water supplies in the 1950's allowed significant growth to occur in this sector. Agricultural water use within the Water Authority's service area is concentrated mainly in the north county, and includes member agencies such as the Rainbow, Valley Center, Ramona, and Yuima Municipal Water Districts, the Fallbrook Public Utility District, and the city of Escondido. The primary crops grown for local, national, and international markets are avocados, citrus, cut flowers, and nursery products. Local fresh market crops and livestock are raised to a lesser extent in the Water Authority's service area.

In recent years, agriculture demand has dropped significantly due to mandatory supply allocations that resulted from drought conditions and judicial restrictions on State Water Project supply availability. Starting in calendar year 2008, member agency customers that were voluntarily receiving discounted agricultural water, were required to implement a 30 percent cutback in agricultural demand from their fiscal year 2007 baseline. To comply with the mandatory cutback, growers implemented various actions that included tree stumping and plant stock reduction. As a result, agricultural demand dropped from 98,262 AF in fiscal year 2007 to 43,515 AF in fiscal year 2010, a 55 percent decline in program agricultural demand.

2.3 TOTAL CURRENT AND HISTORIC WATER USE

Water use in the San Diego region is closely linked to the local economy, population, and weather. Over the last several decades a prosperous economy had stimulated local development and population growth, which in turn produced a relatively steady increase in water demand. However, by the late-2000s, the combination of economic recession, Metropolitan supply allocations, implementation of member agency mandatory water use restrictions, and mild local weather culminated in a dramatic multi-year decrease in total water demand. In fiscal year 2007, water demand in the Water Authority's service area reached a record level of 741,893 AF, only to drop roughly 24 percent to 566,443 AF by fiscal year 2010. The 175,450 AF reduction in demand represents the largest volumetric decline over a three-year period in the Water Authority's history. This drop is attributable to a combination of factors, including mandatory water use restrictions, a growing conservation ethic, greater consumer price response to the retail cost of water, the national recession and high rate of home foreclosures. This period also included slightly cooler temperatures and more normal rainfall amounts. Table 2-1 shows the historic water demand within the Water Authority's service area.

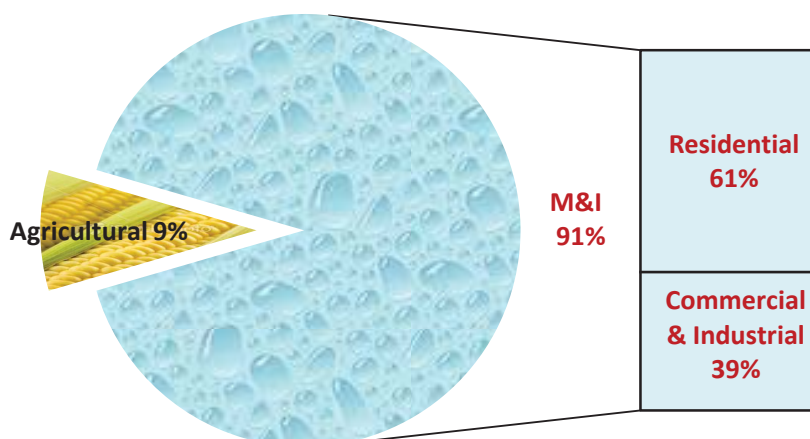
**TABLE 2-1. HISTORIC WATER DEMAND WITHIN
WATER AUTHORITY SERVICE AREA (1995-2010)**

Fiscal Year	Water Use (AF)
1995	526,053
1996	615,900
1997	621,739
1998	562,225
1999	619,409
2000	694,995
2001	646,387
2002	686,530
2003	649,622
2004	715,763
2005	642,152
2006	687,253
2007	741,893
2008	691,931
2009	643,900
2010	566,443

Source: Water Authority Annual Reports

Figure 2-1 shows the estimated relative percentages of various categories of water demand within the Water Authority's service area for fiscal year 2010. In this figure, residential demand includes single-family residential and multi-family residential.

**FIGURE 2-1: ESTIMATED TYPE OF WATER USE
FISCAL YEAR 2010**



2.4 PROJECTED WATER DEMANDS

Since the mid-1990s, the Water Authority has utilized an econometric model to develop its long-range M&I demand forecasts. This computer model is based on the U.S. Army Corps of Engineers Municipal And Industrial Needs (MAIN) model, which has over a quarter of a century of practical application and is used by many cities and water agencies throughout the United States. The Water Authority's version of the model, known as CWA-MAIN, was modified by a consultant to reflect the San Diego region's unique parameters. The CWA-MAIN model relates historic water demand patterns to variables such as household income, consumer response to the price of water, and weather, to predict future M&I water demands. These datasets are compiled from various sources, including SANDAG, Water Authority member agencies, and the Scripps Institution of Oceanography. Under the terms of a 1992 memorandum of agreement between the Water Authority and SANDAG, the Water Authority utilizes SANDAG's official forecast, which is based on local land use jurisdictions' general plans and policies, to project consumptive water demands for the region. This coordination ensures linkage between local jurisdictions' general plans and the Water Authority's projected water demands.

In February 2010, SANDAG's Board adopted the 2050 Regional Growth Forecast for planning analysis purposes, also referred to as SANDAG Series 12 forecast. Two key refinements of the 2050 Regional Growth Forecast include an economic outlook that factors in the current recession and local jurisdictions' general/specific plan updates not completed at the time of SANDAG's last forecast. Based on these updates, SANDAG population projections for the Water Authority service area are on average about one percent higher than 2005 Plan estimates. Housing unit projections are also up - with approximately 32,000 more units forecasted by 2030 compared to SANDAG's Series 10 forecast. However, this additional housing is more heavily weighted towards multi-family units in the 2050 Regional Growth Forecast. These newly released SANDAG demographic and economic projections (i.e., housing units, household density, household size, and employment counts) were incorporated into the CWA-MAIN model. It should be noted that SANDAG does not

forecast land use on Marine Corps Base Camp Pendleton (MCB Camp Pendleton). Therefore, demand projections for MCB Camp Pendleton were developed outside of the CWA-MAIN model and were based on projections provided by base staff.

In the past, M&I demands were adjusted to account for conservation savings based on projected implementation of the California Urban Water Conservation Council's Best Management Practices. Under this bottom-up approach, total forecasted conservation savings was derived from the estimated number of water-conserving devices installed. However, commencing with Water Code Section 10608 in 2009 (SBX7-7) a paradigm shift in the state's demand management philosophy occurred with the adoption of Part 2.55 of Division 6 of the Water Code. This new legislative mandate requires retail agencies to

meet a 20 percent reduction in their per capita potable water use by 2020. Compliance with SBX7-7 can be through a wide range of actions such as development of recycled water supplies, retail water pricing, and traditional conservation programs. For additional information regarding SBX7-7, **see Sections 2.4.2 and 3.2.**

Agricultural demand projections were developed through a cooperative effort between Water Authority staff, its member agencies, SANDAG, County of San Diego Agricultural Weights and Measures, and the California Avocado Commission. A separate forecast model, developed as part of the 2005 Plan update, was used to project member agency level agricultural demands. Forecast driver variables include irrigated acreage within the Water Authority's service area, estimated crop type distribution,

and calculated historic water use factors. SANDAG's projection of agricultural land conversions to other land use categories, provides the long-term trend in acreage used to forecast agricultural water use. The total agricultural forecast is then separated into two categories: (1) projected demands in the Water Authority's Special Agricultural Water Rate (SAWR) program and (2) demands under the Water Authority M&I rate or agricultural demands met through local supplies. It should be emphasized that the delineation between these two categories is a rough estimate based on professional judgment and takes into account the potential future acreage in the SAWR program.

2.4.1 Projected Normal Water Demands

Table 2-2 shows projected normal year total water demand for the Water Authority service area through 2035. Baseline total regional M&I demand projections reflect historic passive conservation, MCB Camp Pendleton area



Converting water-thirsty residential landscapes to WaterSmart ones like this home in Escondido will help the region comply with SBX7-7.

demands, and an increment of demand associated with the decay of historic active conservation program savings. In addition, to fully quantify potential demands served by the Water Authority, a small increment of water use associated with known future potential annexations and accelerated forecasted growth was incorporated into the demand forecast. Beginning with the 2005 Plan, an increment of demand related to potential near-term annexations was added to the baseline M&I forecast. Estimated demands for these parcels were provided to the Water Authority by the associated member agency. However, incorporation of these demands provides no assurance of annexation. Approval by the Water Authority Board is still required before water service may be provided to these lands.

To provide for a more comprehensive planning analysis, the 2010 Plan includes water use associated with accelerated forecasted residential development as part of the M&I sector demand projections. These forecasted housing units were identified by SANDAG in the course of its regional housing needs assessment, but are not yet included in local jurisdiction's existing general land use plans. The demand associated with accelerated forecasted growth is intended to account for a portion of SANDAG's residential land-use development currently projected to occur between 2035 and 2050, but has the potential to occur on an accelerated schedule. SANDAG estimates that general plan amendments, allowing this accelerated residential development, could occur within the planning horizon of the 2010 Plan update. Because these units are not yet included in local jurisdictions' general plans, their projected demands are incorporated at a regional level and not associated with specific

**TABLE 2-2. TOTAL REGIONAL BASELINE DEMAND FORECAST
(Excludes Future Conservation)**

	2015	2020	2025	2030	2035
Baseline M&I Demand ^{1,2,3}	590,731	661,415	728,574	788,174	839,417
Baseline Agricultural Demand – Program	30,358	27,164	26,531	25,927	25,324
Baseline Agricultural Demand – Full Service	25,000	22,370	21,849	21,352	20,854
Near-Term Annexations ⁴	5,709	6,670	6,670	6,670	6,670
Accelerated Forecasted Growth	2,224	4,421	6,605	8,776	10,948
Total Baseline Demand Forecast	654,022	722,040	790,229	850,899	903,213

¹ Includes approximately 12,000 AF of demand for Camp Pendleton – provided by base staff.

² Reflects passive historic conservation savings.

³ Includes increment of demand associated with the decay of historic active conservation program savings (2015 = 7,111 AF; 2020 = 14,221 AF; post-2020 = 21,332 AF).

⁴ Known near-term annexation demands include: Escondido (314AF), Otay Ranch Village 13 and parcels East of Village 13 (2,361AF), Peaceful Valley Ranch (70AF), Sycuan Reservation (392AF), Stoddard Parcel (2AF), San Ysidro Mt. Parcel Village 17 (148AF), Viejas (2,000AF), Rincon (417AF), Meadowood Development (460AF), Pauma Ranch (76AF) and Warner Ranch/Sycamore Ranch (430AF). Including the demands for these parcels does not limit the Board's discretion to deny or approve these or other annexations not contemplated at this time.

member agencies. Additionally, these demands were developed in accordance with the 20 percent reduction in per capita water use, by the year 2020, required under SBX 7-7.

Although Water Code Section 10631.1 requires UWMP demand projections to include separate water use estimates for low income single family and multi-family residential households, this requirement does not apply to wholesale water suppliers as documented in the Department of Water Resources, Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan – Final March 2011. As such, regional water demand projections listed in Table 2-2 represent water use estimates for all income levels included in SANDAG's 2050 Regional Growth Forecast.

The Water Authority has implemented programs and procedures to proactively maintain its water distribution system. These efforts have resulted in annual historic system losses of up to approximately 2 percent per year. For demand

forecasting purposes, Water Authority system losses were set at 1 percent of annual baseline water demands. Using these factors, the Water Authority's system losses were estimated as follows: Year 2005 (historic) – 11,100 AF, Year 2010 (historic) – 9,800 AF, Year 2015 – 6,200 AF, Year 2020 – 6,800 AF, Year 2025 – 7,400 AF, Year 2030 – 7,900 AF, and Year 2035 – 8,500 AF.

2.4.2 SBX 7-7 – Conservation Savings Projections based on Retail Agency Compliance

SBX7-7 was enacted to require retail urban water agencies within the state to achieve a 20 percent reduction in urban per capita water use by December 31, 2020, (Water Code Section 10608.20) and report progress in meeting water use targets (Water Code Section 10608.40.) The Water Authority is a wholesale agency not directly subject to these requirements. Member agencies that serve military installations shall consider requirements under Executive Order 13423 in complying with SBX7-7. However, it is critical for planning purposes that retail compliance of SBX7-7 and corresponding demand reduction be reflected in the Water Authority's 2010 Plan. To clearly reflect retail compli-

ance, the Water Authority is utilizing the Urban Water Use Targets, as defined in Water Code Section 10608.20(a)(1), that were calculated by each of the member agencies to determine the regional demand reduction for inclusion in the 2010 Plan. The 2010 Plan also contains the assumption that because SBX7-7 does not require an agency to identify GPCD targets beyond 2020, for planning purposes, the 2025 through 2035 GPCD targets were set at agencies' 2020 GPCD targets.

The first step in evaluating compliance with SBX7-7 is to determine member agencies' water use efficiency targets. To calculate water use efficiency targets, each agency's SBX7-7 acre-foot potable demand target is first calculated based on the GPCD targets provided by the agency and SANDAG population projections. These demand targets are then subtracted from the projected



SBX7-7 requires retail water agencies within the state to set and achieve water use reduction targets by 2020.

baseline demands derived from the Water Authority's CWA-MAIN model to determine the water use efficiency target that must be met in order to comply with SBX7-7. The numbers are totaled in Table 2-3 to provide a regional water use efficiency target. It should be noted that water use efficiency targets were set to zero for agencies that have already met their target, where SBX7-7 demand targets exceed their projected baseline demands. Additionally, because SBX7-7 compliance rests at the retail level, member agency demand projections exclude the increment of regional water use attributed to accelerated forecast growth. This demand increment is included in the Water Authority's regional projections for supply reliability analysis.

TABLE 2-3. MEMBER AGENCY WATER USE EFFICIENCY TARGETS (AF)

	2015	2020	2025	2030	2035
Total Member Agency Baseline Demand ¹	651,798	717,619	783,624	842,123	892,265
SBX7-7 Potable Demand Target	636,412	640,914	672,861	703,531	731,064
Total Water Use Efficiency Target	-15,386	-76,705	-110,763	-138,592	-161,201

¹ Demands associated with accelerated forecasted growth were developed at a regional level; they are excluded from aggregated member agency baseline projections.

Consistent with SBX7-7 guidelines, member agency water use efficiency targets can be met through both recycled water supplies and additional conservation savings. Table 2-4 shows derivation of the net additional conservation required under SBX7-7 once member agency verifiable recycled water supplies, necessary to meet the target, are accounted for. Refer to **Section 5.4** for details on member agency water recycling projections.

TABLE 2-4. MEMBER AGENCY ADDITIONAL WATER CONSERVATION (AF)

	2015	2020	2025	2030	2035
Total Water Use Efficiency Target	-15,386	-76,705	-110,763	-138,592	-161,201
Verifiable Recycled Water Applied to Meet Water Use Efficiency Target ^{1, 2}	8,649	29,754	38,529	41,312	43,673
Additional Conservation Required ³	-6,737	-46,951	-72,234	-97,280	-117,528

¹ Excludes recycled supplies for agencies with SBX7-7 demand targets exceeding their baseline demands.

² Recycled supplies set equal to water use efficiency target for agencies with recycled supplies in excess of their target.

³ Additional increment of conservation, beyond existing savings, required to meet water use efficiency target.

Table 2-5 shows the Water Authority's regional normal year water demand forecast taking into account member agency additional water conservation derived through compliance with SBX7-7.

**TABLE 2-5. NORMAL YEAR REGIONAL WATER DEMAND FORECAST
ADJUSTED FOR WATER CONSERVATION (AF)**

	2015	2020	2025	2030	2035
Total Regional Baseline Demand	654,022	722,040	790,229	850,899	903,213
Additional Conservation	-6,737	-46,951	-72,234	-97,280	-117,528
Total Baseline Demand with SBX7-7 Conservation	647,285	675,089	717,995	753,619	785,685

Figure 2-2 illustrates the forecasted trend in projected water demands over the 2015 to 2035 time period. This figure combines historic water use and forecasted normal year demands reduced by future additional conservation savings.

**FIGURE 2-2: REGIONAL HISTORIC AND PROJECTED NORMAL
WATER DEMANDS (AF)**

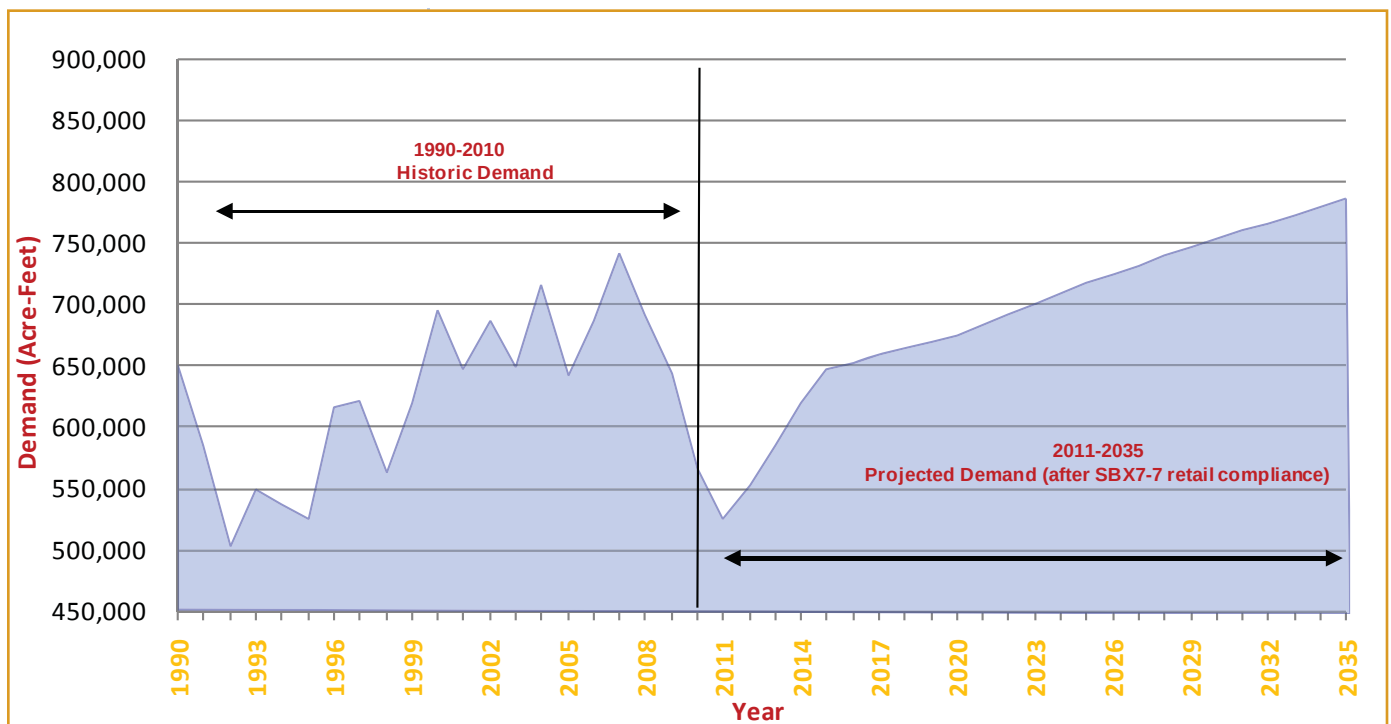


Table 2-6 shows the member agency potable SBX7-7 retail demand targets, based on retail level targets provided by the agencies, SANDAG population forecast for the member agencies and the regional estimates of SBX7-7 potable GPCD targets for each five-year increment.

TABLE 2-6. SBX7-7 POTABLE RETAIL DEMAND TARGETS AND GPCD TARGETS

	2015	2020	2025	2030	2035
SBX7-7 Retail Demand Target (AF) ¹	636,412	640,914	672,861	703,531	731,064
Member Agency Population	3,271,773	3,438,837	3,599,952	3,758,933	3,906,718
Estimated Regional Member Agency Potable GPCD Target	174	167	167	167	167

¹Demand targets based on the individual member agency GPCD target demands.

2.4.3 Projected Dry-Year Water Demands

In addition to a baseline normal demand projection, the Act also requires single dry-year and multiple dry-year demand estimates to evaluate water service reliability during dry-year events. Based on observed historic demand impacts associated with each of these events, separate approaches were taken to forecast single and multiple dry-year conditions.

To develop single dry-year projections, a demand response index formula was used to identify the historic high temperature and low rainfall weather parameters that resulted in the maximum impact. Using this index, a representative single dry-year was selected. For this forecast, the year 1989 was selected. The monthly weather patterns associated with 1989 were then substituted into the CWA-MAIN model to generate dry-year demands projections. By holding all non-weather related predictive variables constant, the model produces an annual forecast of dry-year weather-driven demand. Projected single dry-year demands are shown in Table 2-7.

TABLE 2-7. SINGLE DRY-YEAR REGIONAL WATER DEMAND FORECAST (AF)
Adjusted for Water Conservation

	2015	2020	2025	2030	2035
Single Dry-Year Demand	694,257	765,409	836,967	901,210	956,544
SBX7-7 Additional Conservation Savings	-6,737	-46,951	-72,234	-97,280	-117,528
Total Demands with SBX7-7 Conservation	687,520	718,458	764,733	803,930	839,016

In accordance with the Act, agencies are also required to prepare additional dry period scenarios spanning multiple consecutive years. The major challenge in developing multiple dry-year forecasts is that persistent drier than normal weather over 24 to 36 months results in a compounding effect on rates of water use. Since the CWA-MAIN model was constructed to forecast demand for discrete 12-month periods, other statistical methods were required to develop projected water use for consecutive dry years. The modeling

approach developed correlates trends in historical Water Authority deliveries with multi-year trends in observed precipitation to construct a set of consecutive dry year impact factors. In this approach, running 12-month averages of deliveries were modeled independently as a function of 24- and 36-month running averages of the ratio of observed rainfall to normal monthly precipitation. Historic mean regional weather data was then evaluated to select conditions that could be defined as the driest consecutive two- and three-year periods over the last several decades. Using the statistical model parameters and a repeat of the identified multiple dry-year weather patterns, the two and three consecutive dry-year demand projections for each five-year increment were developed. Multiple dry-year demand projections net of future conservation savings are shown in Table 2-8.

TABLE 2-8. MULTIPLE DRY-YEAR WATER DEMAND FORECAST INCLUDING FUTURE CONSERVATION SAVINGS (AF)

	2012	2013	2014
Total Estimated Demands	658,381	679,509	711,241
	2016	2017	2018
Total Estimated Demands	682,338	705,461	740,326
	2021	2022	2023
Total Estimated Demands ¹	724,294	751,800	790,177
	2026	2027	2028
Total Estimated Demands	772,892	801,649	844,137
	2031	2032	2033
Total Estimated Demands	811,421	842,947	882,795

¹Drop in demand from year 2018 to 2021 is due to full retail compliance with SBX7-7.

2.4.4 Projected Climate Change Impact on Water Demands

Although not currently required by the Act, evaluation of potential climate change impacts on water demand represents a prudent water resources planning exercise. However, definitive projections on the timing and magnitude of climate change-initiated variations to local temperature and precipitation patterns are still forthcoming. The body of work currently available from national and international research contains a full spectrum of possible outcomes based on numerous GHG emission scenarios run through an assortment of General Circulation Models (GCMs). In the absence of research consensus, the Water Authority has adopted a qualitative evaluation approach that uses a manageable number of climate change scenarios to develop a range of potential demands.

The Water Authority's development of climate scenarios starts with the selection of representative GHG emission scenarios. Selection criterion focused on scenarios that represented a practical range of global socioeconomic development. Using this metric, two emission scenarios (Scenario B1 – lower emissions scenario and Scenario A2 – medium-high emissions scenario) were selected from the Intergovernmental Panel on Climate Change's (IPCC's) Special Report on Emissions Scenarios. Emission Scenario B1 represents a future with high levels of environmental consciousness combined with a global approach to more sustainable development that results in carbon dioxide (CO₂) concentrations of roughly 550 parts per million (ppm) by 2100, approximately 41 percent above current CO₂ concentrations. In contrast, Emission Scenario

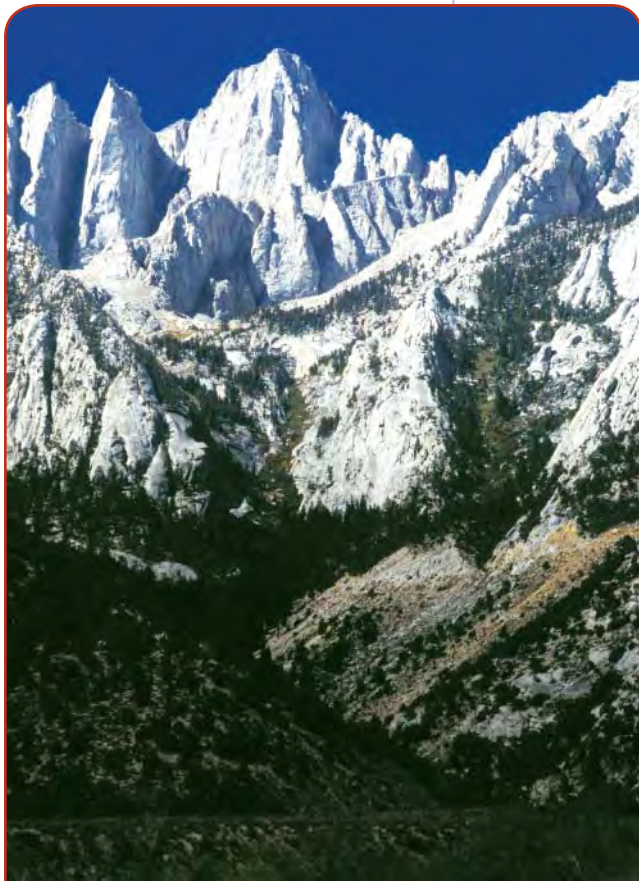
A2 is based on a differentiated world in which global economic growth is uneven and large income gaps remain between industrialized and non-industrialized parts of the world. Atmospheric CO₂ concentrations under this scenario more than double, from 391 ppm in 2011 to 850 ppm by 2100.

Next, an evaluation of GCMs was conducted to assess their strengths and weaknesses in continental weather modeling. Models were screened to evaluate their ability to effectively represent the El Niño and Pacific Decadal Oscillation events. The ability to replicate these climatological events indicates a level of fitness to forecast Pacific coastal weather patterns that impact the Southern California climate. Based on this benchmark, the following GCMs were selected; CNRM-CM3 (Center National Weather Research, France), GFDL-CM2.1 (Geophysical Fluid Dynamics Laboratory, USA), NCAR-PCM1 (National Center for Atmospheric Research, USA).

Since current GCMs forecast climate at a coarse spatial resolution of 200–500 kilometers, fine-scale precipitation and temperature projections required for sub-regional water demand analysis are not readily available. To develop the necessary fine-scale climate scenarios, the Water Authority secured technical climate modeling assistance from Scripps Institution of Oceanography staff. Using the Constructed Analogues downscaling methodology, Scripps staff produced high resolution climate forecasts for the San Diego region.

These downscaled climate estimates were constructed using linear combinations of historic weather patterns. The 30 most similar, previously observed weather patterns were used in a linear regression analysis to obtain precipitation and temperature estimates that best match the coarse resolution

GCM patterns. The coarse-scale meteorological observations and their corresponding high resolution local historic patterns were then used to construct a climate modeling library. Using this library, a set of fine-scale (roughly 13-kilometer resolution) precipitation and temperature forecasts for 2035, 2050, and 2099 were developed for the ensemble of six climate scenarios (2 GHG x 3 GCMs).



Although not currently required by the Act, evaluation of potential climate change impacts on water demand represents a prudent water resources planning exercise.

Evaluation of the downscaled climate change scenarios indicated no dramatic shifts in seasonal patterns of precipitation for the San Diego area under either emission scenario. Additionally for reference year 2035, the end of the 2010 Plan planning horizon, mixed results were observed in the variation of precipitation projections among the climate models. Three of the climate projections resulted in annual precipitation estimates lower than the historic average. Similarly, temperature modeling revealed no dramatic shifts in seasonal patterns, and mixed results prevailed between projected temperatures and historic averages for reference year 2035. The disagreement in short-term climate projections is not entirely unexpected given the protracted lead-time forecasted for significant build up of greenhouse gases. Over an extended timescale, the ensemble of climate scenarios converge on the direction of temperature impact – with five of the six climate scenarios indicating warmer annual average temperature conditions for 2050 and 2099.

The range of climate change impacts on Water Authority demands was calculated by substituting the six climate scenarios into the CWA-MAIN model. For reference year 2035, all but one of the climate scenarios resulted in total water use slightly higher than baseline normal weather demands. The average climate change impact on 2035 demand, across all three GCMs, ranged from 0.63 percent increase under Emission Scenario B1 to 1.8 percent increase for Emission Scenario A2. The relatively small increase in 2035 demand under all climate scenarios suggests that significant water demand impacts associated with the forecasted trend toward warmer and drier climate conditions may occur on a time-step beyond the 2010 Plan planning horizon.

2.4.5 Member Agency Demand on the Water Authority

Table 2-9 shows the Water Authority’s projected water demands (sales) by member agency. Water demands were calculated using SBX7-7 compliant baseline demands for each member agency, as forecasted in **Section 2.4.2**, minus verifiable local supply projections. Therefore, the projected imported demands (sales) are directly tied to the success of local supply development in **Section 5**, “Member Agency Supplies,” and compliance with SBX7-7 conservation savings requirements discussed in **Section 3.2**.

**TABLE 2-9. MEMBER AGENCY NORMAL YEAR IMPORTED DEMAND
ON THE WATER AUTHORITY ^{1,2,3,4} (AF)**

Member Agency	2005	2010	2015	2020	2025	2030	2035
Carlsbad MWD	21,132	16,170	16,862	18,600	20,612	22,273	23,253
Del Mar, city of	1,297	1,075	1,222	1,224	1,236	1,251	1,266
Escondido, city of	21,446	14,388	23,734	21,337	22,913	23,931	24,601
Fallbrook PUD	17,333	11,593	14,140	15,047	16,338	17,528	18,318
Helix WD	28,754	25,780	33,441	32,126	33,754	35,823	37,898
Lakeside WD ⁵	N/A	3,129	4,114	4,424	4,600	4,734	5,045
Oceanside, city of	31,307	21,765	23,566	24,094	25,097	26,294	26,702
Olivenhain MWD	22,429	18,461	21,118	21,552	21,874	22,539	22,854
Otay WD	40,100	29,387	40,483	41,244	43,934	45,889	48,524
Padre Dam MWD ⁵	19,945	11,578	14,935	15,913	17,105	17,740	18,656
Pendleton, MCB Camp	846	844	850	850	850	850	850
Poway, city of	14,209	10,266	12,593	13,020	13,422	13,954	14,076
Rainbow MWD	28,911	18,322	21,537	21,070	22,446	24,078	26,137
Ramona MWD	10,257	6,047	11,213	10,635	11,455	12,159	12,539
Rincon del Diablo MWD	7,952	5,750	3,696	5,429	6,024	6,765	7,024
San Diego, city of	184,335	181,691	201,721	221,458	237,622	249,728	260,107
San Dieguito WD	6,113	1,635	4,736	5,025	5,453	5,677	5,836
Santa Fe ID	11,158	4,374	8,738	8,093	8,426	8,704	8,919
Sweetwater Authority	12,109	6,985	8,125	3,292	3,671	4,461	5,292
Vallecitos WD	19,428	15,419	18,666	17,454	18,777	19,547	19,949
Valley Center MWD	42,265	25,619	32,497	32,526	34,459	36,403	38,537
Vista ID	18,367	11,225	16,080	15,961	16,954	17,825	20,000
Yuima MWD	3,103	1,847	2,098	2,006	2,267	2,510	2,707
Sub-Total	562,795	443,350	536,165	552,380	589,289	620,663	649,090
Accelerated Forecast Growth ⁶	–	–	2,224	4,421	6,605	8,776	10,948
Total	562,795	443,350	538,389	556,801	595,894	629,439	660,038

¹ Based on SANDAG 2050 Regional Growth Forecast

² Includes historic and projected water conservation

³ Includes demands associated with member agency known near-term annexations

⁴ Assumes member agency implementation of verifiable local supply projections

⁵ Lakeside WD detached from Padre Dam MWD in 2006

⁶ Demands associated with accelerated forecasted growth are not attributed to individual member agencies and are listed for regional planning purposes

Definitions:

ID = Irrigation District; MWD = Municipal Water District; PUD = Public Utility District; WD = Water District

DEMAND MANAGEMENT



Demand management, or water conservation, is an important part of the Water Authority's water supply portfolio and its diversification efforts for the San Diego region. The Water Authority's water conservation programs: (1) reduce demand for expensive, imported water; (2) demonstrate a continued commitment to the Best Management Practices and Agricultural Efficient Water Management Practices; (3) assist the Water Authority's member agencies to meet the statutory requirements of the Water Conservation Act of 2009 (SBX7-7); and (4) ensure a reliable future water supply.

As the regional wholesale supplier of water to San Diego County, the Water Authority coordinates many of the region's activities and programs to save water. The Water Authority works closely with its member agencies to implement water conservation programs, including the installation of hundreds of thousands of water-saving devices, development of a landscape auditor internship program, and development of a water budget software tool. With the active cooperation of the public and businesses, the region's water-providers are instilling a water conservation ethic in San Diego County. The Water Authority's member agencies, whose direct contact with their retail customers is crucial to implementing conservation programs, partner with the Water Authority and take a proactive approach to educate and work with their customers to save water. Since 1991, over 656,000 AF of water has been conserved through the region's conservation programs, including 65,000 AF in 2010.



The Water Authority works closely with its member agencies to implement water conservation programs, including the installation of hundreds of thousands of water-saving devices, development of a landscape auditor internship program, and development of a water budget software tool.

3.2 SENATE BILL 7 OF THE SEVENTH EXTRAORDINARY SESSION OF 2009

SBX7-7 was enacted to require retail urban water agencies within the state to achieve a 20 percent reduction in urban per capita water use by December 31, 2020. (Water Code Section 10608.20). The Water Authority is a wholesale

agency not directly subject to these requirements. However, the law requires that the Water Authority, as the wholesale supplier, support its retail member agencies' efforts to comply with SBX7-7 through a combination of regionally and locally administered active and passive water conservation measures, programs, and policies, as well as the use of recycled water. (Water Code Section 10608.36).

Examples of active measures and programs include residential and commercial water use surveys and education programs. Active water conservation management strategies cited in the Water Authority's 2015 Business Plan include participation in Metropolitan's regional programs and coordination on behalf of the member agencies, partnerships with San Diego Gas & Electric (SDG&E) on water and energy programs, and incentives to businesses and property owners based on actual water savings. Passive water conservation management strategies cited in the business plan include programs that encourage long-term behavior change towards measurable reductions in outdoor water use; increase the landscape industry's basic knowledge regarding the interdependency between water efficiency design, irrigation design, and maintenance; and participation on statewide, national, and industrial committees to advance behavior-based conservation strategies. Additional passive programs and policies include outreach activities, plumbing code changes, legislation, and conservation-based rate structures.

The use of these active and passive water conservation measures, programs, and policies will facilitate market transformation within the region and promote the behavioral change that is at the core of the Water Authority's long-term conservation planning. **Section 5.4**, "Water Recycling," includes a discussion on recycled water and its role in helping the region achieve the water use reductions required under SBX7-7.



Examples of active measures and programs include residential and commercial water use surveys and education programs — like the Splash Mobile Lab.

3.3 WATER CONSERVATION ACHIEVEMENTS

This section provides information on the Water Authority's recent achievements in water conservation. These programs and activities provide a foundation for the existing and future measures, programs, and policies discussed in **Section 3.4** below that will support the member agencies' efforts to comply with the requirements of SBX7-7.

3.3.1 Grant Funding

The Water Authority supplements funding of its water conservation programs through the use of grant funding. Recently, the Water Authority was awarded private, state, local, and federal grants with a cumulative value of more than \$5.4 million. Grant funding sources include the Bureau of Reclamation, DWR, and the Hans and Margaret Doe Charitable Trust. Examples of the types of programs awarded grant funding are shown in Table 3-1.

TABLE 3-1. TYPES OF PROGRAMS AWARDED GRANT FUNDING

Water Budget Software Development

Water-Efficient Landscape Design CD

Landscape Water Use Evaluations

Water-Efficient “How-To” Guides

Water-Efficient Site Retrofits Assistance

Assistance For Irrigation Improvements

Landscape Auditor Internship Program

Sustainable Landscape Retrofits



3.3.2 Water Conservation Summits

Three Water Conservation Summits (2006, 2007, and 2009) were held to bring regional water and land use agencies and urban landscape stakeholders together to shape the future of water conservation in the region, outline the actions needed to change the conservation ethic, and demonstrate how to implement water conservation programs.

The first summit, held in 2006, focused on development of water conservation policies and practices for San Diego County. The desired outcome of the symposium was to increase market supply and demand for water-efficient landscaping in San Diego County. The second summit, held in 2007, urged the implementation of the many concepts for water conservation generated at the 2006 summit and focused on taking immediate action to change the public's conservation ethic.

The 2009 summit was held just before the implementation of regional mandatory water restrictions and cut backs. This “how to” summit provided attendees with the latest information on supply issues, impacts on San Diego County, best management practices (BMPs) for industries, and business opportunities and trends. The Water Authority also introduced its new regional water conservation brand, “WaterSmart,” at the summit.

The 2009 Water Conservation Summit provided attendees with the latest information on supply issues, impacts on San Diego County, BMPs and more.

3.3.2.1 Blueprint for Water Conservation

In response to input from participants at the water conservation summits, the Blueprint for Water Conservation (Blueprint) was drafted in 2007 to help the Water Authority, its member agencies, and the Water Conservation Garden to comprehensively plan for and implement conservation efforts and programs. The programs were designed to incorporate the requirements and strategies of conservation-related planning documents, including the Water Authority's 2005 Plan, CUWCC's BMPs, Agricultural Efficient Water Management Practices, Assembly Bill (AB) 2717 Landscape Taskforce, and AB 1881. The Blueprint outlined strategies for saving water in landscaping, indoor uses, and agriculture, and although many of the Blueprint's key strategies and actions are complete, several elements – particularly long-term initiatives targeting outdoor water use – are still in progress.

3.3.3 Accelerated Public Sector Water Efficiency Partnership Demonstration Program

The Accelerated Public Sector Water Efficiency Partnership Demonstration Program, administered by Metropolitan, offered financial incentives to public agencies to implement immediate water efficiency measures for conservation and water recycling. In the San Diego region, the Water Authority coordinated

the participation of 28 public sector agencies to participate in the program. The agencies received nearly \$1 million of program funding for water efficiency improvements through device-based retrofits, audits, and recycled water hook-ups.

3.3.4 San Diego County Fair

Since the early 1990s, the Water Authority has provided water-efficient landscape exhibits, displays, and/or awards at the San Diego County Fair as a means to educate the public about water-efficient landscape practices. In the past, the Water Authority would install its own landscape exhibit; however, today the Water Authority partners with a regional botanic garden or horticultural institution on the landscape exhibit. Doing so provides a means for the Water Authority to support other influencers in the region.

In addition, the Water Authority presents a WaterSmart Landscape Award to the exhibit

that best exemplifies a WaterSmart landscape through eye-catching colors, textures, and designs. The award and its monetary prize encourage landscape exhibitors to install water-efficient gardens, thus increasing the public's exposure to the beauty and potential of a WaterSmart landscape.



The Water Authority partnered with a San Diego Horticultural Society at the 2011 San Diego County Fair on this award-winning residential landscape with the theme, "Let Your Water Budget Drive Your Plant Choices."

3.3.5 Model Water Efficient Landscape Ordinance

The Water Authority and the Conservation Action Committee (CAC) provided technical feedback to DWR on its Model Water Efficient Landscape Ordinance. In early 2007, the Water Authority tasked the CAC's Model Ordinance Group with developing a regional model for adoption by the cities in the region and the county of San Diego. In 2009, DWR updated its own model. The group's initial work on a regional model and its feedback to DWR on the state model is credited with shaping the final ordinance. The group was comprised of stakeholders that represented various areas, including landscape architects, the county, cities, water agencies, soil experts, and landscape contractors.

3.3.6 Smart Water Application Technologies

The Water Authority is one of several water utilities throughout the United States represented on the Smart Water Application Technologies (SWAT) committee, which convenes under the auspices of the Irrigation Association. SWAT is a forum where water utility representatives engage with irrigation industry leaders to jointly identify and promote water efficient irrigation technologies on a national scale. Recent achievements include a standardized testing protocol for weather-based irrigation controllers, including the dissemination of product testing results; as well as progress with developing new protocols for emerging technologies, such as soil moisture-based controllers and other products.



The regional SoCal Water\$mart rebate program includes rebates on high-efficiency clothes washers.

3.4 WATER CONSERVATION PROGRAMS AND ACTIVITIES

This section provides information on the Water Authority's existing and future measures, programs, and policies to support member agency compliance with SBX7-7, as well as to ensure future water reliability for the region beyond 2020. The water conservation measures, programs, and policies are continually evaluated based on current conditions and adjusted accordingly to support member agency water conservation efforts. The region's programs and activities are funded by multiple sources, including the Water Authority's customer service charge, Metropolitan's water stewardship charge, individual retail member agency charges, and grant funding. The information below provides a description of the water conservation programs and activities being implemented in the Water Authority's service area.

3.4.1 Residential Water Conservation Incentive Programs

The Water Authority implemented its first incentive program for water conserving devices in 1991. From 1991 to 2008 financial incentives in the form of vouchers were used to encourage the replacement of water-wasting devices that would not otherwise be replaced. The program was extremely successful and resulted in the installation of over 500,000 water-efficient toilets, 80,000 high-efficiency clothes washers, and other devices that will generate lifetime water savings of over 383,000 AF.

In 2008, the Water Authority transitioned from operation of its own voucher incentive program to participation in the regional SoCal Water\$mart rebate program. The regional program offers rebates for high-efficiency clothes washers, weather-based irrigation controllers, rotating nozzles, and other devices.

Through the program over 22,400 high-efficiency clothes washers and 1.5 million square feet of synthetic turf was installed. The installation of these devices and others rebated through the program will generate a lifetime water savings of more than 22,000 AF.

3.4.2 Commercial, Industrial, and Institutional Water Conservation Incentives

Prior to 2008, the Water Authority managed a commercial, industrial, and institutional (CII) voucher program. In July 2008, the Water Authority transitioned from the Water Authority–managed CII Voucher Incentive Program (VIP) to Metropolitan’s regional CII Save A Buck Program. Joining the Save A Buck program centralized program administration and reduced overhead costs previously incurred by the Water Authority and its member agencies. Through both the VIP and Save A Buck programs over 56,000 CII water saving devices were installed that provided 18,400 AF of water savings from 1993 to 2009. Examples of the types of CII devices available through the Save A Buck program are shown in Table 3-2.

TABLE 3-2. COMMERCIAL, INDUSTRIAL, & INSTITUTIONAL WATER CONSERVATION DEVICES

Weather-Based Irrigation Controllers
Central Computer Irrigation Controllers
Large Rotary Nozzles
Rotating Nozzles for Pop-up Spray Nozzles
Commercial High Efficiency Toilets
Ultra Low Water Urinal and Zero Water Urinals
pH-Cooling Tower Conductivity Controllers
Cooling Tower Conductivity Controllers
Dry Vacuum Pumps
Connectionless Food Steamers
Ice-Making Machines
Water Brooms

3.4.3 Water & Energy Pilot Program

In December 2007, the California Public Utilities Commission approved a pilot program between the Water Authority and SDG&E to develop a partnership to implement specific water and energy conservation programs. As part of the pilot program, SDG&E funded the studies necessary to understand more accurately the relationship between water savings and a reduction in energy

use. The period for the pilot programs and studies began in January 2008, ran for more than 18 months, and consisted of three phases.

During the first phase, the Water Authority and SDG&E designed the pilot programs. In phase two, consultants were hired to work on the pilots, begin baseline studies, and work with the Water Authority and SDG&E to ensure that the pilot programs produce useful information. In phase three, the Water Authority and SDG&E implemented the pilot programs. The results of the pilot program will be used to determine the benefits that result when water conservation efforts and energy efficiency programs are integrated into one program. Below is a brief description of each component of the pilot program.

3.4.3.1 Large Customer Audits

This component of the pilot program integrated water and energy audit services into one comprehensive audit and included implementation of recommendations on a previous large customer audit where the initial audit recommendations were not acted upon by the customer. The development and

implementation of eight integrated water-energy audits for large customers were performed. Preliminary results show significant water and energy savings were achieved through both the implementation of the previous audit recommendations and implementation of the additional eight audits.

3.4.3.2 Managed Landscape

The managed landscape component documented and verified achieved water savings and related energy savings obtained through a guaranteed performance contract with the participant that was based on a pre-implementation audit and work plan. The pilot project focused on efficient use of potable water for landscapes. The pilot involved 13 sites of four acres each. Preliminary results show water savings in excess of 20 percent may be possible.

3.4.3.3 Recycled Water

The recycled water program retrofitted six sites to convert users from a potable water source to a lower energy recycled water source. The Water Authority and its member agencies identified sites with

completed retrofit plans that allowed the customer to immediately switch from potable water usage to recycled water usage. Initial results show significant potable water savings for parks.

Once finalized, the results from the pilot program will be used to design future programs that target water and energy partnership opportunities.

3.4.4 Agricultural Water Management Program

Mission Resource Conservation District (Mission RCD) has been under contract to the Water Authority to operate agricultural water management services since 1990 as part of the Water Authority's Agriculture Water Management Program (AWMP). During that time, Mission RCD provided more than 1,700



Canyonside Community Park is one of six sites the recycled water program retrofitted to convert users from a potable water source to a lower energy recycled water source.



The goal of the Agricultural Water Management Program is to provide technical assistance to growers to enable them to irrigate crops as efficiently as possible.

audits on more than 28,000 acres of avocados, citrus, field flowers, and other fruits and ornamentals. The goal of the program is to provide technical assistance to growers to enable them to irrigate crops as efficiently as possible in order to obtain the maximum economic benefit from limited water resources.

In addition to providing technical assistance, the AWMP provides agricultural audits that include visual observations of the irrigation system, examination of soil and crop materials, pump testing, and answering the grower's questions. A written report is provided that summarizes the irrigation system's hydraulic characteristics and soil profiles, and provides recommendations to improve the overall system efficiency. Local weather data and crop water demand information is also provided. Potential yield improvements and water savings realized from improvements in irrigation efficiency are explained to the grower. Follow-up service is provided to determine if system improvements were implemented and, if not, to encourage implementation of the recommendations. Additionally, the program complies with the requirements of the Efficient Water Management Practices of the Memorandum of Understanding Regarding Efficient Water Management Practices by Agricultural Water Suppliers in California.

3.4.5 Conservation Action Committee

The CAC was created in 2003 by the city of San Diego as a forum to communicate with the landscape industry and property and community managers on issues related to water efficiency. In the following years membership in the CAC increased to include additional retail water agencies. In 2006, the Water Conservation Summit expanded the CAC's purpose to include the following:

- ☐ Encourage industries, government, and communities to conserve water and develop tools, programs, and systems to promote water efficiency in the San Diego region.
- ☐ Provide a forum to exchange information regarding water efficiency.
- ☐ Promote working together for long-term solutions and success.

After the 2006 Summit, the Water Authority began to provide the CAC with administrative support and a more active role in the subcommittees. The CAC includes representation from industry, government, environmental, and community interests. Some of the CAC's and its subcommittees' recent accomplishments include the following:

- ☐ As required by AB 1881¹, developed a Regional Model Landscape Ordinance that regulatory agencies utilized as they developed their local ordinances.
- ☐ Provided detailed feedback to the state on the state's Model Landscape Ordinance with many of CAC's Ordinance Work Group's recommendations and concerns being addressed in the final document.

¹ AB 1881 amended Civil Code §1353.8; repealed and added Article 10.8 (commencing with §65591) of Chapter 3, Div. 1 of Title 7 of the Government Code; added §25401.9 to the Public Resources Code; and added Article 4.5 to Chapter 8 of Div. 1 of the Water Code.

- ☐ Championed water-related issues at the industry association level.
- ☐ Provided feedback to water agencies related to drought ordinances and programs.

Recently, CAC membership conducted an evaluation of its goals and structure, which resulted in the following revised slate of subcommittees to better meet the needs of its membership:

- ☐ Landscape Industry Subcommittee
- ☐ Commercial, Industrial, and Institutional Subcommittee
- ☐ Nursery and Agricultural Subcommittee
- ☐ Regulation and Legislative Subcommittee
- ☐ Residential Subcommittee
- ☐ Outreach and Education Subcommittee

3.4.6 WaterSmart – A Better Way to Beautiful



At the 2006 Water Conservation Summit, a set of six strategies were drafted designed to increase market supply and demand for water-efficient landscaping in San Diego County. These strategies were later incorporated into the Blueprint. Strategy #4, Public Education, recommended development of a branding program to reinforce a common message as part of all public education, website, advertising, conservation programs, and events related to outdoor conservation. Later, the strategy was extended to include all water conservation – indoor and outdoor.

In 2010, the Water Authority officially registered the copyright for the brand's artwork. The brand identity includes a name, logo, and tagline. The logo, the visual representation of the brand, is made up of a simple flower, accentuated by a single water drop. The image promises that it only takes a small amount of water to nourish a healthy and beautiful landscape. The tagline, "A better way to beautiful," encapsulates the ultimate action and benefits of the program.

The accompanying WaterSmart website will support the better way to beautiful message and provide an important tool to educate the region about the ongoing need to use water resources wisely and efficiently in our semi-arid region without compromising beauty. Its goal is to inspire more residents and businesses to permanently reduce their outdoor water use by conveniently demonstrating there is "a better way to beautiful." It shows they can have an attractive landscape that reflects a more water-efficient lifestyle that makes sense for San Diego County, and that others in their community are making this change.

3.4.7 Landscape Auditor Internships

The Water Authority joined with regional water agencies, community colleges, and private-sector partners to implement a landscape auditor internship program to provide students in the San Diego region with career opportunities and on-the-job experience in the area of landscape services. The water agencies benefit through the training of students who are needed to meet a demand for landscape services.

Cuyamaca College administers the program and pays qualified students through a grant, and matching funds are provided by the Water Authority. Cuyamaca College works with other community colleges in the San Diego region to recruit, screen, train, and place students. The interns receive training on a web-driven water budget program that allows water agencies to communicate to their customers landscape water consumption data relative to landscape water needs. Interns also receive training in water conservation principles with an emphasis on landscape audits. Since the internship program began in June 2008, over 4,450 water budgets and landscape area measurements were developed with potential water savings of 2,200 AF.

3.4.8 Water Budgets

The water budget tool software, known locally as the WaterSmart Target, is designed to enable retail water agencies to establish water budgets for irrigation accounts and monitor performance. A water budget is a landscape water

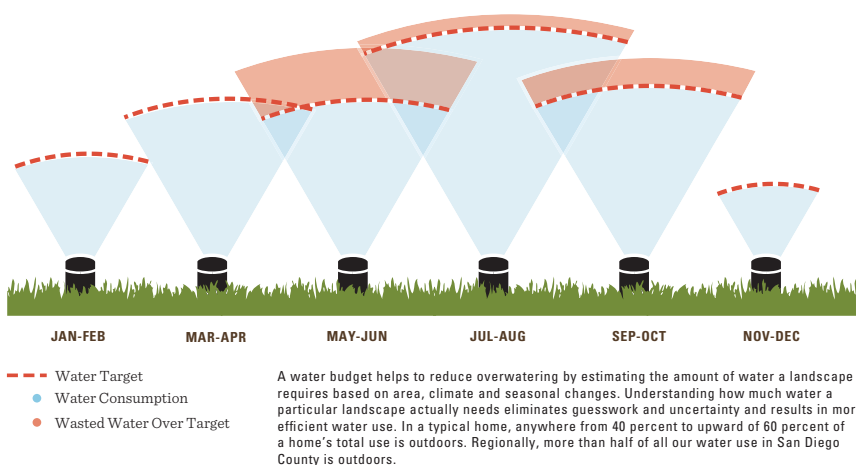
use target based on square footage and local climate conditions. The water budget is compared to actual use to gauge performance and identify savings potential.

WaterSmart Target integrates multiple applications such as a geographic information system (GIS) landscape measurement tool, consumption data import tool, water budget report function, and California Irrigation Management Information System (CIMIS) weather reads to provide a one-stop water budget engine for agencies. The 14 agencies with access to the tool collectively developed over 2,600 measurements and 1,200 budgets.

The Water Authority, in partnership with the Rincon del Diablo Municipal Water District, implemented a residential water budget pilot program that provided land-

scape water budgets to 250 high water use customers within the Rincon del Diablo Municipal Water District's service area. The goal of the program was to illustrate the cost-effectiveness of an integrated water budget approach on large, single-family lots. The program consisted of three phases – recruitment, audits and retrofits, and evaluation. Funding for this program was provided by Metropolitan and the Bureau of Reclamation.

How A Water Budget Works



3.4.9 Smart Landscape Evaluations and WaterSmart Irrigation Check-Ups

The Water Authority makes available smart landscape evaluations to assist single- and multi-family customers and businesses of participating agencies to identify indoor and outdoor water savings opportunities. Technicians review indoor fixtures and evaluate the performance of the site's irrigation system and provide the customer with a list of recommendations to improve water efficiency, including plant alternatives and a proposed watering schedule. The service is provided at no cost to the customer.



The Water Conservation Garden includes 16 different gardens and exhibits and provides school-education outreach, low-water-use classes, and community events.

3.4.10 Water Conservation Garden

The Water Conservation Garden opened to the public in 1999 with the goal of educating the public about the steps they can take to conserve water in the landscape. It occupies 4.5 acres adjacent to Cuyamaca College in the eastern part of the county. The Garden includes 16 different gardens and exhibits and provides school-education outreach, low-water-use classes, and community events. The Water Authority joined the Garden's Joint Powers Authority in 2001 and continues to provide support to the Garden in its efforts to promote water efficiency in the landscape sector.

3.4.11 San Diego Botanic Garden

The San Diego Botanic Garden (formally known as Quail Botanical Garden) is a well-established garden in the north-coastal area of San Diego County. For the past few years, the Water Authority supported the Botanic Garden as a corporate partner. In addition, the Water Authority and the Botanic Garden collaborated on the development of garden and school education videos as well as landscape exhibits for the San Diego County Fair. An important goal in the mission of the Botanic Garden is to promote sustainable use of natural resources. Low-water-use plants and water-saving technologies and displays make up the majority of the gardens. The Botanic Garden also provides classes on water conservation-related subjects throughout the year in an effort to reduce outdoor water use in the region.

3.4.12 California Urban Water Conservation Council

The CUWCC was created in 1991 through a Memorandum of Understanding (MOU) Regarding Urban Water Conservation in California to increase water use efficiency statewide through partnerships among urban water agencies, environmental organizations, and other private entities. The CUWCC's goals are to integrate urban water conservation BMPs into the planning and management of California's water resources to reduce long-term water demands. Some of the early programs to address the BMPs provided financial incentives to retrofit high water-use toilets with ultra-low-flush models and to distribute low-flow showerheads to consumers.

The Water Authority has been in full compliance with the Wholesaler BMP Reports since 1992. Most of the Water Authority's member agencies are signatories to the MOU and submit biennial BMP reports to show compliance with the appropriate retail water agency BMPs. In accordance with DWR's 2010 Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan, Section E: Demand Measurement Measures and Best Management Practices (BMP), CUWCC BMP Annual Reports, the Water Authority has submitted its 2009 and 2010 BMP annual reports. **Appendix D** contains the Water Authority's BMP reports, and documentation from the CUWCC that the Water Authority is on track in its BMP compliance for the 2009 and 2010 reporting period.

In 2007, the CUWCC actively pursued updates to the MOU, Bylaws, and BMPs. The CUWCC formed committees to evaluate and update the existing BMPs. Water Authority and member agency staff actively participated on the BMP revision committees to draft revised BMPs. In June 2010, the CUWCC reorganized their 14 BMPs into five categories. The first two categories, utility operations and education, are "Foundational BMPs" considered to be essential water conservation activities that all agencies should implement. The remaining three categories are termed "Programmatic BMPs" and are organized into residential, CII, and landscape categories.

Additional compliance options were also added to the traditional BMP checklist approach, including a Flex Track (performance-based) and a daily per capita water use approach. Signatories are required to comply with the CUWCC BMPs through 2015. After 2015, the BMPs sunset and compliance with the SBX7-7 targets is required for retail water agencies. Table 3-3 shows the re-organization of the BMPs.

In 2010 the position of Chair of the CUWCC's board of directors was held by a representative of the Water Authority. The Water Authority is also represented on many of the CUWCC's committees, including Utility Operations, Residential, CII, Landscape, Research and Evaluation, Education, and Finance and Governance.

TABLE 3-3. PREVIOUS AND REVISED BMPS

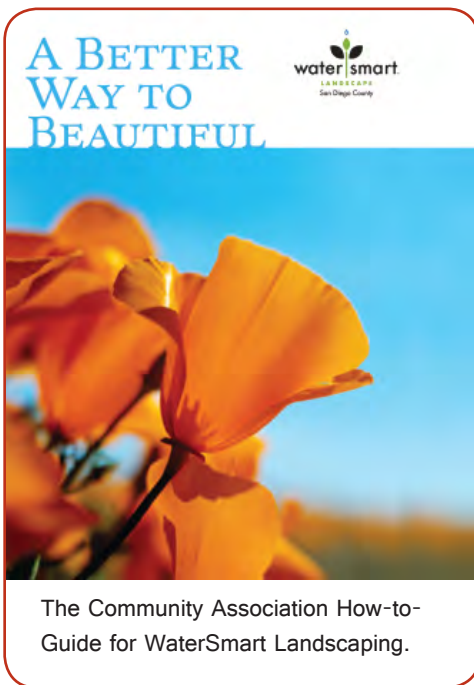
Previous BMP Number and Name	Revised BMP Number and Category
1. Water Survey Programs for Single-Family & Multi-Family Residential Customers	3. Residential, Programmatic
2. Residential Plumbing Retrofit	3. Residential, Programmatic
3. System Water Audits, Leak Detection and Repair	1. Utility Operations, Foundational
4. Metering with Commodity Rates for All New Connections & Retrofit of Existing Connections	1. Utility Operations, Foundational
5. Large Landscape Conservation Programs and Incentives	5. Landscape, Programmatic
6. High-Efficiency Clothes Washing Machine Financial Incentive Programs	3. Residential, Programmatic
7. Public Information Programs	2. Education – Public Information Programs, Foundational
8. School Education Programs	2. Education – Public Information Programs, Foundational
9. Conservation Programs for Commercial, Industrial, and Institutional Accounts	4. Commercial, Industrial, and Institutional; Programmatic
10. Wholesale Agency Assistance Programs	1. Utility Operations; Foundational
11. Retail Conservation Pricing	1. Utility Operations; Foundational
12. Conservation Coordinator	1. Utility Operations; Foundational
13. Water Waste Prohibition	1. Utility Operations; Foundational
14. Residential ULFT Replacement	3. Residential; Programmatic

3.4.13 Public Outreach

In response to shortage conditions, the Water Authority launched an aggressive outreach campaign in June 2007 branded as the “20-Gallon Challenge.” The outreach campaign was a multi-faceted approach to educate the community on the short- and long-term water supply challenges, specific tips to save water, and resources available to implement those changes. Tactics to achieve a targeted 56,000 AF of voluntary savings included traditional advertising, media relations, online communications, water agency relations, education curriculum and contests, government relations, and community outreach.

In addition to the activities related to the 20-Gallon Challenge, other Water Authority outreach activities include the following:

- ☐ Conducting research on the public’s knowledge of water issues, attitudes towards water-efficient landscaping, and influencers.
- ☐ Developing a regional conservation brand.
- ☐ Developing a long-term implementation plan designed to change perceptions about water-efficient landscapes and spur market transformation.
- ☐ Developing a Community Associations How-To Guide for WaterSmart landscaping.
- ☐ Funding the Water Conservation Garden to provide educational classes.
- ☐ Participating in and sponsoring awards at the San Diego Flower and Garden exhibit (San Diego County Fair):
 - Creating annual landscape exhibits that showcase the beauty of water-efficient landscapes.
 - Providing landscape award to the exhibit that best exemplifies WaterSmart principles as a means to encourage exhibitors to install water-efficient landscape exhibits.
- ☐ Developing the “Gardens of Ideas” video (contracted with San Diego Botanic Garden).
- ☐ Participating in community events to provide conservation outreach.
- ☐ Sponsoring the San Diego Home and Garden Show.
- ☐ Developing and providing school education materials, presentations, and workshops to promote conservation. *Examples include:*
 - “Be Water Smart,” a water conservation video for 4th-6th grade students.
 - K-6th grade musical assembly titled, “H2O, Where Do You Go?” that emphasized water conservation.



- Traveling library K–6th grade program.
 - 3rd-grade classroom presentation that covers water sources and conservation.
 - Library kiosk with interactive panels.
 - Books for participating school libraries.
- Funding Splash Science Mobile Lab.
- Developing and funding “Water-Wise Gardening” workshops for teachers.
- Administering a “School Pledge Promotion.”
- Administering a youth merit patch program for scouts that teaches children about water supply and conservation.
- Developing and funding an exhibit at the Reuben H. Fleet Science Center.
- Educating the region on various water-related subjects via a speakers’ bureau.

3.5 CONCLUSION

Water conservation continues to play a central role in the Water Authority’s efforts to maximize the reliability of the region’s water supply through supply diversification. The historical achievements in water conservation discussed in **Section 3.3** provide a foundation for the existing and future measures, programs, and policies outlined in **Section 3.4**. Moving forward, the Water Authority will support its member agencies’ efforts to comply with the GPCD reductions required under SBX7-7 through various means, including a continued emphasis on behavioral change and market transformation.

SAN DIEGO COUNTY WATER AUTHORITY SUPPLIES



Historically, the Water Authority has relied on imported water supplies purchased from Metropolitan to meet the needs of its member agencies. Metropolitan's supplies come from two primary sources, the State Water Project (SWP) and the Colorado River. After experiencing severe shortages from Metropolitan during the 1987–1992 drought, the Water Authority began aggressively pursuing actions to diversify the region's supply sources. Comprehensive supply and facility planning over the last 18 years provided the direction for implementation of these actions.

This section provides specific documentation on the existing and projected supply sources being implemented by the Water Authority. For purposes of analysis in the 2010 Plan, supplies are separated into one of three categories: verifiable, additional planned, or conceptual. "Verifiable" projects are those with adequate documentation regarding implementation and supply utilization, and are used in the reliability assessment in Section 9, "Water Supply Reliability." "Additional planned" projects are those that either the Water Authority or member agencies are actively pursuing and currently funding, but do not rise to the level of verifiable for implementation. The additional planned projects are utilized in Section 10, "Scenario Planning – Managing an Uncertain Future," as potential strategies to manage future uncertainty planning scenarios. "Conceptual" projects are those considered to be in the pre-planning phase, where the projects have not progressed to a point where the project yield can be factored into reliability assessments or uncertainty planning for this 2010 Plan.

A Water Resources Plan developed in 1993 and updated in 1997 emphasized the development of local supplies and core water transfers. Consistent with the direction provided in the 1997 plan, the Water Authority entered into a Water Conservation and Transfer Agreement with IID, an agricultural district

Three Categories of Supply Sources

Verifiable

**Adequate
Documentation**

**Additional
Planned**

**Actively
Pursuing**

Conceptual

**Pre-planning
Phase**



Conserved water from the Coachella Canal lining project reached the region in 2007. Expected supplies from the canal lining projects are considered verifiable Water Authority supplies.

in neighboring Imperial County, in 1998. Through the transfer agreement, the Water Authority received 70,000 AF in 2010, with the volume increasing annually until it reaches 200,000 AF/YR in 2021. The IID Water Conservation and

Transfer Agreement supply source is considered a verifiable Water Authority supply.

In 2003, as part of the execution of the QSA on the Colorado River, the Water Authority contracted for 77,700 AF/YR of conserved water from projects to line the All-American and Coachella Canals (AAC and CC, respectively). Deliveries of this conserved water from the CC reached the region in 2007, and deliveries from the AAC reached the region in 2010. Expected supplies from the canal lining projects are considered verifiable Water Authority supplies.

To further diversify regional supplies, the Water Authority's 2005 Plan identified seawater desalination as a potential supply for meeting future demands. In keeping with the objective of the 2005 Plan, the Water Authority is pursuing the purchase of a water supply from the Carlsbad Desalination Project, a

fully-permitted private desalination project at the Encina Power Station site located in the City of Carlsbad. In 2010, the Water Authority's Board of Directors approved a Term Sheet between the Water Authority and the private investor-owned company, Poseidon Resources (Poseidon), and directed staff to prepare a draft Water Purchase Agreement based on its provisions. The Carlsbad Desalination Project is considered a verifiable Water Authority supply.

In addition to the Carlsbad Desalination Project, the Water Authority is also pursuing the development of two other regional seawater desalination projects – planning efforts for a new regional desalination project located on Camp Pendleton, and the feasibility evaluation of a binational seawater desalination project in Rosarito, Mexico.

4.2 WATER AUTHORITY – IID WATER CONSERVATION AND TRANSFER AGREEMENT

On April 29, 1998, the Water Authority signed a historic agreement with IID for the long-term transfer of conserved Colorado River water to San Diego County. The Water Authority–IID Water Conservation and Transfer Agreement (Transfer Agreement) is the largest agriculture-to-urban water transfer in United States history. Colorado River water will be conserved by Imperial Valley farmers who voluntarily participate in the program and then transferred to the Water Authority for use in San Diego County.



The QSA was finalized at a signing ceremony at the Hoover Dam in October 2003.

4.2.1 Implementation Status

On October 10, 2003, the Water Authority and IID executed an amendment to the original 1998 Transfer Agreement. This amendment modified certain aspects of the Transfer Agreement to be consistent with the terms and conditions of the QSA and related agreements. It also modified other aspects of the agreement to lessen the environmental impacts of the transfer of conserved water. The amendment was expressly contingent on the approval and implementation of the QSA, which was also executed on October 10, 2003. **Section 6.2.1**, "Colorado River," contains details on the QSA.

On November 5, 2003, IID filed a complaint in Imperial County Superior Court seeking validation of 13 contracts associated with the Transfer Agreement and the QSA. Imperial County and various private parties filed additional suits in Superior Court, alleging violations of the California Environmental Quality Act (CEQA), the California Water Code, and other laws related to the approval of the QSA, the water

transfer, and related agreements. The lawsuits were coordinated for trial. The IID, Coachella Valley Water District, Metropolitan, the Water Authority, and state are defending these suits and coordinating to seek validation of the contracts. In January 2010, a California Superior Court judge ruled that the QSA and 11 related agreements were invalid, because one of the agreements created an open-ended financial obligation for the state, in violation of California's constitution. The QSA parties appealed this decision and are continuing to seek validation of the contracts. The appeal is currently pending in the Third District Court of Appeal. A stay of the trial court judgement has been issued during the appeal. Implementation of the transfer provisions is proceeding during litigation. For further information regarding the litigation, please contact the Water Authority's General Counsel.

4.2.2 Expected Supply

Deliveries into San Diego County from the transfer began in 2003 with an initial transfer of 10,000 AF. The Water Authority received increasing amounts of transfer water each year, according to a water delivery schedule contained in

the transfer agreement. In 2010, the Water Authority received 70,000 AF. The quantities will increase annually to 200,000 AF by 2021 then remain fixed for the duration of the transfer agreement. The initial term of the Transfer Agreement is 45 years, with a provision that either agency may extend the agreement for an additional 30-year term.

During dry years, when water availability is low, the conserved water will be transferred under IID's Colorado River rights, which are among the most senior in the Lower Colorado River Basin. Without the protection of these rights, the Water Authority could suffer delivery cutbacks.

4.2.3 Transportation

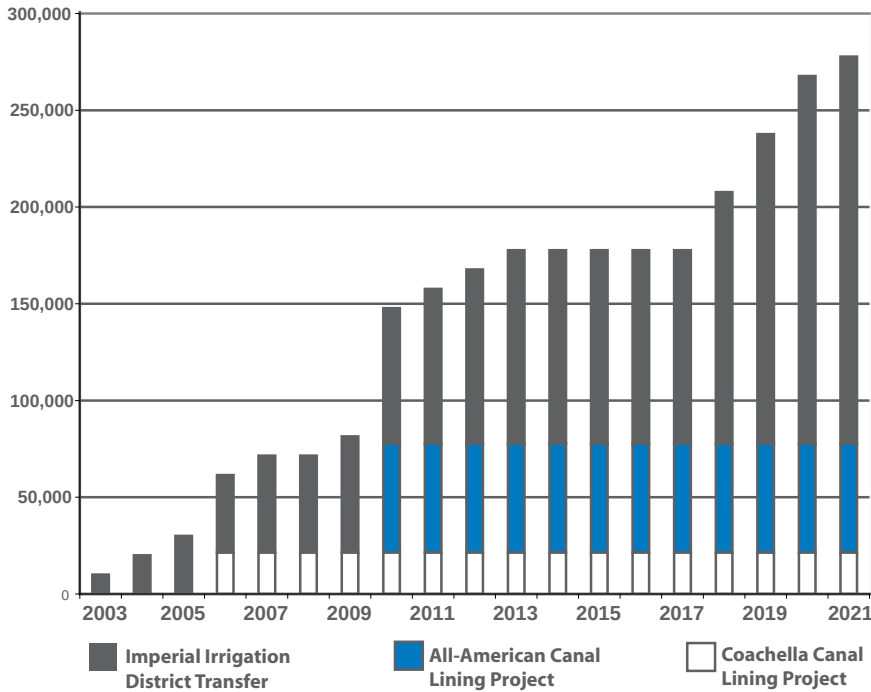
The Water Authority entered into a water exchange agreement with Metropolitan on October 10, 2003, to transport the Water Authority-IID transfer water from the Colorado River to San Diego County. Under the exchange agreement, Metropolitan takes delivery of the transfer water through its Colorado River Aqueduct. In exchange,

Metropolitan delivers to the Water Authority a like quantity and quality of water. The Water Authority pays Metropolitan's applicable wheeling rate for each acre-foot of exchange water delivered. Under the terms of the water exchange agreement, Metropolitan will make delivery of the transfer water for 35 years, unless the Water Authority and Metropolitan elect to extend the agreement another 10 years for a total of 45 years.

4.2.4 Cost/Financing

The costs associated with the transfer are financed through the Water Authority's rates and charges. In the agreement between the Water Authority and IID, the price for the transfer water started at \$258/AF and increased by a set amount for the first seven years. In December 2009, the Water Authority and IID executed a fifth amendment to the water transfer agreement that sets the price per acre-foot for transfer water for calendar years 2010 through 2015, beginning at \$405/AF in 2010 and increasing to \$624/AF in 2015. For calendar years 2016 through 2034, the unit price will be adjusted using an agreed-upon index. The amendment also required the Water Authority to pay IID \$6 million at the end of calendar year 2009 and another \$50 million on or before October 1, 2010, provided that a transfer stoppage is not in effect as a result of a court order in the QSA coordinated cases. Beginning in 2035, either the Water Authority or IID can, if certain criteria are met, elect a market rate price through a formula described in the water transfer agreement.

Transfer of Conserved Water 2003 - 2021



The October 2003 exchange agreement between Metropolitan and the Water Authority set the initial cost to transport the conserved water at \$253/AF. Thereafter, the price is set to be equal to the charge or charges set by Metropolitan’s Board of Directors pursuant to applicable laws and regulation, and generally applicable to the conveyance of water by Metropolitan on behalf of its member agencies. The transportation charge in 2010 is \$314/AF.

The Water Authority is providing \$10 million to help offset potential socioeconomic impacts associated with temporary land fallowing. IID will credit the Water Authority for these funds during years 16 through 45. In 2007, the Water Authority prepaid IID an additional \$10 million for future deliveries of water. IID will credit the Water Authority for this up-front payment during years 16 through 30.

As part of implementation of the QSA and water transfer, the Water Authority also entered into an environmental cost sharing agreement. Under this agreement the Water Authority is contributing a total of \$64 million to fund environmental mitigation projects and the Salton Sea Restoration Fund.

4.2.5 Written Contracts or Other Proof

Appendix E contains a list of the specific written contracts, agreements, and environmental permits associated with implementation of the Water Authority–IID Transfer.

4.2.6 Existing and Future Supplies

Based on the terms and conditions in the Transfer Agreement, Table 4-1 shows the anticipated delivery schedule of the conserved transfer water in five-year increments. There is adequate documentation to demonstrate the availability of this supply, and, therefore, the supply yields shown in Table 4-1 will be included in the reliability analysis found in Section 9, “Water Supply Reliability.”

TABLE 4-1. EXISTING AND PROJECTED WATER AUTHORITY–IID TRANSFER SUPPLIES (NORMAL YEAR – AF/YR)

2010	2015	2020	2025	2030	2035
70,000	100,000	190,000	200,000	200,000	200,000

4.3 ALL-AMERICAN CANAL AND COACHELLA CANAL LINING PROJECTS

As part of the QSA and related contracts, the Water Authority contracted for 77,700 AF/YR of conserved water from projects that lined portions of the AAC and CC. The projects reduced the loss of water that occurred through seepage, and the conserved water is delivered to the Water Authority. This conserved water will provide the San Diego region with an additional 8.5 million AF over the 110-year life of the agreement.

4.3.1 Implementation Status

The CC lining project began in November 2004 and was completed in 2006. Deliveries of conserved water to the Water Authority began in 2007. The project

constructed a 37-mile parallel canal adjacent to the CC. The AAC lining project began in 2005 and was completed in 2010. The lining project constructed a concrete-lined canal parallel to 24 miles of the existing AAC from Pilot Knob to Drop 3.

4.3.2 Expected Supply

The AAC lining project makes 67,700 AF of Colorado River water per year available for allocation to the Water Authority and San Luis Rey Indian water rights settlement parties. The CC lining project makes 26,000 AF of Colorado River water each year available for allocation. The 2003 Allocation Agreement provides for 16,000 AF/YR of conserved canal lining water to be allocated to the San Luis Rey Indian Water Rights Settlement Parties. The remaining amount, 77,700 AF/YR, is to be available to the Water Authority, with up to an additional 4,850 AF/YR available to the Water Authority depending on environmental requirements from the CC lining project.

For planning purposes, the Water Authority assumes that 2,500 AF of the 4,850 AF will be available each year for delivery, for a total of 80,200 AF/FY of that supply. According to the Allocation Agreement, IID has call rights to a portion (5,000 AF/YR) of the conserved water upon termination of the QSA for the remainder of the 110 years of the Allocation Agreement and upon satisfying certain conditions. The term of the QSA is for up to 75 years.

4.3.3 Transportation

The October 2003 Exchange Agreement between the Water Authority and Metropolitan provides for the delivery of the conserved water from the canal lining projects. The Water Authority pays Metropolitan's applicable wheeling rate for each acre-foot of exchange water delivered. In the Agreement, Metropolitan will deliver the canal lining water for the term of the Allocation Agreement (110 years).

4.3.4 Cost/Financing

Under California Water Code Section 12560 et seq., the Water Authority received \$200 million in state funds for construction of the canal lining projects. In addition, \$20 million was made available from Proposition 50 and \$36 million from Proposition 84. The Water Authority was responsible for additional expenses above the funds provided by the state.

In accordance with the Allocation Agreement, the Water Authority is responsible for a portion of the net additional Operation, Maintenance, and Repair (OM&R) costs for the lined canals. Any costs associated with the lining projects are to be financed through the Water Authority's rates and charges.



The AAC lining project makes 67,700 AF of Colorado River water per year available for allocation to the Water Authority and San Luis Rey Indian water rights settlement parties.

4.3.5 Written Contracts or Other Proof

Appendix E contains a list of the specific written contracts, agreements, and environmental permits associated with implementation of the Canal Lining Projects.

4.3.6 Future Supplies

Table 4-2 shows the anticipated delivery schedule of conserved supplies from the canal lining projects in five-year increments. Adequate documentation exists to demonstrate the availability of this supply, and, therefore, the reliability analysis found in **Section 9**, “Water Supply Reliability,” will show the supply yields presented in Table 4-2.

**TABLE 4-2. PROJECTED SUPPLY FROM CANAL LINING PROJECTS
(NORMAL YEAR – AF/YR)**

	2010	2015	2020	2025	2030	2035
CC Lining Project ¹	24,000	24,000	24,000	24,000	24,000	24,000
AAC Lining Project ²	56,200	56,200	56,200	56,200	56,200	56,200
Total:	80,200	80,200	80,200	80,200	80,200	80,200

¹ The project was completed in 2006, and deliveries started in 2007. Includes 21,500 AF + 2,500 AF environmental water deliveries.

² The project was completed in 2010.

4.4 METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

The Water Authority’s imported water supply sources include purchases from Metropolitan. This is separate from and in addition to the Water Authority-IID Transfer supplies and CC and AAC Lining Projects supplies. **Section 6** contains detailed information on Metropolitan’s supplies, and information on Water Authority projected demands on Metropolitan, provided by Metropolitan, can be found in **Appendix I**.

4.5 CARLSBAD SEAWATER DESALINATION PROJECT

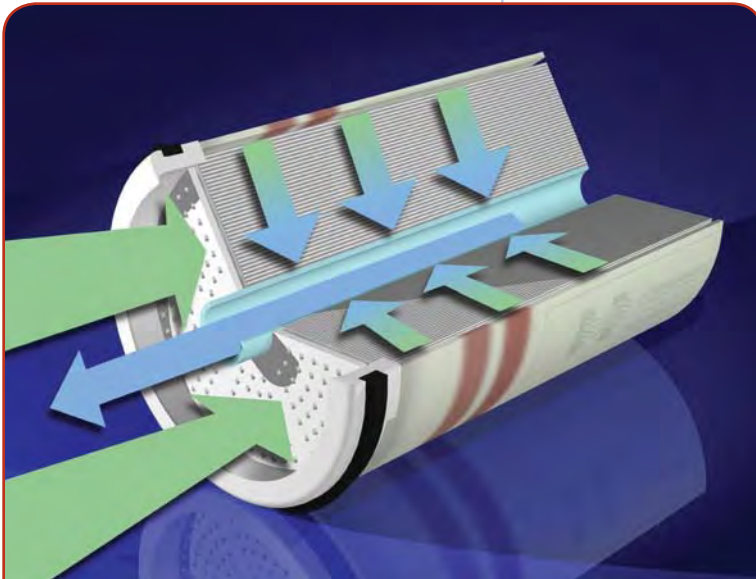
Development of seawater desalination in San Diego County will assist the region in diversifying its water resources, reduce dependence on imported supplies, and provide a new drought-proof, locally treated water supply. The Carlsbad Desalination Project (Project) is a fully-permitted seawater desalination plant and conveyance pipeline currently being developed by Poseidon, a private investor-owned company that develops water and wastewater infrastructure. The Project, located at the Encina Power Station in Carlsbad,

has been in development since 1998 and was incorporated into the 2003 Water Facilities Master Plan and the 2005 Plan. The Project has obtained all required permits and environmental clearances and, when completed, will provide a highly reliable local supply of 56,000 AF/YR for the region.

4.5.1 Implementation Status

The Project has obtained all required permits and environmental clearances, including the following:

- ☐ National Pollutant Discharge Elimination System (NPDES) Discharge Permit (Regional Water Quality Control Board)
- ☐ Conditional Drinking Water Permit (California Department of Health Services)
- ☐ State Lands Commission Lease (State Lands Commission)



As seawater passes through layers of reverse osmosis membranes, water molecules are separated from salts and other impurities to produce high-quality drinking water.

- ☐ Coastal Development Permit (California Coastal Commission)

IDE Technologies, a worldwide leader in the design, construction, and operation of desalination plants, was selected by Poseidon to be the desalination process contractor for the Project.

In July 2010, the Water Authority Board approved a Term Sheet between the Water Authority and Poseidon and directed staff to prepare a Water Purchase Agreement based on its provisions. Prior to the Water Authority engaging (in 2010) as a potential purchaser of all the water produced by the Project, Poseidon was pursuing a project structure where nine local water agencies had signed water purchase agreements. Ultimately, that project structure was found to be financially infeasible and the Water Authority was asked to step into the role of purchaser of the supply. Key terms for a potential Water Purchase Agreement between the Water Authority and Poseidon include the following:

- ☐ The term of the agreement will be for 30 years once commercial operation begins, subject to early buyout provisions beginning at 10 years.
- ☐ The Water Authority will shift the risks associated with the design, permitting, financing, construction, and operation of the Project to Poseidon.
- ☐ The price for water will be based on the actual cost of production.
- ☐ There will be the option to buy the entire plant beginning 10 years after the start date for commercial operation at a price to be specified in the water purchase agreement, as well as the right to purchase the plant at the end of the 30-year water purchase agreement term for \$1. This

ensures eventual public ownership of the plant, securing long-term price certainty and regional public benefit from ratepayers' past investments in the plant through 30 years of water purchase payments.

The Water Authority Board is expected to consider the Water Purchase Agreement by late 2011. The Project is expected to be completed and online by early 2016.

4.5.2 Expected Supply

When completed, the Project will provide a highly reliable local supply of 56,000 AF/YR of supply for the region, available in both normal and dry hydrologic conditions.

4.5.3 Transportation

A 54-inch pipeline will be constructed to convey product water from the desalination plant 10.5 miles east to the Water Authority's Second Aqueduct. The water will be then be conveyed 5 miles north to the Water Authority's Twin Oaks Valley Water Treatment Plant facility, where it will be blended with treated imported water and subsequently distributed into the Water Authority's existing aqueduct system.

4.5.4 Cost/Financing

The Term Sheet between the Water Authority and Poseidon provides the basis for a potential purchase agreement whereby the Water Authority would purchase the entire output from the Project at a price based on the cost of production. A preliminary September 2010 unit cost estimate was \$1,600/AF. The Water Authority's water purchase costs would be financed through Water Authority rates and charges. If the water purchase agreement is approved by the Water Authority Board, Poseidon plans to finance the capital cost of the Project with a combination of private equity and tax-exempt Private Activity Bonds.

4.5.5 Written Contracts or Other Proof

Appendix E contains a list of the specific written contracts, agreements, and environmental permits associated with implementation of the Carlsbad Desalination Project.

4.5.6 Future Supplies

Table 4-3 shows the anticipated delivery schedule of supplies from the Carlsbad Desalination Project in five-year increments. Adequate documentation exists to demonstrate the availability of this supply, and therefore, the reliability analysis found in **Section 9**, "Water Supply Reliability," will show the supply yields presented in Table 4-3.

**TABLE 4-3. PROJECTED SUPPLY FROM CARLSBAD DESALINATION PROJECT
(NORMAL YEAR – AF/YR)**

2010	2015	2020	2025	2030	2035
--	--	56,000	56,000	56,000	56,000

4.6 OTHER WATER AUTHORITY SEAWATER DESALINATION EFFORTS

4.6.1 MCB Camp Pendleton Seawater Desalination Project

The Camp Pendleton desalination project is not considered a verifiable supply, and is therefore not included in the reliability assessment contained in **Section 9**. The project is categorized as an additional planned project and is utilized in **Section 10**, “Scenario Planning – Managing an Uncertain Future,” as a potential strategy to manage future uncertainty planning scenarios. In June 2009, the Water Authority, in collaboration with MCB Camp Pendleton, completed a feasibility study for a potential 50 to 150 MGD seawater desalination project on Camp Pendleton focusing on two possible seawater desalination plant sites in the southwest corner of the base near the mouth of the Santa Margarita River. The feasibility study provided an analysis on new facilities, environmental and permitting requirements, cost estimates, and implementation issues. Major project components include: intake and discharge facilities, the seawater desalination facility, and the desalinated water conveyance system.



At a special meeting in May 2009, staff briefed the Board on the results and findings of the feasibility study and obtained Board approval to fund a new CIP project for \$5.72 million to conduct further planning work for the project. A Memorandum of Understanding (MOU) between the Water Authority and MCB Camp Pendleton was executed in April 2010. The MOU would facilitate base access and defines the roles and responsibilities of the base, the Water Authority, and its consultants in conducting various technical studies for the project. A key technical issue to be investigated further is the type of seawater intake that would be best suited for this project. Hydrogeologic and marine environment studies are planned to further evaluate both subsurface and open-ocean intakes. In addition, other studies on product water conveyance and integration for the Camp Pendleton project will be performed as part of the 2012 Master Plan Update.

These studies are expected to be underway by early 2011 and completed by the end of 2012. Results from the studies will be incorporated into the Water Authority's 2012 Regional Water Facilities Optimization and Master Plan Update. The earliest online date of a potential Camp Pendleton desalination project is 2020.

4.6.2 Rosarito Beach Binational Desalination Plant Feasibility Evaluation and Preliminary Design

Currently, the Rosarito Beach Binational Desalination Project is considered a conceptual-level project and is therefore not included in the reliability assessment in **Section 9**. The Water Authority is participating with U.S. and Mexican agencies in a binational review of potential water management and water supply programs that could benefit Colorado River water users of both countries. As part of this effort, a binational workgroup formed to study potential new water supplies recommended the evaluation and preliminary design of an initial 25 MGD (expandable to 50 MGD) seawater desalination plant that would be located at Rosarito Beach in Baja California, Mexico. U.S. water agencies, including the Water Authority, Metropolitan, Southern Nevada Water Authority (SNWA), and the Central Arizona Water Conservation District (CAWCD), have collaborated to fund a feasibility evaluation and preliminary design of the plant. The Water Authority, Metropolitan, and SNWA are each funding 30 percent of the work, with CAWCD funding the remaining 10 percent. Mexican agencies have supported the development of the project's scope of work and are expected to provide in-kind services in lieu of direct funding for the project. The Water Authority agreed to administer the consultant selection process and serve as project manager for the project.



If built, product water from the plant would be available to both U.S. and Mexican water users. For U.S. water users, the water could be delivered either directly to the San Diego region, using a cross-border pipeline, or possibly by exchange, with Mexican users taking delivery of the product water and leaving an equivalent amount of Colorado River water available for U.S. users. A separate local seawater desalination project is being pursued by Otay Water District at the same location, and is described in **Section 5.5**.

The project is scheduled to be implemented in four phases, with a "go" or "no go" decision being made at the end of each phase. Existing funding was sufficient to complete the first phase of the project, which provided a feasibility evaluation of the site, assessment of water demand, and a review of environmental permitting requirements. The first phase was completed in March 2010. The first phase confirmed that the

site and the existing infrastructure were adequate to support up to a 50 MGD seawater desalination facility. The second phase of the project would confirm conceptual treatment process requirements, confirm plant size and physical layout, further assess permitting and regulatory issues, and define full-scale

plant costs. The Water Authority's Board approved funding for the second phase of the study in January 2011. Additional funds would be required to complete the remaining two phases, which include development and operation of a pilot plant for various test purposes, and a preliminary design of the full-scale plant. The preliminary design would be for a 25 MGD seawater desalination plant, expandable to a 75 MGD plant.

4.7 WATER AUTHORITY DRY-YEAR SUPPLIES

In addition to Water Authority supplies expected during a normal water year, the Water Authority has also invested in carryover storage supplies to assist in achieving reliability in dry year and multiple dry years, as discussed in **Section 9.3**, "Dry Water Year Assessment." The Water Authority's carryover storage supply program includes both in-region surface water storage and out-of-region groundwater storage in California's Central Valley. These verifiable dry-year storage supplies are described in detail in **Section 11**, "Shortage Contingency Analysis," and a list of the specific written contracts, agreements, and environmental permits associated with implementation of the carryover storage program is contained in **Appendix E**.

The Water Authority also successfully acquired and utilized dry-year transfers in 2009, as described in Section 11.2.3.2. The Water Authority's dry-year transfer program serves as a strategy to meet potential future planning uncertainties in times of shortages, identified in **Section 10**, "Scenario Planning – Managing an Uncertain Future."

MEMBER AGENCY SUPPLIES



5.1 INTRODUCTION

Local resources developed and managed by the Water Authority's member agencies are critical to securing a diverse and reliable supply for the region. Local projects, such as recycled water and groundwater recovery, reduce demands for imported water and often provide agencies with a drought-proof supply. This section provides general information on the local resources being developed and managed by the member agencies. These supplies include surface water, groundwater, recycled water, and desalinated seawater.

The Water Authority, working closely with its member agencies, took the following steps to update the yields anticipated from the member agencies' local supplies:

1. Provided the member agencies with the projected supply numbers included in the Water Authority's Updated 2005 Plan and requested they update the figures for their specific project(s).
2. Prepared revised projections based on input from agencies.
3. Separated the recycled water, groundwater, and seawater desalination projects into three categories: "verifiable," "additional planned," and "conceptual" projects based on the stages of development, as defined in the introduction of Section 4, "San Diego County Water Authority Supplies."
4. Presented revised supply numbers to member agencies at several meetings and requested input.
5. Distributed the administrative draft of the 2010 Plan to member agencies for their review, providing them another opportunity to review and revise the updated local supply figures prior to Water Authority Board approval.



Local supplies developed by the Water Authority's member agencies include surface water — such as the City of San Diego's Lake Hodges reservoir shown above — along with groundwater, recycled water, and desalinated seawater.



Olivenhain Reservoir, completed in 2003, is the region's newest reservoir and has a storage capacity of 24,364 AF.

Before 1947, the San Diego region relied on local surface water runoff in normal and wet weather years and on groundwater pumped from local aquifers during dry years when stream flows were reduced. As the economy and population grew, local resources became insufficient to meet the region's water supply needs. From the 1950s onward, the region became increasingly reliant on imported water supplies. Since 1980, a range of 5 to 36 percent of the water used within the Water Authority's service area has come from local sources, primarily from surface water reservoirs with yields that vary directly with annual rainfall. A small but growing share of local supply comes from recycled water and groundwater recovery projects, with additional local supply planned from seawater desalination. Yield from these projects are considered drought-proof since they are primarily independent of precipitation. In fiscal

year 2010, total local water sources provided 11 percent of the water used in the Water Authority's service area.

5.2 SURFACE WATER

5.2.1 Description

The regional surface water yield is supported by 25 surface reservoirs with a combined capacity of 593,490 AF. The reservoirs are located in seven of the San Diego County's nine coastal watersheds. Table 5-1 lists the 25 reservoirs in the San Diego region. The runoff in these watersheds starts at the crest of the Peninsular Range and drains into the Pacific Ocean and is mostly developed. The oldest functional reservoir in the county, Cuyamaca Reservoir, was completed in 1887.

Olivenhain Reservoir completed in 2003 is the region's newest. It is part of the Water Authority's ESP and has a storage capacity of 24,364 AF. The ESP storage capacity will add 90,100 AF and is designed to protect the region from disruptions in the water delivery system. In addition, the 2002 Regional Water Facilities Master Plan (Master Plan) identified an opportunity to augment the ESP with a carryover storage component at San Vicente. The Carryover Storage Project (CSP) is scheduled for completion in late 2012, with filling scheduled to occur within three to five years, and will provide 100,000 AF of water storage resources to buffer dry-year supply shortages. Refer to **Section 11.2.3**, "Water Authority Dry-Year Supplies," for additional information on carryover storage.

TABLE 5-1. MAJOR SAN DIEGO COUNTY RESERVOIRS

Member Agency	Reservoir	Capacity (AF)
 Carlsbad MWD	Maerke	600
 Escondido, city of	Dixon	2,606
Escondido, city of	Wohlford	6,506
 Fallbrook PUD	Red Mountain	1,335
Helix WD	Cuyamaca	8,195
 Helix WD	Jennings	9,790
 Poway, city of	Poway	3,330
 Rainbow MWD	Beck	625
 Rainbow MWD	Morro Hill ¹	465
 Ramona MWD	Ramona	12,000
San Diego, city of	Barrett	37,947
 San Diego, city of	El Capitan ²	112,807

TABLE 5-1. MAJOR SAN DIEGO COUNTY RESERVOIRS (CONT'D)

Member Agency	Reservoir	Capacity (AF)
San Diego, city of	Hodges ³	30,251
 San Diego, city of	Lower Otay	49,510
 San Diego, city of	Miramar	7,185
San Diego, city of	Morena	50,207
 San Diego, city of	Murray	4,818
 San Diego, city of	San Vicente	90,230
San Diego, city of	Sutherland	29,685
 San Dieguito WD/Santa Fe ID	San Dieguito	883
 SDCWA/Olivenhain MWD	Olivenhain	24,364
Sweetwater Authority	Loveland	25,387
 Sweetwater Authority	Sweetwater	28,079
Valley Center MWD	Turner ⁴	1,612
Vista ID	Henshaw	51,774
Total Capacity		590,191

 = Connected to Water Authority aqueduct system.

¹ Not currently in service due to maintenance; to return online in 2012.

² Imported water can be delivered via San Vicente.

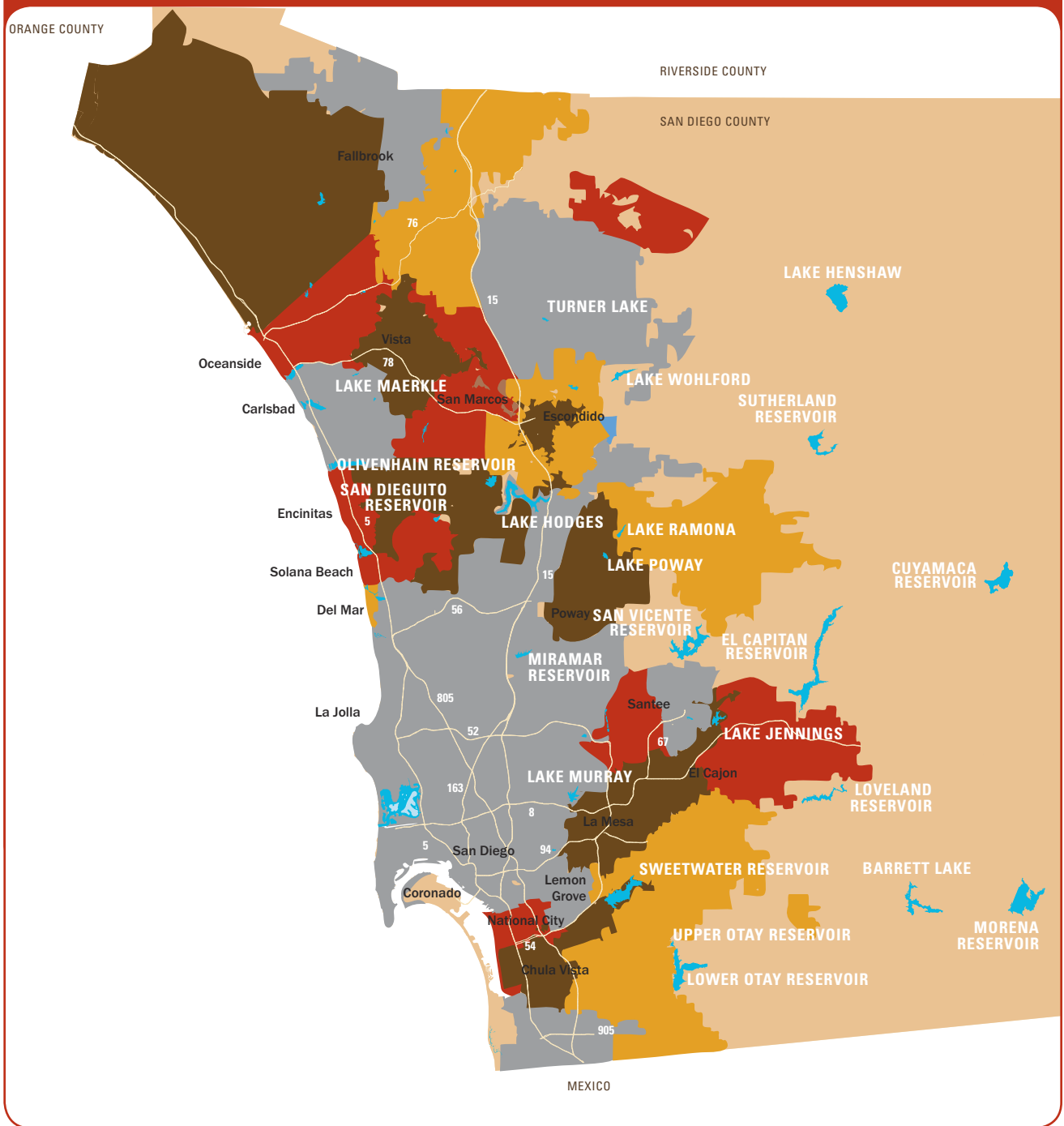
³ System connection is projected to be in service beginning 2011 as part of the ESP.

⁴ Not currently in service as a supply reservoir.

Definitions:

ID = Irrigation District; MWD = Metropolitan Water District; PUD = Public Utility District;
WD = Water District

Figure 5.1 Major San Diego County Reservoirs



5.2.2 Issues

5.2.2.1 Management

The Water Authority's member agencies manage most of the region's reservoirs. The Water Authority manages the imported conveyance system to achieve the optimal use of both local and imported water resources, which includes the local reservoirs. In order to reduce the need for imported water purchases, the reservoirs are operated to maximize the use of this local supply. Local surface water supplies can also offset dry-year shortfalls in imported water. Maximizing local yield reduces losses due to evaporation and spills, but it also results in increased demands for imported water during dry years when imported water is more likely to be in short supply. Most member agencies maintain some portion of their storage capacity for emergency storage. The 2002 Master Plan identified carryover storage as necessary to supplement supplies during dry weather events and to maximize the efficient use of existing and planned infrastructure. Currently the Water Authority is operating carryover storage accounts in member agency reservoirs to attenuate the effects of any supply shortfall.

5.2.2.2 Water Quality

See **Section 7**, "Water Quality," for information.

5.2.3 Encouraging Optimization of Local Surface Water Reservoirs

To optimize the use of local storage, the Water Authority works with its member agencies through storage agreements and through the aqueduct operating plan. The storage agreements allow for carryover storage in member agency reservoirs and provide increased local storage, which can be used during peaks on the aqueduct system. The aqueduct operating plans coordinate imported water deliveries and optimize reservoir fill opportunities. Local yield is maximized by the member agencies that operate the reservoirs. Through the Water Authority's 2012 Regional Water Facilities Optimization and Master Plan Update (Master Plan Update) the Water Authority, in coordination with its member agencies, will model and evaluate whether other opportunities for storage optimization exist.

5.2.4 Projected Surface Water Supplies

Surface water supplies represent the largest single local resource in the Water Authority's service area. However, annual surface water yields can vary substantially due to fluctuating hydrologic cycles. Since 1980, annual surface water yields have ranged from a low of 18,000 AF to a high of 146,000 AF. Planned ESP projects are expected to increase local yield due to the more efficient use of local reservoirs; the volume has not been determined. Water Authority member agency determined average surface water yield to range from 48,206 AF per year in 2015 to 47,289 AF per year in 2035.

A list of the individual reservoirs, expected yield, and basis for the supply figure can be found in **Appendix F**, Table F-1. Table 5-2 shows the projected average surface water supply within the Water Authority's service area, and the yields are utilized in the reliability analysis included in **Section 9**, "Water Supply Reliability."

Specific information on the projected yields from local reservoirs is expected to be included in the member agencies' 2010 plans.

TABLE 5-2. PROJECTED SURFACE WATER SUPPLY (NORMAL YEAR – AF/YR)

2010	2015	2020	2025	2030	2035
27,336 ¹	48,206 ²	47,940	47,878	47,542	47,289

¹Based on fiscal year 2010 totals.

²Post-2015 supply adjusted downward to account for increase in Cal Am demands from City of San Diego.

5.3 GROUNDWATER

One of the elements identified in the Water Authority's resource mix is the use and optimization of groundwater supplies by member agencies. It should be noted that the Water Authority does not currently hold groundwater basin rights, nor does it own or operate groundwater facilities within San Diego county. Although opportunities are limited, groundwater is currently being used to meet a portion of the municipal water demands throughout the Water Authority's service area from MCB Camp Pendleton in the north to National City in the south. This section provides a general description of: municipal groundwater development within the Water Authority's service area, the issues associated with development of this supply, and projected agency yields. Specific information required under the Act on groundwater basins and projects is expected to be included in the member agencies' 2010 plans.

5.3.1 Description

Within the past five years, water supply agencies within the Water Authority's service area have produced an annual average of approximately 18,300 AF of potable water supplies from groundwater. This total represents production from both brackish groundwater desalination facilities and municipal wells producing groundwater not requiring desalination. It does not include production from privately owned water wells used for irrigation and domestic purposes, or several thousand acre-feet of groundwater produced annually from the Warner Basin by Vista Irrigation District, but discharged to Lake Henshaw, a surface water reservoir, then released downstream of the dam.

In addition to providing a local supply to water agencies, groundwater is also a source of supply for numerous private well owners who draw on groundwater to help meet their domestic and agriculture water needs. In the Ramona area alone, over 1,000 privately owned wells provide a supplementary source of water for Ramona MWD customers. Similar domestic uses occur throughout the Water Authority's service area. These domestic supplies help to offset demand for imported water provided by the Water Authority and its member agencies. Although the amount of groundwater pumped by private wells is significant, it cannot be accurately quantified nor estimated within the Water Authority's entire service area.

Groundwater production in the Water Authority's service area is limited by a number of factors including: the limited geographic extent of the more productive sand and gravel (alluvial) aquifers; the relatively shallow nature of most of the alluvial aquifers; lack of rainfall and groundwater recharge; and degraded water quality resulting from human activities, such as septic tank use.

Figure 5.2 Alluvial Groundwater Basins



Shallow and narrow river valleys filled with alluvial sand and gravel deposits are characteristic of the more productive groundwater basins in the San Diego region. Outside of these more productive aquifers, groundwater is developed from fractured crystalline bedrock and semi-consolidated sedimentary deposits that occur throughout the region. However, yield and storage in these aquifers are limited, and the aquifers are best suited for meeting domestic water needs that do not require higher flow rates. Figure 5-2 shows the location of the principal alluvial groundwater basins within the Water Authority's service area.

Although groundwater supplies are less plentiful in the San Diego region than in some other areas of California, such as the Los Angeles Basin in southern California and the Central Valley in northern California, the Water Authority believes that sufficient undeveloped brackish groundwater supplies exist that could help meet a greater portion of the region's future water demand. Several agencies within the Water Authority's service area have identified potential projects that may provide several thousand to tens of thousands acre-feet of additional groundwater production in the coming years. A general summary and description of these projects is presented below.

5.3.1.1 Groundwater Extraction and Disinfection Projects

Groundwater that can be extracted and used as a potable water supply, with little more than disinfection, generally occurs outside the influence of human activities and within the upper reaches of the east-west trending watersheds. Wells producing higher quality water are operated by MCB Camp Pendleton (Santa Margarita River watershed) and the Sweetwater Water Authority (San Diego Formation aquifer). The Vista Irrigation District also operates numerous high quality extraction wells in the Warner Basin, located in the upper San Luis Rey River watershed. The water from these wells is discharged to Lake Hemshaw and eventually to the San Luis Rey River where it is then diverted further downstream for use in the city of Escondido and elsewhere. The unit cost of water produced from simple groundwater extraction and disinfection projects is low and generally well below the cost of imported water. Because most of the higher quality groundwater within the Water Authority's service area is already being fully utilized, the focus for future local groundwater development is brackish groundwater recovery and treatment.

5.3.1.2 Brackish Groundwater Recovery Projects

Groundwater that is high in salts and total dissolved solids (TDS) and other contaminants, and requires advanced treatment prior to potable use, is typically found in shallow basins in the downstream portions of watersheds. Brackish groundwater recovery projects use membrane technology, principally reverse osmosis, to treat extracted groundwater to potable water standards. The city of Oceanside's 6.37-MGD capacity Mission Basin Desalter and the Sweetwater Authority's existing 4.0-MGD Richard A. Reynolds Groundwater Desalination Facility are the only currently operating brackish groundwater recovery and treatment facilities within the Water Authority's service area. Unit costs for brackish groundwater recovery projects are considerably higher than those for simple groundwater extraction and disinfection projects due to the additional treatment requirements and the cost of concentrate (brine)

disposal. However, where economical options exist for disposal of brine, this type of groundwater project has proven to be an economically sound water-supply option.

5.3.1.3 Groundwater Recharge and Recovery Projects

Artificial recharge and recovery projects, also referred to as conjunctive-use projects, can increase groundwater basin yields by supplementing the natural recharge process. Conjunctive-use projects divert excess surface water supplies to percolation basins or injection wells to supplement natural rainfall runoff recharge. Captured rainfall runoff, reclaimed water, imported water, or a combination thereof, can be used to recharge groundwater basins when water levels have been lowered sufficiently by pumping. Groundwater basins can be operated similar to surface water reservoirs to supply stored water to the region if imported deliveries are limited due to high demand, or supply and facility constraints, or a combination thereof. The Fallbrook PUD and MCB Camp Pendleton, and Padre Dam MWD and Helix WD are currently exploring the feasibility of such projects.



Artificial recharge and recovery projects, also referred to as conjunctive-use projects, can increase groundwater basin yields by supplementing the natural recharge process. Fallbrook PUD and MCB Camp Pendleton are currently exploring the feasibility of their Santa Margarita Conjunctive-Use Groundwater Project.

5.3.2 Issues

Local water agencies oftentimes need to consider a multitude of issues during the planning, permitting, design, construction, and operation of a groundwater project. The issues can include dealing with hydrogeologic uncertainties, high upfront study and subsurface investigation costs, higher unit costs associated with brackish groundwater recovery and treatment, project funding considerations, water rights, regulatory and environmental concerns, and possible contamination of groundwater that might occur after the project is constructed and facilities are brought online. These issues can discourage decision makers and potentially limit the amount of groundwater development in San Diego County.

The Water Authority financial assistance program, Local Investigation and Studies Assistance Program (LISA), provides funding opportunities for facility planning, feasibility investigations, preliminary engineering studies, environmental impact reports (EIRs), and research projects

related to groundwater development, which will help agencies overcome some of the risks and constraints to project development.

5.3.2.1 Hydrogeologic and Environmental Impact Uncertainty

In groundwater basins that have not been recently utilized as a source of a municipal water supply by an agency and where there is a general lack of information regarding the physical nature of the aquifer materials, existing

wells and groundwater production, water quality, potential impact of pumping to riparian habitat, etc. significant resources must be expended prior to determining the feasibility of a project. Subsurface exploration and field investigations are both costly and time consuming. In addition, data management and utilization generally requires the development of costly large-scale numerical models. These issues, in conjunction with financial considerations, can oftentimes dictate that groundwater projects be developed and production increased incrementally in a planned and managed fashion.

5.3.2.2 Economic and Financial Considerations

Because of the saline nature of the water and the presence of other contaminants in many of the groundwater basins in San Diego County, the cost of groundwater development will oftentimes require demineralization and brine disposal facilities, which can be costly to construct and operate.

5.3.2.3 Institutional, Legal, and Regulatory Issues

Institutional and legal issues can also impact project development. Because groundwater basins oftentimes involve multiple water agencies and/or numerous private wells and water-right holders, water rights and management authority can be issues that need to be addressed before a project progresses beyond the planning stage. However, agencies are often reluctant to initiate groundwater development projects and go beyond the feasibility study stage unless jurisdiction and water rights issues are resolved beforehand.

Uncertainty over future regulatory requirements for drinking water supplies can pose an additional barrier to project development. When developing facilities and compliance plans for groundwater development and/or groundwater recharge projects, agencies must take into account proposed or potential regulatory changes related to water quality issues. Some of the regulations for which changes are expected over the next decade include state and federal drinking water standards and California Department of Health Services groundwater recharge regulations.

5.3.2.4 Environmental Regulatory Constraints

Issues related to the environmental impacts that could potentially result from the fluctuation of groundwater levels when large quantities of groundwater are extracted are common to many of the groundwater projects proposed within the principal alluvial aquifers in the Water Authority's service area. These issues include potential impacts on endangered species habitat and groundwater-dependent vegetation. Impacts may occur if a project results in seasonal or long-term increases in the depth of the groundwater. Although potential environmental impacts can generally be mitigated, mitigation costs can reduce the cost-effectiveness of a project.

5.3.2.5 Water Quality

See **Section 7.4**, "Groundwater," for additional information on water quality for groundwater supplies.

5.3.2.6 Funding

In November 2006, the Water Authority's Local Water Supply Development Program was modified to provide up to \$200 per acre-foot for potable water produced from brackish or otherwise contaminated groundwater. Currently

no agencies have qualified for LWSD funding for groundwater projects. However, two local agencies, Sweetwater Authority and the city of Oceanside have received financial incentives from Metropolitan Water District's Groundwater Recovery Program (GRP) totaling \$944,779 in fiscal year 2009 and \$312,767 in fiscal year 2010.

5.3.3 Projected Groundwater Supply Yield

The Water Authority has worked closely with its member agencies to develop groundwater yield projections. The most reliable projections have been developed by considering only existing (verifiable) groundwater projects, which include planned expansions to existing projects.

Table 5-3 shows the projected annual yield from verifiable groundwater projects in five-year increments, based on projections and implementation schedules or existing projects and planned expansions provided by the member agencies. These are included in the reliability analysis found in **Section 9**, "Water Supply Reliability." Table F-2, **Appendix F** contains a list of the projects and the projected supplies.

TABLE 5-3. PROJECTED GROUNDWATER SUPPLY (NORMAL YEAR – AF/YR)

2010	2015	2020	2025	2030	2035
20,833	22,030	26,620	27,620	28,360	28,360

An overall projected increase in groundwater production from 2015 and beyond is due primarily from the expansion of the brackish groundwater recovery and treatment project currently operated by the Sweetwater Authority.

The Sweetwater Authority has completed feasibility studies and design of the expansion of its Richard A. Reynolds Facility, and is currently seeking funding for construction. The agency is also participating in studies with the United States Geological Survey (USGS) to evaluate and further develop production from the San Diego Formation aquifer. Sweetwater has completed the environmental process for the expansion project; however, the city of San Diego has filed a CEQA challenge on the EIR and the outcome of that lawsuit is still pending.

The city of Oceanside has recently completed an expansion of the capacity of its Mission Basin Desalter (6.37 MGD/4.0 MGD expansion). However, production will remain below the capacity of the facility until new conveyance and pumping facilities, required to distribute the additional supply to additional service areas, are completed. The expected completion date for the new conveyance and pumping facilities is January 2013. The ultimate production capacity, or "safe yield" of the Mission Basin will need to be verified by continued monitoring of water levels after production capacity of the current facility is realized.

5.3.3.1 Additional Planned Projects – Groundwater

Maximizing groundwater development is critical to diversifying the region's water supply portfolio. Beyond the projections of the more reliable and verifiable projects included in Table 5-3, member agencies have also identified four additional planned projects, with an estimated total of 12,700 AF/YR of additional yield in 2035. Carlsbad MWD will utilize its groundwater rights in the Mission Basin and in the Aqua Hedionda Hydrologic Area of the Carlsbad Hydrologic Unit. Carlsbad MWD's Mission Basin/Agua Hedionda Projects are expected to yield 1,000 AF/YR by 2020, ramping up to 2,000 AF/YR by 2030. The Otay WD Rancho del Rey Well Development Project is expected to yield 500 AF/YR by 2015. The Helix Water District/Padre Dam MWD's El Monte Valley Recharge Project is projected to yield 5,000 AF/YR by the year 2020, and Fallbrook PUD/MCB Camp Pendleton's Santa Margarita Conjunctive-Use Project is projected to yield an additional 5,200 AF/YR by 2020 (for a total yield from the basin of 10,800 AF/YR.) These additional yields are considered additional planned supplies and are utilized in **Section 10**, "Scenario Planning – Managing an Uncertain Future," as potential strategies to manage future uncertainty planning scenarios. These additional planned projects, as well as the conceptual projects provided by the member agencies, are also included in Table F-2, **Appendix F**.



Every gallon of recycled water used within the region reduces the need to import or develop other water supplies.

5.4 WATER RECYCLING

Another of the elements identified in the Water Authority's resource mix is the optimization of recycled water use. Every gallon of recycled water used within the region reduces the need to import or develop other water supplies. This section provides a general description of recycled water development within the Water Authority's service area, the issues associated with developing this supply, and projected regional yield. Documentation on specific existing and future recycling projects is expected to be in the 2010 plans for those agencies that include water recycling as a supply. The Water Authority coordinated the preparation of this section with its member agencies and those wastewater agencies that operate water recycling facilities within the Water Authority's service area.

5.4.1 Description

Water may be recycled for non-potable or indirect potable purposes. Non-potable recycling is the treatment and disinfection of municipal wastewater to provide a water supply suitable for non-drinking uses. Agencies in San

Diego County use recycled water to fill lakes, ponds, and ornamental fountains; to irrigate parks, campgrounds, golf courses, freeway medians, community greenbelts, school athletic fields, food crops, and nursery stock; and to control dust at construction sites. Recycled water can also be used in certain industrial processes, in cooling towers and for flushing toilets and urinals in non-residential buildings. Recycled water is also being considered for street sweeping purposes.

Indirect potable reuse includes the use of multi-barrier treatment, which may include treatment technologies such as reverse osmosis and advanced oxidation, and a natural barrier, such as a groundwater basin or surface water reservoir, to render wastewater suitable for potable purposes. Several Water Authority member agencies are completing studies pertaining to potable reuse in San Diego County through groundwater recharge or reservoir augmentation.

5.4.2 Issues

Local agencies must consider a number of issues when developing recycled water projects, including economic and financial considerations; regulatory, institutional, and public acceptance issues; and water quality concerns related to unknown or perceived health and environmental risks. These issues, if unresolved, can limit the amount of recycled water use in San Diego County. The following sections discuss some of the specific challenges associated with recycled water development.



The capital-intensive cost of constructing recycled water projects and managing a dual distribution system has traditionally been a barrier to project implementation.

5.4.2.1 Economic and Financial Considerations

The capital-intensive cost of constructing recycled water projects and managing a dual distribution system has traditionally been a barrier to project implementation. The up-front capital costs for construction of treatment facilities and recycled water distribution systems can be high, while full market implementation is usually phased in over a number of years, resulting in very high initial unit costs that affect cash flow in the early project years.

Costs associated with converting existing water customers to non-potable recycled water use have also proved challenging. This situation is compounded by the seasonal nature of recycled water demands, a lack of seasonal storage and the lack of large industrial water users in San Diego County that can use recycled water. Projects that serve a large portion of irrigation demands, like the majority of the projects in the Water Authority's service area, often use only half of their annual production capacity due to these seasonal demand patterns. The unit costs associated with these projects tend to be higher than

those of projects that serve year-round demands, since the project facilities must be sized to accommodate seasonal peaking. Projects that serve mostly irrigation demands also tend to have less stable revenue bases because irrigation demands are heavily influenced by hydrologic conditions.

Recycled water for indirect potable reuse can be stored in local reservoirs and groundwater basins. This can ensure a continuous demand and production of recycled water throughout the year making the projects more cost effective. Although indirect potable projects require a higher level of treatment than non-potable projects, these costs are offset because they do not require a dual distribution system or customer retrofits. To be economically feasible, a project's benefits must offset or exceed its associated costs. Project benefits can take the form of: (1) revenues from the sale of recycled water; (2) increased supply reliability; (3) increased control over the cost of future water supplies;

and (4) avoided water and wastewater treatment, storage, and conveyance costs. Agencies developing recycled water projects must be able to quantify these benefits in order to determine the economic feasibility of a project. In addition, financial incentives and grant funding from the Water Authority, Metropolitan, and federal and state agencies are critical to offsetting project costs and project implementation.

5.4.2.2 Regulatory

Two state agencies have primary responsibility for regulating the application and use of recycled water: the California Department of Public Health (DPH) and the California Regional Water Quality Control Board (Regional Board). Planning and implementing water recycling projects entails numerous interactions with these regulatory agencies prior to project approval.

The DPH establishes the statewide criteria for recycled water uses in Title 22 of the California Administrative Code. Under Title 22, the standards are established for each general type of use based on the potential for human contact with recycled water. The highest degree of standards for recycled water is for unrestricted body contact.

The Regional Board is charged with issuing permits and enforcing requirements for the application and use of recycled water for each recycled operation which ensures compliance with basin plan objectives and incorporates recommendations from the DPH. As part of the permit application process, applicants must demonstrate that the proposed recycled water operation will meet the ground and surface water quality objectives in the basin management plan, and will comply with Title 22 requirements. With the consent of the recycled water supplier, the Regional Board and DPH may delegate review of individual non-potable use sites to the County of San Diego Department of Environmental Health.

Coordination between the regulatory agencies responsible for monitoring development of recycled water is important, along with the development of a reasonable and consistent application of regulations. Regulatory agencies need to work more closely and cooperatively with project proponents in their efforts to satisfy the regulations and still be able to develop a much needed, cost-effective water-recycling project.

A recent regulatory development that may help expand recycled water use was the January 2011 amendments to the building standards contained in the California Code of Regulations (CCR), Title 24, Part 5, pertaining to dual plumbing design standards for use of recycled water systems inside buildings. The recent amendments established statewide standards for installing both potable and recycled water plumbing systems in commercial, retail, and office buildings; and in theaters, auditoriums, condominiums, schools, hotels, apartments, barracks, dormitories, jails, prisons, and reformatories.

Potable reuse projects require a high level of regulatory scrutiny and are currently approved on a case by case basis. Typically an expert panel is convened to look the project specifics and provide recommendations to the project proponent and DPH. While all projects will build on the knowledge and efforts obtain through past indirect potable reuse projects, local reservoir augmentation projects will be the first to be approved in the State. In 2010, the

California Legislature passed AB 918 which will require the DPH to adopt regulations for groundwater recharge and reservoir augmentation and investigate the possibility of direct potable reuse. This will pave the way for future potable reuse projects throughout the State.

5.4.2.3 Institutional

The primary institutional issue related to the development of water recycling in San Diego County is interagency coordination, such as when the wastewater agency that produces the recycled water is not the water purveyor within the reuse area. At those times, effective communication and cooperation between both agencies regarding the distribution of recycled water and providing service to the water customer is vital and should begin early in the planning process.

These institutional arrangements require contracts and/or agreements between the parties and/or agencies involved, the terms of which must be established on a case-by-case basis. The agreements usually define the reporting and compliance responsibilities, the amount of recycled water deliveries, water pricing, and a financing plan that identifies which agency will receive the financial incentives.

5.4.2.4 Public Acceptance

Without public acceptance, siting, financing, constructing, and operating a water-recycling project becomes increasingly difficult. For many in the public, there is a general sense of water quality and safety concerns due to a lack of understanding the water reclamation treatment process. The most successful means to obtaining public acceptance is through education and involvement. Agencies in the San Diego region have formed citizen's advisory groups and held public workshops in an effort to increase public involvement in projects, which is described in greater detail in **Section 5.4.4** below. While the public has fully accepted the safety of recycled water for non-potable uses, potable reuse has had to overcome greater public acceptance hurdles. Recent impacts from drought, increased statewide experience demonstrating the safety of potable reuse projects and local support from the environmental and business communities are increasing the local public acceptance for potable reuse.

5.4.3 Wastewater Generation, Collection, Treatment, and Disposal

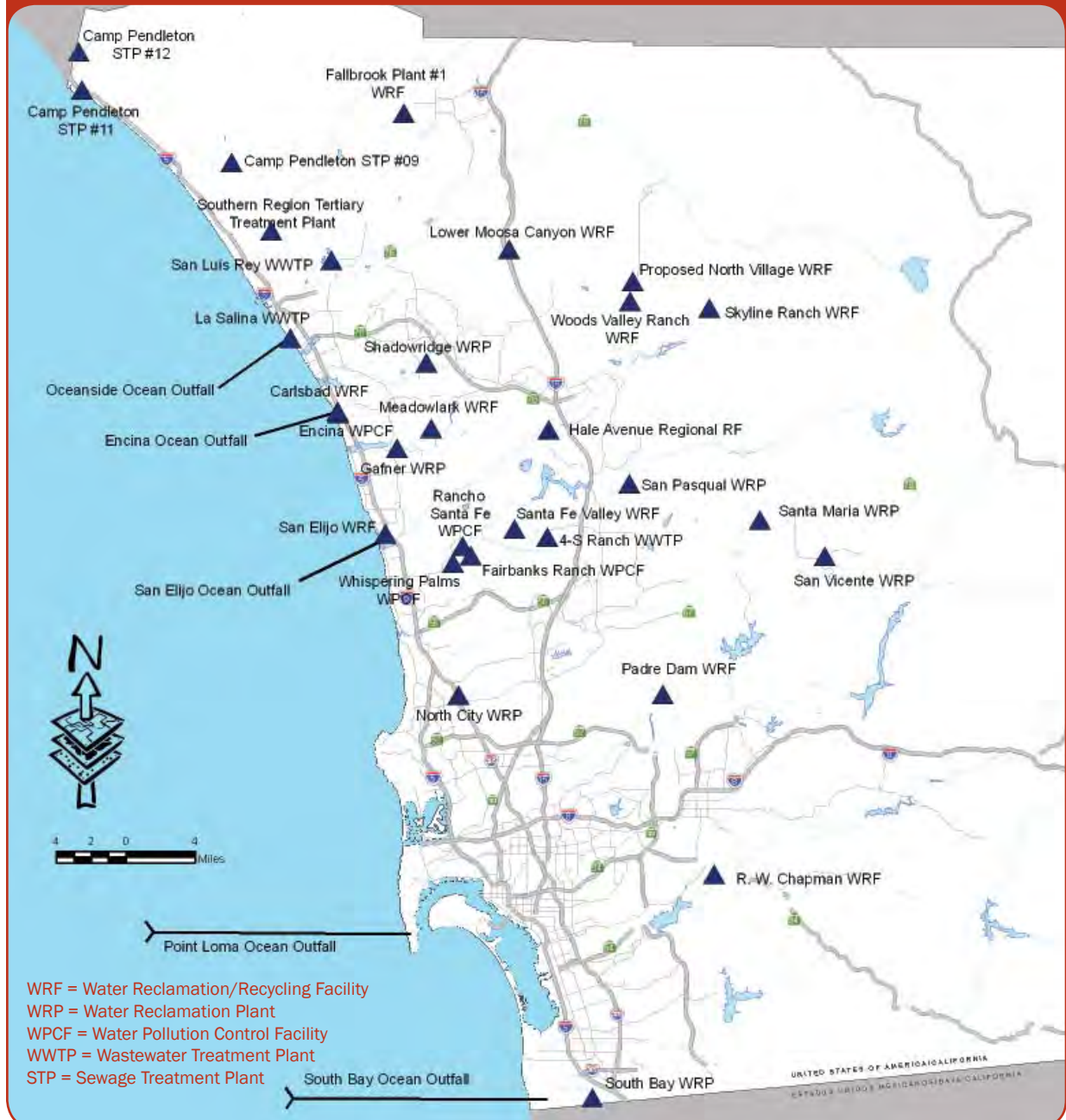
Approximately 300 MGD of wastewater is currently being generated, collected, treated, and disposed of within the Water Authority's service area and provides significant potential for recycled water use. Most of the large wastewater treatment plants are located along the coast for easy and convenient access to an ocean outfall. These plants serve most of the San Diego region's highly urbanized areas. Figure 5-3 identifies the location of the wastewater treatment plants and the associated outfall systems. The coastal location of the plants is not always conducive to development of recycled water. Most of the market for recycled water is located at higher elevations, making distribution systems costly. However recycled water costs could be offset by possible savings on wastewater treatment costs where those savings are available. Table F-3, **Appendix F** shows a detailed list of the wastewater treatment plants

within the county, their capacities at various levels of treatment, and the type of disposal. In addition, approximately 10 to 15 MGD of wastewater within the Water Authority's service area is generated and disposed of through private systems, such as septic tanks.

5.4.4 Encouraging Recycled Water Development

The Act requires agencies to describe in their plan the actions, including financial incentives, that agencies may take to encourage the use of recycled water. Table 5-4 summarizes the programs used by the Water Authority's member

Figure 5.3 Wastewater Treatment and Water Recycling Facilities



agencies. The water recycling agencies develop some of the programs, while others are developed or funded by the water providers, such as the Water Authority, Metropolitan, and state and federal agencies.

5.4.4.1 Funding Programs

Another important component of a successful recycling project is securing diversified funding and establishing funding partnerships. The Water Authority

TABLE 5-4. PROGRAMS TO ENCOURAGE RECYCLED WATER USE

Incentive Programs

Local Water Supply Development (Water Authority)
Local Resources Program (Metropolitan)
Local Investigations and Studies Assistance Program (Water Authority)
Public Sector Water Efficiency Partnership Demonstration Program – Immediate Hookup for Potential Recycled Water Use Customers (Metropolitan)

Grants

Title XVI Funding Program (US Bureau of Reclamation)
Proposition 13 Planning Grants and Loans (State of California)
Proposition 50 Grant (State of California)

Low Interest Loans

Clean Water State Revolving Fund Program (State of California)

Long-Term Contracts to Ensure Price and Reliability

Funding Assistance to State Water Resources Control Board to

fund staff position(s) to expedite water recycling projects (Water Authority)

Recycled Water Rate Discounts

(most San Diego area water/wastewater agencies)

Public Education/Information Materials

Market Development and Technical Assistance Program (Water Authority and most San Diego area water/wastewater agencies)

Regional Planning and Regulatory Assistance

Regional coordination with member agencies and regulatory agencies such as DPH and the San Diego Regional Board on recycled water issues
Review and comment on statewide regulatory developments and legislation to support local projects
Preparation of guidelines in conjunction with member agencies, such as Decorative Water Feature Design Guide, Dual Plumbing Standard Guidelines, etc.

Administration of Recycled Water Site Supervisor Training Workshops

(Water Authority in conjunction with member agencies)

has focused on providing and facilitating the acquisition of outside funding for water recycling projects.

Financial assistance programs available to San Diego County agencies include: the Water Authority's Local Water Supply Development Program, Metropolitan's Local Resources Program (LRP), the U.S. Bureau of Reclamation (USBR) Title XVI Grant Program, the State Water Resources Control Board (SWRCB) low-interest loan programs and the Integrated Regional Water Management Plan Grant Program. Together, these programs can offer funding assistance for all project phases, from initial planning and design to construction and operation. Financial assistance programs administered by the Water Authority, Metropolitan, and the USBR provided \$9,508,617 to San Diego County agencies during fiscal year 2010.

Local Water Supply Development Program

The Water Authority administers the Local Water Supply Development (LWSD) Program (formerly referred to as the Recycled Water Development Fund (RWDF) Program initially adopted by the Board in April 1991), which is designed to ensure the financial feasibility of local water recycling projects during their initial years of operation. In November 2006, the LWSD Program was modified to provide up to \$200 per acre-foot of recycled water and potable water produced from brackish or otherwise contaminated groundwater. In February 2008, the LWSD Program was again amended to expand eligibility to include seawater desalination projects and adopt updated program guidelines and funding principles.

To date, the Water Authority has entered into LWSD agreements with 11 water and wastewater agencies for a combined project yield of over 30,000 AF/YR. Over \$22 million in Water Authority incentive funding has been awarded to program participants. In fiscal year 2010, the Water Authority provided local agencies with \$3,575,093 in LWSD incentives.

Local Resources Program

Metropolitan also has a program that currently subsidizes the cost of water supply production from local projects during the initial years of operation. The Local Resources Program (LRP) provides subsidies of up to \$250 AF/YR for recycled water and groundwater recovery projects. Currently, 14 water and wastewater agencies in San Diego County have agreements for Metropolitan LRP and Local Projects Program (LPP) funding. Metropolitan provided \$4,169,089 in fiscal year 2009 and \$3,620,756 in fiscal year 2010 from these funding sources.

In June 2010, the Water Authority filed suit against Metropolitan challenging its practice of allocating supply related expenses to the transportation rate it charges the Water Authority to wheel the Water Authority's independently obtained supplies. Following the filing of the lawsuit, Metropolitan sent a Notice of Intent to Cancel six Local Resources Program subsidy agreements that are subject to Metropolitan's 'Rate Structure Integrity' provision.

The Reclamation Wastewater and Groundwater Study and Facilities Act – Title XVI

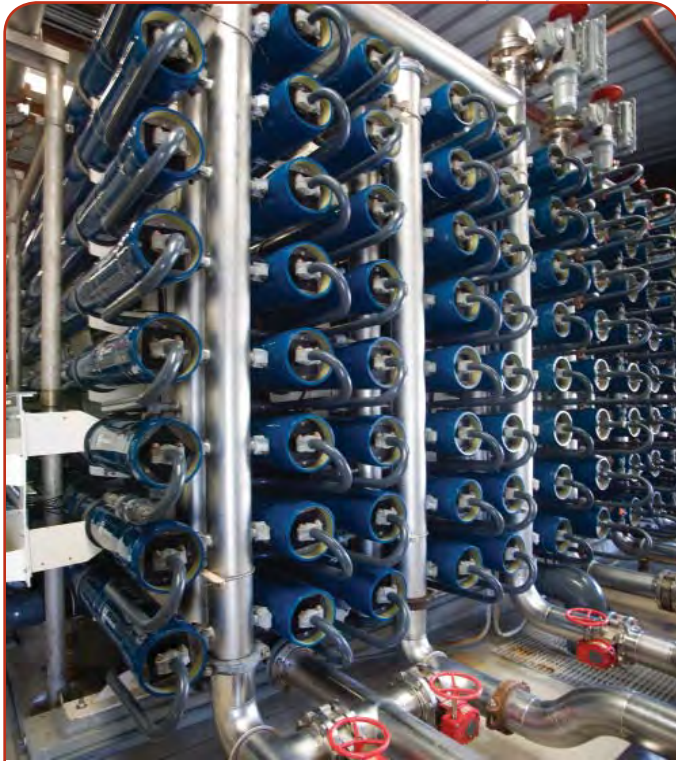
The Title XVI Grant Program is a significant source of funding for San Diego area water recycling projects. Title XVI of Public Law (PL) 102-575, the

Reclamation Wastewater and Groundwater Study and Facilities Act, authorizes the federal government to fund up to 25 percent of the capital cost of authorized recycling projects, including the San Diego Area Water Reclamation Program, an inter-connected system of recycling projects serving the Metropolitan Sewage System service area. PL 104-266, the Reclamation Recycling and Water Conservation Act of 1996, authorized two additional projects in northern San Diego County: the North San Diego County Area Water Recycling Project and the Mission Basin Brackish Groundwater Desalting Demonstration Project. The North San Diego County project is no longer eligible to receive federal funding in that it has reached its maximum federal funding limit of

\$20 million per project. The Mission Basin project is nearing completion, having received a total of \$2,500,000 so far. To date, San Diego agencies have been authorized to receive more than \$192 million under the Title XVI grant program, including more than \$4,472,000 obligated during federal fiscal year 2009. A total of \$117,992,000 has been received from this funding source to date. Future authorizations and annual funding from this program are important, but could become more challenging due to current Federal budget challenges.

Clean Water State Revolving Fund/Water Recycling Grants

The SWRCB, through the Division of Financial Assistance, offers low interest financing agreements for water quality projects and water reclamation facilities. Annually, the program disburses between \$200 and \$300 million to eligible projects. The Clean Water State Revolving Fund (CWSRF) offers agencies a below-market interest rate that can result in substantial savings on debt service. Approximately \$83 million was appropriated to the SWRCB in fiscal year 2009 for funding water recycling projects. An example of funding awarded to one of the Water Authority's member agencies was a \$496,161 grant commitment to the city of San Diego for their South Bay Water Reclamation Plant. Additional funding can also be obtained through Water Recycling Grants to provide up to 25% of eligible construction costs with a maximum \$5 million cap per agency. Planning grants of up to \$75,000 maximum are also provided for eligible facilities planning/feasibility study costs.



The Mission Basin Brackish Groundwater Desalting Demonstration Project received \$2.5 million in Title XVI grants to date.

Further, the Water Authority completed a Membrane Bioreactor (MBR) Study which evaluated 11 potential sites for MBR placement and coordinated the final Regional Recycled Water Study – Phase II Project Report to the SWRCB which included \$701,262 in grant funding for 11 local member agency projects. In addition, matching funds were obtained from USBR for the Regional Recycled Water Study, and for an Otay Water District Groundwater Feasibility Study in the amount of \$126,518.

Integrated Regional Water Management Plan Grant Funding, Propositions 50 and 84

In June 2008, the California DWR awarded a grant package for \$25 million that will provide funding for 19 local projects designed to improve the San Diego region's water supply reliability, water quality, and natural resources.



In June 2008, the California DWR awarded a grant package for \$25 million that will provide funding for 19 local IRWM projects, such as the El Capitan Watershed project.

The San Diego-area projects are part of the 2007 San Diego Integrated Regional Water Management (IRWM) Plan, which aims to coordinate local water planning activities. The San Diego package was among a number of similar efforts state-wide that have been funded by the state under Proposition 50, a water bond measure approved by voters in 2002. An additional 70 million dollars has been dedicated to the San Diego IRWMP Region through Proposition 84. A portion of the funding will support recycled water projects, including for example, a recycled retrofit program, construction of treatment facilities at the San Elijo JPA and a north county recycled water study. Refer to **Section 8**, “Integrated Regional Water Management Planning,” for more information.

5.4.4.2 Policies, Ordinances, and Guidance Documents

The Water Authority has adopted a number of policies, guidance documents, and a model ordinance to assist local agencies with water recycling project implementation. Many local agencies have adopted the Water Authority–sponsored ordinance, which includes provisions that

typically require new development projects to install recycled water systems. The ordinance also states that where allowed by law and available in sufficient quantities, at a reasonable cost and quality, recycled water shall be the sole water supply delivered for non-potable uses.

In 2009, a guidance document was also developed by the Water Authority to provide general, regulatory guidelines for agencies and customers seeking to use recycled water in water features and fountains. The guidelines were approved by the local regulatory agencies.

5.4.4.3 Training

The Water Authority, in partnership with other water agencies, offers a half-day course designed to provide irrigation supervisors with a basic understanding of recycled water. Completion of the Recycled Water Site Supervisor Training fulfills the training requirement as mandated by regulatory authorities. The four-hour workshop provides information to designated Site Supervisors on: recycled water treatment and rules and regulations, backflow prevention and cross-connection shut-down testing and inspections, landscape irrigation fundamentals, and Site Supervisor responsibilities. At this time, more than 2,300 participants have been certified. Instructors include a certified cross-connection control specialist, a landscape/irrigation specialist, and a recycled water specialist.

5.4.4.4 Optimizing the Use of Recycled Water – Regional Perspective

In the Water Authority’s service area, the Market Development and Technical Assistance Program was developed and implemented to promote the increased use of recycled water. Through this program, technical assistance and specific process recommendations through customer site inspections and site review reports were provided to local CII customers interested in connecting to

local recycled water systems. The resources available to these CII customers included the use of technical experts in the fields of cooling tower operation, landscape irrigation, agronomy, cross control connection, and other related fields. For example, one biotech firm that requested a Customer Site Inspection could potentially realize a 46 AF/YR reduction in imported water demand by converting their cooling towers at a single facility.

Technical reference materials associated with the promotion of recycled water to CII and agricultural customers included the development of Information Data Sheets for the use of recycled water in cooling towers, detailed case studies, a Recycled Water Landscape Guide, and a Recycled Water Quality Template.



Through the Market Development and Technical Assistance Program, developed to promote the increased use of recycled water, three specialty Industry Workshops were scheduled and conducted. One was geared towards CII/bio-tech customers, a second was tailored for the Golf Course Superintendents Association, and the third targeted landscape architects and contractors.

Through the Market Development and Technical Assistance Program, three specialty Industry Workshops were also scheduled and conducted. One was geared towards CII/bio-tech customers (focusing on cooling tower use), another was tailored for the Golf Course Superintendents Association, and another targeted landscape architects and contractors. Although local agencies take responsibility to expand and develop their respective recycled water projects the Water Authority provides regional leadership and assistance that will facilitate and expedite project completion and implementation. In support of the SWRCB call for salinity planning, the Water Authority, in cooperation with the Southern California Salinity Coalition (SCSC), hosted and coordinated a series of stakeholder workshops and

workgroup meetings to work in partnership with San Diego Regional Board staff to develop guidelines for the development of Salinity/Nutrient Management Plans. The final guidelines were approved supported by the San Diego Regional Board through a resolution adopted in November 2010. IRWMP Grant funding is being used to support the development of the plans.

To help advance Indirect Potable Reuse in the San Diego region, Water Authority staff participated in numerous stakeholder outreach and technical committees, including initially serving as a representative on both of the City of San Diego's American Assembly Workshops which resulted in the "unanimous agreement that current technology and scientific studies support the safe implementation of non-potable and indirect potable use projects." More recently, technical assistance has been provided to the city of San Diego for their efforts to approve and fund a demonstration-scale Advanced Water Purification (AWP) Facility at the North City Water Reclamation Plant for the Indirect Potable Reuse/Reservoir Augmentation Demonstration Project and to the

Helix Water District and Padre Dam MWD joint El Monte Valley Groundwater Recharge and River Restoration Project. The Water Authority will continue to advocate at a State and local level for reasonable regulations that will support the safe use of recycled water for indirect potable reuse projects.

5.4.5 Projected Recycled Water Use

The Water Authority worked closely with its member agencies to determine the projected yield from existing and planned recycled water projects. Table 5-5 shows the estimated annual yield from the projects in five-year increments based on the implementation schedules provided by the member agencies and the likelihood of development. These projected supply yields will be included in the reliability analysis found in **Section 9**, “Water Supply Reliability.” Table F-4, **Appendix F** contains a detailed list of the projects and projected supplies.

The Water Authority’s 2005 Plan projected a recycled water yield of 33,688 AF/YR in the year 2010. As shown in Table 5-5 above, the actual yield for 2010 was 27,931 AF/YR. The increase in projected recycled water use shown in Table 5-5 in 2015 and beyond is primarily from the expansion of existing facilities. The Olivenhain MWD will be expanding its use of recycled water from its connection with the city of San Diego’s North City Water Reclamation Plant to 800 AF/YR of recycled water for customers within Olivenhain’s Southeast Quadrant, which encompasses 4S Ranch, Santa Fe Valley, and the Rancho Santa Fe/Fairbanks Ranch area. Olivenhain MWD’s connection from the Vallecitos Water District’s Meadowlark Water Recycling Facility will ultimately provide approximately 1,000 AF/YR of recycled water to Olivenhain MWD customers.

TABLE 5-5. PROJECTED RECYCLED WATER USE (NORMAL YEAR – AF/YR)

2010	2015	2020	2025	2030	2035
27,931	38,660	43,728	46,603	48,278	49,998

A marked increase in the use of recycled water also stems from MCB Camp Pendleton’s expanded production and use of recycled water. Through the South and North Wastewater Treatment Plants and other production plants, over 4,000 AF/YR of recycled water will be beneficially used throughout the military base by 2015.

5.4.5.1 Additional Planned Projects – Recycled Water

Maximizing recycled water development is critical to diversifying the region’s water supply portfolio. Beyond the verifiable project yields included in Table 5-5 above, member agencies have also identified additional planned projects. Carlsbad MWD, Fallbrook PUD, Olivenhain MWD, Padre Dam MWD, City of Poway, City of San Diego, Santa Fe ID, and Valley Center MWD all have identified additional planned projects which are projected to yield an additional 26,383 AF/YR by 2030. These yields are considered additional planned supplies and are utilized in **Section 10**, “Scenario Planning – Managing an Uncertain

Future.” These additional planned projects, as well as the conceptual projects provided by the member agencies, are also included in Table F-4, **Appendix F**.

As part of the City of San Diego’s effort to provide a local and sustainable water supply, the City’s Water Purification Demonstration Project (WPDP) is examining the use of advanced water purification technology to provide safe and reliable water for San Diego’s future, and will determine if reservoir augmentation using this purified water is a feasible option for San Diego. The WPDP is underway and will conclude in 2012. During this time, the advanced water purification facility (AWPF) will operate for approximately one year and will produce 1 MGD of purified water. A study of the San Vicente Reservoir is being conducted to test the key functions of reservoir augmentation and to determine the viability of a full-scale project. During the demonstration phase, no purified water will be sent to the reservoir. Instead the purified water will supply water to the non-potable recycled water distribution system. A summary report detailing the results of the WPDP will be provided to the Mayor and San

Diego City Council. If deemed technically and economically feasible, and after City Council and Mayoral approval, a full-scale AWPf could produce approximately 15,000 AF/YR of high quality advanced treated recycled water. Helix Water District and Padre Dam MWD are completing planning of the El Monte Valley Recharge Project (indirect potable reuse through groundwater recharge) which is expected to provide 5,000 AF/YR of supply. The project is currently undergoing environmental review and design is expected to be completed by late 2012. The City of Escondido is both planning to expand its non potable water recycling program to include additional landscaping and potentially agricultural irrigation as well as incorporate a future indirect potable reuse element. Escondido is pursuing this dual path for water supply reliability and to avoid the cost of a future ocean outfall expansion associated with its discharge of second-

ary treated wastewater. At this point the Escondido City council has approved exploring this alternative and has incorporated this approach into their long range financial planning. As part of its plans to further expand its recycled water program, the Rincon Municipal Water District is beginning to study options for potable reuse through groundwater recharge in less urbanized portions of their service area.

5.5 MEMBER AGENCY SEAWATER DESALINATION

5.5.1 Rosarito Beach Desalination Project, Otay Water District

The Otay Rosarito Beach Desalination Project is not considered a verifiable supply, and is therefore not included in the reliability assessment in **Section**



The City of San Diego’s Water Purification Demonstration Project is examining the use of advance water purification technology to provide a local and sustainable water supply.

9. The Otay project is considered an additional planned project and is utilized in **Section 10** as a potential strategy to manage future uncertainty planning scenarios.

A private developer, NSC Agua, is in the process of obtaining a contract to build a 50-MGD desalination plant next to the existing power plant in Rosarito Beach, Mexico. NSC Agua would permit, design, construct and operate the Rosarito Beach Desalination Facility. Otay Water District (Otay) would purchase excess product water of up to 20,200 AF/YR by 2015, ramping up to 38,600 AF/YR by 2035. In order to convey the purchased product water from the Rosarito plant into its service area, Otay is currently evaluating conveyance and treatment options. Otay's conveyance and treatment project, within the U.S., would have to undergo an environmental review and permitting process once a final project description has been determined. Otay is projecting this private development project could be operational as early as 2015.

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA



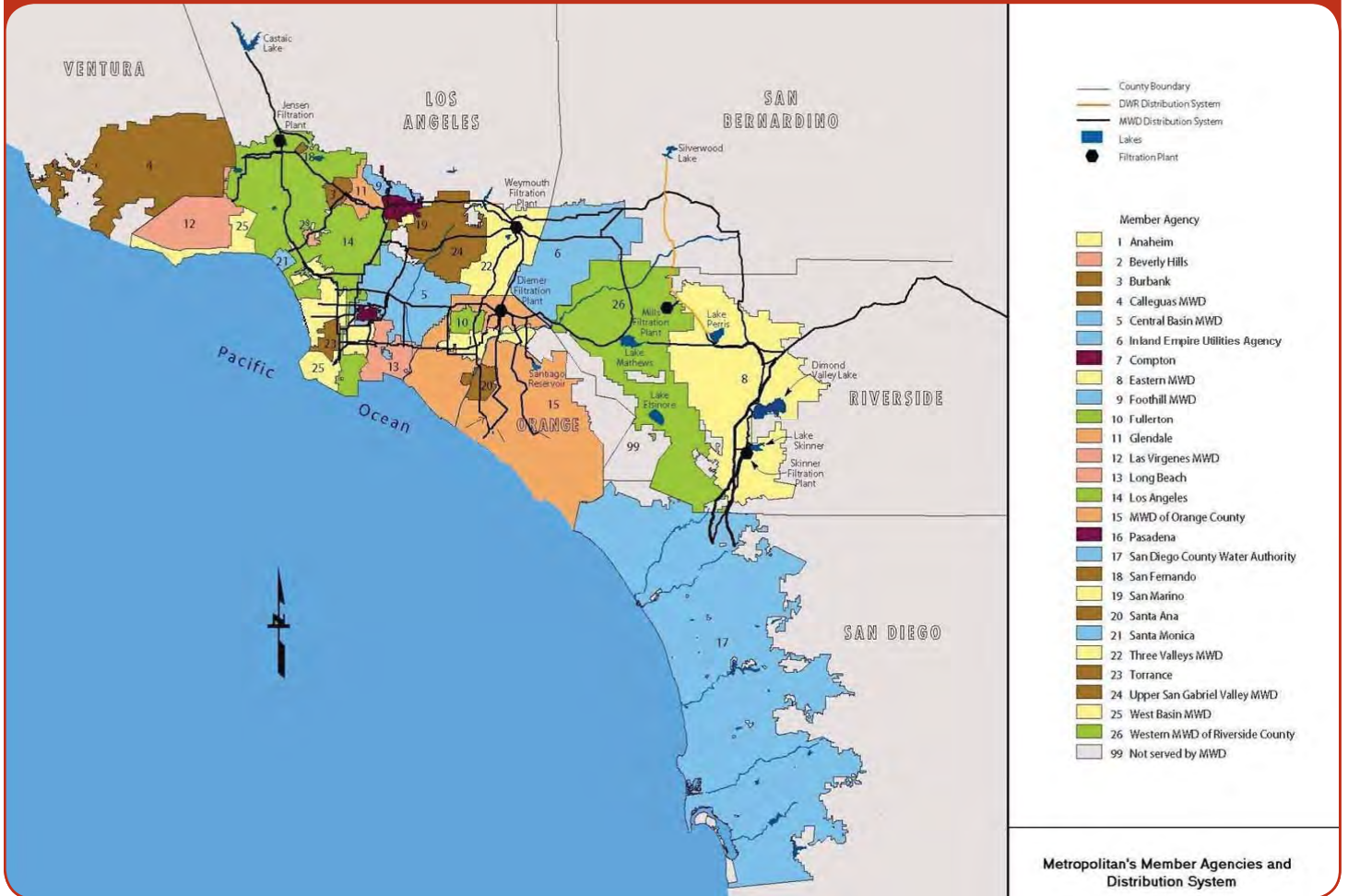
6.1 DESCRIPTION

The Water Authority's imported water sources include purchases from Metropolitan. Metropolitan was formed in 1928 to develop, store, and distribute supplemental water in Southern California for domestic and municipal purposes. Metropolitan supplies water to approximately 19 million people in a service area that includes portions of Ventura, Los Angeles, Orange, San Bernardino, Riverside, and San Diego counties. The Metropolitan service area, shown in Figure 6-1, covers a 70-mile-wide strip of the Southern California coastal plain, extending from the city of Oxnard on the north to the Mexican border. Close to half of the water used in this 5,200-square-mile region is supplied by Metropolitan, and about 90 percent of its population receives at least some of its water from Metropolitan. The Water Authority, one of 26 Metropolitan member agencies, is the largest in terms of purchases, purchasing 331,825 AF, or about 21 percent of all the water Metropolitan delivered in fiscal year 2010. The extent to which Metropolitan's member agencies rely upon Metropolitan supplies varies by the amount of local supplies available or their own reliability goals. Water Authority demands on Metropolitan, provided by Metropolitan, can be found in **Appendix I**.



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Figure 6.1 Metropolitan Service Area

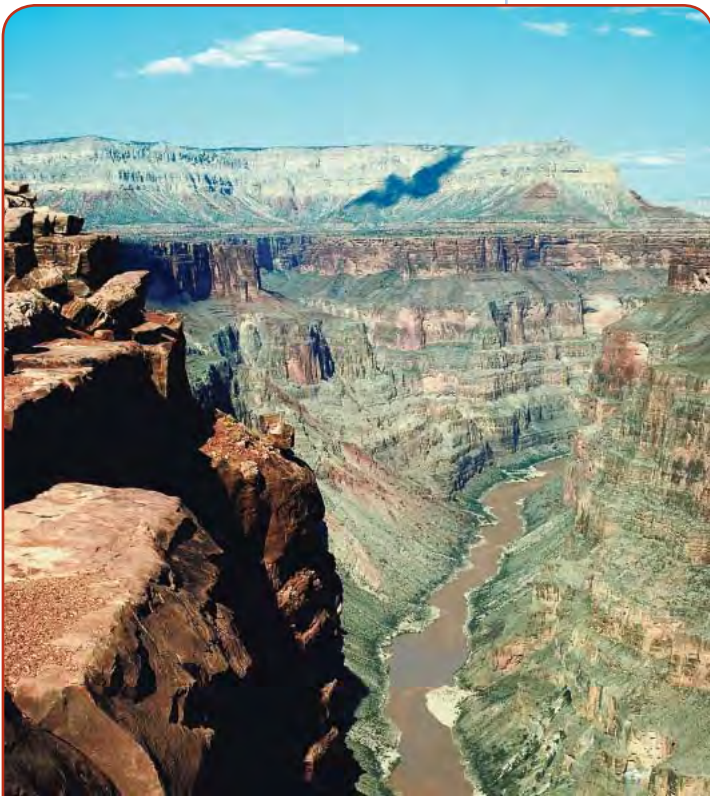


6.1.1 Metropolitan Act Section 135 – Preferential Right to Water

Under Section 135 of the Metropolitan Act, each member agency has a preferential right to Metropolitan purchases. The preferential rights are determined by each agency's total historic payments to Metropolitan from property taxes, readiness-to-serve charges, and other minor miscellaneous revenue. Revenue resulting from the purchase of Metropolitan water is excluded, even though more than 81 percent of Metropolitan's revenues come from water sales.

Metropolitan member agencies' ability to exercise preferential rights was confirmed in a lawsuit filed by the Water Authority in 2001. The court decisions made clear how much water the Water Authority may count on from Metropolitan should a member agency invoke its preferential right. While the Water Authority had a preferential right to purchase 17.47 percent of Metropolitan's water as of June 30, 2010, it purchased about 21 percent of their available supply in fiscal year 2010.

In Metropolitan's 2010 Regional Urban Water Management Plan (RUWMP), Section 2.3, Metropolitan presents its supply availability at the regional level, rather than at the member agency level. The report stated that the region can provide reliable water supplies under both the single driest year and the multiple dry-year hydrologies through 2035. The report listed Metropolitan's forecasted imported water supply capabilities under normal, single driest year and multiple dry-year hydrologies through 2035, which would provide the Water Authority with adequate supplemental imported supplies in normal years and a single dry-year. In multiple dry years, under its projected preferential right formula, the Water Authority could experience shortages as shown in **Section 9.3**.



The Colorado River is the primary source of the Water Authority's imported water supply.

6.2 METROPOLITAN'S WATER SUPPLIES

Metropolitan obtains its water from two sources: the CRA, which it owns and operates, and the SWP, with which Metropolitan has a water supply contract through the state of California. Figure 6-2 shows these imported water supply sources, and they are described below. In order to meet emerging challenges from dry hydrologic conditions and regulatory restrictions that limit supplies from the SWP, Metropolitan's strategy also includes utilizing its storage programs to maximize available supplies in wet years for dry years' use.

6.2.1 Colorado River

Metropolitan was formed to import water from the Colorado River. During the 1930s, Metropolitan built the CRA to con-

Figure 6.2 Major Water Conveyance Facilities Serving San Diego County



vey this water. Metropolitan's member agencies received the first deliveries in 1941. The aqueduct is more than 240 miles long, beginning at Lake Havasu on the Arizona/California border and ending at Lake Mathews in Riverside County. The aqueduct has capacity to deliver up to 1.25 million AF/YR. Figure 6-2 shows the location of the aqueduct.

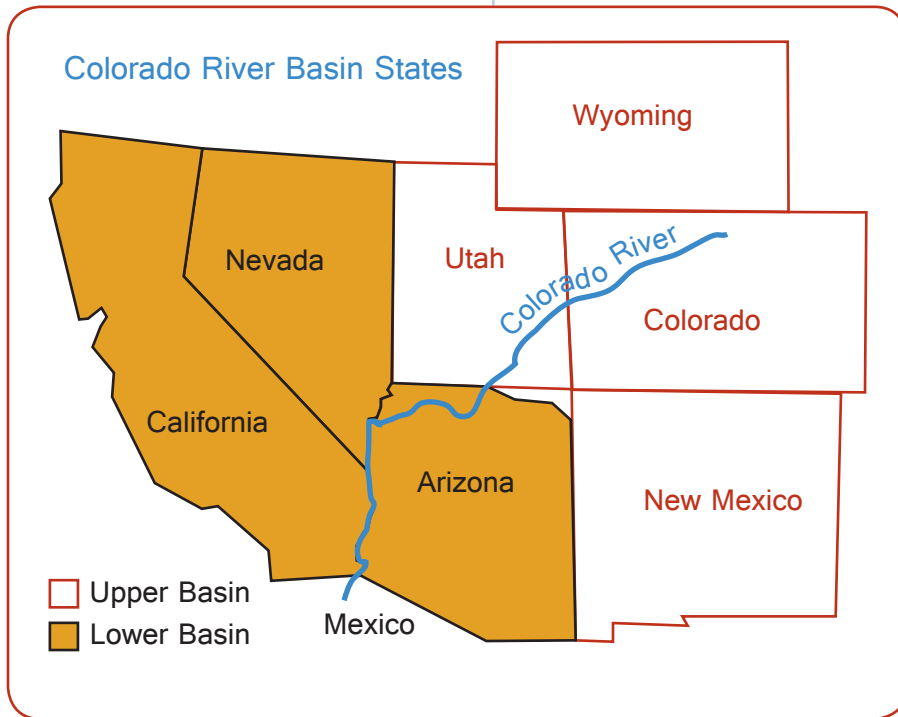
6.2.1.1 Reliability Issues

Before 1964, Metropolitan had a firm annual allocation of 1.212 million AF of Colorado River water through contracts with the U.S. Department of the Interior, which was enough to keep Metropolitan's aqueduct full. However, as a result of the U.S. Supreme Court decision in *Arizona vs. California*, Metropolitan's firm supply fell to 550,000 AF, its basic annual apportionment. Due to growth in demand from the other states and drought conditions, since 2003, Metropolitan's deliveries have been limited to its basic annual apportionment

plus water resulting from unused apportionment water by other California holders of priorities 1 through 3, and transfer programs resulting from conservation with other senior water right holders.

Water availability from the Colorado River is governed by a system of priorities and water rights that has been established over many years. The Colorado River Lower Basin states (California, Arizona, and Nevada) have an annual

apportionment of 7.5 million AF of water divided as follows: (1) California, 4.4 million AF; (2) Arizona, 2.8 million AF; and (3) Nevada, 300,000 AF. The 1931 Seven Party Agreement established California's priorities for water among California's contractors to use Colorado River water made available to California. The first four priorities total the 4.4 million AF/YR available to California. Metropolitan has priorities 4, 5(a), and 5(b) water listed in the Seven Party Agreement, but only priorities 1–4 of the Seven Party Agreement are within California's basic annual apportionment. Metropolitan's fourth priority of 550,000 AF is junior to that of the first three priorities, 3.85 million AF to California agricultural agencies. Water used to satisfy Metropolitan's priorities 5(a) and 5 (b) must come from unused allocations within California, Arizona, or Nevada, or from surpluses declared by the Secretary of the Interior.



6.2.1.2 Environmental Considerations

Several fish species and other wildlife species either directly or indirectly have the potential to affect Colorado River operations, thus changing power operations and the amount of water deliveries to the CRA. A number of species that are on either "endangered" or "threatened" lists under the federal and/or California Endangered Species Acts (ESAs) are present in the area of the Lower Colorado River. To address this issue, a broad-based state/federal/tribal/private regional partnership, which includes water, hydroelectric power, and wildlife management agencies in Arizona, California, and Nevada, developed a multi-species conservation plan for the main stem of the Lower Colorado River (the Lower Colorado River Multi-Species Conservation Program [MSCP]). Developed between 1996 and launched in early-2005, this 50-year plan allows Metropolitan to obtain federal and state permits for any incidental take of protected species resulting from current and future water and power operations and diversions on the Colorado River. The MSCP also covers operations of federal dams and power plants on the Colorado River.

6.2.1.3 Water Quality Considerations

Please see **Section 7**, "Water Quality," for information.

6.2.1.4 Current Supplies

Per the Seven Party Agreement, Metropolitan has a firm Colorado River supply of 550,000 AF from its fourth priority within California's basic apportionment of 4.4 million AF. Because Metropolitan continues to face dry hydrologic challenges coupled with increasing demands, Metropolitan relied on its fifth priority for up to 662,000 AF/YR (through unused water from holders of priorities 1 through 3, water saved by Palo Verde, or when the U.S. Secretary of Interior declares surplus or unused water by Arizona and/or Nevada), and additional supplies when the Department of Interior declared surplus flows are available. With the 2003 QSA and related agreements among the IID, the Coachella Valley Water District (CVWD), State of California, Department of Interior, Metropolitan, and the Water Authority, a plan was formalized on how California will implement water transfers and supply programs that allow California to live within the state's 4.4 million AF basic annual apportionment of Colorado River water. Since then, Metropolitan has relied on cooperative transfer programs and storage programs to increase its Colorado River water deliveries beyond its basic priority 4 water.



The State Water Project water (above) is owned by the State of California and stretches more than 600 miles from Lake Oroville in the north to Lake Perris in the south.

6.2.1.5 Quantification Settlement Agreement and Future Supplies

The Water Authority, together with CVWD, IID, and Metropolitan, entered into the QSA in October 2003. The QSA, which is in effect for 45 years (and up to 75 years), resolved longstanding disputes regarding Colorado River water use among the agencies, and established a baseline water use for IID, CVWD, and Metropolitan. This permitted the implementation of a variety of water conservation and transfer agreements, including the Water Authority's transfer agreement with IID. The QSA also provides that CVWD and Metropolitan will put aside, for the term of the agreement, a dispute over beneficial use of water by IID; and that Metropolitan would forbear consumptive use of water to permit the Secretary of Interior to satisfy the uses of the non-encompassed water delivered to holders of present perfected rights. See **Section 4.2**, "Water Authority – IID Water Conservation and Transfer Agreement," for more information on the QSA.

Metropolitan's Tables 2-9, 2-10, and 2-11 in its 2010 RUWMP indicate that Metropolitan's current program Colorado River Aqueduct supply target for an average (based on 1922–2004 hydrologies) and single (repeat of 1977 hydrology) or multiple dry year (based on 1990–1992 hydrology) is 1.25 million AF, the maximum Colorado River Aqueduct delivery capacity. The figure includes water management programs and IID/Water Authority transfers and conserved canal lining water conveyed by the aqueduct.

6.2.2 State Water Project

The SWP is owned by the State of California and is operated by the DWR. Metropolitan has a take-or-pay supply contract with the State of California and is entitled to take about 48 percent of available SWP water through its Long-Term SWP Water



The Bay Delta is the largest estuary on the United States' west coast and is also home to an agricultural industry, recreation and fishing, and provides the means by which to deliver water from Northern California to the south.

Supply Contract (Table A allocation). The project stretches more than 600 miles, from Lake Oroville in the north to Lake Perris in the south. Water is stored at Lake Oroville and released when needed into the Feather River, which flows into the Sacramento River and to the Sacramento–San Joaquin River Delta (Delta). The Delta is the largest estuary on the United States' west coast and is also home to an agricultural industry, recreation and fishing, and provides the means by which to deliver water from Northern California to the south. In the north Delta, water is pumped into the North Bay Aqueduct for delivery to Napa and Solano counties. In the south Delta, water is diverted into the SWP's Banks Pumping Plant, where it is lifted into the 444-mile-long California Aqueduct. Some of this water flows into the South Bay Aqueduct to serve areas in Alameda and Santa Clara counties. The remainder flows southward to cities and farms in central and southern California. In the winter, when demands are lower, water is stored at the San Luis Reservoir located south of the Delta. SWP facilities provide drinking water to 23 million Californians and 755,000 acres of irrigated farmland. Figure 6-2 shows the California Aqueduct.

6.2.2.1 Reliability Issues

The reliability of SWP supplies is limited by both the level of SWP supply development and pumping restrictions due to state and federal environmental regulations and hydrology. When approved by the voters in the 1960s, the SWP was planned to deliver 4.2 million AF to 32 contracting agencies. Subsequent contract amendments reduced total contracted deliveries to 4.13 million AF and the number of contracting agencies to 29. Metropolitan's contracted entitlement is 1,911,500 AF. Metropolitan's original long-term water supply contract for 2,011,500 AF was amended as part of the 2003 QSA. Effective in 2005, the amendment resulted in an exchange agreement among CVWD, Desert Water Agency (DWA), and Metropolitan. The exchange agreement provides for the transfer of 88,100 AF of Metropolitan's Table A amounts to CVWD and 11,900 AF of Metropolitan's Table A amounts to DWA. When voters approved construction of the SWP in 1960, state planners did not expect the full amount of contracted water to be needed for at least the first 20 years of the project. As a result, the planners anticipated that the facilities needed to produce the full contracted amount would be constructed over time as demands on the system increased. However, decisions about these additional facilities were repeatedly deferred as public attitudes and environmental regulations changed and costs increased. New state and federal environmental laws put some potential water supply sources off limits to development. More stringent water quality standards adopted by the SWRCB to protect the San Francisco Bay/Sacramento–San Joaquin River Delta have reduced the amount of water available for diversion. Environmental challenges to the SWP operations also resulted in the issuance of new biological opinions, which led to pumping restrictions that further reduced SWP exports. At the same time, California's population and water demand continued to grow.

Since 2006, a voluntary collaboration of state, federal and local water agencies, state and federal fish agencies, environmental organizations, and other interested parties began development of the Bay Delta Conservation Plan

(BDCP). The purpose of the BDCP is to restore and protect Delta water supply, water quality, and ecosystem health within a stable regulatory environment. A parallel effort, the Delta Habitat Conservation and Conveyance Program (DHCCP) is in process, and is the state government's mechanism for achieving the BDCP's goals.

In November 2009, the state Legislature passed a package of bills that established in state policy the co-equal goals of water supply reliability and environmental restoration in the Delta. The bills also provided a governance structure for the Delta and required the preparation of a Delta Plan to guide the process of achieving the co-equal goals and outline a plan to restore listed species. The Delta Stewardship Council, an independent state agency, is required to develop the Delta Plan by January 1, 2012. In order for the BDCP to be incorporated into the Delta plan and for public funds to be made available for public restoration benefits, the BDCP must also be approved by the California Department of Fish and Game (CDFG) as a Natural Community Conservation Plan (NCCP). If unsuccessful, operational constraints likely will continue until a long-term solution to the problems in the Delta is implemented.



The Water Authority held a roundtable in 2009 with Assembly members Nathan Fletcher and Mary Block to familiarize these newly elected legislators with water issues. Board Director James Bond discusses priorities and concerns including resolving Bay-Delta issues.

DWR's 2009 State Water Project Delivery Reliability Report updated DWR's estimate of the current and future water delivery reliability of the SWP.

The 2009 report showed that future deliveries will be further impacted by significant restrictions due to operational requirements contained in federal biological opinions and forecasted effects of climate change, which is changing the hydrologic conditions of the state. The 2009 report projected that the primary component of the annual SWP deliveries will be less, when compared to the preceding 2007 report, where the 2007 report incorporated interim and less restrictive operational requirements established by federal Judge Oliver Wanger in 2007. For current conditions, the dominant factor for the SWP's reductions is the restrictive operational requirements contained in the federal biological opinions. For future conditions, it is the restrictive operational requirements coupled with the forecasted effects of climate change. Metropolitan's SWP deliveries projection listed in its RUWMP are based on DWR's Draft

2009 Report, which is substantially the same as the final report. For dry, below-normal conditions, Metropolitan also developed its Central Valley storage and transfer programs to increase its supply capabilities.

In developing its supply capabilities, Metropolitan assumed a new Delta conveyance as fully operational by 2022 and would return supply reliability similar to 2005 conditions, prior to supply regulatory restrictions imposed. Metropolitan also assumes near-term improvements that could potentially provide a 10% increase in water supplies obtained from the SWP allocation for the year. Additional supplies from this interim fix are assumed to materialize by 2013. In terms of water supply impacts, Metropolitan identified regulatory restric-

tions water costs of over one million AF between both the SWP and the federal Central Valley Project in 2010.

6.2.2.2 Environmental Considerations

In recent years, actions taken to protect the ecosystem of the Bay-Delta have placed additional restrictions on SWP operations. The Bay-Delta is the largest



The Delta smelt is one of several endangered or threatened fish species at the center of a controversy over regulatory restrictions that can limit pumping water from the Bay-Delta to Southern California.

estuary on the west coast and supports more than 750 plant and animal species. However, 150 years of human activity, dating back to 19th century gold mining, has taken its toll on the Bay-Delta ecosystem and the fish that live there.

Numerous factors contribute to the degradation of the Bay-Delta ecosystem and the decline of Delta fisheries, such as habitat loss, water diversions, non-point source pollution, over-fishing, and the introduction of nonnative species. Regulatory protection efforts have nevertheless tended to focus on the operations of the SWP and the federal Central Valley Project (CVP). The restrictions began in 2007, when Federal Court Judge Oliver Wanger, acting in a case filed two years earlier, invalidated the Biological Opinion (BiOp) for the Delta smelt and imposed an injunction that limited the time

during which water could be pumped out of the Delta. The judge imposed restrictions on pumping to protect the Delta smelt, while new BiOps were being prepared. During the spring of 2008, Judge Wanger also invalidated the federal government's BiOps with respect to salmon and steelhead in the Sacramento River. In December 2008, the U.S. Fish and Wildlife Service (USFWS) issued a new BiOp for the Delta smelt. This BiOp imposed operating restrictions that were even more severe than those imposed by the judge. Metropolitan and other State Water Contractors filed separate lawsuits in federal district court challenging the BiOp.

On June 4, 2009, the National Oceanic and Atmospheric Administration National Marine Fisheries Service issued a BiOp intended to protect spring- and winter-run Chinook salmon, Central Valley steelhead, green sturgeon, and Southern Resident killer whales. This action placed additional restrictions on SWP and CVP operations. By the spring of 2010, Judge Wanger granted a preliminary injunction against the federal government's implementation of pumping restrictions under the salmon BiOp. The judge said that the federal government had not properly taken into account the impact the restrictions would have on people in the Central Valley and had not justified the need for imposing the harshest restrictions within the range stated in the biological opinion. Shortly thereafter, as with the salmon ruling, Judge Wanger found that water officials must consider impacts on humans along with the delta smelt. He also found that water users made convincing arguments that the federal government's science did not prove that increased pumping from the delta imperiled the smelt. Deliveries estimated for DWR's 2009 Report are reduced by the operational restrictions of the biological opinions issued by the USFWS in December 2008 and the National Marine Fisheries Service in June 2009 governing the SWP and Central Valley Project operations.

On December 14, 2010, Judge Wanger issued a decision in the Delta Smelt consolidated lawsuits. He granted a number of the State Water Contractors', CVP Contractors', and other plaintiffs' motions for summary judgment, while denying others. On the whole, the decision invalidates the federal government's biological opinions on the Delta smelt and lessens the resulting restrictions on water supply to the state and federal water contractors. It is expected that Judge Wanger will most likely call a remedies hearing, at which the water contractor plaintiffs and the federal defendants will work to agree on a new set of restrictions based on the decision. There are still hearings to be held on the biological opinion regarding salmon. In addition, another lawsuit by environmentalist organizations is challenging the federal government's decision not to list the longfin smelt as endangered. Should the federal government lose that lawsuit, the restrictions on pumping to protect the longfin smelt may erase any gains in water supply resulting from the Wanger decision.

6.2.2.3 Water Quality Considerations

Please see **Section 7**, "Water Quality," for information.

6.2.2.4 Current Supplies

Metropolitan's SWP supplies are projected using DWR's Draft 2009 State Water Project Delivery Reliability Report. The reliability report presents current DWR estimates of the amount of water deliveries for current (as of 2009) and 20 years in the future conditions. The estimates incorporate restrictions on SWP and CVP operations in accordance with the biological opinions of the USFWS and National Marine Fishery Service issued on December 15, 2008, and June 4, 2009, respectively. Under the reliability report, the delivery estimates for the SWP for current conditions as percentage of maximum Table A amounts are

7 percent under a single dry-year (1977) condition, which is equivalent to 134,000 AF, and 60 percent under long-term average conditions, which is equivalent to 1.15 million AF. In dry, below-normal conditions caused by dry hydrologic conditions and regulatory restrictions, Metropolitan developed additional supplies from Central Valley storage and transfer programs.

6.2.2.5 Future Supplies

Metropolitan's 2010 RUWMP indicates that Metropolitan's SWP target for "current programs" in a single dry year (based on 1977 hydrology) is 522,000 AF in 2015, 601,000 AF in 2020, and 651,000 AF in 2025. The 2010 RUWMP also estimates that in the 2030–2035 period, Metropolitan's annual supply range from the SWP will be between 609,000 and 610,000 AF. These figures include Central Valley transfer and storage program supplies conveyed by the aqueduct. In Metropolitan's 2010 RUWMP, the increased supply yield from a long-term delta fix is contained in "programs under development." The 2010 RUWMP estimates that the SWP "current programs" will be capable of serving between 1.55 million to 1.73 million AF to Metropolitan from 2015 through 2035 in an average year.

6.2.3 Storage Management Programs

Metropolitan relies on water in storage to augment at times of limited imported supplies. It manages its storage portfolio by storing water during wet years to meet the region's needs during critical droughts caused by varied hydro-

logic conditions and SWP pumping restrictions imposed to protect endangered or threatened fish species. Metropolitan's likelihood of having adequate

supply capability before environmental issues that caused Delta pumping restrictions are addressed to meet projected demands, without implementing the Water Supply Allocation Plan (WSAP), is largely dependent on its storage resources. The principles that guide the management of supply and storage are based on the framework established in the Water Surplus and Drought Management (WSDM) Plan, and is being further refined through the WSAP update process. Currently, Metropolitan has about 30 storage programs in operation that provide flexibility to meet delivery requirements. The storage accounts include groundwater and surface storage programs and facilities, within and outside of Metropolitan's service area. Metropolitan's dry-year storage portfolio has the potential to store more than 5 million AF.

Metropolitan's 2010 RUWMP indicates that the in-region storage and programs target for "current programs" in a single dry year (based on 1977 hydrology) is 685,000 AF in 2015, 931,000 AF in 2020, and 1,076,000 AF in 2025. The 2010 RUWMP also estimates that in the 2030–2035 period, Metropolitan's annual supply range from the in-region storage and programs will be 964,000 and 830,000 AF, respectively. The 2010 RUWMP estimates that the in-region storage and transfer program will be capable of serving between 830,000 AF and 964,000 AF to Metropolitan from 2015 through 2035 in an average year.



Metropolitan relies on water in storage, such as water stored in its Diamond Valley Lake reservoir, to augment at times of limited imported supplies.

WATER QUALITY



The Act requires that the 2010 Plan include information, to the extent practicable, on the quality of existing supply sources and the manner in which water quality affects water supply reliability. A significant task for the Water Authority is to protect the water quality of the water passing through its delivery system and communicating water quality changes to its member agencies. This section summarizes water quality issues associated with supplies serving the San Diego region. Information on Colorado River and SWP supplies came in part from Metropolitan's final 2010 RUWMP (November 2010).

Water agencies treat all water to meet stringent state and federal drinking water standards before delivering it to customers. However, source water of poor quality will make it increasingly expensive and difficult to meet those standards.



The Colorado River is the primary source of the Water Authority's imported water supply.

7.1 COLORADO RIVER

The Colorado River is the primary source of the Water Authority's imported water supply. High salinity levels, uranium, and perchlorate contamination represent the primary areas of concern with the quality of Colorado River supplies. Managing the watershed of the Colorado River has been the most effective method for controlling these elements of concern.

7.1.1 Salinity

The salts in the Colorado River System are indigenous and pervasive, mostly resulting from saline sediments in the basin that were deposited in prehistoric marine environments. They are easily eroded, dissolved, and transported into the river system. Agricultural development and water diversions over the past 50 years increase the already high naturally occurring levels of TDS.

Water imported via the CRA has a TDS averaging around 650 mg/l during normal water years. During the high water flows of 1983–1986, salinity levels in the CRA dropped to a historic low of 525 mg/l. However, during the 1987–1990 drought, higher salinity levels returned. During an extreme drought, CRA supplies could exceed 900 mg/l. High TDS in water supplies leads to high TDS

in wastewater, which lowers the usefulness of the water and increases the cost of recycled water. (Refer to **Section 7.5** for details on salinity impacts to water recycling.) In addition to the link between water supply and water quality, high levels of TDS in water supplies can damage water delivery systems and home appliances.

To reduce the affects of high TDS levels on water supply reliability, Metropolitan approved a highly successful Salinity Management Policy in April 1999. One of the policy goals is to blend Colorado River supplies with lower-salinity water from the SWP to achieve delivered water salinity levels less than 500 mg/l TDS. Since 1999, the TDS levels in Metropolitan's supply has ranged between 381 mg/l and 643 mg/l, with an average TDS of 500 mg/l. In addition, to fostering interstate cooperation on this issue, the seven basin states formed the Colorado River Basin Salinity Control Forum (Forum). To lower TDS levels in Colorado River supplies, the Forum develops programs designed to prevent a portion of the abundant salt supply from moving into the river system. The Colorado River Basin Salinity Control Program targets the interception and control of non-point sources, such as surface runoff, as well as wastewater and saline hot springs.

7.1.2 Perchlorate

Perchlorate is used as the main component in solid rocket propellant, and it can also be found in some types of munitions and fireworks. Perchlorate and other perchlorate salts are readily soluble in water, dissociating into the perchlorate ion, which does not readily interact with the soil matrix or degrade in the environment. The primary human health concern related to perchlorate is its effects on the thyroid. Perchlorate has been detected at low levels in Metropolitan's CRA water supply.

Because of the growing concerns over perchlorate levels in drinking water, in 2002 Metropolitan adopted a Perchlorate Action Plan. Objectives include expanded monitoring and reporting programs and continued tracking of remediation efforts in the Las Vegas Wash. Metropolitan has been conducting monthly monitoring of Colorado River supplies. The source of the perchlorate that originates in the Las Vegas Wash is most likely from a chemical manufacturing site located in Henderson, Nevada. The Nevada Department of Environmental Protection manages a comprehensive groundwater remediation program in the Henderson area. As of December 2004, the amount of perchlorate entering the Colorado River system from Henderson has been reduced from approximately 1,000 pounds per day (lb/day) to less than 90 lb/day.

7.1.3 Uranium



Naturally occurring uranium has always been present in Colorado River water and has always been under the California Maximum Contaminant Level (MCL) of 20 picocuries per liter (pCi/l). The risks to water quality have primarily come from upstream mining in Moab, Utah and other potential mining sites in the west. Currently the U.S. Department of Energy (DOE) is working to remove and dispose of mine tailings and improve groundwater quality on the Colorado River Watershed near Moab. The expected completion of this cleanup is

between 2019 and 2025. Current levels are below MCL and can be treated by regional water treatment plants.

7.1.4 Nutrients

The Colorado River system has historically been low in nutrients, but with population growth in the watershed nutrients are still a concern. Metropolitan is involved with upstream entities along the lower Colorado River to enhance wastewater management to control nutrient loading, especially phosphorus. The Colorado River's low nutrient level has been important for blending with SWP water to reduce the nutrient level delivered to retail agencies.

7.1.5 Arsenic



Arsenic is another naturally occurring element that is being monitored by drinking water agencies. The state detection level for purposes of reporting is 2 micrograms per liter ($\mu\text{g/l}$), and the MCL for domestic water supplies is 10 $\mu\text{g/l}$. Between 2001 and 2008, arsenic levels in Colorado River water have ranged from not detected to 3.5 $\mu\text{g/l}$. Increasing coagulant doses at water treatment plants can reduce arsenic levels for retail deliveries.

7.2 STATE WATER PROJECT



State Water Project

The quality of SWP water as a drinking water source is affected by a number of factors, most notably seawater intrusion and agricultural drainage from peat soil islands in the Delta. SWP water contains relatively high levels of bromide and total organic carbon, two elements that are of particular concern to drinking water agencies. Bromide and total organic carbon combine with chemicals used in the water treatment process to form disinfection byproducts that are regulated under the federal Safe Drinking Water Act (SDWA). Wastewater discharges from cities and towns surrounding the Delta also add salts and pathogens to Delta water, and they influence its suitability for drinking and recycling.

The 2000 Record of Decision (ROD) adopted by CALFED states that CALFED will either achieve water quality targets at Clifton Court Forebay and drinking water intakes in the

south and central Delta, or it will achieve an “equivalent level of public health protection using a cost-effective combination of alternative source waters, source control, and treatment technologies.”

Actions to protect Delta fisheries have exacerbated existing water quality problems by forcing the SWP to shift its diversions from the springtime to the

fall, when salinity and bromide levels are higher. Closure of the Delta Cross-Channel gates to protect migrating fish has also degraded SWP water quality by reducing the flow of higher quality Sacramento River water to the SWP pumps at critical times.

7.2.1 Total Organic Carbon and Bromide

Total organic carbon and bromide are naturally occurring but are elevated due to agricultural drainage and seawater intrusion as water moves through the delta. The concern with both total organic carbon and bromide is that they form disinfection byproducts (DBPs) when treated with disinfectants such as chlorine. Some DBPs have been identified and are regulated under SDWA; there are others that are not yet identified. The potential adverse health effects may not be fully understood, but associations with certain cancers, reproductive and developmental effects are of significant concern. Water agencies began complying with new regulation to protect against the risk of DBP exposure in January 2002 under the Disinfection Byproducts (D/DBP) rule Stage 1. The U. S. Environmental Protection Agency (EPA) promulgated the Stage 2 D/DBP rule in January 2006, which has made compliance more challenging. CALFED's Bay-Delta Program calls for a wide array of actions to improve Bay-Delta water quality, which remains the best method for controlling these elements of concern in the drinking water supply.

7.2.2 Nutrients

SWP supplies have significantly higher nutrient levels over the Colorado River supplies. Elevated levels of nutrients can increase nuisance algal and aquatic weed growth, which in turn affects taste and odor in product water and can reduce filter run times at WTPs. Nutrient rich soils in the Delta, agricultural drainage, and wastewater discharges are primary sources of nutrient loading to the SWP. Water agencies receiving delta water have been engaged in efforts to minimize the effects of nutrient loading from Delta wastewater plants. Taste and odor complaints due to Delta nutrients are dependent on the blend of imported water delivered through Metropolitan. Metropolitan developed a program to provide early warning of algae-related problems, taste, and odor events to best manage water quality in the system.

7.2.3 Salinity

Water supplies from the SWP have significantly lower TDS levels than the Colorado River, averaging 250 mg/l in water supplied through the East Branch and 325 mg/l on the West Branch. Because of this lower salinity, Metropolitan blends SWP water with high salinity CRA water to reduce the salinity levels of delivered water. However, both the supply and the TDS levels of SWP water can vary significantly in response to hydrologic conditions in the Sacramento–San Joaquin watersheds.

The TDS levels of SWP water can also vary widely over short periods of time. These variations reflect seasonal and tidal flow patterns, and they pose an additional problem to blending as a management tool to lower the higher TDS from the CRA supply. For example, in the 1977 drought, the salinity of SWP water reaching Metropolitan increased to 430 mg/l, and supplies became limited. During this same event, salinity at the Banks pumping plant



Nutrient rich soils in the Delta, agricultural drainage, and wastewater discharges are primary sources of nutrient loading to the SWP.



The TDS levels of SWP water can also vary widely over short periods of time. These variations reflect seasonal and tidal flow patterns.

exceeded 700 mg/l. Under similar circumstances, Metropolitan's 500 mg/l salinity objectives could only be achieved by reducing imported water from the CRA. Thus, it may not be possible to maintain both salinity standards and water supply reliability unless salinity levels of source supplies can be reduced.

The CALFED Bay-Delta Program's Environmental Impact Statement/Environmental Impact Report (EIS/EIR), Technical Appendix, July 2000 Water Quality Program Plan, identified targets that are consistent with TDS objectives in Article 19 of the SWP Water Service Contract: a ten-year average of 220 mg/l and a maximum monthly average of 440 mg/l. These objectives were set in the 1960s when Metropolitan expected to obtain a greater proportion of its total supplies from the SWP. Because of reductions in expected SWP deliveries, Metropolitan's Board believes that this standard is no longer appropriate, so it has adopted a statement of needs from the Bay-Delta. Under the drinking water quality and salinity targets element, the Board states its need "to meet Metropolitan's 500 mg/l salinity-by blending objective in a cost-effective manner while minimizing resource losses and ensuring the viability of recycling and groundwater management programs."



7.2.4 Arsenic

Between 2001 and 2008, arsenic levels in SWP water have ranged from not detected to 4.0 µg/l. Increasing coagulant doses at water treatment plants can reduce arsenic levels for retail deliveries. Groundwater storage programs in the SWP appear to provide the greatest risk of arsenic contamination; therefore, a pilot arsenic treatment facility is being tested by one of the groundwater partners.

7.3 Surface Water

The region's water quality is influenced by a variety of factors depending on its source. As stated above, waters from the Colorado River and from Northern California are vulnerable to a number of contributors to water quality degradation. Regional surface and groundwater are primarily vulnerable to increasing urbanization in the watershed, agriculture, recreational uses, wildlife, and fires.

Historically, regional surface water quality has been considered good to excellent. Water quality can vary with imported water inflows and surface water contamination. Source water protection is considered a key element in regional water quality. The Water Authority and its member agencies are working together to improve watershed awareness and management. Currently, the most significant water quality issue that affects the public is algae blooms, which can create taste and odor problems.

In San Diego County, the California Department of Public Health (CDPH) has primacy over the implementation of the SDWA. The SDWA regulates source water protection to ensure public health through the multiple barrier approach, an approach that anticipates that the public will participate in source water protection. Member agencies in the Water Authority's service area that have surface water have a good, long-standing, working relationship with CDPH.

A similar requirement from EPA calls for utilities to complete a Source Water Assessment (SWA). Information collected in SWAs is used to evaluate changes in potential sources of contamination and to help determine if more protection measures are needed. EPA requires utilities to complete an SWA that uses information collected in the sanitary surveys. The SWA is also used to evaluate the vulnerability of water sources to contamination and also helps determine whether more protective measures are needed.

Source water protection is fundamentally important to all of California. The CDPH requires large utilities delivering surface water to complete a Watershed Sanitary Survey every five years to examine possible sources of drinking water contamination. The survey includes suggestions for how to protect water quality at the source.



The IRWM stresses the need to attain the region's water quality standards by managing runoff from all sources within the region through the watershed management framework.

The monitoring of key constituents in source waters is critical in helping to identify constituents that should be controlled at the source and to determine the best ways to operate the water system so as to improve the quality of water delivered to the consumer. The effect of urban runoff on receiving water quality is a recognized problem.

To address the issues associated with surface water quality, the Water Authority, the city of San Diego, and the county of San Diego have formed a Regional Water Management Group to coordinate development of an IRWM for the San Diego region. An important element in the IRWM is to protect and enhance the region's local surface water quality. As part of this process, projects will be identified and implemented to assist in watershed protection, and thereby, protect the quality of surface water supplies.

One of the key objectives of the IRWM is to reduce sources of pollutants and environmental stressors. This objective targets water management strategies that directly address pollution management and include: agricultural land stewardship, pollution prevention, urban land use planning, urban runoff management, and watershed management and planning. The IRWM stresses the need to attain the region's water quality standards by managing

runoff from all sources within the region through the watershed management framework. (Refer to **Section 8**, "Integrated Regional Water Management Planning for more information.)

7.4 GROUNDWATER

Two water quality parameters that can affect reliability of groundwater resources in San Diego County are contamination from high salinity levels and Methyl Tertiary Butyl Ether (MTBE).

7.4.1 Salinity

Increased TDS in groundwater basins occurs either when basins near the ocean are over drafted, leading to seawater intrusion, or when agricultural and urban return flows add salts to the basins. Much of the water used for agricultural or urban irrigation infiltrates into the aquifer, so where high TDS irrigation water is used or where the water transports salts from overlying

soil, the infiltrating water will increase the salinity of the aquifer. Using this resource requires costly demineralization projects. (Refer to **Section 5.3**, “Groundwater,” for discussion on groundwater recovery projects.)

To protect the quality of these basins, the Regional Board often places restrictions on the salinity levels of water used for basin recharge or for irrigation of lands overlying the aquifers. Where these restrictions are in place, water reuse and aquifer recharge may be restricted, or expensive mitigation measures may be required.

7.4.2 Methyl Tertiary Butyl Ether

MTBE was the primary oxygenate in virtually all the gasoline historically used in California. In January 2004, the Governor’s executive order to remove MTBE from gasoline became effective, and now ethanol is the primary oxygenate. Relative to other organic compounds, MTBE is very soluble in water and has low affinity for soil particles, thus allowing the chemical to move quickly in the groundwater. MTBE is also resistant to chemical and microbial degradation in water, making treatment more difficult than the treatment of other gasoline components.

MTBE presents a significant potential problem to local groundwater basins. Leaking underground storage tanks and poor fuel-handling practices at local gas stations may provide a large source of MTBE. Improved underground storage tank requirements and monitoring, and the phase-out of MTBE as a fuel additive, has decreased the likelihood of MTBE groundwater problems in the future.



South Bay Water Reclamation Plant is one of 29 wastewater treatment and water recycling facilities in the San Diego region.

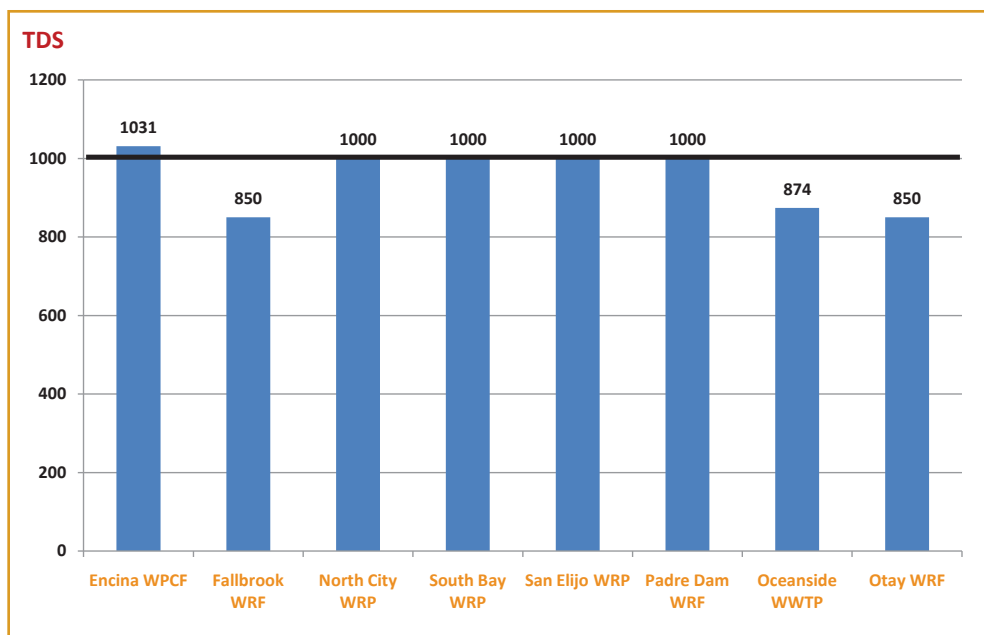
7.5 RECYCLED WATER

Water quality, as it pertains to high salinity supplies, is a significant implementation issue for recycled water projects. High TDS source water poses a special problem for water recycling facilities because conventional treatment processes are designed to remove suspended particles, but not dissolved particles. TDS removal, or demineralization, requires an advanced treatment process, which can increase project costs significantly.

Residential use of water typically adds 200 to 300 mg/l of TDS to the wastewater stream. Self-regenerating water softeners can add another pound of salt per day per unit. Infiltration of brackish groundwater into sewer lines can also cause an increase in TDS. If an area receives a water supply with TDS of more than 700 mg/l, and residents add 300 mg/l or more through normal use, the recycling facility will produce recycled water with a TDS concentration of 1,000 mg/l or higher. Figure 7-1 shows the average

TDS at several of the existing and projected water recycling treatment plants. In general, TDS concentrations over 1,000 mg/l become problematic for irrigation and industrial reuse customers. This problem greatly limits the potential uses and marketability of recycled water, particularly for agricultural purposes, because certain crops and nursery stock are sensitive to irrigation water with TDS levels exceeding 1,000 mg/l.

FIGURE 7-1: TREATMENT PLANT AVERAGE EFFLUENT (MG/L)



7.6 SEAWATER DESALINATION

The feedwater source for the proposed regional seawater desalination project at the Encina Power Station in Carlsbad is the Pacific Ocean. The salinity of the Pacific Ocean in San Diego County is fairly stable, with a TDS concentration around 34,000 mg/l. To address TDS concentrations at this level, the desalination facility will use a reverse osmosis (RO) membrane treatment process to reduce the TDS to less than 350 mg/l, resulting in approximately 99 percent removal of TDS and a supply that meets drinking water standards.

Prior to the RO process, the feedwater will be pretreated to remove suspended solids, including organic material. The RO process will then remove the dissolved solids. Next, the product water will be post-treated to prevent corrosion in the distribution system and improve the aesthetic quality of the water. This process generally involves adding alkalinity to the treated water. The final step, a disinfection process, provides a disinfection residual in the treated water.

A single-pass RO process of seawater generally results in about 50 percent recovery of treated water. The remaining 50 percent is discharged as concentrate, with about twice the salinity of the original feedwater. The concentrate will be diluted to avoid negative impacts to the marine environment from the elevated salinity levels at the point of discharge.

INTEGRATED REGIONAL WATER MANAGEMENT PLANNING



8.1 DESCRIPTION

IRWM planning involves the coordination and integration of water planning activities occurring within a defined region to improve and maintain the reliability of the region's water supply. IRWM planning recognizes that water supplies, water quality, and natural resources are connected and, as such, focuses on projects that produce multiple benefits in those areas. IRWM planning typically involves both governmental and non-governmental stakeholders.

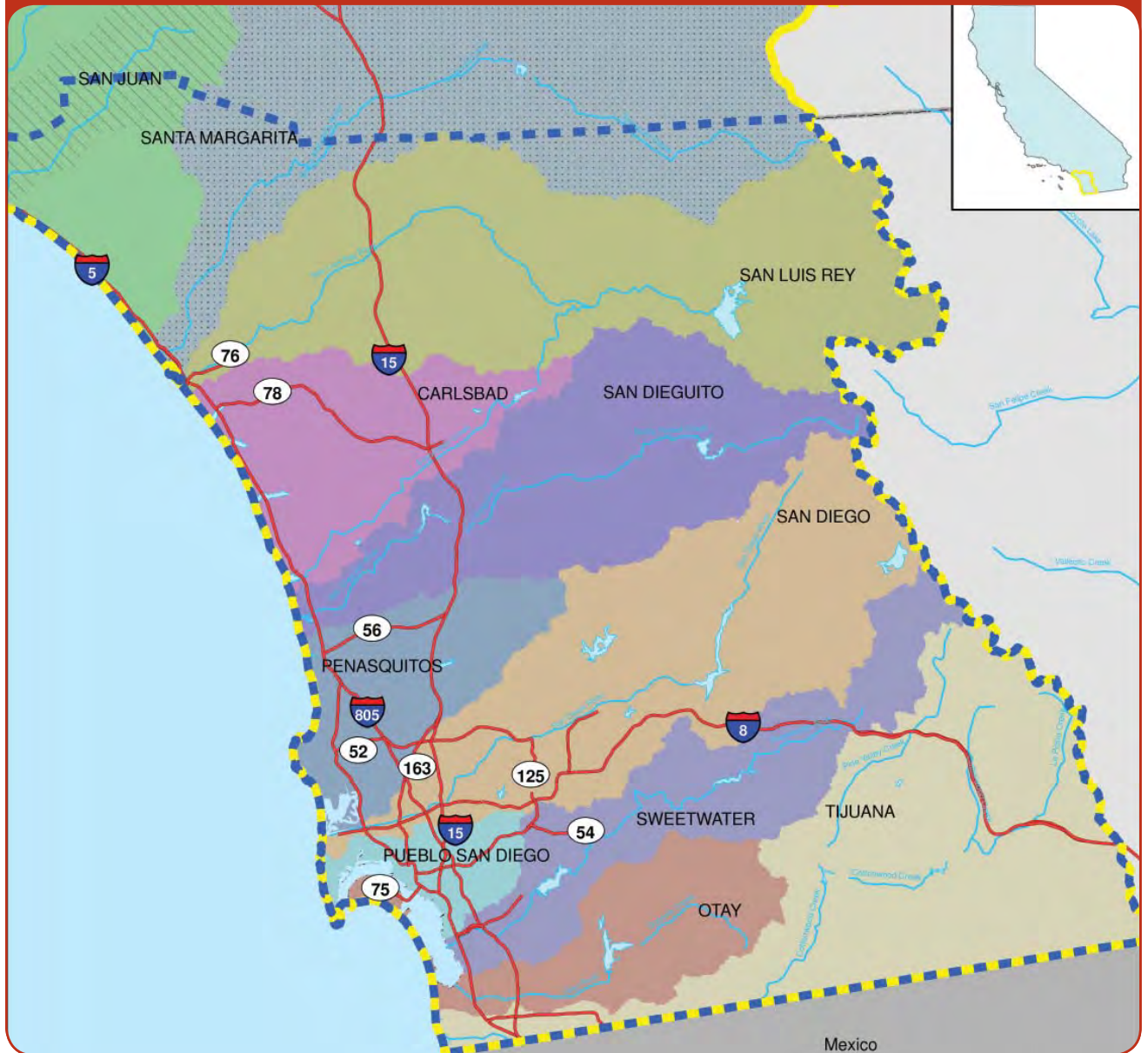


San Diego Coastkeeper volunteer monitors water quality at Chollas creek.

Both the 2005 and 2009 State Water Plan Updates identify the expansion of IRWM as one of two “initiatives for reliable water supplies.” As the 2009 Update states, “Integrated regional water management enables regions to implement strategies appropriate for their own needs and helps them become more self-sufficient.” Through voter-approved bond measures – Proposition 50 in 2002 and Proposition 84 in 2006 – the state has made available up to \$1.5 billion to support IRWM planning and implementation in various regions of California.

The Water Authority, the city of San Diego, and the county of San Diego joined together in 2005 to form a Regional Water Management Group (RWMG), which defined the San Diego IRWM planning region as the portion of San Diego County that is tributary to coastal waters (Figure 8-1). The RWMG then worked with a regional advisory committee to write the first San Diego IRWM Plan, which was approved in 2007 by the Water Authority Board, the San Diego City Council, and the San Diego County Board of Supervisors. DWR formally accepted the plan in 2009. Preparation of the San Diego Region's IRWM Plan was required for the San Diego planning region to apply for state funding. It also formed the foundation of long-term IRWM planning in the region. For detailed information on the San Diego IRWM Plan, visit the Plan's website: <http://www.rmewater.com/clients/sdirwmp/home.html>.

Figure 8.1 San Diego IRWM Planning Region



In 2008, DWR awarded a \$25 million IRWM grant to the San Diego planning region. The funding is supporting 19 projects listed in the San Diego IRWM Plan that, in total, benefit the entire region. Project sponsors include the Water Authority and seven of its member agencies. All of the projects are designed to provide multiple benefits. Almost \$18 million of the requested funding was designated for projects that had as their primary objective “water supply diversity.” Nine of the projects, which received a total of \$5.9 million, included water quality protection as one of their objectives.

Proposition 84 allocated \$1 billion to DWR to support IRWM planning and implementation in California. An amount of \$91 million is earmarked for the San Diego Funding Area, which comprises the planning regions for San Diego, South Orange County, and the Upper Santa Margarita River Watershed. (DWR will use 5 percent of the \$91 million to cover administrative costs, leaving the San Diego Funding Area with \$86.5 million.) According to a memorandum of understanding adopted by the three planning regions in 2009, the San Diego region will receive approximately 78 percent of this amount. The San Diego RWMG intends to use this funding as it becomes available to implement more projects listed in the San Diego IRWM Plan.



Wetlands construction project at Safari Park - San Diego Zoo

The San Diego RWMG thus far has received two funding grants from DWR’s Proposition 84 IRWM grant program. A \$1 million planning grant will support the region’s update of the 2007 San Diego IRWM Plan so that it complies with new state guidelines and requirements. The update will expand the scope of the San Diego IRWM program to include land-use planning, integrated flood management, and the program’s relationship with the San Diego Regional Water Quality Control Board. As part of the Plan update, the San Diego RWMG also will support salt and nutrient management planning in the region to protect water quality.

The San Diego planning region also was awarded a preliminary implementation grant of \$7.9 million from the Proposition 84 program. (As of this writing, DWR has not finalized this grant award list.) The funding will support 11 projects that, like the projects in the Proposition 50 grant, in total provide multiple benefits to the entire region. Project sponsors include the Water Authority and two member agencies. Almost \$5 million of the funding is designated for projects that will increase the region’s water supply or protect drinking water quality, or both.

The San Diego IRWM Program supports the UWMP by promoting regional planning and supporting projects that aim to increase water supply reliability and improve surface water and groundwater quality. IRWM planning and funding will help to make possible water supply projects in the areas of seawater desalination, recycled water, local surface water, and groundwater, all of which are identified in this 2010 Plan as part of the region’s projected mix of water resources. The IRWM Program also supports water conservation, another key element of the 2010 Plan.

WATER SUPPLY RELIABILITY



Under the Act, every UWMP must include an assessment of the reliability of water supply reliability. The water supply and demand assessment must compare the total projected water use with the expected water supply over the next 20 years in 5-year increments. This reliability assessment is required for normal, single dry-year and multiple dry water years. The assessment contained in the 2010 Plan projects reliability through the next 25 years. In addition to the expected, verifiable mix of resources utilized in the reliability assessment, additional planned resources, which have not yet achieved the same level of certainty, have also been identified by the Water Authority and its member agencies. This section presents a summary of the water demands and supplies within the Water Authority's service area along with the reliability assessment and discussion on additional planned supplies.



Strategic Plan



SAN DIEGO COUNTY WATER AUTHORITY
APRIL 2008

Board approvals taken in regard to continued supply availability include adoption of Water Authority's 2008 Strategic Plan with Key Result Area 1 – Water Supply Diversification.

9.1 DEVELOPMENT OF PROJECTED WATER RESOURCES MIX

In summary, development of the projected mix of resources to meet future demands is based on the following factors:

- ☐ Local agency information on projected water recycling, groundwater, and surface water (discussed in **Section 5**);
- ☐ Retail compliance with SBX7-7 conservation targets (**Section 2**)
- ☐ Board approvals taken in regard to continued supply availability:
 - Adoption of Water Authority's 2008 Strategic Plan with Key Result Area 1 – Water Supply Diversification
 - Agreement between IID and the Water Authority for Transfer of Conserved Water, and other related agreements (**Section 4.1**);
 - Allow the agreement related to the ACC and CC Lining Projects, and other related agreements (**Section 4.2**);
 - A water supply contract consistent with the Term Sheet between Poseidon Resources and the Water Authority regarding development of a regional seawater desalination plant located in Carlsbad, CA (**Section 4.3**);

- Inclusion of the San Vicente Dam Raise and Carryover Storage Project in Water Authority's CIP (**Section 11.2.3**); and
- Agreements and actions related to out-of-region groundwater banking program.

9.2 NORMAL WATER YEAR ASSESSMENT

Table 9-1 shows the normal year assessment, summarizing the total water demands for the Water Authority through the year 2035 along with the supplies necessary to meet demands under normal conditions. **Section 2** contains a discussion of the normal year water demands in the Water Authority's service area. If Metropolitan, the Water Authority and member agency supplies are developed as planned, along with achievement of the SBX7-7 retail conservation target, no shortages are anticipated within the Water Authority's service area in a normal year through 2035. As part of preparation of their 2010 Plan, Metropolitan staff identified the Water Authority's demands on Metropolitan, which are shown to be adequate to cover the supplemental need identified in Table 9.1. The member agency level data was not included in their 2010 Plan, but provided by Metropolitan to their member agencies separately and the Water Authority's data is included in **Appendix I**.

TABLE 9-1. NORMAL WATER YEAR SUPPLY AND DEMAND ASSESSMENT (AF/YR)¹

	2015	2020	2025	2030	2035
WATER AUTHORITY SUPPLIES					
IID Water Transfer	100,000	190,000	200,000	200,000	200,000
ACC and CC Lining Projects	80,200	80,200	80,200	80,200	80,200
Proposed Regional Seawater Desalination	0	56,000	56,000	56,000	56,000
Sub-Total	180,200	326,200	336,200	336,200	336,200
MEMBER AGENCY SUPPLIES					
Surface Water	48,206	47,940	47,878	47,542	47,289
Water Recycling	38,660	43,728	46,603	48,278	49,998
Groundwater	11,710	11,100	12,100	12,840	12,840
Groundwater Recovery	10,320	15,520	15,520	15,520	15,520
Sub-Total	108,896	118,288	122,101	124,180	125,647
Metropolitan Water District Supplies	358,189	230,601	259,694	293,239	323,838
Total Projected Supplies	647,285	675,089	717,995	753,619	785,685
Total Demands w/ SBX7-7 Conservation	647,285	675,089	717,995	753,619	785,685

¹ Normal water year demands based on 1960 – 2008 hydrologies.

9.3 DRY WATER YEAR ASSESSMENT

In addition to a normal water year assessment, the Act requires an assessment to compare supply and demands under single dry and multiple dry water years over the next 20 years, in five-year increments. **Section 2** describes the derivation of the dry water year demands. Table 9-2 shows the single dry-year assessment. The projected groundwater and surface water yields shown in the table are based on historic 1990 supplies during the 1987-1992 drought years. The supplies available from projected recycling and groundwater recovery projects are assumed to experience little, if any, reduction in a dry-year. The Water Authority's existing and planned supplies from the IID transfer, canal lining projects, and seawater desalination are also considered "drought-proof" supplies as discussed in **Section 4**. For this single dry-year assessment, it was assumed that Metropolitan would have adequate supplies in storage and would not be allocating supplies. With the previous years leading up to the single dry-year being wet or average hydrologic conditions, Metropolitan should have adequate supplies in storage to cover potential shortfalls in core supplies and would not need to allocate.

**TABLE 9-2. SINGLE DRY WATER YEAR SUPPLY AND DEMAND ASSESSMENT
FIVE YEAR INCREMENTS (AF/YR)**

	2015	2020	2025	2030	2035
WATER AUTHORITY SUPPLIES					
IID Water Transfer	100,000	190,000	200,000	200,000	200,000
ACC and CC Lining Projects	80,200	80,200	80,200	80,200	80,200
Proposed Regional Seawater Desalination	0	56,000	56,000	56,000	56,000
Sub-Total	180,200	326,200	336,200	336,200	336,200
MEMBER AGENCY SUPPLIES					
Surface Water	17,932	17,932	17,932	17,932	17,932
Water Recycling	38,660	43,728	46,603	48,278	49,998
Groundwater	9,977	9,977	9,977	9,977	9,977
Groundwater Recovery	10,320	15,520	15,520	15,520	15,520
Sub-Total	76,889	87,157	90,032	91,707	93,427
Metropolitan Supplies	430,431	305,101	338,501	376,023	409,389
Total Projected Supplies	687,520	718,458	764,733	803,930	839,016
Total Demands w/ SBX7-7 Conservation	687,520	718,458	764,733	803,930	839,016

If Metropolitan, the Water Authority and member agency supplies are developed as planned, along with achievement of the SBX7-7 retail conservation target, no shortages are anticipated within the Water Authority's service area in a single dry-year through 2035.

In accordance with the Act, Tables 9-3, 9-4, 9-5, 9-6, and 9-7 show the multiple dry water year assessments in five-year increments. The member agencies' surface and groundwater yields shown in these tables are reflective of supplies available during the 1987-92 drought, in years 1990, 1991 and 1992. The Water Authority supplies consist of yield from the IID transfer, canal lining projects, and Carlsbad Seawater Desalination project.

For the multi dry-year reliability analysis, the conservative planning assumption is that Metropolitan will be allocating supplies to its member agencies. By assuming allocations in this reliability assessment, it allows the Water Authority to analyze how storage supplies could be utilized and the likelihood of shortages. Currently Metropolitan allocates supplies through its Water Supply Allocation Plan. Because it is uncertain in the future how Metropolitan will allocate supplies to its member agencies, the analysis in the tables assumes they are allocated based on preferential right to Metropolitan supplies. As discussed in **Section 6.1.1**, Section 135, Preferential Right to Purchase Water, is included in Metropolitan's Act and allows a Metropolitan member agency to acquire for use within the agency supplies based on preferential rights at any time.

**TABLE 9-3. MULTIPLE DRY WATER YEAR SUPPLY AND DEMAND ASSESSMENT
FIVE-YEAR INCREMENTS (AF/YR) – 2012–2014**

	2012	2013	2014
Member Agency Supplies	69,597	84,440	103,907
Water Authority Supplies	170,200	180,200	180,200
Metropolitan Allocation (Preferential Right)	317,760	319,177	320,456
Total Estimated Core Supplies w/o Storage Takes	557,557	583,817	604,563
Total Demands w/ SBX7-7 Conservation	658,381	679,509	711,241
Potential Supply (Shortage) or Surplus (Difference between Supplies and Demands)	(100,824)	(95,692)	(106,678)
Utilization Carryover Supplies	40,000	40,000	30,000
Total Projected Core Supplies with Utilization of Carryover Storage Supplies	597,557	623,817	634,563
Remaining Potential Surplus Supply, or (Shortage) that will be handled through Management Actions	(60,824)	(55,692)	(76,678)

**TABLE 9-4. MULTIPLE DRY WATER YEAR SUPPLY AND DEMAND ASSESSMENT
FIVE-YEAR INCREMENTS (AF/YR) – 2016–2018**

	2016	2017	2018
Member Agency Supplies	78,943	93,408	112,499
Water Authority Supplies	236,200	236,200	266,200
Metropolitan Allocation (Preferential Right)	322,661	323,350	324,100
Total Estimated Core Supplies w/o Storage Takes	637,804	652,958	702,799
Total Demands w/ SBX7-7 Conservation	682,338	705,461	740,326
Potential Supply (Shortage) or Surplus (Difference between Supplies and Demands)	(44,534)	(52,503)	(37,527)
Utilization Carryover Supplies	44,534	40,000	30,000
Total Projected Core Supplies with Utilization of Carryover Storage Supplies	682,338	692,958	732,799
Remaining Potential Surplus Supply, or (Shortage) that will be handled through Management Actions	0	(12,503)	(7,527)

**TABLE 9-5. MULTIPLE DRY WATER YEAR SUPPLY AND DEMAND ASSESSMENT
FIVE-YEAR INCREMENTS (AF/YR) – 2021–2023**

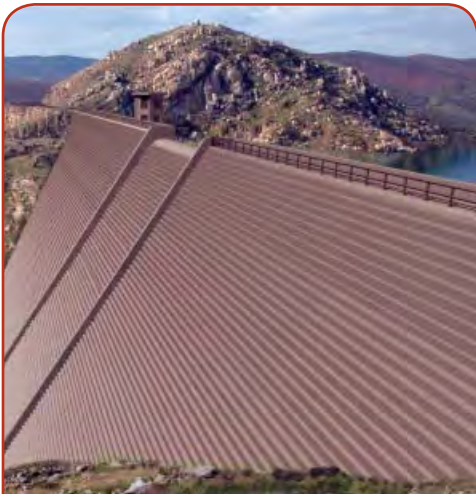
	2021	2022	2023
Member Agency Supplies	87,732	100,719	118,331
Water Authority Supplies	336,200	336,200	336,200
Metropolitan Allocation (Preferential Right)	326,697	327,671	328,695
Total Estimated Core Supplies w/o Storage Takes	750,629	764,590	783,226
Total Demands w/ SBX7-7 Conservation	724,294	751,800	790,177
Potential Supply (Shortage) or Surplus (Difference between Supplies and Demands)	26,335	12,790	(6,951)
Utilization Carryover Supplies	0	0	6,951
Total Projected Core Supplies with Utilization of Carryover Storage Supplies	750,629	764,590	790,177
Remaining Potential Surplus Supply, or (Shortage) that will be handled through Management Actions	26,335	12,790	0

**TABLE 9-6. MULTIPLE DRY WATER YEAR SUPPLY AND DEMAND ASSESSMENT
FIVE-YEAR INCREMENTS (AF/YR) – 2026–2028**

	2026	2027	2028
Member Agency Supplies	90,367	103,114	120,486
Water Authority Supplies	336,200	336,200	336,200
Metropolitan Allocation (Preferential Right)	332,058	333,272	334,532
Total Estimated Core Supplies w/o Storage Takes	758,625	772,586	791,218
Total Demands w/ SBX7-7 Conservation	772,892	801,649	844,137
Potential Supply (Shortage) or Surplus (Difference between Supplies and Demands)	(14,267)	(29,063)	(52,919)
Utilization Carryover Supplies	14,267	29,063	40,000
Total Projected Core Supplies with Utilization of Carryover Storage Supplies	772,892	801,649	831,218
Remaining Potential Surplus Supply, or (Shortage) that will be handled through Management Actions	0	0	(12,919)

**TABLE 9-7. MULTIPLE DRY WATER YEAR SUPPLY AND DEMAND ASSESSMENT
FIVE-YEAR INCREMENTS (AF/YR) – 2031–2033**

	2031	2032	2033
Member Agency Supplies	92,051	104,807	122,188
Water Authority Supplies	336,200	336,200	336,200
Metropolitan Allocation (Preferential Right)	338,575	340,009	341,486
Total Estimated Core Supplies w/o Storage Takes	766,826	781,016	799,874
Total Demands w/ SBX7-7 Conservation	811,421	842,947	882,795
Potential Supply (Shortage) or Surplus (Difference between Supplies and Demands)	(44,595)	(61,931)	(82,921)
Utilization Carryover Supplies	44,595	40,000	30,000
Total Projected Core Supplies with Utilization of Carryover Storage Supplies	811,421	821,016	829,874
Remaining Potential Surplus Supply, or (Shortage) that will be handled through Management Actions	0	(21,931)	(52,921)



The carryover storage investment includes both surface water storage in San Vicente Reservoir and out-of-region groundwater storage in California's central valley, for a total of approximately 170,000 AF of storage capacity.

The Water Authority's annual preferential right percentage of Metropolitan supplies is estimated through 2035 and total Metropolitan dry-year supplies available for allocation are estimated to be 1,800,000 AF. This total supply assumes reduced deliveries from the State Water Project and Colorado River Aqueduct along with limited storage supplies. For reference, during the fiscal year 2010 allocation period, Metropolitan allocated approximately 1,890,000 AF of supplies to its member agencies.

Under the specific parameters assumed in the multi dry-year analysis, some level of shortage could potentially be experienced, as shown in Tables 9-3, 9-4, 9-5, 9-6, and 9-7. Shortages occur in the early years because the Carlsbad Seawater Desalination project is not yet on-line and the IID transfer supplies have not yet fully ramped up to 200,000AF/YR maximum deliveries. The shortages occurring in the later years are due primarily to increasing water demands due to growth within the region.

As discussed in **Section 11.2.3**, the Water Authority has invested in carryover storage supply capacity, which can be utilized in dry-years to improve reliability. The carryover storage investment includes both surface water storage in San Vicente Reservoir and out-of-region groundwater storage in California's central valley, for a total of approximately 170,000 AF of storage capacity available by 2012, when the San Vicente Dam raise is scheduled for completion. Once completed, it will take three to five years to fill the reservoir.

As described in **Section 11.2.3**, there are a number of factors to consider when determining the utilization of carryover supplies to reduce or eliminate shortages. The storage take amount should be handled on a case-by-case basis, considering such items as, current demand trends, core supply availability, hydrologic conditions, and storage supply available for withdrawal. These factors will vary depending upon the situation. For the analysis in the 2010 Plan, it was assumed the carryover storage supplies would be full going into the dry-year period. In determining the amount to utilize, the analysis takes into account the take capacity of the groundwater banking program (approximately 12,000AF/YR) and uses general guidelines that approximately one third of the carryover supplies available in storage will be utilized in one year. Utilizing only a portion of available storage supplies avoids depletion of storage reserves, thereby making water available for potential ongoing or future shortages. The supplies taken from carryover storage will be considered a Water Authority regional supply to be combined with Water Authority's core supplies and any potential dry-year transfers.

Another factor that will be considered when utilizing carryover supplies is the Special Agricultural Water Rate (SAWR) program requirement that customers in the SAWR class of service receive no water from the Carryover Storage Program during Stage 2 or 3 of the Water Shortage Drought Response Plan. The Water Authority will work with its member agencies to develop a proposed method for administering this program prior to completion of the San Vicente Dam raise. Because the method has yet to be developed, the assessments in Tables 9-3 through 9-7 do not factor in this program requirement.



Demand hardening diminishes the ability or willingness of a customer to reduce demands during shortages as a result of having implemented long-term conservation measures.

In years where shortages may still occur, after utilization of carryover storage, additional regional shortage management measures, consistent with the Water Authority's Water Shortage and Drought Response Plan (described in **Section 11.2.2**), will be taken to fill the supply shortfall. These measures could include securing dry-year transfers, which the Water Authority successfully acquired and utilized during the recent shortage period. (Description of the Water Authority's dry-year transfer program is included in **Section 11.2.3**.) In addition to dry-year supplies, extraordinary conservation, achieved through voluntary or mandatory water-use restrictions, could also assist in managing shortages. A description of the savings achieved during the 2007-2011 shortage period is described in **Section 11.2.1**. As discussed in the following section, the amount of savings achieved through extraordinary conservation measures could be limited due to demand hardening, especially following compliance with SBX7-7 conservation savings.

9.3.1 Demand Hardening

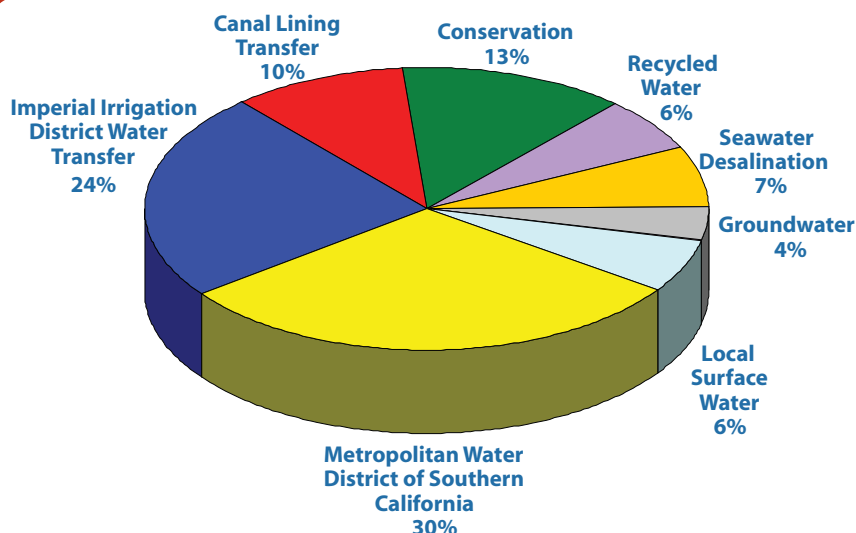
It should be emphasized that the amount of extraordinary conservation savings expected to be achieved through mandatory measures, such as water-use restrictions, could be less than that experienced in the 2007-2011 previous shortage periods. This is due to the concept known as demand hardening. Demand hardening diminishes the ability or willingness of a customer to reduce demands during shortages as a result of having implemented long-term conservation measures. Responsiveness to drought pricing and general price increases will diminish because remaining essential uses are less responsive to price. The required reduction levels through SBX7-7 compliance will reduce customer discretionary demands and create less flexibility in the managing of demand during shortages. This will increase the importance of acquiring supplemental dry-year supplies to eliminate or reduce potential supply shortages. **Section 11.2.3** discusses the Water Authority's potential dry-year supplies. Long-term permanent conservation savings is critical to ensuring water is used most efficiently and for achieving the SBX7-7 conservation compliance targets. Due to potential demand hardening, resulting from SBX7-7, shortage management measures such as water-use restrictions and drought pricing may not be as effective in the future in achieving necessary savings to help reduce the supply gap.

9.4 RELIABILITY OF SUPPLY

The above sections identify the diverse mix of resources planned to meet future demands in both a normal and dry-year. Implementation of this regional resource mix will require development of projects and programs by the Water Authority, its member agencies, and Metropolitan. The Water Authority coordinated with its member agencies and Metropolitan during preparation of the 2010 Plan on the future demands and supplies projected for the region. The steps being taken by the member agencies and Metropolitan to develop supplies are addressed in their respective urban water management plans. **Section 4** contains the steps taken and remaining actions necessary to develop and maintain the Water Authority supplies.

The Act requires agencies to describe reliability of the water supply and vulnerability to seasonal and climatic shortage. **Sections 9.2** and **9.3** describes the results of the water supply reliability assessment for the region, during normal

San Diego County Water Authority Water Supply Diversification by 2020*



The unavailability of any one water supply source will be buffered because of the diversity of the supplies: the region is not reliant on a single source.

*Normal/average year

water years, single dry years, and multiple dry years. The Act also requires the 2010 Plan to contain historic data on supplies available for the three water year types. The following is the historic total supplies, both local and imported, that were utilized during the periods identified: Normal/average (595,000AF) based on 30-year average between 1979 and 2008, single dry year (645,000AF) based on 1990, and multiple dry water years (645,000AF, 505,000AF, and 541,000AF) based on years 1990-1992. Supplies utilized in a non-allocation dry period could exceed the supplies utilized in a normal year, due to the ability to purchase additional imported supplies from Metropolitan. It should also be noted that in the reliability assessment, contained in **Section 9.2**, the average local supply yields are not based on historic yields, but projected numbers provided by member agencies. These figures more accurately reflect the expected yield based on

current local agency policies and procedures on operations and management of the supply.

Key to long-term reliability will be the monitoring of supplies and demands in order to make necessary modifications to the core and dry-year resources identified in the normal and dry-year resource mixes. The Water Authority Board will monitor reliability of existing supplies and development of identified future supplies through the Annual Supply Report and five year updates to the UWMP.

The Act requires that, for any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, that the agency describe, to the extent practicable, plans to replace that source with alternative sources or water demand management measures. As stated throughout the 2010 Plan, the Water Authority and its member agencies are planning to develop a diverse supply of resources. The unavailability of any one supply source will be buffered because of the diversity of the supplies: the region is not reliant on a single source. To replace or supplement an existing supply, the Water Authority could take steps to increase development of transfers or seawater desalination. Member agencies could also further maximize development of recycled water, groundwater, and seawater desalination. In order to adequately plan for potential supply uncertainties and identify alternative sources, the 2010 Plan contains a scenario planning process described in **Section 10**.

9.5 ADDITIONAL PLANNED SUPPLY PROJECTS

The mix of current and future supplies is developed jointly between the Water

Authority and its member agencies. The mix of supplies is being represented in two ways. Verifiable supplies are those supplies identified by the Water Authority or member agencies as having achieved a level of certainty in their planning and implementation where California Environmental Quality Act has been satisfied, permits are in hand or contracts have been executed. Verifiable supplies are included in water supply assessments and verifications prepared by retail water agencies and used by the cities and county in their land use decisions regarding available water supplies for growth under SB 221 and SB 610. Those projects with adequate documentation regarding implementation and supply utilization, or existing projects already planned for expansion, were considered for inclusion in the assessments discussed in **Sections 9.2** and **9.3**. Additional planned supplies are those that have not yet achieved the same level of certainty as the verifiable supplies, but have progressed to a point where the Water Authority or a member agency has taken significant financial actions to pursue the project.

These additional planned supplies are important to the region for a number of reasons. The Water Authority and member agencies must continue to strive to develop cost-effective local resources that can further diversify the region's supplies and reduce demands for imported water from Metropolitan. They provide objectives for the region to work towards by resolving any funding, regulatory, and other constraints associated with implementation. The additional planned projects are considered potential supply management strategies in the scenario planning process described in **Section 10**. Figures 9-1, 9-2, and 9-3 show the existing, verifiable, and planned water supplies for recycled water, groundwater, and seawater desalination.

The specific local recycled water and brackish groundwater projects included in the figures are listed in Tables F-2 and F-4, respectively, in **Appendix F**. The

**FIGURE 9-1 RECYCLED WATER SUPPLY –
EXISTING, VERIFIABLE, AND PLANNED (AF)**

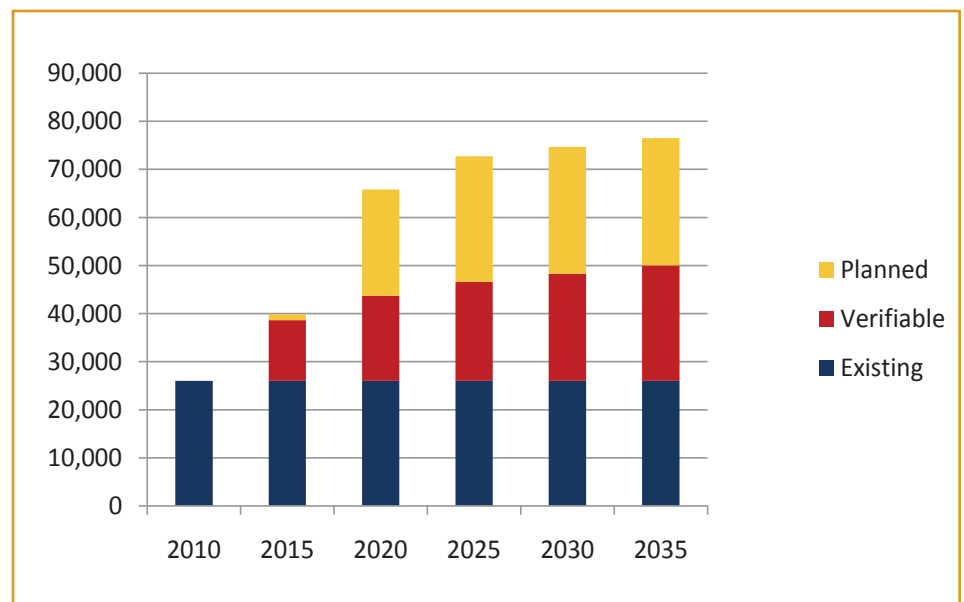


FIGURE 9-2 BRACKISH GROUNDWATER RECOVERY – EXISTING, VERIFIABLE, AND PLANNED (AF)

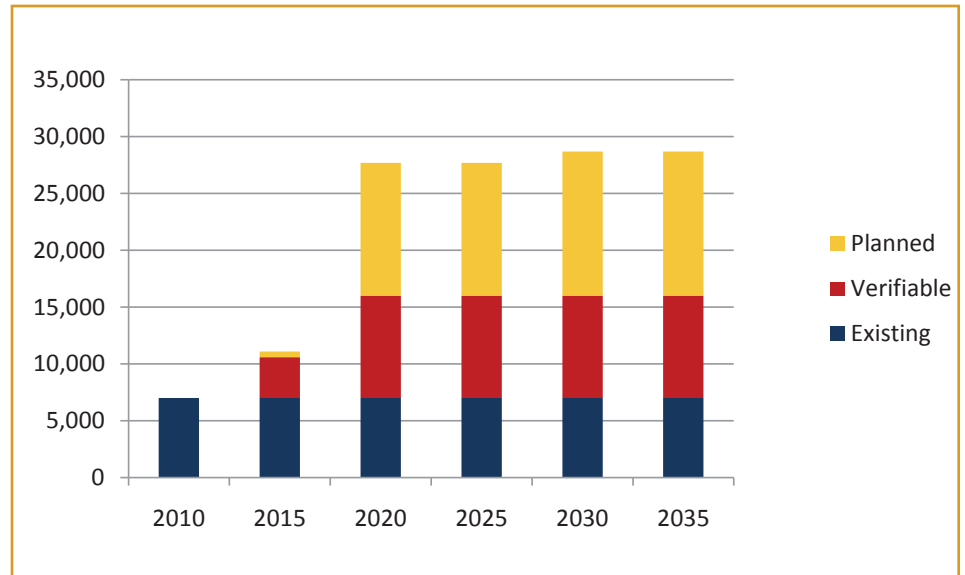
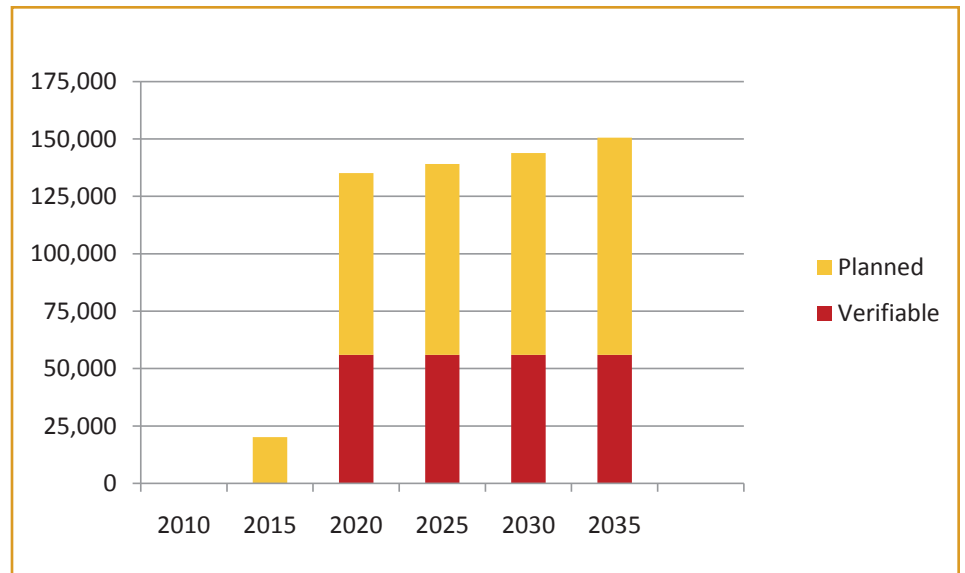


FIGURE 9-3 SEAWATER DESALINATION – EXISTING, VERIFIABLE, AND PLANNED (AF)



total seawater desalination additional planned supplies in 2035 are a combination of Otay Water District's proposed Bi-National Seawater Desalination project (38,600AF/YR) and the Water Authority's proposed Camp Pendleton Seawater Desalination facility (56,000AF/YR). Refer to **Sections 4** and **5** for additional information on the derivation of the verifiable and additional planned supply figures.

SCENARIO PLANNING – MANAGING AN UNCERTAIN FUTURE



UNCERTAINTIES



SWP Reliability



Recurring Droughts



Climate Change

The Water Authority's water supply reliability assessment can be found in **Section 9**. The Act also requires that, for any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, that the agency describe to the extent practicable, plans to replace that source with alternative sources or water demand management measures.

In order to adequately assess the reliability of the region's future resource mix and plan for potential uncertainties of the water supply sources, the 2010 Plan update incorporates a traditional scenario planning process. The process assesses potential risks associated with implementation of the projected resource mix and identifies management strategies to help deal with the uncertainties. A procedure to track development of supply sources to determine when and if potential adaptive management strategies may be needed is also included.

A list of the primary source documents that were utilized to prepare this section is included in **Section 10.3**. One of foundational documents used as a resource in selecting the traditional scenario planning process is the 2010 Water Utility Climate Alliance Decision Support Planning Methods: Incorporating Climate Change Uncertainties into Water Planning. (2010 WUCA Report)

10.1 TRADITIONAL SCENARIO PLANNING PROCESS

There are various decision support planning methods available to planners that incorporate uncertainty and risk assessment into water planning. Traditional scenario planning was selected for the 2010 Plan based primarily on the following factors:

- ☐ Used for uncertainty analysis specific to water resources/water utility planning;
- ☐ Develops a small but wide ranging set of future scenarios to test and make planning decisions more robust;
- ☐ Highly transparent, easily implemented with medium level of development by internal staff, outside expertise not required;
- ☐ Does not require extensive computer power, can accommodate changes in assumptions, inputs and objectives;
- ☐ Uses concepts familiar to stakeholders, improves understanding and communicability, and avoids the 'black box' issue.

A summary of the basic steps for the 2010 Plan scenario planning process are listed below:

1. Define the focal issue or central question for the process that will be assessed and ultimately answered through the process;
2. Identify the projected water resource supply mix;
3. Identify critical uncertainties that could influence implementation of the mix;
4. Formulate potential scenarios based on the critical uncertainties;
5. Identify common strategies to manage the scenarios; and
6. Establish key tracking metrics that evaluate the status of supply sources in the projected resource mix and whether adaptive management strategies are required to ensure continued reliability.

A Water Authority internal scenario planning team was formed to provide input into the process. The group consisted of representatives from the General Manager's office as well as the Water Resources Department, Conservation Program, Metropolitan Program, and Colorado River Program. They provided expertise to the process, assisting in development of the focal issue (central question) along with identifying the critical uncertainties and management strategies.

Each of the steps taken and the results from the process are described in the remainder of this Section.



A Water Authority internal scenario planning team was formed to provide input into the process.

10.1.1 Definition of the Focal Issue or Central Question

The focal issue or central question to be assessed and ultimately answered through the scenario planning process is:

In this climate of supply uncertainty and scarcity, how will the Water Authority and its member agencies adaptively provide water supply reliability over the next 20 years?

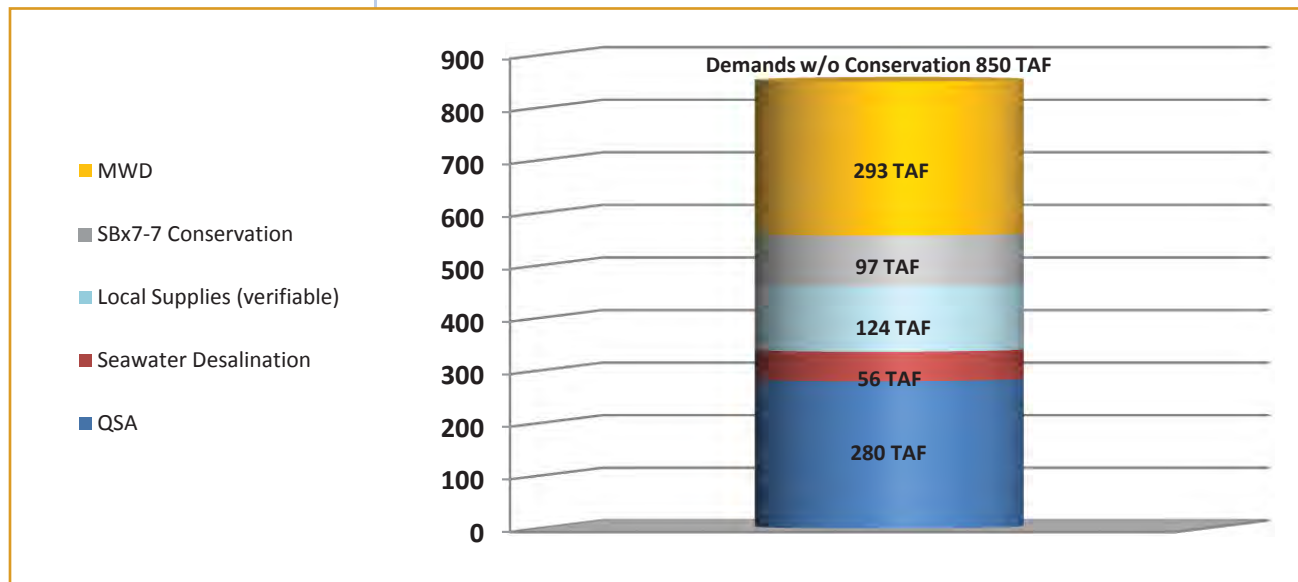
10.1.2 Identify Projected Water Resource Mix

As discussed in **Section 9**, in coordination with the member agencies, a projected resource mix to meet future demands was generated in five-year increments. For the scenario planning process the projected mix in 2030 was selected for evaluation in order to capture long-term supply planning. The normal weather resource mix in 2030 is based on the following factors:

- ☐ Member agency implementation of additional projected verifiable water recycling, and brackish groundwater recovery projects;
- ☐ Average yield from surface and groundwater supplies;
- ☐ Retail agency compliance with SBX7-7 2020 conservation target of 167 GPCD, which remains the target through 2035;
- ☐ Water Authority's QSA supplies delivered in accordance with agreements;
- ☐ Deliveries commence from the Regional Carlsbad Seawater Desalination Facility by 2016; and
- ☐ Metropolitan is able to meet the supplemental supply needed within the Water Authority's service area.

Figure 10-1 below includes the projected water resource mix for 2030 under normal weather conditions. The scenarios illustrated in the process include SBX7-7 conservation savings to highlight the expected volume and importance of achieving the target in evaluating supply uncertainties.

FIGURE 10-1: NORMAL YEAR (2030)



As shown in Figure 10-1, if the projected Metropolitan, Water Authority, and member agency supplies are developed as planned, no shortages are anticipated within the Water Authority's service area in 2030 in a normal year. Consistent with the UWMP Act, it is important that a risk assessment be conducted on the projected resource mix to ensure long-term reliable and sustainable water supplies to meet demands. This is accomplished through the scenario planning process, with the next step being to identify the critical uncertainties.

10.1.3 Critical Uncertainties Associated with Implementation of Projected Resource Mix

Following identification of the projected resource mix, the next step in the analysis is to identify critical uncertainties surrounding implementation of the mix. Table 10-1 provides a list of the critical uncertainties, derived through input from the internal working group and source documents, such as the Department Water Resources 2009 California Water Plan Update. The list doesn't include all the uncertainties water planners face, but focuses on critical uncertainties associated with supply planning reliability. For example, managing uncertainties associated with physical system reliability, such as a potential pipeline failure, is handled through the Water Authority's Integrated Contingency Plan: Emergency Operations Plan. The critical uncertainties form the basis for developing potential future scenarios. To aid in the process of formulating the potential scenarios, the uncertainties are categorized into whether the source of change is gradual over the long-term or more sudden.

TABLE 10-1. CRITICAL UNCERTAINTIES ASSOCIATED WITH IMPLEMENTATION OF PROJECTED RESOURCE MIX

Sources of Gradual Change and Uncertainty	Sources of Sudden or Short-term Change and Uncertainty
Demographic Growth deviates from SANDAG Forecast	Droughts Severity, timing, and frequency
Climate Change Impacts from long-term changes in temperature and precipitation	SWP Regulatory Restrictions Regulatory restrictions are put in place that further limit supply availability
State Water Project Reliability Willingness to pay for Delta Fix	Delta Levee Failure Delta levees fail due to earthquake or flooding and supplies are curtailed from SWP
Local Supplies not Developed as Planned	Invalidation of QSA and Related Agreements

Notes: Format adopted from DWR California Water Plan Update 2009, Chapter 5

10.1.4 Scenario Analysis – Future Potential Scenarios Based on Critical Uncertainties

“Traditional scenario planning, also known as traditional scenario analysis is a methodology that relies on developing future scenarios that consider a variety of potential future situations.” (WUCA, 2010) The scenarios are plausible, but not predictions or forecasts of the future. They incorporate the water supply uncertainties urban water planners face and can be qualitative, quantitative or both. Important to traditional scenario planning is to select just a few scenarios that focus on critical uncertainties and avoid having too many scenarios. When working with numerous scenarios they will begin to blur and lose their meaningful distinctions as decision tools. From the scenario analysis common strategies are developed to manage the uncertainties. The six potential scenarios developed based on the uncertainties are listed in Table 10-2, followed by a detailed description.

The six scenarios and potential supply gap are described below.

TABLE 10-2: FUTURE POTENTIAL SCENARIOS BASED ON CRITICAL UNCERTAINTIES

Future Potential Scenarios Identified for Planning Purposes

- 1 Drought
- 2 Drought with Further Limitations on Metropolitan Supplies
- 3 Drought with Limited Metropolitan Supplies and Member Agency Local Supplies
- 4 Drought with Limited Metropolitan Supplies and Limited Water Authority and Member Agency Local Supplies
- 5 Demographic Shift
- 6 Climate Change

Scenario 1: Drought

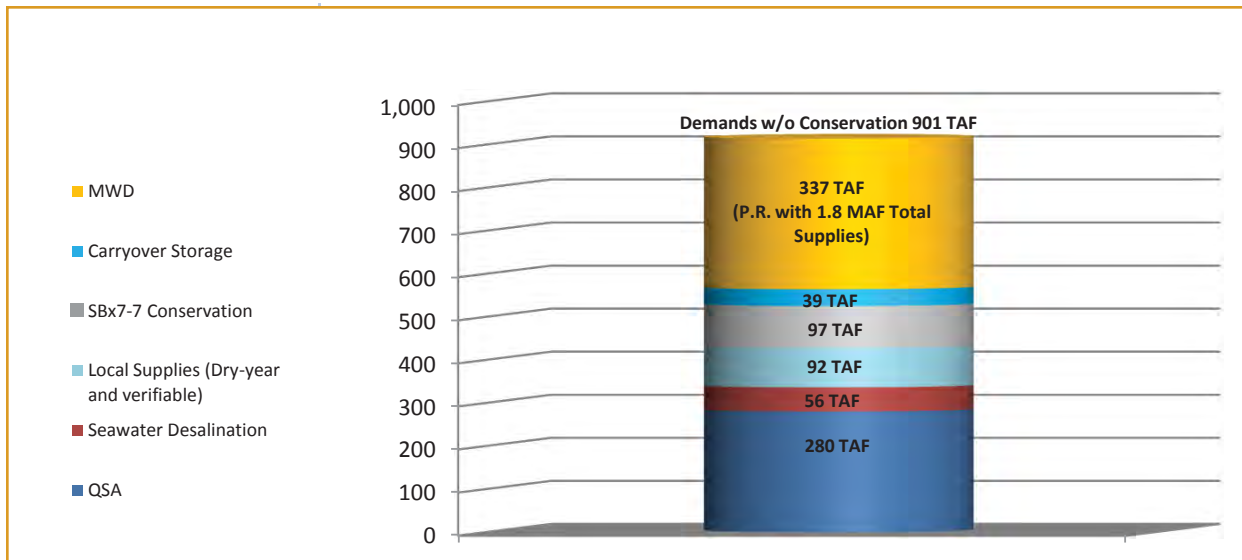
Scenario 1 is a dry-year situation developed based on the following factors:

- ☐ Single dry-year demands derived from CWA-MAIN modeling effort (Refer to **Section 2**);
- ☐ Demands do not reflect reductions due to potential mandatory water-use restrictions or public outreach, which might be imposed during drought conditions. These shortage management actions could serve as potential strategies to overcome potential supply gaps. In addition, achieving these demand savings in 2030 could prove more difficult than reductions achieved during the 2007-2010 drought due to demand hardening, as discussed in **Section 9.3.1**;

- Metropolitan is allocating supplies due to dry conditions. It is unknown how Metropolitan will allocate supplies in the long-term. For this reason and for conservative planning purposes, the Water Authority's allocation is based on its preferential right to purchase supplies from Metropolitan. In 2030 that right is estimated to be approximately 18.7 percent with 1.8 million acre-feet of supply available (Refer to **Section 6.1.1** for details on preferential rights);
- Surface and groundwater supply yields reduced based on historic 1990 supplies;
- Supplies utilized from carryover storage reserves;
- Verifiable member agency projected water recycling and brackish groundwater supplies;
- SBX7-7 2020 Conservation target fixed at 167 GPCD beyond 2020;
- Water Authority's QSA supplies are being delivered in accordance with agreements; and
- Deliveries commence from the Regional Carlsbad Seawater Desalination Facility by 2016.

The projected mix of supplies and potential gap are shown in Figure 10-2.

FIGURE 10-2: SCENARIO 1 – DROUGHT (2030)



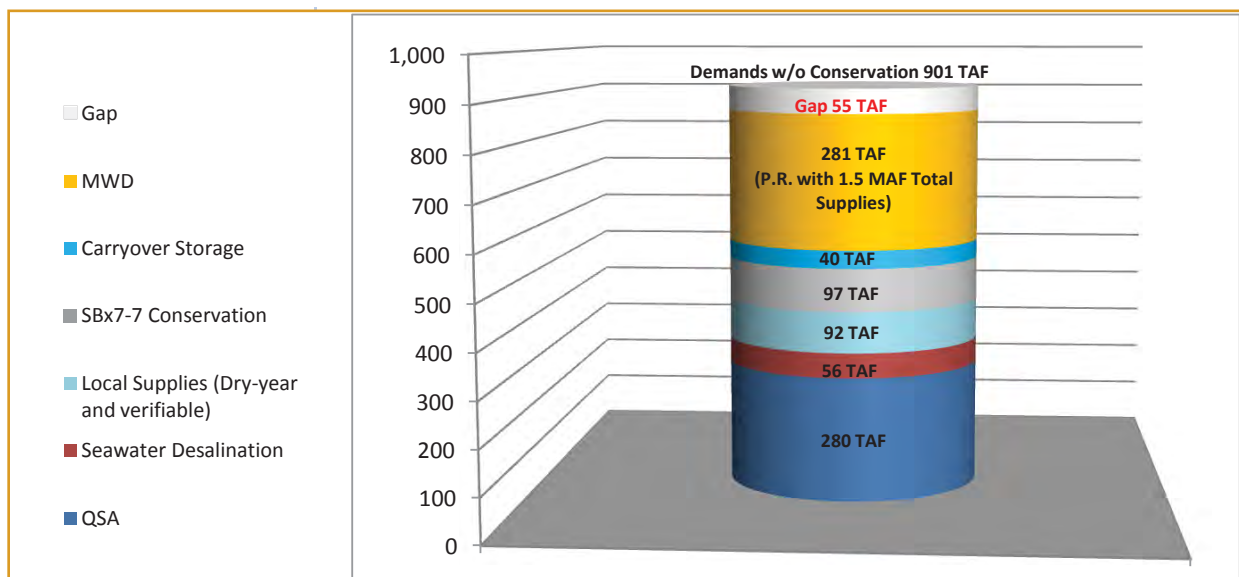
Scenario 2: Drought with Further Limitation on Metropolitan Supplies

Scenario 2 was developed utilizing the same variables identified in Scenario 1, with the following modification:

- Metropolitan supplies are further limited and being allocated to the member agencies:
- Metropolitan limited to 1.5 MAF of supplies due to dry conditions and increased reductions in deliveries from State Water Project (no delta improvements) and/or reduction in Colorado River deliveries, and
- Water Authority receives estimated preferential right allocation of 18.7 percent.

The projected mix of supplies and potential gap are shown in Figure 10-3.

FIGURE 10-3: SCENARIO 2 – DROUGHT WITH FURTHER LIMITATIONS ON METROPOLITAN SUPPLIES (2030)

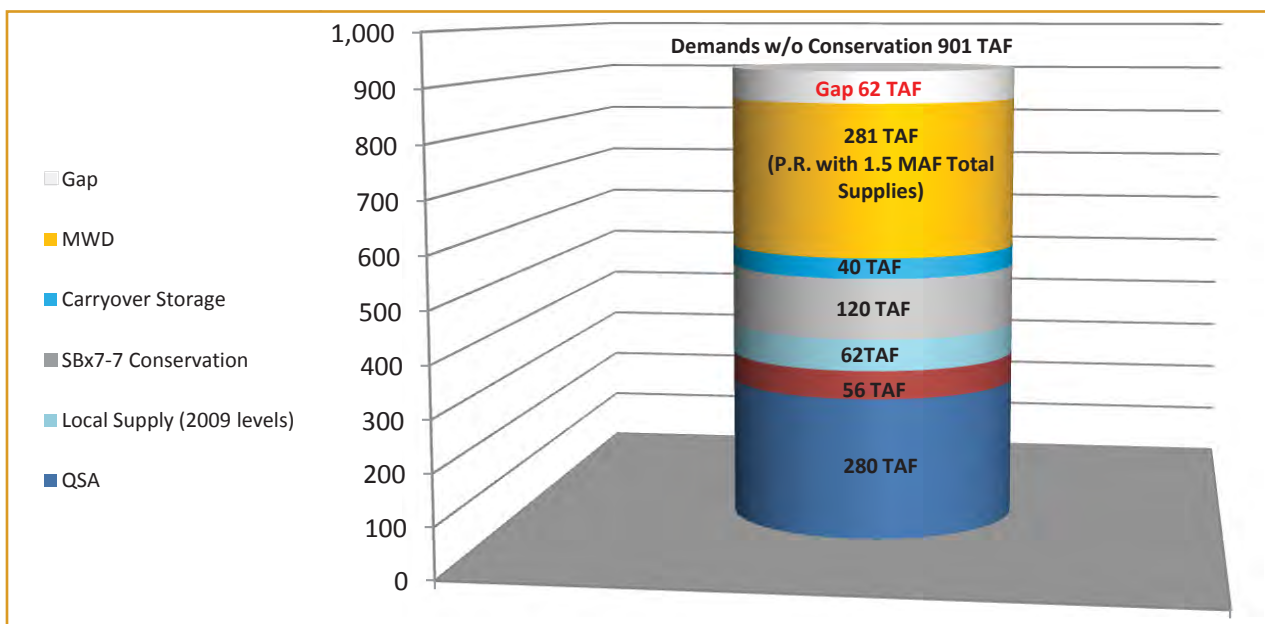


Scenario 3: Drought with Limited Metropolitan and Member Agency Local Supplies

Scenario 3 was developed utilizing the same variables identified in Scenario 2, with the following modification:

- Recycled water and brackish groundwater projects are not developed as planned and remain fixed at current levels; and
- The SBX7-7 conservation target is increased in order to maintain compliance with the 167 GPCD efficiency target. The conservation target must be increased to replace the recycled water yield assumed not to occur. The water use efficiency target identified in **Section 2** is shown to be met by both recycled water and conservation.

FIGURE 10-4: SCENARIO 3 – DROUGHT WITH LIMITED METROPOLITAN AND MEMBER AGENCY LOCAL SUPPLIES (2030)

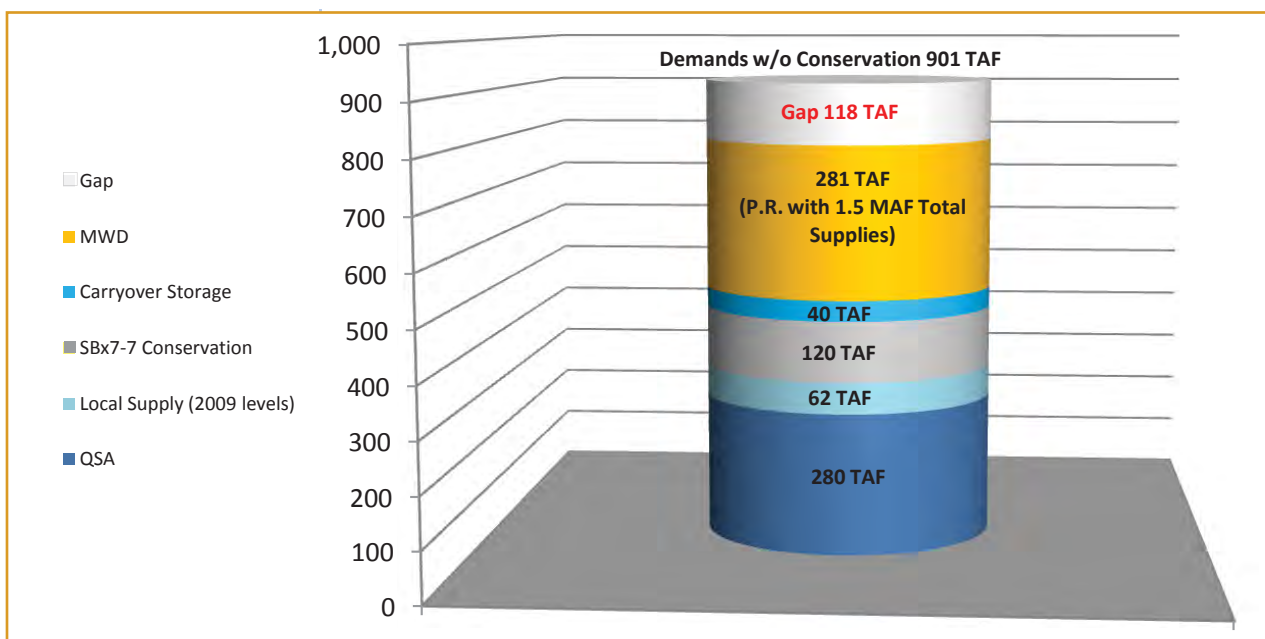


The projected mix of supplies and potential gap are shown in Figure 10-4.

Scenario 4: Drought with Limited Metropolitan Supplies and Limited Water Authority and Member Agency Local Supplies

Scenario 4 was developed utilizing the same variables identified in Scenario 3, except that the Regional Carlsbad Seawater Desalination Facility is not completed as planned. The projected mix of supplies and potential gap are shown in Figure 10-5.

FIGURE 10-5: SCENARIO 4 – DROUGHT WITH LIMITED METROPOLITAN AND LIMITED WATER AUTHORITY & MEMBER AGENCY LOCAL SUPPLIES (2030)



Scenario 5: Demographic Shift

As discussed in **Section 2**, the Water Authority's demand projections are driven by SANDAG's most recent regional growth forecast. In turn, the regional growth forecast is based on the cities and county general plans. Under this scenario, land-use development approval would differ from that identified in the cities and county general plans. Depending upon the variation in housing type, demands could be higher or lower. Single-family homes with larger lots (lower density and potentially more irrigated landscape) will generally use more water than multi-family units (higher density). One potential scenario that would cause demands to be higher than projected is if the multi-family units included in the growth forecast are approved as single-family units. The magnitude of a potential housing shift is difficult to quantify. The affect on water demands due to a shift in demographics would be a gradual change that would be captured in each five-year update to the UWMP. Projected demands in the UWMP updates would be updated based on SANDAG's most recent growth forecast, which would reflect changes to land-use plans occurring between plan updates. In part to deal with this uncertainty associated with land-use approvals occurring during the 2010 Plan planning horizon, an additional demand increment, termed Accelerated Forecasted Growth, has been included in the regional total demand forecast, as discussed in **Section 2**.

Scenario 6: Climate Change

Scenario 6 considers the potential influence climate change may have on the projected resource mix. Because there are still too many uncertainties regarding the impact of climate change on supplies and demands, a qualitative risk assessment is conducted. The assessment is based primarily on the California Department of Water Resources October 2008 Report entitled "Managing an Uncertain Future; Climate Change Adaptation Strategies for California's Water."

When evaluating the effects of climate change on long-term water supply planning, a distinction should be made between climate and weather. Weather consists of the short-term (minutes to months) changes in the atmosphere. Climate is how the atmosphere "behaves" over relatively long periods of time. The term climate change refers to changes in long-term averages of daily weather. Changes to climate will be gradual, providing water supply agencies the ability to adapt planning strategies to manage for the supply uncertainties. The affect on supply would be gradual and captured in each five-year update to the UWMP.

Researchers have concluded that increasing atmospheric concentrations of greenhouse gases, such as carbon dioxide, are causing the Earth's air temperature to rise. While uncertainties remain regarding the exact timing, magnitude, and regional impacts of the temperature and potential precipitation changes due to climate change, researchers have identified several areas of concern that could influence long-term water supply reliability. These potential areas are listed below:

Loss of Natural Snowpack Storage. Rising temperatures reduce snowpack in the Sierra Nevada because more precipitation falls as rain, and snowmelt

occurs sooner. Snowpack in the Sierra Nevada is the primary source of supply for the State Water Project. Snowpack is often considered a large surface “reservoir,” where water is slowly released between April and July each year. Much of the state’s water infrastructure was designed to capture the slow spring runoff and deliver it during the drier summer and fall months. The California Department of Water Resources projects that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050.

Sea Level Rise. Rising sea levels could increase the risk of damage to water and water recycling facilities from storms, high-tide events, and erosion of levees. A potential catastrophic levee failure in the Delta could interrupt supplies from the State Water Project, potentially reducing supply deliveries to the San Diego region from Metropolitan. In addition, rising sea levels could cause saltwater intrusion into the Delta, degrading drinking water quality. More freshwater releases from upstream reservoirs would be required to repel the sea to maintain salinity levels for municipal, industrial, and agricultural uses.

Changes in Average Precipitation and Runoff Volume. The effect of climate change on overall precipitation and runoff volumes is still unclear and highly uncertain. For example, a number of studies conclude that the flow of the Colorado River may be reduced by climate change, but a wide disparity exists on the predicted volume. The yield from local surface water resources could potentially be reduced, if annual runoff volumes are reduced due to a decline in precipitation or there is an increase in evapotranspiration in reservoirs. It must be highlighted that research is still highly unclear on how precipitation levels may be impacted by climate change.

Change in Frequency and Intensity of Droughts. Warming temperatures, combined with potential changes in rainfall and runoff patterns, could exacerbate the frequency and intensity of droughts.

Demands Levels. Climate change could also gradually affect water demands out in the future. Warmer temperatures increase evapotranspiration rates and growing season, which are likely to increase outdoor consumptive water use for landscaping. As part of the water demand forecasting effort for the 2010 Plan, the long-term influence of climate change on demands in the San Diego region was evaluated. Results from the analysis are included in **Section 2**.

All five of the areas discussed above focus on the potential effect climate change could have on future supply reliability. The potential long-term effect is a possible decrease in the availability of imported supplies from Metropolitan and local supplies – causing a potential gap between supply and demands. With so many unknowns regarding the actual impact, the previous uncertainty scenarios could be seen as capturing any potential shortfalls in supply due to climate change. In addition, the supply and demand impacts from climate change will just start to be experienced within the 2010 Plan 25-year planning horizon, but should be considered in establishing “no regret” strategies that provide water supply benefits within the planning horizon, while increasing the ability to manage potential climate change impacts in the future.

10.1.5 Strategies to Strengthen Implementation of Resource Mix and Manage Uncertainty Scenarios

For each projected scenario, including the projected resource mix, management strategies are identified to both strengthen likelihood of development of identified resources and fill potential gaps in supply. The strategies are

generally common to all the scenarios, which mean that such projects and programs will be useful under a wide range of possible outcomes. As a result, they are more likely to be viable as the future unfolds. The strategies include individual elements that can consist of policies and programs, as well as, various potential construction projects.

The management strategies included in the 2010 Plan scenario planning process are derived based on the following:

- ☐ Input from internal scenario planning working group, based on evaluation of uncertainty scenarios;
- ☐ Water Authority Board 2008 Strategic Plan;
- ☐ Water Authority 2015 Business Plan Management Strategies; and
- ☐ Previous Water Authority Board actions on policies and programs surrounding supply reliability and development.

Table 10-3 contains strategies that the Water Authority can employ to aid in

**TABLE 10-3. POTENTIAL STRATEGIES TO MANAGE
UNCERTAINTY SCENARIOS (2030)**

Potential Strategy	Minimum Estimated Yield (AF)
Foundational Strategy Diversify the region's supply mix, thereby reducing dependence on Metropolitan, and also strengthening the reliability of existing supplies.	
State Water Project Advocate for near-term actions and permanent Delta fixes, including federal and state legislation to fund improvements, which will improve the water quality and supply reliability of the State Water Project.	
Colorado River - Quantification Settlement Agreement Defend the QSA against existing and potential litigation to ensure continued delivery of conserved supplies from canal lining projects and Imperial Irrigation District water transfer.	
Member Agency Local Projects Provide technical assistance to member agencies in the planning, design, and construction of local projects Continue to provide funding for recycled and brackish groundwater projects through the Local Projects Development Fund Advocate at local, state, and federal level for minimizing regulatory constraints and enacting acceptable and practicable regulatory standards that allow member agencies to maximize local supply project development. Advocate for state and federal funding for local projects and work with agencies to ensure projects qualify for funding.	
Water Conservation Offer programs that encourage long-term behavioral change towards measureable reductions in outdoor water use.	
Climate Change Encourage focused scientific research on climate change to identify the impacts on the San Diego region's imported and local water supplies.	

the implementation of the supplies identified in the projected resource mix and manage uncertainty scenarios. The strategies focus on programs, many of which are already being implemented consistent with Water Authority Board policy.

In addition to the policies and programs identified in Table 10-3, Table 10-4 provides a list of the potential management strategies that the Water Authority and member agencies can take in regard to managing the uncertainty scenarios and filling the potential gap identified in Figures 10-3, 10-4, and 10-5.

TABLE 10-4. POTENTIAL STRATEGIES TO MANAGE UNCERTAINTY SCENARIOS (2030)

Potential Strategy	Minimum Estimated Yield (AF)
Member Agency Potential Additional Planned Local Projects¹	
Additional Planned Recycled Water and Brackish Groundwater	14,000
City of San Diego Water Purification Project	15,000
Helix WD/Padre Dam MWD El Monte Valley Recharge Project	5,000
Fallbrook PUD/Camp Pendleton Groundwater Recharge & Recovery Project	5,200
Otay WD Rosarito Beach Desalination Project	32,000
Total Additional Planned Local Projects (Member Agencies):	71,200
Water Authority Potential Strategies	
Potential Regional Seawater Desalination Facility (Camp Pendleton):	56,000 - 168,000
Regional Shortage Management Actions (Dry-year transfers and potential extraordinary conservation savings)	— ²
Total Minimum Estimated Yield from Potential Strategies:	127,200 – 239,200

¹ The estimated yields from the additional planned local supply projects are from the member agencies and the development and implementation of these supplies rests with the member agencies.

² Availability of dry-year supplies is described in Section 11.2.3.

If the uncertainty scenarios were to materialize, the potential gap, based on current information and variables could potentially range from approximately 55 TAF to a maximum estimate of 118 TAF. As shown in Table 10-4, there are currently strategies (alternative supply sources) that could potentially be implemented that would assist in ensuring supply reliability if imported supplies are limited or verifiable local supplies are not developed as planned.

In regard to Scenario 6: Climate Change, the strategies outlined in Tables 10-3 and 10-4 can also be utilized to manage the supply uncertainties associated with a changing climate. For example, the foundational strategy to diversify the region's resource mix through development of local projects, such as recycled water and seawater desalination, reduces reliance on imported and local surface supplies, whose yields could potentially decrease as a result of climate change. The strategies identified in this section provide supply reliability benefits within the planning horizon, while increasing the ability to manage potential climate change impacts in the future.

There are a number of factors that influence the decision to develop a new supply project, such as reliability, political will, community support, cost and financing. A key factor often considered when evaluating potential supply strategies is the project costs. In September 2010, the Water Authority prepared a report evaluating the comparative cost of the next increment of supply, using specific project studies. To ensure equitable comparison, the evaluation excludes avoided costs and external incentive and grants. The estimated cost of the next increment of local supply based on actual proposed San Diego region project units costs for the following local supplies are: brackish groundwater (\$1,700/AF – \$2,100AF/YR), indirect potable reuse (\$2,200/AF - \$2,300/AF), and seawater desalination (\$1,600/AF - \$2,300/AF). Through the 2012 Master Plan update these costs will be further evaluated and refined.

As listed in Table 10-4, extraordinary conservation is identified as a potential shortage management action to assist in managing uncertainties. It should be noted that, due to SBX7-7 retail compliance, the amount of extraordinary savings expected to be achieved through mandatory measures, such as water-use restrictions, could be less than that experienced in the current and previous shortage periods. This is due to the concept known as demand hardening, which is described in the dry-year reliability assessment (**Section 9.3**).

10.1.6 Key Tracking Metrics – Track Progress on Implementation of Projected Resource Mix and Need for Adaptive Strategies

Through the scenario analysis, the projected resource mix plus the six uncertainty scenarios have been identified. Potential strategies to strengthen implementation of the resource mix and manage the uncertainty scenarios have been identified. The critical final step, which links these two components, is to establish a few key tracking metrics that evaluate the status of supply sources in the projected resource mix and whether the adaptive management strategies are required to ensure continued reliability. The primary vehicle for reporting to the Board on the metrics would be through the Water Authority’s Annual Water Supply Report. Water Authority Administrative Code Section 8.00.050 outlines preparation of an annual water supply report that would provide information on the reliability of existing supplies and implementation of plans and programs to meet the future water supply requirements. The annual report serves as an excellent vehicle to monitor the key tracking metrics. A complete evaluation and

TABLE 10-5. TRACKING PROGRESS ON IMPLEMENTATION OF RESOURCE MIX

Time Period	Vehicle	Purpose
Annually (except UWMP years)	Annual Supply Report to Board (Consistent with Administrative Code Section 8.00.050)	Utilizing key indicators, conduct evaluation and track progress on implementation of UWMP projected water resource mix
At Least Every 5 years	Urban Water Management Plan Update	Conduct evaluation of supply and demand conditions and update projected resource mix
As Needed	Reports to Board	Update the Board on issues impacting resource mix implementation

update of the resource mix would occur every five years with update of the UWMP. Table 10-5 highlights the timing upon which the Water Authority Board would track progress on implementation of the projected resource mix and evaluate the tracking metrics. If necessary, reporting to the Board on issues related to implementation of the resource mix could occur more frequently.

With the many unknown factors and outside influences affecting development of supply sources in the projected mix, the key metrics for tracking implementation will be included in the next update of the annual supply report, planned for completion in 2012. The metrics could be reset with each annual supply report update. Table 10-6 lists the key tracking metrics to be considered in the 2012 Annual Water Supply Report for the region's two sources of imported supplies. Table 10-7 lists the key tracking metrics for 2012 Annual Water Supply Report associated with water conservation and local supply development. The metrics in both tables were derived based on supplies identified in the

TABLE 10-6. PROPOSED KEY TRACKING METRICS FOR 2012 ANNUAL WATER SUPPLY REPORT MAJOR SOURCES OF IMPORTED SUPPLIES

Management Action or Event - Description	Key Metrics for 2012
The BDCP is to provide the regulatory approvals and framework for achieving the co-equal goals of supply reliability and ecosystem restoration. Scheduled for completion by end of 2012.	Has the draft BDCP and EIR/EIS been released for public review? Are documents still on schedule for approval by the end of 2012?
The state water bond measure (Safe, Clean and Reliable Drinking Water Supply Act) will, in part, provide funding to carry-out the BDCP and is scheduled for November 2012 ballot.	Has the water bond measure passed?
Near-term Delta actions are being pursued by Metropolitan to provide increased supply reliability prior to a long-term Delta fix. (i.e., the Two-Gate System and habitat restoration projects.)	Has progress been made towards completion of the near-term projects that would increase SWP supply reliability?
Colorado River Aqueduct	
The Bureau of Reclamation has claimed that under certain hydrologic conditions, a potential shortage declaration could be made on the Colorado River which could impact yield from Metropolitan's WSDM programs on the Colorado River.	Have dry-year conditions resumed within the Colorado River watershed? Has the Secretary of the Interior declared shortages?
Superior Court judge invalidated 13 agreements related to the Quantification Settlement Agreement. The Water Authority and other parties involved in the QSA have appealed the judge's decision. Appellate decision is expected in 2011 or 2012.	What is the result of the appellate court? Will there be reductions in QSA supplies to Metropolitan and Water Authority?

TABLE 10-7. PROPOSED KEY TRACKING METRICS FOR 2012 ANNUAL WATER SUPPLY REPORT WATER CONSERVATION AND LOCAL SUPPLY DEVELOPMENT

Management Action or Event - Description	Key Indicators for 2012
Water Conservation	Is per capita water use on track to achieve retail 2020 SBX7-7 target?
Water Recycling	Is recycled water development on track to assist in achieving the 2020 SBX7-7 target included in UWMP?
Brackish Groundwater	Is brackish groundwater development on track to achieve the UWMP targets?
Seawater Desalination	Is the Carlsbad seawater desalination facility on track to be on-line by 2016?

projected resource mix and the Water Authority 2008 Strategic Plan Objectives and 2015 Business Plan Goals. For further information on the action or event listed in Table 10-6, please reference **Sections 4** and **6** on Water Authority and Metropolitan supplies.

The analysis included in the annual supply report will include a discussion on the status of the proposed metrics identified in the table above and overall implementation of the projected resources mix. Highlighting this list of metrics, doesn't preclude other metrics from being evaluated in the supply report. Key to the reporting will also be an update on the potential strategies; whether they remain a viable option taking into account specific project studies and political decisions made over the reporting period.

10.2 CONCLUSION

As identified at the beginning of the scenario planning process, the focal question that ultimately needed to be answered as a result of this process is:

In this climate of supply uncertainty and scarcity, how will the Water Authority and its member agencies adaptively provide water supply reliability over the next 20 years?

Based on the results of the scenario planning process, the Water Authority and its member agencies can help ensure a long-term reliable water supply for the region through the following four basic measures:

- ☐ Implementation of the diverse resource mix identified in the 2010 Plan;
- ☐ Retail compliance with the SBX7-7 conservation compliance target;

- Continue to implement programs and explore additional planned local projects that could strengthen implementation of the projected resource mix and manage potential shortfalls in development of supplies identified in the resource mix; and
- Conduct annual tracking and reporting on implementation of the mix that will allow for the Water Authority and its member agencies to take appropriate action if supplies in the resource mix are not developed as planned.

While these measures focus on supply development, the Water Authority and its member agencies will also be conducting a Regional Water Facilities Optimization and Master Plan Update in 2012. As discussed in **Section 1.5**, the 2012 Master Plan Update will, among other objectives, match new infrastructure needs with the water demand and supply projections included in the 2010 Plan. This is another important element to ensuring a long-term reliable supply for the region.

10.3 PRIMARY SOURCE DOCUMENTS

California Department of Water Resources. California Water Plan Update 2009. Chapter 5: Managing an Uncertain Future.

California Department of Water Resources, 2008. Managing an Uncertain Future; Climate Change Adaptation strategies for California's Water.

Hanak, Ellen and Lund, Jay, 2008. Adapting California's Water Management to Climate Change, Public Policy Institute of California.

Howe, Charles W., Goemans, Christopher, 2007. "The Simple Analytics of Demand Hardening." Journal AWWA.

Metropolitan Water District 2010 Urban Water Management Plan

Schartz, Peter, 1991. The Art of the Long View: Planning for the Future in an Uncertain World.

U.S. Geological Survey Circular 1331, 2009. Climate Change and water resources management – A Federal Perspective

Water Utility Climate Alliance (WUCA), 2010. Decision Support Planning Methods: Incorporating Climate Change Uncertainties into Water Planning

SHORTAGE CONTINGENCY ANALYSIS



The Act requires that urban water agencies conduct a water shortage contingency analysis as part of their 2010 plan. This section includes the Water Authority's analysis and plans to address supply shortages due to a catastrophe, drought, or other situations. An estimate of the minimum supplies available during each of the next three years, required under the Act, is also contained in this section.

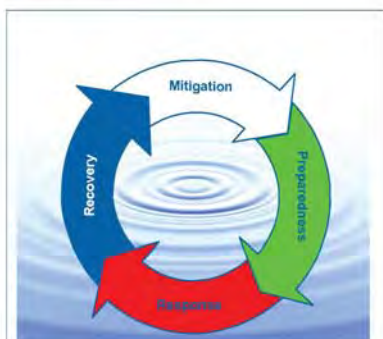
11.1 CATASTROPHIC WATER SHORTAGE

A catastrophic water shortage occurs when a disaster, such as an earthquake, results in insufficient available water to meet the region's needs or eliminates access to imported water supplies. The following section describes the Water Authority's Integrated Contingency Plan (ICP) and ESP, both of which were developed to protect public health and safety and to prevent or limit economic damage that could occur from a severe shortage of water supplies. The Water Authority's ICP and ESP provide actions to be taken in the event of an earthquake or power outage. The ESP provides actions that the Water Authority will take to operate ESP facilities to address up to a six month supply interruption, which could result from earthquakes (see **Section 11.1.2** below for ESP actions). As discussed in the ICP, the Water Authority has prepared for potential power outages by operating and testing standby and mobile generators that can provide power for essential or critical activities for at least one hour. Power outages may occur as a result of natural events such as earthquake and flooding, or man-made events such as a terrorist act.

11.1.1 Integrated Contingency Plan

The Water Authority's ICP provides staff with the information necessary to respond to an emergency that causes severe damage to the Water Authority's water distribution system, or impedes the Water Authority's ability to provide reliable water service to its member agencies. The ICP describes the situations and incidents that will trigger the activation of the Water Authority's ICP and Emergency Operations Center. It also provides direction and strategies for responding to a crisis. The Water Authority's ICP includes:

- ☐ Authorities, policies, and procedures associated with emergency response activities
- ☐ Emergency Operations Center activities, including activation and deactivation guidelines



INTEGRATED CONTINGENCY PLAN
Emergency Operations Plan and
Annexes

January 2010

- Multi-agency and multi-jurisdictional coordination, particularly between the Water Authority, its member agencies, and Metropolitan in accordance with Standardized Emergency Management System (SEMS) and National Incident Management System (NIMS) guidelines
- Incident Command System management and organization and emergency staffing required to assist in mitigating any significant emergency or disaster
- Mutual Aid Agreements and covenants that outline the terms and conditions under which mutual aid assistance will be provided
- Hazard specific action plans and Incident Command System position checklists

In addition, the Water Authority's ICP uses a step-by-step approach to emergency response planning by providing tools such as resource and information lists, personnel rosters, pertinent policies and procedures, and reference materials. The Water Authority provides input to the Unified San Diego County Emergency Services Organization's "Operational Area Emergency Plan," which in turn, supports the Water Authority's plan.

11.1.2 Water Authority's Emergency Storage Project

In June 1998, the Water Authority's Board authorized implementation of the ESP to reduce the risk of potential catastrophic damage that could result from a prolonged interruption of imported water due to earthquake, drought, or

other disasters. The ESP is a system of reservoirs, pipelines, and other facilities that will work together to store and move water around the county in the event of a natural disaster. The ESP will provide, when complete, a rolling two month average of consumptive demand to offset complete loss of imported water supplies from Metropolitan during an extended shutdown or outage of the aqueduct system. The project will provide up to six months of emergency water storage in the case of a partial outage.

The ESP facilities are located throughout San Diego County and are being constructed in phases. Construction of the first facilities began in 2000. The initial ESP phase included construction of the 318-foot-high Olivenhain Dam and accompanying Olivenhain Reservoir, which together added 24,300 AF of emergency storage for the region. Raising the height of the San Vicente Dam is the last major component of the ESP, and should be completed by 2012. The raised dam will add an additional 117 feet, making this the tallest dam raise in the United States, and will allow for an additional 52,000 AF of emergency storage, as well as 100,000 AF of carryover storage (see **Section 11.2.3.1** for discussion on carryover storage). When completed, the ESP will provide 90,100 AF of stored water for emergency purposes to meet the county's needs through at least 2030. The Water Authority Board of Directors may also authorize that supplies from the ESP be used in a prolonged drought or other water shortage situation where imported



water shortage situation where imported

and local supplies do not meet 75 percent of the Water Authority's member agencies Municipal and Industrial (M&I) demands.

In sizing the ESP, the Water Authority assumed a 75 percent level of service to all Water Authority member agencies during an outage and full implementation of the water conservation best management practices. The following steps from the August 2002 Emergency Water Delivery Plans show the methodology for calculating the allocation of ESP supplies to member agencies in a prolonged outage situation without imported supplies:

- ☐ Estimate the duration of the emergency (i.e. time needed to repair damaged pipelines).
- ☐ Determine each member agency's net demand during the emergency period by adding M&I water demands and agricultural water demands and then subtracting recycled water supplies.
- ☐ Determine each member agency's useable local supplies during the emergency period (local supplies include surface water and groundwater).
- ☐ Determine each member agency's level of service based on usable local supplies and net demand.
- ☐ Adjust the allocation of ESP supplies based on a member agency's participation in an interruptible agricultural program (e.g. Metropolitan Interim Agricultural Water Program or Water Authority Special Agricultural Water Rate). Interruptible agricultural program customers will be required to take a reduction in deliveries during a water shortage due to an emergency at double the system-wide reduction up to a maximum of 90 percent. Water not delivered to interruptible agricultural program customers will be redistributed to member agencies based on the "system-wide" level of service targets.
- ☐ Determine the amount of local supplies that can be transferred between member agencies, with transfers occurring only after a member agency has a level of service greater than 75 percent based on their usable local supplies.
- ☐ Allocate delivery of useable ESP storage supplies along with available Water Authority and Metropolitan supplies to member agencies with the goal of equalizing the level of service among the member agencies.

11.2 WATER SHORTAGE AND DROUGHT RESPONSE PLANNING

This section discusses the actions the Water Authority, in coordination with its member agencies, could take to effectively plan for potential shortages. The Water Authority's Water Shortage and Drought Response Plan (WSDRP), which serves as the region's guiding shortage management document, is discussed below. The section also highlights the actions taken during the 2007-2011 shortage period to manage supply shortfalls and contains information on the Water Authority's dry-year supplies.

11.2.1 Water Shortage and Drought Response Plan

Following the major drought in California of 1987 - 1992, which led to severe water supply shortages throughout the state, the Water Authority and its

member agencies aggressively developed plans to minimize the impact of potential shortages. In 2006, the Water Authority Board of Directors adopted the WSDRP, to serve as a comprehensive plan in the event that the region faced supply shortages due to drought or other water shortage conditions.

The WSDRP was developed by the Water Authority in coordination with its member agencies to provide a balanced, flexible, systematic approach to identifying regional actions necessary to reduce the impacts from shortages. It includes all aspects of drought planning, from steps to avoid rationing, to drought response stages, allocation methodology, pricing, tracking actual reductions in water use, and a communication strategy. Multiple actions are identified to manage shortage situations, including both supply augmentation measures and demand reductions up to 50 percent in water supply. Conservation savings is an essential component of meeting the need for water in a time when available supplies are limited.

The WSDRP is organized into three stages: voluntary supply management, supply enhancement, and mandatory cutbacks including a supply allocation methodology. These stages are summarized in the Drought Response Matrix in Table 11-1. A copy of the WSDRP is included in **Appendix G**.

11.2.1.1 Drought Response Matrix

The WSDRP includes a drought response matrix that serves as guidance to the Water Authority and member agencies in selecting potential regional actions to lessen the severity of shortage conditions. As shown in Table 11.1, the matrix identifies the three drought stages and potential actions available to the Water Authority at each stage.

11.2.1.2 M&I Supply Allocation Methodology

In the event of mandatory supply cutbacks from Metropolitan, the WSDRP includes an M&I allocation methodology to determine how the Water Authority's

TABLE 11-1. DROUGHT RESPONSE MATRIX – FIRM DEMANDS

Potential SDCWA Drought Actions	STAGES		
	Voluntary	Supply Enhancement	Mandatory Cutbacks
Ongoing BMP implementation	X	X	X
Communication strategy	X	X	X
Monitoring supply conditions and storage levels	X	X	X
Call for voluntary conservation	X	X	X
Draw from SDCWA carryover storage	X	X	X
Secure transfer option contracts	X	X	X
Buy phase 1 spot transfers (cost at or below Tier 2 rate)		X	X
Call transfer options		X	X
Buy phase 2 spot transfers (cost at or above Tier 2 rate)		X	X
Implement allocation methodology			X
Utilize ESP Supplies			X

SDCWA = San Diego County Water Authority

available supplies will be equitably allocated to its member agencies. The allocation methodology applies to those customers paying the M&I rate, including residential, commercial, and industrial customers. During an allocation, the actual reduction in member agency deliveries is determined through monthly meter reads, which are compared to the allocation targets for each member agency. This tracking information is then provided in monthly progress reports to the board of directors.

The Water Authority administers the M&I allocation methodology following the procedures and policies contained in the Water Authority's Resolution Establishing Procedures and Policies for Administration of the Drought Management Plan Water Supply Allocation Methodology. A copy of the resolution is included in **Appendix G**. The resolution includes a requirement for the Water Authority staff to report monthly to the Board of Directors and member agency managers on agency deliveries are tracking compared to their allocation target.

11.2.2 Summary of 2007–2011 Shortage Period Management Actions

The last major drought in California began in 2007, which also marked the beginning of increased restrictions on State Water Project pumping from the

Bay-Delta environmental considerations. The Colorado River was in the midst of a prolonged multi-year drought that began in 2000. In April 2007, Metropolitan notified its member agencies that it expected challenges in meeting demands due to insufficient imported water supplies from the State Water Project and the Colorado River. In order to meet demands, Metropolitan announced that it would implement shortage-related actions consistent with its WSDM Plan, including a need to draw upon its storage to meet expected 2007 demands. Metropolitan adopted its Water Surplus and Drought Management (WSDM) Plan in 1999 as guidance for managing regional water supplies during both surplus and shortage situations. Metropolitan's announcement that it would need to draw upon its storage to meet demands triggered implementation of the Water Authority's WSDRP.

The Water Authority began to implement a series of response measures identified in its WSDRP to reduce potential shortage impacts, starting with a call for voluntary conservation, and securing dry-year water transfers and storage programs for the region. As dry conditions persisted into 2009, the Water Authority and its member agencies intensified their drought response activities. In April 2009, Metropolitan's Board of Directors voted to allocate urban water deliveries in fiscal year 2010 for the first time in decades to its member agencies. In turn, the Water Authority allocated water deliveries to its member agencies using the supply allocation methodology contained in the WSDRP. The Water Authority's long-term strategy to improve water supply reliability by diversifying the region's water supply portfolio helped offset some of the required cutbacks from Metropolitan. In order to ensure deliveries remained under the allocation target, many agencies went from voluntary conservation to mandatory water use restric-



The last major drought in California began in 2007. This photo of Lake Oroville in 2008 shows a 35 percent drop in its water level since 2005.

tions. Residences and businesses responded to the call for conservation, and urban water use fell throughout San Diego County. Although hydrologic conditions began to improve in 2010, storage reserves remained low, and allocations continued into fiscal year 2011, to help restore storage reserves and prepare for a potential dry water year. Supply conditions continued to improve throughout the winter and into the spring 2011. Storage water began to rise to levels seen before the start of the 2007 drought. On April 13, 2011, Metropolitan terminated water allocations to its member agencies. Subsequently, the Water Authority discontinued allocations to its member agencies and deactivated the WSDRP on April 28, 2011.

With the drought over and deactivation of the WSDRP, the Water Authority, in coordination with its member agencies, is conducting an evaluation of the WSDRP, including the allocation methodology, based on lessons learned through implementation during the 2007-2011 shortage period. The Water Authority will continue to work closely with the member agencies and Metropolitan to monitor supply conditions and storage levels, and to implement the WSDRP as needed to effectively manage and minimize the effect of shortages.

11.2.2.1 Timeline of Important Drought and Shortage Related Events

To assist in the potential activation of the WSDRP in the future, Table 11.2 contains a general timeline of events that occurred and actions taken during the 2007-2011 period:

TABLE 11-2. TIMELINE OF IMPORTANT DROUGHT & SHORTAGE RELATED EVENTS

Date	Event or Action
2007	
April	Metropolitan staff announces to the Board that it will need to draw from storage supplies to meet expected 2007 demands, consistent with its WSDM Plan
May	☐ Water Authority activates WSDRP Stage 1, Voluntary Supply Management ☐ US District Judge Oliver Wanger invalidates the US Fish and Wildlife 2005 Delta Smelt biological opinion and orders a new biological opinion be developed ☐ DWR final calendar year 2007 water allocation to SWP contractors is 60 percent
July	Water Authority begins delivery of imported supplies to carryover storage accounts in local member agency reservoirs
October	Metropolitan announces plans to reduce agricultural deliveries to customers participating in their Interim Agricultural Water Program by 30 percent, effective January 1, 2008, consistent with its WSDM Plan
November	DWR initial calendar year 2008 water allocation to SWP contractors is 25 percent
December	☐ Judge Wanger issues an interim order to direct actions at the export facilities to protect Delta Smelt until a new biological opinion is completed. ☐ Water Authority activates WSDRP Stage 2, Supply Enhancement
2008	
February	DWR final water calendar year 2008 allocation to SWP contractors is 60 percent
March	Water Authority Board of Directors approves Model Drought Response Ordinance

Date	Event or Action
2008	
April	☐ Water Authority declares Level 1 Drought Alert under its Model Drought Response Ordinance ☐ Judge Wanger invalidates National Marine Fisheries Service biological opinion related to the operations of the CVP and SWP
June	Governor Arnold Schwarzenegger proclaims statewide emergency due to drought
October	☐ Metropolitan Board approves a plan to phase out the IAWP by 2013 ☐ DWR initial calendar year 2009 water allocation to SWP contractors is 25 percent
December	☐ U.S. Fish and Wildlife Service releases revised biological opinion on Delta smelt ☐ On February 27, 2009, Governor Schwarzenegger proclaims a state of emergency due to drought
2009	
April	☐ Metropolitan announces allocation of M&I deliveries to its member agencies, including the San Diego region for fiscal year 2010 at an estimated 13 percent cutback level ☐ Water Authority implements WSDRP Stage 3 “Mandatory Cutbacks” and approves allocating M&I supplies to its member agencies in fiscal year 2010 at an estimated 8 percent cutback level ☐ Water Authority declares Level 2 Drought Alert under its Model Drought Response Ordinance ☐ Water Authority authorized utilization of approximately 16,000 AF acre-feet of dry-year transfers acquired in 2009
May	DWR final calendar year 2009 water allocation to SWP contractors is 25 percent
June	National Marine Fisheries Service releases final biological opinion and concludes that CVP and SWP pumping operations should be changed to protect the winter and spring run Chinook salmon, Central Valley steelhead, North American green sturgeon, and southern resident killer whales
November	DWR initial calendar year 2010 water allocation to SWP contractors is 5 percent
2010	
April	Metropolitan continues allocation of M&I deliveries to its member agencies for fiscal year 2011. In response, the Water Authority continues to allocate M&I deliveries to its member agencies
June	DWR final calendar year 2010 water allocation to SWP contractors is 50 percent
November	DWR initial calendar year 2011 water allocation to SWP contractors is 25 percent
2011	
January	DWR increases its calendar year 2011 water allocation to SWP contractors to 60 percent
March	Governor Jerry Brown proclaims an end to the statewide drought
April	☐ Metropolitan discontinues M&I allocations ☐ DWR increases its calendar year 2011 water allocations to SWP contractors to 80 percent ☐ Water Authority deactivates WSDRP and discontinues allocations ☐ Water Authority declares an end to the Drought Response Levels contained in the model Drought Response Conservation Program Ordinance

11.2.3 Water Authority Dry-Year Supplies and Carryover Storage

The Water Authority's dry-year supplies and carryover storage are an important component of managing potential shortages within the region and for increasing supply reliability for the region. The dry-year supplies assist in minimizing or reducing potential supply shortages from Metropolitan. Over the last five years the Water Authority has developed a carryover storage program to more effectively manage supplies. This includes in-region surface storage currently in member agency reservoirs and increasing capacity through the raising of San Vicente Dam, which should be completed by 2012. The Water Authority also has an out-of-region groundwater banking program in the California central valley. Through these efforts, the Water Authority can store water available during wet periods for use during times of shortage. The Water Authority also implemented a dry-year transfer program during the last shortage period and successfully acquired and utilized dry-year transfer supplies in 2009. The Water Authority's carryover storage and dry-year transfer programs are discussed below.

11.2.3.1 Water Authority Carryover Storage Program

The carryover storage program provides water for the region in the case of a supply shortage, such as during a drought. The Water Authority has identified three main needs for carryover storage:

- ☐ Enhance reliability of the water supply: During dry weather periods, increased regional demand for water may exceed available supplies, resulting in potential water shortages. Carryover storage provides a reliable and readily available source of water during periods of shortage, such as during dry years.
- ☐ Increase system efficiency: Carryover storage provides operational flexibility to serve above normal demands, such as those occurring during peak summer months or extended droughts, from locally stored water rather than by the over-sizing of the Water Authority's imported water transmission facilities.
- ☐ Better management of water supplies: Carryover storage allows the Water Authority to accept additional deliveries from its existing State Water Project- and Colorado River-derived sources during periods of greater availability, such as during wet years, to increase water availability locally during periods of shortage, such as during dry years.

San Vicente Dam Raise Carryover Storage Project

The Water Authority's Water Facilities Master Plan (December 2002) identified a need for approximately 100,000 AF of carryover storage to assist in maintaining a secure and reliable supply for the region.

The San Vicente Dam Raise CSP will meet this need by providing approximately 100,000 acre-feet of local storage and facilitate the reliable and efficient delivery of water to residents of the Water Authority service area. It will be located in the San Vicente Reservoir above the reservoir expansion for the ESP (see previous **Section 11.1.2**), and will increase water storage reliability for



The San Vicente Dam Raise Carryover Storage Project will provide approximately 100,000 acre-feet of local storage capacity.

the region. Construction is scheduled to be completed in 2012, followed by filling of the reservoir in three to five years. Prior to completion of the project, the Water Authority is storing carryover water in member agency reservoirs under agreement.

Water Authority's Out-Of-Region Groundwater Program

As part of the Quantification Settlement Agreement, the Water Authority became the recipient of groundwater conjunctive use funds appropriated through Senate Bill 1765 (1998), which originally were designated to Metropolitan. Approximately \$30.5 million was made available to the Water Authority for use in its groundwater program. A demand and supply analysis utilizing data from the Water Authority's 2005 Urban Water Management Plan identified a maximum potential need for approximately up to 95,000 acre-feet of additional carryover storage beyond the 100,000 acre-feet of carryover storage at San Vicente Reservoir. This evaluation looked at a three-year dry cycle scenario during which demands are high and imported supplies are constrained by preferential rights. Based on that scenario, the Water Authority distributed a Request for Proposal (RFP) in November 2005 to partner with agencies overlying a groundwater basin for a conjunctive use project. The project would allow water to be delivered and stored during above normal hydrology and extracted from the basin and delivered to the Water Authority either by wheeling through various facilities, exchanges, or other alternatives.

In 2008, the Water Authority acquired a total of 70,000 acre-feet of permanent storage allocation in the Semitropic-Rosamond Water Bank Authority and Semitropic Water Bank (40,000 acre-feet and 30,000 acre-feet respectively) located in Kern County. Due to its location near the California Aqueduct, the Kern River and the Friant-Kern Canal, the location was ideally suited for groundwater banking. The Water Authority's assigned rights also included a total Program Delivery Capacity of 12,715 acre-feet per year and 10,865 acre-feet per year of Program Pumpback Capacity.

Due to continuing statewide dry conditions, in 2008, the Water Authority purchased approximately 23,077 acre-feet of water from Butte Water District and Sutter Extension Water District (transfer water). Also in 2008, an agreement was executed between Metropolitan and the Water Authority allowing Metropolitan to take ownership of the Water Authority's Transfer Water at Banks Pumping Plant and Metropolitan would pay all costs to convey the Transfer Water to its service area for sale to its member agencies. In exchange, Metropolitan would assign to the Water Authority an amount of water stored in Metropolitan's existing Semitropic account equal to the Transfer Water, less a 10 percent one-time loss. In December 2008, 17,908 acre-feet was delivered into Metropolitan's service area. The Department of Water Resources confirmed the delivered amount, and Metropolitan assigned the like amount of water (less a 10 percent evaporative and aquifer loss) to the Water Authority's Semitropic Water Bank program. As a result, 16,117 acre-feet of water was stored and qualified as reimbursement for initial fill from the state funds

provided under SB 1765. The 16,117 acre-feet of water continues to be stored in the Water Authority's 70,000 acre-feet out-of-region banking program.

Utilization of Carryover Storage Supplies

In accordance with the Water Authority's WSDRP, potential utilization of carryover storage supplies could occur in Stage 2, Supply Enhancement, or Stage 3, Mandatory Cutbacks. The amount of water taken from carryover storage reserves, to manage potential shortages, is influenced by a number of factors and should generally be handled on a case-by-case basis. Many of the factors influencing the storage take will vary depending upon conditions present. These factors include, but are not limited to:

- ☐ Current water demand trends;
- ☐ Core water supply availability from imported and local sources;
- ☐ Existing and projected hydrologic conditions;
- ☐ Storage supply available for withdrawal;
- ☐ Take capacity from the groundwater banking program; and
- ☐ Need to avoid depletion of storage reserves.



Supplies taken from carryover storage will be considered a Water Authority regional supply, to be combined with Water Authority's core supplies and any potential dry-year transfers.

For planning purposes in the 2010 Plan, general guidelines are established that approximately one third of the carryover supplies available in storage will be utilized in one year. Utilizing only a portion of available storage supplies avoids depletion of storage reserves, thereby making water available for potential ongoing or future shortages. It should be emphasized that the carryover storage takes shown in the dry water year assessments contained in **Section 9.3** are used for planning purposes only and should not dictate future carryover storage takes. The Water Authority's 2012 Master Plan Update will contain a more detailed evaluation of carryover storage program supply utilization. The supplies taken from carryover storage will be considered a Water Authority regional supply to be combined with Water Authority's core supplies and any potential dry-year transfers.

Another factor that will be considered when utilizing carryover supplies is the March 2010 Water Authority Board approval of a revised SAWR program. Customers in the SAWR class of service are exempt from paying the Water Authority's storage charge and in turn receive no water from the Carryover Storage Program during Stage 2 or 3 of the WSDRP. Water Authority staff will work with the agricultural member agencies on developing proposed procedures for administering this program prior to completion of the San Vicente Dam raise.

11.2.3.2 Water Authority's Dry-Year Transfer Program

To ensure adequate water supplies resulting from continuing drought conditions (2007 – 2011) and regulatory constraints, and as part of the Water Authority's WSDRP, staff developed a plan to secure one-time water transfer

agreements, which could lay the foundation for long-term agreements as authorized by the Board on September 27, 2007. Although transfers of water supplies through the Delta may be subject to curtailments during certain periods due to operations of the pumps in the SWP system, staff pursued opportunities as a supply option in the event that Colorado River surplus was suspended or dry-year conditions continue. The supply could also hedge against shortfalls resulting from a reduced State Water Project allocation.

In 2009, the Water Authority acquired 20,000 acre-feet of water under a one-year transfer agreement with Placer County Water Agency in Northern California to lessen the impact of water supply reductions on the San Diego region. The transfer eased the region's transition from voluntary conservation to mandatory water use restrictions by keeping regional water savings target for the year at a manageable level. In 2010, the Water Authority actively sought water transfer options, however, due to the changed conditions of the Water Authority's water demands, which had significantly dropped since Metropolitan enacted Level 2 of its Water Supply Allocation Plan in July 2009, the expense necessary to obtain the necessary approvals and agreements and the comparatively higher cost of the supplies, the board approved not exercising its call rights to the 2010 dry-year transfer with the South Feather Water and Power Agency. The board also decided to end its pilot program efforts between San Juan Water District, Santa Clara Valley Water District, and the Water Authority for Calendar Year 2010 and continue it over to 2011.

Considerations that shaped negotiations between the Water Authority and the potential partners included:

- ☐ **Source Location:** To mitigate the delivery risks through the Delta, staff pursued transfers as a part of DWR's Dry Year Program, which had a wheeling priority in the Delta. In addition, staff investigated temporary storage agreements with DWR and the USBR in Lake Oroville or Lake Shasta to store the conserved water for when releases would be permitted.
- ☐ **Federal and State Agency Approvals:** Potential programs may have required environmental compliance and approval from overseeing agencies, such as the USBR and DWR.
- ☐ **Price:** The cost for water purchase, transportation, conveyance losses, and environmental/administrative fees should be comparable to the costs of other supply alternatives such as Metropolitan's Tier 2 purchases and IID transfers. In addition, staff made efforts to not drive the costs up of potential proposals by Metropolitan with the Northern California water districts.
- ☐ **Call Period:** Potential partners were seeking earlier call dates to ensure time to conserve the call amount. The Water Authority sought a balance that would provide a later call date opportunity due to changing weather conditions or water opportunities.
- ☐ **Available Capacity in the SWP system:** Consideration was made due to the uncertainty of the SWP pump operations and available capacity in the SWP system.

11.2.4 Model Drought Response Conservation Ordinance

In March 2008, the Water Authority's Board of Directors approved for release a Model Drought Response Conservation Program Ordinance (Model Drought Ordinance) for use by member agencies in updating their existing ordinances. The Model Drought Ordinance was developed with input from the member agencies to provide regional consistency during periods of shortages. The Department of Water Resource's 2008 Updated Urban Drought Guidebook was also utilized as a reference document for preparation of the Model Drought Ordinance. It identifies four drought response levels that contain water-use restrictions to help achieve demand reduction during temporary shortages. The restrictions become more stringent at each successive level to obtain necessary savings and delay economic impact until higher levels. The Model Drought Ordinance is included in **Appendix H**. Table 11.3 shows the correlation between the WSDRP stages and the Model Drought Ordinance.

**TABLE 11-3. CORRELATION BETWEEN WSDRP STAGES
AND MODEL ORDINANCE LEVELS**

WSDRP Stage	Drought Response Level	Use Restrictions	Conservation Target
1	1 – Drought Watch	Voluntary	Up to 10%
2	1 – Drought Watch	Voluntary	Up to 10%
	2 – Drought Alert	Mandatory	Up to 20%
3	2 - Drought Alert	Mandatory	Up to 20%
	3 - Drought Critical	Mandatory	Up to 40%
	4 - Drought Emergency	Mandatory	Above 40%+

The Water Authority's member agencies, not the Water Authority, have the direct customer service relationship with water users, and responsibility to address mandatory use prohibitions or restrictions during water shortages. The Model Drought Ordinance served as a model to the member agencies in updating their individual ordinances to help promote regional consistency. Member agencies independently adopt retail-level actions to manage potential shortages. Since its approval, all of the member agencies have updated their existing ordinances, based on the Model Drought Ordinance, but also tailoring their individual ordinances to their unique service area and characteristics. Similar to the Water Authority's Model Drought Ordinance, the member agencies' ordinances provide specific mandatory restrictions on water use during a water shortage or drought event depending on its severity.

The Water Authority is working with its member agencies to update the Water Authority's Model Drought Ordinance, based on lessons learned during the 2007-2011 shortage period. This will include updating the language to comply with the specific requirements of the Act regarding consumption reduction methods to address "up to a 50 percent reduction in water supply" (Water Code Section 10632 (a)).

11.2.5 Penalties for Excessive Water Use

Penalty rates may be used by the Water Authority to encourage conservation and reduce demand during a drought or other water supply shortage. If Metropolitan allocates imported water supplies to the Water Authority, Metropolitan can impose surcharges (penalty pricing) on water consumption in excess of the Water Authority's allocation. The Water Authority's Implementing Resolution, provides for a pass through to the Water Authority's member agencies of any penalties levied by Metropolitan on the Water Authority for exceeding its annual allocation. Penalties are assessed at the end of the fiscal or calendar year, depending on the class of service. Penalties will be assessed on a pro rata basis to the member agencies that exceed their allocations, and only if the Water Authority exceeds its allocation from Metropolitan. The Water Authority is subject to significant financial penalties if it exceeds its Metropolitan allocation.

Rates may also be adjusted based on any other allocation program implemented by the Water Authority as determined necessary by the Board of Directors. The Water Authority may also reduce the amount of water it allocates to a member agency if the member agency fails to adopt or implement water use restrictions.

11.2.6 Revenue Impacts

The Water Authority has taken significant steps to reduce potential revenue impacts resulting from fluctuating water sales. In fiscal year 1990, the Water Authority created a Rate Stabilization Fund (RSF) to provide funds that would mitigate the need for rate increases in the event of an unexpected decline in water sales. In 2006, the Board adopted new policies governing the RSF. Under the newly adopted policy, the RSF has a "target" balance that is the equivalent of the estimated financial impact 2.5 years of wet weather (reduced sales). The new policy also established a maximum RSF balance that is equal to the financial impact of 3.5 years of wet weather. The new policy matches the level of RSF funding with the risk (water sales volatility) that the fund is designed to mitigate. The RSF provides an important tool to mitigate water sales volatility and the impact that has on water rates.

Additionally, on January 1, 2003, the Water Authority implemented a new rate structure that substantially increased the percentage of water revenues generated from fixed charges. This increase replaced the previous variable "postage stamp" rate, which historically generated as much as 80 percent or more of total annual revenues, with two fixed charges, and one variable rate. These new fixed charges – Customer Service, Infrastructure Access Charge, and Storage – are key components to the Water Authority's future revenue stability.

Although the Water Authority maintains financial reserves, it is possible that additional costs associated with demand reduction and supply enhancement could negatively affect the Water Authority's short-term financial situation. The Water Authority may compensate for increased costs or reduced water sales by adjusting water rates in succeeding years.

11.2.7 Minimum Water Supply Available Over Next Three Years

In accordance with the Act, agencies are required to estimate the minimum water supply available during each of the next three years, based on the driest three-year historic sequence, compared with a normal water year. To determine the minimum supplies potentially available to the region, the same assumptions contained in the multi dry-year analysis in **Section 9.3** were used. Table 11.4 contains the minimum estimated supplies. The minimum supplies are included in accordance with the Act. It should be noted that based on current supply and storage conditions statewide, the Water Authority is not currently forecasting this supply scenario.

TABLE 11-4. ESTIMATED MINIMUM SUPPLIES WITHOUT UTILIZATION OF CARRYOVER STORAGE

Supplies	Average Water Year 2013	Single Dry Year 2013	MULTIPLE DRY-YEAR WATER SUPPLY		
			2012	2013	2014
Member Agency Local Supplies	95,805	72,028	69,597	84,440	103,907
Water Authority QSA	180,200	180,200	170,200	180,200	180,200
Metropolitan Supplies (Allocation at Preferential Rights)	319,177	319,177	317,760	319,177	320,456
Total	595,183	571,405	557,557	583,817	604,563

11.3 SUMMARY

The shortage contingency analysis included in this section demonstrates that the Water Authority and its member agencies, through the ICP and ESP, are taking actions to prepare for and appropriately handle a catastrophic interruption of water supplies. The analysis also describes the Water Authority's plans, procedures, and WSDRP for the San Diego region, and coordinated development of the Drought Model Ordinance. The WSDRP identifies the actions to be taken by the Water Authority to minimize the impacts of a supply shortage due to a drought or other water supply shortage, including a methodology for allocating M&I supplies to the member agencies during a water shortage. These components address the requirements of the Act that are applicable to the Water Authority.



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Appendix A:
California Urban Water Management Planning Act and
Senate Bill 7 (SBX7-7)

CALIFORNIA WATER CODE DIVISION 6

PART 2.6. URBAN WATER MANAGEMENT PLANNING

All California Codes have been updated to include the 2010 Statutes.

CHAPTER 1.	GENERAL DECLARATION AND POLICY	10610-10610.4
CHAPTER 2.	DEFINITIONS	10611-10617
CHAPTER 3.	URBAN WATER MANAGEMENT PLANS	
Article 1.	General Provisions	10620-10621
Article 2.	Contents of Plans	10630-10634
Article 2.5.	Water Service Reliability	10635
Article 3.	Adoption and Implementation of Plans	10640-10645
CHAPTER 4.	MISCELLANEOUS PROVISIONS	10650-10656

WATER CODE

SECTION 10610-10610.4

10610. This part shall be known and may be cited as the "Urban Water Management Planning Act."

10610.2. (a) The Legislature finds and declares all of the following:

- (1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.
- (2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.
- (3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.
- (4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.
- (5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.
- (6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.
- (7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.
- (8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.
- (9) The quality of source supplies can have a significant impact

on water management strategies and supply reliability.

(b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.

10610.4. The Legislature finds and declares that it is the policy of the state as follows:

(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.

(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.

(c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

WATER CODE

SECTION 10611-10617

10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

10611.5. "Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

10616. "Public agency" means any board, commission, county, city

and county, city, regional agency, district, or other public entity.

10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.

10617. "Urban water supplier" means a supplier, either publicly or privately owned, 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. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

WATER CODE

SECTION 10620-10621

10620. (a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d) (1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

(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.

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

(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.

(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, 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. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

WATER CODE

SECTION 10630-10634

10630. It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

10631. A plan shall be adopted in accordance with this chapter that shall do all of the following:

(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.

(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 described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(c) (1) 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:

- (A) An average water year.
- (B) A single dry water year.
- (C) Multiple dry water years.

(2) 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 supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

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

(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.
- (I) Agricultural.

(2) The water use projections shall be in the same five-year increments described in subdivision (a).

(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:

- (A) Water survey programs for single-family residential and multifamily residential customers.
- (B) Residential plumbing retrofit.
- (C) System water audits, leak detection, and repair.
- (D) Metering with commodity rates for all new connections and retrofit of existing connections.
- (E) Large landscape conservation programs and incentives.
- (F) High-efficiency washing machine rebate programs.
- (G) Public information programs.
- (H) School education programs.
- (I) Conservation programs for commercial, industrial, and institutional accounts.

- (J) Wholesale agency programs.
- (K) Conservation pricing.
- (L) Water conservation coordinator.
- (M) Water waste prohibition.
- (N) Residential ultra-low-flush toilet replacement programs.
- (2) A schedule of implementation for all water demand management measures proposed or described in the plan.
- (3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.
- (4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.
- (g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:
 - (1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.
 - (2) Include a cost-benefit analysis, identifying total benefits and total costs.
 - (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.
 - (4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.
- (h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.
- (i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.
- (j) For purposes of this part, urban water suppliers that are members of the California Urban Water Conservation Council shall be deemed in compliance with the requirements of subdivisions (f) and (g) by complying with all the provisions of the "Memorandum of Understanding Regarding Urban Water Conservation in California,"

dated December 10, 2008, as it may be amended, and by submitting the annual reports required by Section 6.2 of that memorandum.

(k) Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

10631.1. (a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

(b) It is the intent of the Legislature that the identification of projected water use for single-family and multifamily residential housing for lower income households will assist a supplier in complying with the requirement under Section 65589.7 of the Government Code to grant a priority for the provision of service to housing units affordable to lower income households.

10631.5. (a) (1) Beginning January 1, 2009, the terms of, and eligibility for, a water management grant or loan made to an urban water supplier and awarded or administered by the department, state board, or California Bay-Delta Authority or its successor agency shall be conditioned on the implementation of the water demand management measures described in Section 10631, as determined by the department pursuant to subdivision (b).

(2) For the purposes of this section, water management grants and loans include funding for programs and projects for surface water or groundwater storage, recycling, desalination, water conservation, water supply reliability, and water supply augmentation. This section does not apply to water management projects funded by the federal American Recovery and Reinvestment Act of 2009 (Public Law 111-5).

(3) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if the urban water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the water demand management measures. The supplier may request grant or loan funds to implement the water demand management measures to the extent the request is consistent with the eligibility requirements applicable to the water management funds.

(4) (A) Notwithstanding paragraph (1), the department shall

determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if an urban water supplier submits to the department for approval documentation demonstrating that a water demand management measure is not locally cost effective. If the department determines that the documentation submitted by the urban water supplier fails to demonstrate that a water demand management measure is not locally cost effective, the department shall notify the urban water supplier and the agency administering the grant or loan program within 120 days that the documentation does not satisfy the requirements for an exemption, and include in that notification a detailed statement to support the determination.

(B) For purposes of this paragraph, "not locally cost effective" means that the present value of the local benefits of implementing a water demand management measure is less than the present value of the local costs of implementing that measure.

(b) (1) The department, in consultation with the state board and the California Bay-Delta Authority or its successor agency, and after soliciting public comment regarding eligibility requirements, shall develop eligibility requirements to implement the requirement of paragraph (1) of subdivision (a). In establishing these eligibility requirements, the department shall do both of the following:

(A) Consider the conservation measures described in the Memorandum of Understanding Regarding Urban Water Conservation in California, and alternative conservation approaches that provide equal or greater water savings.

(B) Recognize the different legal, technical, fiscal, and practical roles and responsibilities of wholesale water suppliers and retail water suppliers.

(2) (A) For the purposes of this section, the department shall determine whether an urban water supplier is implementing all of the water demand management measures described in Section 10631 based on either, or a combination, of the following:

(i) Compliance on an individual basis.

(ii) Compliance on a regional basis. Regional compliance shall require participation in a regional conservation program consisting of two or more urban water suppliers that achieves the level of conservation or water efficiency savings equivalent to the amount of conservation or savings achieved if each of the participating urban water suppliers implemented the water demand management measures. The urban water supplier administering the regional program shall provide participating urban water suppliers and the department with data to demonstrate that the regional program is consistent with this clause. The department shall review the data to determine whether the urban water suppliers in the regional program are meeting the eligibility requirements.

(B) The department may require additional information for any determination pursuant to this section.

(3) The department shall not deny eligibility to an urban water supplier in compliance with the requirements of this section that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of

the agencies participating in the project or plan is not implementing all of the water demand management measures described in Section 10631.

(c) In establishing guidelines pursuant to the specific funding authorization for any water management grant or loan program subject to this section, the agency administering the grant or loan program shall include in the guidelines the eligibility requirements developed by the department pursuant to subdivision (b).

(d) Upon receipt of a water management grant or loan application by an agency administering a grant and loan program subject to this section, the agency shall request an eligibility determination from the department with respect to the requirements of this section. The department shall respond to the request within 60 days of the request.

(e) The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities. In addition, for urban water suppliers that are signatories to the Memorandum of Understanding Regarding Urban Water Conservation in California and submit biennial reports to the California Urban Water Conservation Council in accordance with the memorandum, the department may use these reports to assist in tracking the implementation of water demand management measures.

(f) This section shall remain in effect only until July 1, 2016, and as of that date is repealed, unless a later enacted statute, that is enacted before July 1, 2016, deletes or extends that date.

10631.7. The department, in consultation with the California Urban Water Conservation Council, shall convene an independent technical panel to provide information and recommendations to the department and the Legislature on new demand management measures, technologies, and approaches. The panel shall consist of no more than seven members, who shall be selected by the department to reflect a balanced representation of experts. The panel shall have at least one, but no more than two, representatives from each of the following: retail water suppliers, environmental organizations, the business community, wholesale water suppliers, and academia. The panel shall be convened by January 1, 2009, and shall report to the Legislature no later than January 1, 2010, and every five years thereafter. The department shall review the panel report and include in the final report to the Legislature the department's recommendations and comments regarding the panel process and the panel's recommendations.

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

(1) 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 that are applicable to each stage.

(2) 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.

(3) 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.

(4) 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.

(5) 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.

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

(7) An analysis of the impacts of each of the actions and conditions described in paragraphs (1) to (6), 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.

(8) A draft water shortage contingency resolution or ordinance.

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

(b) Commencing with the urban water management plan update due December 31, 2015, for purposes of developing the water shortage contingency analysis pursuant to subdivision (a), the urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

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. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:

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

(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

(c) 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.

(d) 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, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

(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.

(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.

(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 obstacles to achieving that increased use.

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.

WATER CODE

SECTION 10635

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 state, regional, or local agency population projections within the service area of the urban water supplier.

(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

(c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

(d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

WATER CODE

SECTION 10640-10645

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630).

The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

10641. An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.

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 within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

10643. An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

10644. (a) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

(b) The department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part. The report prepared by the department shall identify the exemplary elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has submitted its plan to the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

(c) (1) For the purpose of identifying the exemplary elements of the individual plans, the department shall identify in the report those water demand management measures adopted and implemented by specific urban water suppliers, and identified pursuant to Section

10631, that achieve water savings significantly above the levels established by the department to meet the requirements of Section 10631.5.

(2) The department shall distribute to the panel convened pursuant to Section 10631.7 the results achieved by the implementation of those water demand management measures described in paragraph (1).

(3) The department shall make available to the public the standard the department will use to identify exemplary water demand management measures.

10645. Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

WATER CODE

SECTION 10650-10656

10650. Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

(b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.

10651. In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

10652. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

10653. The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board and the Public Utilities Commission, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board or the Public Utilities Commission requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.

10654. An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the

"Memorandum of Understanding Regarding Urban Water Conservation in California" is deemed to be reasonable for the purposes of this section.

10655. If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

10656. An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26 (commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

Senate Bill No. 7

CHAPTER 4

An act to amend and repeal Section 10631.5 of, to add Part 2.55 (commencing with Section 10608) to Division 6 of, and to repeal and add Part 2.8 (commencing with Section 10800) of Division 6 of, the Water Code, relating to water.

[Approved by Governor November 10, 2009. Filed with
Secretary of State November 10, 2009.]

LEGISLATIVE COUNSEL'S DIGEST

SB 7, Steinberg. Water conservation.

(1) Existing law requires the Department of Water Resources to convene an independent technical panel to provide information to the department and the Legislature on new demand management measures, technologies, and approaches. "Demand management measures" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

This bill would require the state to achieve a 20% reduction in urban per capita water use in California by December 31, 2020. The state would be required to make incremental progress towards this goal by reducing per capita water use by at least 10% on or before December 31, 2015. The bill would require each urban retail water supplier to develop urban water use targets and an interim urban water use target, in accordance with specified requirements. The bill would require agricultural water suppliers to implement efficient water management practices. The bill would require the department, in consultation with other state agencies, to develop a single standardized water use reporting form. The bill, with certain exceptions, would provide that urban retail water suppliers, on and after July 1, 2016, and agricultural water suppliers, on and after July 1, 2013, are not eligible for state water grants or loans unless they comply with the water conservation requirements established by the bill. The bill would repeal, on July 1, 2016, an existing requirement that conditions eligibility for certain water management grants or loans to an urban water supplier on the implementation of certain water demand management measures.

(2) Existing law, until January 1, 1993, and thereafter only as specified, requires certain agricultural water suppliers to prepare and adopt water management plans.

This bill would revise existing law relating to agricultural water management planning to require agricultural water suppliers to prepare and adopt agricultural water management plans with specified components on or before December 31, 2012, and update those plans on or before December

31, 2015, and on or before December 31 every 5 years thereafter. An agricultural water supplier that becomes an agricultural water supplier after December 31, 2012, would be required to prepare and adopt an agricultural water management plan within one year after becoming an agricultural water supplier. The agricultural water supplier would be required to notify each city or county within which the supplier provides water supplies with regard to the preparation or review of the plan. The bill would require the agricultural water supplier to submit copies of the plan to the department and other specified entities. The bill would provide that an agricultural water supplier is not eligible for state water grants or loans unless the supplier complies with the water management planning requirements established by the bill.

(3) The bill would take effect only if SB 1 and SB 6 of the 2009–10 7th Extraordinary Session of the Legislature are enacted and become effective.

The people of the State of California do enact as follows:

SECTION 1. Part 2.55 (commencing with Section 10608) is added to Division 6 of the Water Code, to read:

PART 2.55. SUSTAINABLE WATER USE AND DEMAND REDUCTION

CHAPTER 1. GENERAL DECLARATIONS AND POLICY

10608. The Legislature finds and declares all of the following:

(a) Water is a public resource that the California Constitution protects against waste and unreasonable use.

(b) Growing population, climate change, and the need to protect and grow California's economy while protecting and restoring our fish and wildlife habitats make it essential that the state manage its water resources as efficiently as possible.

(c) Diverse regional water supply portfolios will increase water supply reliability and reduce dependence on the Delta.

(d) Reduced water use through conservation provides significant energy and environmental benefits, and can help protect water quality, improve streamflows, and reduce greenhouse gas emissions.

(e) The success of state and local water conservation programs to increase efficiency of water use is best determined on the basis of measurable outcomes related to water use or efficiency.

(f) Improvements in technology and management practices offer the potential for increasing water efficiency in California over time, providing an essential water management tool to meet the need for water for urban, agricultural, and environmental uses.

(g) The Governor has called for a 20 percent per capita reduction in urban water use statewide by 2020.

(h) The factors used to formulate water use efficiency targets can vary significantly from location to location based on factors including weather, patterns of urban and suburban development, and past efforts to enhance water use efficiency.

(i) Per capita water use is a valid measure of a water provider's efforts to reduce urban water use within its service area. However, per capita water use is less useful for measuring relative water use efficiency between different water providers. Differences in weather, historical patterns of urban and suburban development, and density of housing in a particular location need to be considered when assessing per capita water use as a measure of efficiency.

10608.4. It is the intent of the Legislature, by the enactment of this part, to do all of the following:

(a) Require all water suppliers to increase the efficiency of use of this essential resource.

(b) Establish a framework to meet the state targets for urban water conservation identified in this part and called for by the Governor.

(c) Measure increased efficiency of urban water use on a per capita basis.

(d) Establish a method or methods for urban retail water suppliers to determine targets for achieving increased water use efficiency by the year 2020, in accordance with the Governor's goal of a 20-percent reduction.

(e) Establish consistent water use efficiency planning and implementation standards for urban water suppliers and agricultural water suppliers.

(f) Promote urban water conservation standards that are consistent with the California Urban Water Conservation Council's adopted best management practices and the requirements for demand management in Section 10631.

(g) Establish standards that recognize and provide credit to water suppliers that made substantial capital investments in urban water conservation since the drought of the early 1990s.

(h) Recognize and account for the investment of urban retail water suppliers in providing recycled water for beneficial uses.

(i) Require implementation of specified efficient water management practices for agricultural water suppliers.

(j) Support the economic productivity of California's agricultural, commercial, and industrial sectors.

(k) Advance regional water resources management.

10608.8. (a) (1) Water use efficiency measures adopted and implemented pursuant to this part or Part 2.8 (commencing with Section 10800) are water conservation measures subject to the protections provided under Section 1011.

(2) Because an urban agency is not required to meet its urban water use target until 2020 pursuant to subdivision (b) of Section 10608.24, an urban retail water supplier's failure to meet those targets shall not establish a violation of law for purposes of any state administrative or judicial proceeding prior to January 1, 2021. Nothing in this paragraph limits the use of data reported to the department or the board in litigation or an

administrative proceeding. This paragraph shall become inoperative on January 1, 2021.

(3) To the extent feasible, the department and the board shall provide for the use of water conservation reports required under this part to meet the requirements of Section 1011 for water conservation reporting.

(b) This part does not limit or otherwise affect the application of Chapter 3.5 (commencing with Section 11340), Chapter 4 (commencing with Section 11370), Chapter 4.5 (commencing with Section 11400), and Chapter 5 (commencing with Section 11500) of Part 1 of Division 3 of Title 2 of the Government Code.

(c) This part does not require a reduction in the total water used in the agricultural or urban sectors, because other factors, including, but not limited to, changes in agricultural economics or population growth may have greater effects on water use. This part does not limit the economic productivity of California's agricultural, commercial, or industrial sectors.

(d) The requirements of this part do not apply to an agricultural water supplier that is a party to the Quantification Settlement Agreement, as defined in subdivision (a) of Section 1 of Chapter 617 of the Statutes of 2002, during the period within which the Quantification Settlement Agreement remains in effect. After the expiration of the Quantification Settlement Agreement, to the extent conservation water projects implemented as part of the Quantification Settlement Agreement remain in effect, the conserved water created as part of those projects shall be credited against the obligations of the agricultural water supplier pursuant to this part.

CHAPTER 2. DEFINITIONS

10608.12. Unless the context otherwise requires, the following definitions govern the construction of this part:

(a) "Agricultural water supplier" means a water supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding recycled water. "Agricultural water supplier" includes a supplier or contractor for water, regardless of the basis of right, that distributes or sells water for ultimate resale to customers. "Agricultural water supplier" does not include the department.

(b) "Base daily per capita water use" means any of the following:

(1) The urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the urban retail water supplier may extend the calculation described in paragraph (1) up to an additional five years to a maximum of

a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(3) For the purposes of Section 10608.22, the urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.

(c) "Baseline commercial, industrial, and institutional water use" means an urban retail water supplier's base daily per capita water use for commercial, industrial, and institutional users.

(d) "Commercial water user" means a water user that provides or distributes a product or service.

(e) "Compliance daily per capita water use" means the gross water use during the final year of the reporting period, reported in gallons per capita per day.

(f) "Disadvantaged community" means a community with an annual median household income that is less than 80 percent of the statewide annual median household income.

(g) "Gross water use" means the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of the following:

(1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier.

(2) The net volume of water that the urban retail water supplier places into long-term storage.

(3) The volume of water the urban retail water supplier conveys for use by another urban water supplier.

(4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24.

(h) "Industrial water user" means a water user that is primarily a manufacturer or processor of materials as defined by the North American Industry Classification System code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development.

(i) "Institutional water user" means a water user dedicated to public service. This type of user includes, among other users, higher education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions.

(j) "Interim urban water use target" means the midpoint between the urban retail water supplier's base daily per capita water use and the urban retail water supplier's urban water use target for 2020.

(k) "Locally cost effective" means that the present value of the local benefits of implementing an agricultural efficiency water management practice is greater than or equal to the present value of the local cost of implementing that measure.

(l) "Process water" means water used for producing a product or product content or water used for research and development, including, but not limited to, continuous manufacturing processes, water used for testing and maintaining equipment used in producing a product or product content, and

water used in combined heat and power facilities used in producing a product or product content. Process water does not mean incidental water uses not related to the production of a product or product content, including, but not limited to, water used for restrooms, landscaping, air conditioning, heating, kitchens, and laundry.

(m) “Recycled water” means recycled water, as defined in subdivision (n) of Section 13050, that is used to offset potable demand, including recycled water supplied for direct use and indirect potable reuse, that meets the following requirements, where applicable:

(1) For groundwater recharge, including recharge through spreading basins, water supplies that are all of the following:

(A) Metered.

(B) Developed through planned investment by the urban water supplier or a wastewater treatment agency.

(C) Treated to a minimum tertiary level.

(D) Delivered within the service area of an urban retail water supplier or its urban wholesale water supplier that helps an urban retail water supplier meet its urban water use target.

(2) For reservoir augmentation, water supplies that meet the criteria of paragraph (1) and are conveyed through a distribution system constructed specifically for recycled water.

(n) “Regional water resources management” means sources of supply resulting from watershed-based planning for sustainable local water reliability or any of the following alternative sources of water:

(1) The capture and reuse of stormwater or rainwater.

(2) The use of recycled water.

(3) The desalination of brackish groundwater.

(4) The conjunctive use of surface water and groundwater in a manner that is consistent with the safe yield of the groundwater basin.

(o) “Reporting period” means the years for which an urban retail water supplier reports compliance with the urban water use targets.

(p) “Urban retail water supplier” means a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes.

(q) “Urban water use target” means the urban retail water supplier’s targeted future daily per capita water use.

(r) “Urban wholesale water supplier,” means a water supplier, either publicly or privately owned, that provides more than 3,000 acre-feet of water annually at wholesale for potable municipal purposes.

CHAPTER 3. URBAN RETAIL WATER SUPPLIERS

10608.16. (a) The state shall achieve a 20-percent reduction in urban per capita water use in California on or before December 31, 2020.

(b) The state shall make incremental progress towards the state target specified in subdivision (a) by reducing urban per capita water use by at least 10 percent on or before December 31, 2015.

10608.20. (a) (1) Each urban retail water supplier shall develop urban water use targets and an interim urban water use target by July 1, 2011. Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis, as provided in subdivision (a) of Section 10608.28, and may determine the targets on a fiscal year or calendar year basis.

(2) It is the intent of the Legislature that the urban water use targets described in subdivision (a) cumulatively result in a 20-percent reduction from the baseline daily per capita water use by December 31, 2020.

(b) An urban retail water supplier shall adopt one of the following methods for determining its urban water use target pursuant to subdivision (a):

(1) Eighty percent of the urban retail water supplier's baseline per capita daily water use.

(2) The per capita daily water use that is estimated using the sum of the following performance standards:

(A) For indoor residential water use, 55 gallons per capita daily water use as a provisional standard. Upon completion of the department's 2016 report to the Legislature pursuant to Section 10608.42, this standard may be adjusted by the Legislature by statute.

(B) For landscape irrigated through dedicated or residential meters or connections, water efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in Chapter 2.7 (commencing with Section 490) of Division 2 of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992. An urban retail water supplier using the approach specified in this subparagraph shall use satellite imagery, site visits, or other best available technology to develop an accurate estimate of landscaped areas.

(C) For commercial, industrial, and institutional uses, a 10-percent reduction in water use from the baseline commercial, industrial, and institutional water use by 2020.

(3) Ninety-five percent of the applicable state hydrologic region target, as set forth in the state's draft 20x2020 Water Conservation Plan (dated April 30, 2009). If the service area of an urban water supplier includes more than one hydrologic region, the supplier shall apportion its service area to each region based on population or area.

(4) A method that shall be identified and developed by the department, through a public process, and reported to the Legislature no later than December 31, 2010. The method developed by the department shall identify per capita targets that cumulatively result in a statewide 20-percent reduction in urban daily per capita water use by December 31, 2020. In developing urban daily per capita water use targets, the department shall do all of the following:

(A) Consider climatic differences within the state.

- (B) Consider population density differences within the state.
 - (C) Provide flexibility to communities and regions in meeting the targets.
 - (D) Consider different levels of per capita water use according to plant water needs in different regions.
 - (E) Consider different levels of commercial, industrial, and institutional water use in different regions of the state.
 - (F) Avoid placing an undue hardship on communities that have implemented conservation measures or taken actions to keep per capita water use low.
- (c) If the department adopts a regulation pursuant to paragraph (4) of subdivision (b) that results in a requirement that an urban retail water supplier achieve a reduction in daily per capita water use that is greater than 20 percent by December 31, 2020, an urban retail water supplier that adopted the method described in paragraph (4) of subdivision (b) may limit its urban water use target to a reduction of not more than 20 percent by December 31, 2020, by adopting the method described in paragraph (1) of subdivision (b).
- (d) The department shall update the method described in paragraph (4) of subdivision (b) and report to the Legislature by December 31, 2014. An urban retail water supplier that adopted the method described in paragraph (4) of subdivision (b) may adopt a new urban daily per capita water use target pursuant to this updated method.
- (e) An urban retail water supplier shall include in its urban water management plan required pursuant to Part 2.6 (commencing with Section 10610) due in 2010 the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.
- (f) When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections.
- (g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).
- (h) (1) The department, through a public process and in consultation with the California Urban Water Conservation Council, shall develop technical methodologies and criteria for the consistent implementation of this part, including, but not limited to, both of the following:
- (A) Methodologies for calculating base daily per capita water use, baseline commercial, industrial, and institutional water use, compliance daily per capita water use, gross water use, service area population, indoor residential water use, and landscaped area water use.
 - (B) Criteria for adjustments pursuant to subdivisions (d) and (e) of Section 10608.24.
- (2) The department shall post the methodologies and criteria developed pursuant to this subdivision on its Internet Web site, and make written copies

available, by October 1, 2010. An urban retail water supplier shall use the methods developed by the department in compliance with this part.

(i) (1) The department shall adopt regulations for implementation of the provisions relating to process water in accordance with subdivision (l) of Section 10608.12, subdivision (e) of Section 10608.24, and subdivision (d) of Section 10608.26.

(2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

(j) An urban retail water supplier shall be granted an extension to July 1, 2011, for adoption of an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) due in 2010 to allow use of technical methodologies developed by the department pursuant to paragraph (4) of subdivision (b) and subdivision (h). An urban retail water supplier that adopts an urban water management plan due in 2010 that does not use the methodologies developed by the department pursuant to subdivision (h) shall amend the plan by July 1, 2011, to comply with this part.

10608.22. Notwithstanding the method adopted by an urban retail water supplier pursuant to Section 10608.20, an urban retail water supplier's per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use as defined in paragraph (3) of subdivision (b) of Section 10608.12. This section does not apply to an urban retail water supplier with a base daily per capita water use at or below 100 gallons per capita per day.

10608.24. (a) Each urban retail water supplier shall meet its interim urban water use target by December 31, 2015.

(b) Each urban retail water supplier shall meet its urban water use target by December 31, 2020.

(c) An urban retail water supplier's compliance daily per capita water use shall be the measure of progress toward achievement of its urban water use target.

(d) (1) When determining compliance daily per capita water use, an urban retail water supplier may consider the following factors:

(A) Differences in evapotranspiration and rainfall in the baseline period compared to the compliance reporting period.

(B) Substantial changes to commercial or industrial water use resulting from increased business output and economic development that have occurred during the reporting period.

(C) Substantial changes to institutional water use resulting from fire suppression services or other extraordinary events, or from new or expanded operations, that have occurred during the reporting period.

(2) If the urban retail water supplier elects to adjust its estimate of compliance daily per capita water use due to one or more of the factors described in paragraph (1), it shall provide the basis for, and data supporting, the adjustment in the report required by Section 10608.40.

(e) When developing the urban water use target pursuant to Section 10608.20, an urban retail water supplier that has a substantial percentage of industrial water use in its service area, may exclude process water from the calculation of gross water use to avoid a disproportionate burden on another customer sector.

(f) (1) An urban retail water supplier that includes agricultural water use in an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) may include the agricultural water use in determining gross water use. An urban retail water supplier that includes agricultural water use in determining gross water use and develops its urban water use target pursuant to paragraph (2) of subdivision (b) of Section 10608.20 shall use a water efficient standard for agricultural irrigation of 100 percent of reference evapotranspiration multiplied by the crop coefficient for irrigated acres.

(2) An urban retail water supplier, that is also an agricultural water supplier, is not subject to the requirements of Chapter 4 (commencing with Section 10608.48), if the agricultural water use is incorporated into its urban water use target pursuant to paragraph (1).

10608.26. (a) In complying with this part, an urban retail water supplier shall conduct at least one public hearing to accomplish all of the following:

(1) Allow community input regarding the urban retail water supplier's implementation plan for complying with this part.

(2) Consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part.

(3) Adopt a method, pursuant to subdivision (b) of Section 10608.20, for determining its urban water use target.

(b) In complying with this part, an urban retail water supplier may meet its urban water use target through efficiency improvements in any combination among its customer sectors. An urban retail water supplier shall avoid placing a disproportionate burden on any customer sector.

(c) For an urban retail water supplier that supplies water to a United States Department of Defense military installation, the urban retail water supplier's implementation plan for complying with this part shall consider the United States Department of Defense military installation's requirements under federal Executive Order 13423.

(d) (1) Any ordinance or resolution adopted by an urban retail water supplier after the effective date of this section shall not require existing customers as of the effective date of this section, to undertake changes in product formulation, operations, or equipment that would reduce process water use, but may provide technical assistance and financial incentives to those customers to implement efficiency measures for process water. This section shall not limit an ordinance or resolution adopted pursuant to a declaration of drought emergency by an urban retail water supplier.

(2) This part shall not be construed or enforced so as to interfere with the requirements of Chapter 4 (commencing with Section 113980) to Chapter 13 (commencing with Section 114380), inclusive, of Part 7 of Division 104 of the Health and Safety Code, or any requirement or standard for the protection of public health, public safety, or worker safety established by federal, state, or local government or recommended by recognized standard setting organizations or trade associations.

10608.28. (a) An urban retail water supplier may meet its urban water use target within its retail service area, or through mutual agreement, by any of the following:

- (1) Through an urban wholesale water supplier.
- (2) Through a regional agency authorized to plan and implement water conservation, including, but not limited to, an agency established under the Bay Area Water Supply and Conservation Agency Act (Division 31 (commencing with Section 81300)).
- (3) Through a regional water management group as defined in Section 10537.
- (4) By an integrated regional water management funding area.
- (5) By hydrologic region.
- (6) Through other appropriate geographic scales for which computation methods have been developed by the department.

(b) A regional water management group, with the written consent of its member agencies, may undertake any or all planning, reporting, and implementation functions under this chapter for the member agencies that consent to those activities. Any data or reports shall provide information both for the regional water management group and separately for each consenting urban retail water supplier and urban wholesale water supplier.

10608.32. All costs incurred pursuant to this part by a water utility regulated by the Public Utilities Commission may be recoverable in rates subject to review and approval by the Public Utilities Commission, and may be recorded in a memorandum account and reviewed for reasonableness by the Public Utilities Commission.

10608.36. Urban wholesale water suppliers shall include in the urban water management plans required pursuant to Part 2.6 (commencing with Section 10610) an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part.

10608.40. Urban water retail suppliers shall report to the department on their progress in meeting their urban water use targets as part of their urban water management plans submitted pursuant to Section 10631. The data shall be reported using a standardized form developed pursuant to Section 10608.52.

10608.42. The department shall review the 2015 urban water management plans and report to the Legislature by December 31, 2016, on progress towards achieving a 20-percent reduction in urban water use by December 31, 2020. The report shall include recommendations on changes to water efficiency standards or urban water use targets in order to achieve

the 20-percent reduction and to reflect updated efficiency information and technology changes.

10608.43. The department, in conjunction with the California Urban Water Conservation Council, by April 1, 2010, shall convene a representative task force consisting of academic experts, urban retail water suppliers, environmental organizations, commercial water users, industrial water users, and institutional water users to develop alternative best management practices for commercial, industrial, and institutional users and an assessment of the potential statewide water use efficiency improvement in the commercial, industrial, and institutional sectors that would result from implementation of these best management practices. The taskforce, in conjunction with the department, shall submit a report to the Legislature by April 1, 2012, that shall include a review of multiple sectors within commercial, industrial, and institutional users and that shall recommend water use efficiency standards for commercial, industrial, and institutional users among various sectors of water use. The report shall include, but not be limited to, the following:

(a) Appropriate metrics for evaluating commercial, industrial, and institutional water use.

(b) Evaluation of water demands for manufacturing processes, goods, and cooling.

(c) Evaluation of public infrastructure necessary for delivery of recycled water to the commercial, industrial, and institutional sectors.

(d) Evaluation of institutional and economic barriers to increased recycled water use within the commercial, industrial, and institutional sectors.

(e) Identification of technical feasibility and cost of the best management practices to achieve more efficient water use statewide in the commercial, industrial, and institutional sectors that is consistent with the public interest and reflects past investments in water use efficiency.

10608.44. Each state agency shall reduce water use on facilities it operates to support urban retail water suppliers in meeting the target identified in Section 10608.16.

CHAPTER 4. AGRICULTURAL WATER SUPPLIERS

10608.48. (a) On or before July 31, 2012, an agricultural water supplier shall implement efficient water management practices pursuant to subdivisions (b) and (c).

(b) Agricultural water suppliers shall implement all of the following critical efficient management practices:

(1) Measure the volume of water delivered to customers with sufficient accuracy to comply with subdivision (a) of Section 531.10 and to implement paragraph (2).

(2) Adopt a pricing structure for water customers based at least in part on quantity delivered.

(c) Agricultural water suppliers shall implement additional efficient management practices, including, but not limited to, practices to accomplish all of the following, if the measures are locally cost effective and technically feasible:

(1) Facilitate alternative land use for lands with exceptionally high water duties or whose irrigation contributes to significant problems, including drainage.

(2) Facilitate use of available recycled water that otherwise would not be used beneficially, meets all health and safety criteria, and does not harm crops or soils.

(3) Facilitate the financing of capital improvements for on-farm irrigation systems.

(4) Implement an incentive pricing structure that promotes one or more of the following goals:

(A) More efficient water use at the farm level.

(B) Conjunctive use of groundwater.

(C) Appropriate increase of groundwater recharge.

(D) Reduction in problem drainage.

(E) Improved management of environmental resources.

(F) Effective management of all water sources throughout the year by adjusting seasonal pricing structures based on current conditions.

(5) Expand line or pipe distribution systems, and construct regulatory reservoirs to increase distribution system flexibility and capacity, decrease maintenance, and reduce seepage.

(6) Increase flexibility in water ordering by, and delivery to, water customers within operational limits.

(7) Construct and operate supplier spill and tailwater recovery systems.

(8) Increase planned conjunctive use of surface water and groundwater within the supplier service area.

(9) Automate canal control structures.

(10) Facilitate or promote customer pump testing and evaluation.

(11) Designate a water conservation coordinator who will develop and implement the water management plan and prepare progress reports.

(12) Provide for the availability of water management services to water users. These services may include, but are not limited to, all of the following:

(A) On-farm irrigation and drainage system evaluations.

(B) Normal year and real-time irrigation scheduling and crop evapotranspiration information.

(C) Surface water, groundwater, and drainage water quantity and quality data.

(D) Agricultural water management educational programs and materials for farmers, staff, and the public.

(13) Evaluate the policies of agencies that provide the supplier with water to identify the potential for institutional changes to allow more flexible water deliveries and storage.

(14) Evaluate and improve the efficiencies of the supplier's pumps.

(d) Agricultural water suppliers shall include in the agricultural water management plans required pursuant to Part 2.8 (commencing with Section 10800) a report on which efficient water management practices have been implemented and are planned to be implemented, an estimate of the water use efficiency improvements that have occurred since the last report, and an estimate of the water use efficiency improvements estimated to occur five and 10 years in the future. If an agricultural water supplier determines that an efficient water management practice is not locally cost effective or technically feasible, the supplier shall submit information documenting that determination.

(e) The data shall be reported using a standardized form developed pursuant to Section 10608.52.

(f) An agricultural water supplier may meet the requirements of subdivisions (d) and (e) by submitting to the department a water conservation plan submitted to the United States Bureau of Reclamation that meets the requirements described in Section 10828.

(g) On or before December 31, 2013, December 31, 2016, and December 31, 2021, the department, in consultation with the board, shall submit to the Legislature a report on the agricultural efficient water management practices that have been implemented and are planned to be implemented and an assessment of the manner in which the implementation of those efficient water management practices has affected and will affect agricultural operations, including estimated water use efficiency improvements, if any.

(h) The department may update the efficient water management practices required pursuant to subdivision (c), in consultation with the Agricultural Water Management Council, the United States Bureau of Reclamation, and the board. All efficient water management practices for agricultural water use pursuant to this chapter shall be adopted or revised by the department only after the department conducts public hearings to allow participation of the diverse geographical areas and interests of the state.

(i) (1) The department shall adopt regulations that provide for a range of options that agricultural water suppliers may use or implement to comply with the measurement requirement in paragraph (1) of subdivision (b).

(2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

CHAPTER 5. SUSTAINABLE WATER MANAGEMENT

10608.50. (a) The department, in consultation with the board, shall promote implementation of regional water resources management practices through increased incentives and removal of barriers consistent with state and federal law. Potential changes may include, but are not limited to, all of the following:

- (1) Revisions to the requirements for urban and agricultural water management plans.
- (2) Revisions to the requirements for integrated regional water management plans.
- (3) Revisions to the eligibility for state water management grants and loans.
- (4) Revisions to state or local permitting requirements that increase water supply opportunities, but do not weaken water quality protection under state and federal law.
- (5) Increased funding for research, feasibility studies, and project construction.
- (6) Expanding technical and educational support for local land use and water management agencies.

(b) No later than January 1, 2011, and updated as part of the California Water Plan, the department, in consultation with the board, and with public input, shall propose new statewide targets, or review and update existing statewide targets, for regional water resources management practices, including, but not limited to, recycled water, brackish groundwater desalination, and infiltration and direct use of urban stormwater runoff.

CHAPTER 6. STANDARDIZED DATA COLLECTION

10608.52. (a) The department, in consultation with the board, the California Bay-Delta Authority or its successor agency, the State Department of Public Health, and the Public Utilities Commission, shall develop a single standardized water use reporting form to meet the water use information needs of each agency, including the needs of urban water suppliers that elect to determine and report progress toward achieving targets on a regional basis as provided in subdivision (a) of Section 10608.28.

(b) At a minimum, the form shall be developed to accommodate information sufficient to assess an urban water supplier's compliance with conservation targets pursuant to Section 10608.24 and an agricultural water supplier's compliance with implementation of efficient water management practices pursuant to subdivision (a) of Section 10608.48. The form shall accommodate reporting by urban water suppliers on an individual or regional basis as provided in subdivision (a) of Section 10608.28.

CHAPTER 7. FUNDING PROVISIONS

10608.56. (a) On and after July 1, 2016, an urban retail water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

(b) On and after July 1, 2013, an agricultural water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

(c) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for achieving the per capita reductions. The supplier may request grant or loan funds to achieve the per capita reductions to the extent the request is consistent with the eligibility requirements applicable to the water funds.

(d) Notwithstanding subdivision (b), the department shall determine that an agricultural water supplier is eligible for a water grant or loan even though the supplier is not implementing all of the efficient water management practices described in Section 10608.48, if the agricultural water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the efficient water management practices. The supplier may request grant or loan funds to implement the efficient water management practices to the extent the request is consistent with the eligibility requirements applicable to the water funds.

(e) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval documentation demonstrating that its entire service area qualifies as a disadvantaged community.

(f) The department shall not deny eligibility to an urban retail water supplier or agricultural water supplier in compliance with the requirements of this part and Part 2.8 (commencing with Section 10800), that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the requirements of this part or Part 2.8 (commencing with Section 10800).

10608.60. (a) It is the intent of the Legislature that funds made available by Section 75026 of the Public Resources Code should be expended, consistent with Division 43 (commencing with Section 75001) of the Public Resources Code and upon appropriation by the Legislature, for grants to implement this part. In the allocation of funding, it is the intent of the

Legislature that the department give consideration to disadvantaged communities to assist in implementing the requirements of this part.

(b) It is the intent of the Legislature that funds made available by Section 75041 of the Public Resources Code, should be expended, consistent with Division 43 (commencing with Section 75001) of the Public Resources Code and upon appropriation by the Legislature, for direct expenditures to implement this part.

CHAPTER 8. QUANTIFYING AGRICULTURAL WATER USE EFFICIENCY

10608.64. The department, in consultation with the Agricultural Water Management Council, academic experts, and other stakeholders, shall develop a methodology for quantifying the efficiency of agricultural water use. Alternatives to be assessed shall include, but not be limited to, determination of efficiency levels based on crop type or irrigation system distribution uniformity. On or before December 31, 2011, the department shall report to the Legislature on a proposed methodology and a plan for implementation. The plan shall include the estimated implementation costs and the types of data needed to support the methodology. Nothing in this section authorizes the department to implement a methodology established pursuant to this section.

SEC. 2. Section 10631.5 of the Water Code is amended to read:

10631.5. (a) (1) Beginning January 1, 2009, the terms of, and eligibility for, a water management grant or loan made to an urban water supplier and awarded or administered by the department, state board, or California Bay-Delta Authority or its successor agency shall be conditioned on the implementation of the water demand management measures described in Section 10631, as determined by the department pursuant to subdivision (b).

(2) For the purposes of this section, water management grants and loans include funding for programs and projects for surface water or groundwater storage, recycling, desalination, water conservation, water supply reliability, and water supply augmentation. This section does not apply to water management projects funded by the federal American Recovery and Reinvestment Act of 2009 (Public Law 111-5).

(3) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if the urban water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the water demand management measures. The supplier may request grant or loan funds to implement the water demand management measures to the extent the request is consistent with the eligibility requirements applicable to the water management funds.

(4) (A) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if an urban water supplier submits to the department for approval documentation demonstrating that a water demand management measure is not locally cost effective. If the department determines that the documentation submitted by the urban water supplier fails to demonstrate that a water demand management measure is not locally cost effective, the department shall notify the urban water supplier and the agency administering the grant or loan program within 120 days that the documentation does not satisfy the requirements for an exemption, and include in that notification a detailed statement to support the determination.

(B) For purposes of this paragraph, “not locally cost effective” means that the present value of the local benefits of implementing a water demand management measure is less than the present value of the local costs of implementing that measure.

(b) (1) The department, in consultation with the state board and the California Bay-Delta Authority or its successor agency, and after soliciting public comment regarding eligibility requirements, shall develop eligibility requirements to implement the requirement of paragraph (1) of subdivision (a). In establishing these eligibility requirements, the department shall do both of the following:

(A) Consider the conservation measures described in the Memorandum of Understanding Regarding Urban Water Conservation in California, and alternative conservation approaches that provide equal or greater water savings.

(B) Recognize the different legal, technical, fiscal, and practical roles and responsibilities of wholesale water suppliers and retail water suppliers.

(2) (A) For the purposes of this section, the department shall determine whether an urban water supplier is implementing all of the water demand management measures described in Section 10631 based on either, or a combination, of the following:

(i) Compliance on an individual basis.

(ii) Compliance on a regional basis. Regional compliance shall require participation in a regional conservation program consisting of two or more urban water suppliers that achieves the level of conservation or water efficiency savings equivalent to the amount of conservation or savings achieved if each of the participating urban water suppliers implemented the water demand management measures. The urban water supplier administering the regional program shall provide participating urban water suppliers and the department with data to demonstrate that the regional program is consistent with this clause. The department shall review the data to determine whether the urban water suppliers in the regional program are meeting the eligibility requirements.

(B) The department may require additional information for any determination pursuant to this section.

(3) The department shall not deny eligibility to an urban water supplier in compliance with the requirements of this section that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the water demand management measures described in Section 10631.

(c) In establishing guidelines pursuant to the specific funding authorization for any water management grant or loan program subject to this section, the agency administering the grant or loan program shall include in the guidelines the eligibility requirements developed by the department pursuant to subdivision (b).

(d) Upon receipt of a water management grant or loan application by an agency administering a grant and loan program subject to this section, the agency shall request an eligibility determination from the department with respect to the requirements of this section. The department shall respond to the request within 60 days of the request.

(e) The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities. In addition, for urban water suppliers that are signatories to the Memorandum of Understanding Regarding Urban Water Conservation in California and submit biennial reports to the California Urban Water Conservation Council in accordance with the memorandum, the department may use these reports to assist in tracking the implementation of water demand management measures.

(f) This section shall remain in effect only until July 1, 2016, and as of that date is repealed, unless a later enacted statute, that is enacted before July 1, 2016, deletes or extends that date.

SEC. 3. Part 2.8 (commencing with Section 10800) of Division 6 of the Water Code is repealed.

SEC. 4. Part 2.8 (commencing with Section 10800) is added to Division 6 of the Water Code, to read:

PART 2.8. AGRICULTURAL WATER MANAGEMENT PLANNING

CHAPTER 1. GENERAL DECLARATIONS AND POLICY

10800. This part shall be known and may be cited as the Agricultural Water Management Planning Act.

10801. The Legislature finds and declares all of the following:

- (a) The waters of the state are a limited and renewable resource.
- (b) The California Constitution requires that water in the state be used in a reasonable and beneficial manner.
- (c) Urban water districts are required to adopt water management plans.

(d) The conservation of agricultural water supplies is of great statewide concern.

(e) There is a great amount of reuse of delivered water, both inside and outside the water service areas.

(f) Significant noncrop beneficial uses are associated with agricultural water use, including streamflows and wildlife habitat.

(g) Significant opportunities exist in some areas, through improved irrigation water management, to conserve water or to reduce the quantity of highly saline or toxic drainage water.

(h) Changes in water management practices should be carefully planned and implemented to minimize adverse effects on other beneficial uses currently being served.

(i) Agricultural water suppliers that receive water from the federal Central Valley Project are required by federal law to prepare and implement water conservation plans.

(j) Agricultural water users applying for a permit to appropriate water from the board are required to prepare and implement water conservation plans.

10802. The Legislature finds and declares that all of the following are the policies of the state:

(a) The conservation of water shall be pursued actively to protect both the people of the state and the state's water resources.

(b) The conservation of agricultural water supplies shall be an important criterion in public decisions with regard to water.

(c) Agricultural water suppliers shall be required to prepare water management plans to achieve conservation of water.

CHAPTER 2. DEFINITIONS

10810. Unless the context otherwise requires, the definitions set forth in this chapter govern the construction of this part.

10811. "Agricultural water management plan" or "plan" means an agricultural water management plan prepared pursuant to this part.

10812. "Agricultural water supplier" has the same meaning as defined in Section 10608.12.

10813. "Customer" means a purchaser of water from a water supplier who uses water for agricultural purposes.

10814. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of that entity.

10815. "Public agency" means any city, county, city and county, special district, or other public entity.

10816. "Urban water supplier" has the same meaning as set forth in Section 10617.

10817. “Water conservation” means the efficient management of water resources for beneficial uses, preventing waste, or accomplishing additional benefits with the same amount of water.

CHAPTER 3. AGRICULTURAL WATER MANAGEMENT PLANS

Article 1. General Provisions

10820. (a) An agricultural water supplier shall prepare and adopt an agricultural water management plan in the manner set forth in this chapter on or before December 31, 2012, and shall update that plan on December 31, 2015, and on or before December 31 every five years thereafter.

(b) Every supplier that becomes an agricultural water supplier after December 31, 2012, shall prepare and adopt an agricultural water management plan within one year after the date it has become an agricultural water supplier.

(c) A water supplier that indirectly provides water to customers for agricultural purposes shall not prepare a plan pursuant to this part without the consent of each agricultural water supplier that directly provides that water to its customers.

10821. (a) An agricultural water supplier required to prepare a plan pursuant to this part shall notify each city or county within which the supplier provides water supplies that the agricultural water supplier will be preparing the plan or reviewing the plan and considering amendments or changes to the plan. The agricultural water supplier may consult with, and obtain comments from, each city or county that receives notice pursuant to this subdivision.

(b) The amendments to, or changes in, the plan shall be adopted and submitted in the manner set forth in Article 3 (commencing with Section 10840).

Article 2. Contents of Plans

10825. (a) It is the intent of the Legislature in enacting this part to allow levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

(b) This part does not require the implementation of water conservation programs or practices that are not locally cost effective.

10826. An agricultural water management plan shall be adopted in accordance with this chapter. The plan shall do all of the following:

(a) Describe the agricultural water supplier and the service area, including all of the following:

- (1) Size of the service area.
- (2) Location of the service area and its water management facilities.
- (3) Terrain and soils.
- (4) Climate.

- (5) Operating rules and regulations.
- (6) Water delivery measurements or calculations.
- (7) Water rate schedules and billing.
- (8) Water shortage allocation policies.
- (b) Describe the quantity and quality of water resources of the agricultural water supplier, including all of the following:
 - (1) Surface water supply.
 - (2) Groundwater supply.
 - (3) Other water supplies.
 - (4) Source water quality monitoring practices.
 - (5) Water uses within the agricultural water supplier's service area, including all of the following:
 - (A) Agricultural.
 - (B) Environmental.
 - (C) Recreational.
 - (D) Municipal and industrial.
 - (E) Groundwater recharge.
 - (F) Transfers and exchanges.
 - (G) Other water uses.
 - (6) Drainage from the water supplier's service area.
 - (7) Water accounting, including all of the following:
 - (A) Quantifying the water supplier's water supplies.
 - (B) Tabulating water uses.
 - (C) Overall water budget.
 - (8) Water supply reliability.
- (c) Include an analysis, based on available information, of the effect of climate change on future water supplies.
- (d) Describe previous water management activities.
- (e) Include in the plan the water use efficiency information required pursuant to Section 10608.48.

10827. Agricultural water suppliers that are members of the Agricultural Water Management Council, and that submit water management plans to that council in accordance with the "Memorandum of Understanding Regarding Efficient Water Management Practices By Agricultural Water Suppliers In California," dated January 1, 1999, may submit the water management plans identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of Section 10826.

10828. (a) Agricultural water suppliers that are required to submit water conservation plans to the United States Bureau of Reclamation pursuant to either the Central Valley Project Improvement Act (Public Law 102-575) or the Reclamation Reform Act of 1982, or both, may submit those water conservation plans to satisfy the requirements of Section 10826, if both of the following apply:

- (1) The agricultural water supplier has adopted and submitted the water conservation plan to the United States Bureau of Reclamation within the previous four years.

(2) The United States Bureau of Reclamation has accepted the water conservation plan as adequate.

(b) This part does not require agricultural water suppliers that are required to submit water conservation plans to the United States Bureau of Reclamation pursuant to either the Central Valley Project Improvement Act (Public Law 102-575) or the Reclamation Reform Act of 1982, or both, to prepare and adopt water conservation plans according to a schedule that is different from that required by the United States Bureau of Reclamation.

10829. An agricultural water supplier may satisfy the requirements of this part by adopting an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) or by participation in areawide, regional, watershed, or basinwide water management planning if those plans meet or exceed the requirements of this part.

Article 3. Adoption and Implementation of Plans

10840. Every agricultural water supplier shall prepare its plan pursuant to Article 2 (commencing with Section 10825).

10841. Prior to adopting a plan, the agricultural water supplier shall make the proposed plan available for public inspection, and shall hold a public hearing on the plan. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned agricultural water supplier pursuant to Section 6066 of the Government Code. A privately owned agricultural water supplier shall provide an equivalent notice within its service area and shall provide a reasonably equivalent opportunity that would otherwise be afforded through a public hearing process for interested parties to provide input on the plan. After the hearing, the plan shall be adopted as prepared or as modified during or after the hearing.

10842. An agricultural water supplier shall implement the plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan, as determined by the governing body of the agricultural water supplier.

10843. (a) An agricultural water supplier shall submit to the entities identified in subdivision (b) a copy of its plan no later than 30 days after the adoption of the plan. Copies of amendments or changes to the plans shall be submitted to the entities identified in subdivision (b) within 30 days after the adoption of the amendments or changes.

(b) An agricultural water supplier shall submit a copy of its plan and amendments or changes to the plan to each of the following entities:

- (1) The department.
- (2) Any city, county, or city and county within which the agricultural water supplier provides water supplies.
- (3) Any groundwater management entity within which jurisdiction the agricultural water supplier extracts or provides water supplies.
- (4) Any urban water supplier within which jurisdiction the agricultural water supplier provides water supplies.

(5) Any city or county library within which jurisdiction the agricultural water supplier provides water supplies.

(6) The California State Library.

(7) Any local agency formation commission serving a county within which the agricultural water supplier provides water supplies.

10844. (a) Not later than 30 days after the date of adopting its plan, the agricultural water supplier shall make the plan available for public review on the agricultural water supplier's Internet Web site.

(b) An agricultural water supplier that does not have an Internet Web site shall submit to the department, not later than 30 days after the date of adopting its plan, a copy of the adopted plan in an electronic format. The department shall make the plan available for public review on the department's Internet Web site.

10845. (a) The department shall prepare and submit to the Legislature, on or before December 31, 2013, and thereafter in the years ending in six and years ending in one, a report summarizing the status of the plans adopted pursuant to this part.

(b) The report prepared by the department shall identify the outstanding elements of any plan adopted pursuant to this part. The report shall include an evaluation of the effectiveness of this part in promoting efficient agricultural water management practices and recommendations relating to proposed changes to this part, as appropriate.

(c) The department shall provide a copy of the report to each agricultural water supplier that has submitted its plan to the department. The department shall also prepare reports and provide data for any legislative hearing designed to consider the effectiveness of plans submitted pursuant to this part.

(d) This section does not authorize the department, in preparing the report, to approve, disapprove, or critique individual plans submitted pursuant to this part.

CHAPTER 4. MISCELLANEOUS PROVISIONS

10850. (a) Any action or proceeding to attack, review, set aside, void, or annul the acts or decisions of an agricultural water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(1) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

(2) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 120 days after submitting the plan or amendments to the plan to entities in accordance with Section 10844 or the taking of that action.

(b) In an action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an agricultural water supplier, on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse

of discretion is established if the agricultural water supplier has not proceeded in a manner required by law, or if the action by the agricultural water supplier is not supported by substantial evidence.

10851. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part. This part does not exempt projects for implementation of the plan or for expanded or additional water supplies from the California Environmental Quality Act.

10852. An agricultural water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

10853. No agricultural water supplier that provides water to less than 25,000 irrigated acres, excluding recycled water, shall be required to implement the requirements of this part or Part 2.55 (commencing with Section 10608) unless sufficient funding has specifically been provided to that water supplier for these purposes.

SEC. 5. This act shall take effect only if Senate Bill 1 and Senate Bill 6 of the 2009–10 Seventh Extraordinary Session of the Legislature are enacted and become effective.

Appendix B:
Water Authority UWMP Implementation Documents



San Diego County Water Authority

4677 Overland Avenue • San Diego, California 92123-1233
(858) 522-6600 FAX (858) 522-6568 www.sdcwa.org

Notice of San Diego County Water Authority's 2010 Urban Water Management Plan Preparation

MEMBER AGENCIES

Carlsbad
Municipal Water District

City of Del Mar

City of Escondido

City of National City

City of Oceanside

City of Poway

City of San Diego

Fallbrook
Public Utility District

Helix Water District

Lakeside Water District

Olivenhain
Municipal Water District

Otay Water District

Padre Dam
Municipal Water District

Camp Pendleton
Marine Corps Base

Rainbow
Municipal Water District

Ramona
Municipal Water District

Rincon del Diablo
Municipal Water District

San Dieguito Water District

Santa Fe Irrigation District

South Bay Irrigation District

Vallecitos Water District

Valley Center
Municipal Water District

Vista Irrigation District

Yuima
Municipal Water District

OTHER REPRESENTATIVE

County of San Diego

Date: March 23, 2011

This letter is to inform you that the San Diego County Water Authority (Water Authority) is updating its Urban Water Management Plan (UWMP). California State law requires urban water suppliers to update their UWMPs every five years and notify the cities and counties within their service area that a plan is being prepared. The Water Authority must adopt an updated UWMP by July 1, 2011, and submit the adopted plan to the California Department of Water Resources by August 1, 2011.

The UWMP is required to contain a detailed evaluation of the supplies necessary to reliably meet demands over at least a 20-year period in both normal and dry years. In accordance with State law, the Water Authority will distribute a copy of its draft 2010 UWMP to the cities and county for public review at least two weeks prior to holding a tentatively scheduled public hearing in May 2011.

Please feel free to contact Ms. Kelley Gage in the Water Resources department at (858) 522-6763, or kgage@sdewa.org, if you have any questions or would like additional information.

Sincerely,

Dana Frieauf
Principal Water Resources Specialist

Cc: K. Weinberg, Director of Water Resources
K. Gage, Senior Water Resources Specialist

**SAN DIEGO COUNTY WATER AUTHORITY 2010 UWMP
60-DAY NOTICE TO LAND USE AGENCIES WITHIN SERVICE AREA MAILING LIST**

Jurisdiction/Agency	Name	Address	Phone/Fax/Email
City of Carlsbad	Don Neu	City of Carlsbad Planning Department 1635 Faraday Drive Carlsbad, CA 92008	760-602-4601 760-602-8560 fax Don.Neu@carlsbadca.gov
	David De Cordova	City of Carlsbad Planning Department 1635 Faraday Drive Carlsbad, CA 92008	760-602-4604 760-602-8560 fax david.decordova@carlsbadca.gov
City of Chula Vista	Gary Halbert	City of Chula Vista Planning and Building Dept. 276 Fourth Avenue Chula Vista, CA 91910-2631	619-691-5002 619-409-5861 fax ghalbert@ci.chula-vista.ca.us
	Ed Batchelder	City of Chula Vista Planning and Building Dept. 276 Fourth Avenue Chula Vista, CA 91910-2631	619-691-5005 619-409-5859 fax ebatchelder@ci.chula-vista.ca.us
City of Coronado	Rachel Hurst	City of Coronado Planning Department 1825 Strand Way Coronado, CA 92118-3005	619 522-7338 619-522-2418 fax rhurst@coronado.ca.us
	Ann McCaull	City of Coronado Planning Department 1825 Strand Way Coronado, CA 92118-3005	619-522-2415 619-522-2418 fax amccaull@coronado.ca.us
City of Del Mar	Kathy Garcia	City of Del Mar Planning and Comm. Dev. Dept. 1050 Camino Del Mar Del Mar, CA 92014-2604	858-755-9313 x157 858-755-2794 fax kgarcia@delmar.ca.us
City of El Cajon	Melissa Ayres	City of El Cajon Community Development Dept. 200 E. Main Street El Cajon, CA 92020-3912	619-441-1741 619-441-1743 fax mayres@ci.el-cajon.ca.us
	Manjeet Ranu	City of El Cajon Community Development Dept. 200 E. Main Street El Cajon, CA 92020-3912	619-441-1771 619-441-1743 fax mranu@ci.el-cajon.ca.us
City of Encinitas	Patrick Murphy	City of Encinitas Community Dev. Dept. 505 S. Vulcan Avenue Encinitas, CA 92024-3633	760-633-2696 760-633-2818 fax pmurphy@ci.encinitas.ca.us
City of Escondido	Barbara Redlitz	Director of Community Development City of Escondido Community Dev. Department 201 N. Broadway Escondido, CA 92025-2709	760-839-4546 760-839-4313 fax bredlitz@escondido.org
	Jay Petrek	Principal Planner City of Escondido Community Dev. Department 201 N. Broadway Escondido, CA 92025-2709	760-839-4556 760-839-4313 fax Jpetrek@ci.escondido.ca.us
City of Imperial Beach	Greg Wade	Community Development Director City of Imperial Beach Community Dev. Dept. 825 Imperial Beach Boulevard Imperial Beach, CA 91932-2702	619-628-1354 619-429-9770 fax gwade@cityofib.org
	Jim Nakagawa	City of Imperial Beach Community Dev. Dept. 825 Imperial Beach Boulevard Imperial Beach, CA 91932-2702	619-628-1355 619-429-9770 fax jnakagawa@cityofib.org
City of La Mesa	Bill Chopyk	City of La Mesa Community Development Dept. 8130 Allison Avenue La Mesa, CA 91941-5002	619-667-1187 619-667-1131 fax bchopyk@ci.la-mesa.ca.us

City of Lemon Grove	Carol Dick	City of Lemon Grove Community Dev. Dept. 3232 Main Street Lemon Grove, CA 91945-1705	619-825-3806 619-825-3818 fax cdick@ci.lemon-grove.ca.us
	David DeVries	City of Lemon Grove Community Dev. Dept. 3232 Main Street Lemon Grove, CA 91945-1705	619-825-3805 x3926 619-825-3818 fax ddevrie@ci.lemon-grove.ca.us
City of National City	Brad Raulston	City of National City Community Development Department 1243 National City Boulevard National City, CA 91950-4301	619-336-4256 619-336-4286 fax braulston@nationalcityca.gov
	Ray Pe	City of National City Planning Department 1243 National City Boulevard National City, CA 91950-4301	619-336-4421 619-336-4286 fax rpe@nationalcityca.gov
City of Oceanside	Jerry Hittleman	City of Oceanside Planning Department 300 N. Coast Highway Oceanside, CA 92054	760-435-3535 760-754-2958 fax jhittleman@ci.oceanside.ca.us
City of Poway	Robert (Bob) Manis	City of Poway Dept. of Development Services P.O. Box 789 Poway, CA 92074-0789	858-668-4601 858-668-1212 fax bmanis@ci.poway.ca.us
	Suparna Dasgupta	City of Poway Dept. of Development Services P.O. Box 789 Poway, CA 92074-0789	858-668-4606 858-668-1212 fax sdasgupta@poway.org
	Jim Lyon	City of Poway Dept. of Development Services P.O. Box 789 Poway, CA 92074-0789	858-668-1212 fax jlyon@poway.org
City of San Diego	Bill Anderson	City Planning and Community Investment Mail Station 5A 202 C Street San Diego, CA 92101	619-236-6361 619-236-6478 fax AndersonW@sandiego.gov
County of San Diego	Eric Gibson	County Dept. of Planning and Land Use Mail Station 0650 5201-B Ruffin Road San Diego, CA 92123	858-694-2962 858-694-2555 fax eric.gibson@sdcounty.ca.gov
	Devon Muto	County Dept. of Planning and Land Use Mail Station 0650 5201-B Ruffin Road San Diego, CA 92123	858-694-3016 858-694-3373 fax devon.muto@sdcounty.ca.gov
City of San Marcos	Jerry Backoff	City of San Marcos Planning Department 1 Civic Center Drive San Marcos, CA 92069-2949	760-744-1050 x3234 760-591-4135 fax jbackoff@ci.san-marcos.ca.us
	Karen Brindley	City of San Marcos Planning Department 1 Civic Center Drive San Marcos, CA 92069-2949	760-744-1050 x3220 760-591-4135 fax kbrindley@ci.san-marcos.ca.us
City of Santee	Mark Brunette	City of Santee Director/Deputy City Manager City of Santee Development Services 10601 Magnolia Avenue Santee, CA 92071-1222	619-258-4100 x158 619-562-9376 fax mbrunette@ci.santee.ca.us
	Melanie Kush	City of Santee Development Services 10601 Magnolia Avenue Santee, CA 92071-1222	619-258-4100 x167 619-562-9376 fax mkush@ci.santee.ca.us
	Travis Cleveland	City of Santee Development Services 10601 Magnolia Avenue Santee, CA 92071-1222	619-258-4100 x160 619-562-9376 fax tcleveland@ci.santee.ca.us
City of Solana Beach	Tina Christiansen	Solana Beach Community Development 635 S. Highway 101 Solana Beach, CA 92075-2215	858-720-2444 858-720-2448 fax tchristiansen@cosb.org
	Rich Whipple	Solana Beach Community Development 635 S. Highway 101 Solana Beach, CA 92075-2215	858-720-2442 858-720-2443 fax rwhipple@cosb.org

City of Vista	John Conley	Vista Community Development Department 200 Civic Center Drive Vista, CA 92084	760-639-6100 760-639-6101 fax jconley@cityofvista.com
	Patsy Chow	Vista Community Development Department 200 Civic Center Drive Vista, CA 92084	760-639-6100 760-639-6101 fax pchow@cityofvista.com
San Diego County Water Authority	Dana Friehauf	San Diego County Water Authority 4677 Overland Avenue San Diego, CA 92123	858-522-6749 858-268-7881 fax dfriehauf@sdcwa.org
San Diego Association of Governments	Charles "Muggs" Stoll Department Director	SANDAG 401 B Street, Suite 800 San Diego, CA 92101 (or Mail Station 980)	619-699-6945 619-699-1905 fax mst@sandag.org
San Diego LAFCO	Ingrid Hansen Chief, Governmental Services	1600 Pacific Highway, Room 452 San Diego, CA 92101	619-531-5400



San Diego County Water Authority

**Member Agency Working Group Meeting
2010 Urban Water Management Plan**

**Oct. 1, 2009
(10 a.m. – 12 p.m.)**

**San Diego County Water Authority
Board Room**

PURPOSE: Coordination with Member Agencies on refinement of their local supply and conservation projections for the 2035 Regional Water Demand Forecast and 2010 Urban Water Management Plans.

AGENDA

1. Introductions
2. Purpose and overview of 2010 UWMP (Kelley Gage)
 - a. Regulatory/Legislative changes
 - b. Climate change impacts
3. Review process and schedule for 2035 regional water demand forecast (Tim Bombardier)
 - a. Buffer supply (Dana Frieauf)
4. Local Supply Projections - Overview (Kelley Gage)
5. Preparation of conservation savings estimates (Jeff Stephenson)
6. Recycling projections (Maria Mariscal)
 - a. Revised projections
 - b. Future projections by recycling project
7. Groundwater projections (Dan Diehr)
8. Local surface water projections (Paul Gebert)
 - a. Average year estimates
 - b. Dry year estimates
9. Schedule & Discussion



San Diego County Water Authority

**Member Agency Working Group Meeting #2
2010 Urban Water Management Plan**

**March 22, 2011
(1:30 – 3:30 p.m.)
Water Authority - Board Room**

Purpose: To provide an overview of the Water Authority's draft 2010 UWMP, being provided to member agencies by the end of March for technical review.

AGENDA

1. Introduction/Background
2. Overview of Water Authority draft 2010 Plan Content and Coordination
3. 2035 Draft Regional Water Demand Forecast
4. Retail Water Use Efficiency Target (Compliance with SBX7-7)
5. Water Authority Preliminary Projected Water Resources Mix
6. Scenario Planning Process to Manage Uncertainties
7. Schedule & Discussion

MEMORANDUM

TO: MEMBER AGENCY MANAGERS & MEMBER AGENCY UWMP
WORKING GROUP MEMBERS

FROM: KEN WEINBERG, DIRECTOR OF WATER RESOURCES

SUBJECT: MEMBER AGENCY TECHNICAL REVIEW: ADMINISTRATIVE
DRAFT OF THE WATER AUTHORITY 2010 URBAN WATER
MANAGEMENT PLAN

DATE: 3/30/11

Enclosed is the technical review draft of the Water Authority's 2010 Urban Water Management Plan (Plan) on a CD for your review and comment. On February 25, 2011 we provided the member agencies data consisting of the individual agency demand forecast, water use efficiency targets and local supply plans. This draft, which includes the previously distributed data, is being provided to the member agencies for their technical review prior to release of a draft Plan to the public and Water Authority Board of Directors.

This administrative draft Plan is also being provided in part to address Water Code Section 10631 (k) of the Urban Water Management Planning Act (Act). This section of the Act requires the exchange of supply and demand information between the wholesale agency and its member agencies. The enclosed draft Plan provides preliminary numbers associated with the existing and planned sources of water expected to be available from the Water Authority under multiple dry-year, single dry-year, and average year conditions, in five-year increments for the 20-year term required under the Act. The supply numbers will be finalized with adoption of the Plan by the Water Authority Board.

The Water Authority would like to thank all the member agencies for their assistance and valuable input during preparation of the draft 2010 Plan. The enclosed technical review draft contains the local supply information submitted by the member agencies and, for those member agencies that provided it, the member agency retail-level gallons per capita per day (GPCD) targets for compliance with SBX7-7. To accurately reflect the region's overall plan for future reliability, it is important that the Plan correctly reflect the member agencies' projected yields from local supplies and the projected savings from retail-level GPCD targets. This will lead to consistency between the plans, thereby reinforcing the importance of development of local supplies and achieving the retail-level GPCD targets to meet local and regional water demands.

Please pay special attention to the local supply figures included in the Plan for your agency to ensure that they are consistent with what is being included in your urban water management

plan. (The tables in Appendix F of the Plan list the member agencies' groundwater and recycled water projects, along with yields from local surface water reservoirs.) In addition, if your agency revises its retail-level GPCD target, or has yet to provide this information to the Water Authority, please include this information in your comments to us on the draft Plan. We would like the public review draft 2010 Plan to reflect the most up-to-date member agency GPCD targets. Lastly, we will continue to work with you to resolve questions regarding the member agency baseline demand forecast numbers.

We welcome any comments you may have on the draft Plan by **April 21, 2011**. This will allow us time to incorporate them into the public review draft Plan that will be provided to the Board and the public in late April. Please submit your comments in writing, attention Ms. Kelley Gage, 4677 Overland Avenue, San Diego, CA 92123, or via email, at: kgage@sdewa.org.

Thank you for your cooperation.



MEMORANDUM

TO: BOARD OF DIRECTORS
FROM: KEN WEINBERG, DIRECTOR OF WATER RESOURCES
SUBJECT: DRAFT OF THE WATER AUTHORITY'S 2010 URBAN WATER
MANAGEMENT PLAN
DATE: 5/6/2011

Enclosed for your review and comment is a CD containing a draft of the Water Authority's 2010 Urban Water Management Plan (2010 Plan). The California Urban Water Management Planning Act (Act), included in the State Water Code, requires urban water suppliers to prepare and adopt its 2010 Urban Water Management Plan by July 1, 2011. The attached draft 2010 Plan incorporates comments received from the Water Authority's member agencies.

The enclosed 2010 Plan provides draft numbers associated with the existing and planned sources of water expected to be available from the Water Authority under multiple dry-year, single dry-year, and average year conditions, in five-year increments for the 20-year term required under the Act. The supply numbers will be finalized with adoption of the 2010 Plan by the Board in June 2011. At the May 23, 2011, Special Water Planning Committee meeting, staff will present the draft demand and supply numbers contained in the 2010 Plan, as well as other important information in the plan.

A copy of the draft 2010 Plan has also been distributed to the public for comment. The document is available for public review on the Water Authority's website at www.sdcwa.org. At the May 26, 2011, Board meeting, staff will receive comments from the Board on the draft 2010 Plan and hold a noticed public hearing to receive comments from the public. Public comments can be submitted in writing to the Water Authority by mail or email (uwmpcomment@sdewa.org), but must be received no later than 5:00 p.m. on June 6, 2011.

SAN DIEGO COUNTY WATER AUTHORITY
4677 Overland Avenue
San Diego, California 92123
(858) 522-6600

Revised 04/04/2011

ROSTER OF DIRECTORS

**NAME/AGENCY &
TERM EXPIRATION**

MAILING ADDRESS

ARANT, Gary
Valley Center MWD
01/13/2014

P O BOX 67
Valley Center CA 92082

BAILEY, Roger
San Diego, city of

9192 Topaz Way
San Diego CA 92123

BOND, Jim
San Dieguito WD
12/21/2014

2472 Calle San Clemente
Encinitas CA 92024

**BOWERSOX, James L.
Poway, City of
04/22/2014

13175 Triumph Drive
Poway CA 92064

BOYLE, Brian
Oceanside, city of
07/15/2016

3232 San Helena Drive
Oceanside CA 92056

CROUCHER, Gary
Otay WD
03/03/2014

10566 Villa Bonita
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DAILEY, Marilyn J.
Escondido, City of
10/18/2016

1657 Vladic Lane
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DION, Mitch
Rincon del Diablo MWD
06/20/2014

1920 North Iris Lane
Escondido, CA 92026

DOUGLAS, Farrah
Carlsbad MWD
01/15/2016

2914 Carrillo Way
Carlsbad CA 92009

FERGUSON, Margaret E. "Betty"
Vallecitos WD
03/13/2016

1128 La Casa Lane
Lake San Marcos CA 92078

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03/17/2016

401 B Street, Suite 2400
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Lakeside WD
01/08/13

9310 LOS COCHES
Lakeside CA 92040

HOGAN, Michael
Santa Fe ID
12/13/2014

507 Barbara Avenue
Solana Beach CA 92075

JUNGREIS, Jeremy
Camp Pendleton
01/12/2014

1291 Bellingham Drive
Oceanside, CA 92057

KNUTSON, W.D. "Bill"
Yuima MWD
01/13/2016

P O Box 920
Pauma Valley, CA 92061

LEWINGER, Keith
Fallbrook PUD
07/15/2016

Fallbrook PUD
P O BOX 2290
Fallbrook CA 92028

LEWIS, Bud
Carlsbad MWD
06/16/2014

2030 Basswood Avenue
Carlsbad CA 92008

LINDEN, John
Helix WD
07/15/2013

7560 "A" University Avenue
La Mesa CA 91941-4899

McINTOSH, Ralph
Ramona MWD
09/08/2012

105 Earlham Street
Ramona CA 92065

MORRISON, Ron
National City, City of
03/08/2014

1243 National City Blvd
National City CA 91950

MUDD, Vincent
San Diego, city of
01/02/2016

3706 Ruffin Road
San Diego, CA 92123

MUIR, Mark
Olivenhain MWD
08/04/2014

710 West Bluff Dr.
Encinitas CA 92024

<u>NAME/AGENCY & TERM EXPIRATION</u>	<u>MAILING ADDRESS</u>
POCKLINGTON, Bud SO. Bay ID 09/08/2012	656 Glover Place Chula Vista CA 91910
PRICE, Hershell Del Mar, City of 03/12/2011	1844 Camino Del Mar # 25 Del Mar CA 92014
SAUNDERS, JAVIER San Diego, City of 03/05/2015	1122 Albion Street San Diego CA 92106
SAXOD, ELSA San Diego, City of 02/07/2016	P.O. BOX 33419 San Diego CA 92103
SMITH, Richard Helix WD 08/18/2013	1570 Villa Crest Drive El Cajon CA 92021
STEINER, Fern San Diego, City of 03/05/2015	401 West A Street, Suite 320 San Diego CA 92101
TU, YEN C. San Diego, City of 01/30/2015	11074 Roxboro Road San Diego CA 92131
WALSON, Gerald R. Rainbow MWD 02/14/2015	30545 Via Maria Elena Bonsall CA 92003
WATTON, Mark Otay WD 01/23/2014	2554 Sweetwater Springs Blvd Spring Valley CA 91978
WIGHT, Barbara San Diego, City of 10/27/2012	2856 Ariane Drive San Diego CA 92117
WILLIAMS, Howard Vista Irrigation District 11/22/2011	1443 Alga Court Vista CA 92081
WILLIAMS, Kenneth San Diego, City of 07/15/2016	5908 La Jolla Corona Drive La Jolla CA 92037

NAME/AGENCY &
TERM EXPIRATION

MAILING ADDRESS

WILSON, Doug
Padre Dam MWD
07/07/2016

1949 Hacienda Drive
El Cajon CA 92020

WORNHAM, Thomas
San Diego, City of
05/02/2015

401 B Street # 2201
San Diego CA 92101

COUNTY OF SAN DIEGO REPRESENTATIVE

SLATER-Price, Pam (Supervisor)

1600 Pacific Highway
Room 335
San Diego CA 92101

MEMORANDUM

TO: MEMBER AGENCY MANAGERS, MEMBER AGENCY UWMP
WORKING GROUP MEMBERS, INTERESTED PARTIES

FROM: KEN WEINBERG, DIRECTOR OF WATER RESOURCES

SUBJECT: DRAFT OF THE WATER AUTHORITY 2010 URBAN WATER
MANAGEMENT PLAN FOR PUBLIC REVIEW & COMMENT

DATE: 5/6/11

Enclosed for your review and comment is a CD containing a draft of the Water Authority's 2010 Urban Water Management Plan (2010 Plan). The California Urban Water Management Planning Act (Act), included in the California State Water Code, requires urban water suppliers to prepare and adopt its 2010 Urban Water Management Plan by July 1, 2011. The draft 2010 Plan incorporates comments received from the Water Authority's member agencies.

The enclosed 2010 Plan provides draft numbers associated with the existing and planned sources of water expected to be available from the Water Authority under multiple dry-year, single dry-year, and average year conditions, in five-year increments for the 20-year term required under the Act. The supply numbers will be finalized with adoption of the 2010 Plan by the Water Authority's Board of Directors at the June 23, 2011, Board meeting.

The document is also available for public review and comment on the Water Authority's website at www.sdcwa.org. A public hearing on the information contained in the Water Authority's draft 2010 UWMP is scheduled for May 26, 2011, at 1:00 p.m. or as soon thereafter as the matter may be heard, in the Board Room at 4677 Overland Avenue, San Diego, California.

Comments on the draft 2010 Plan may also be submitted in writing, however not later than **5:00 p.m. on June 6, 2011**. Written comments can be submitted to the Water Authority via mail: Urban Water Management Plan, San Diego County Water Authority, 4677 Overland Avenue, San Diego, CA 92123, or via email: uwmpcomment@sdcwa.org.

DRAFT 2010 UWMP - MEMBER AGENCY MANAGERS, UWMP STAFF WORKING GROUP, and MWD MAILING LIST

CARLSBAD MWD

5950 El Camino Real
Carlsbad CA 92008
Glenn Pruim, General Manager
Bill Plummer
Steve Plyler

CITY OF DEL MAR

Water Utilities Department
1050 Camino Del Mar
Del Mar CA 92014
Eric Minicilli, Public Works Director

CITY OF ESCONDIDO

Civic Center Plaza
Water Utilities Department
201 N. Broadway
Escondido CA 92025
Lori Vereker, Director of Utilities
Lori Rountree
Richard Walker
Elisa Marrone

FALLBROOK PUBLIC UTILITY DISTRICT

PO Box 2290 (zip 92088)
990 E Mission Road
Fallbrook CA 92028
Keith Lewinger, General Manager
Jack Bebee
Jeff Marchand

HELIX WATER DISTRICT

7811 University Ave
La Mesa CA 91942-4927
Mark Weston, General Manager
Jeff Barnes
Luis Valdez

LAKESIDE WATER DISTRICT

10375 Vine Street
Lakeside, CA 92040
Bob Cook, General Manager

CITY OF NATIONAL CITY

Engineering Department
1243 National City Blvd
National City CA 91950
Maryam Babaki, Dev. Svcs Dir./City Eng.

CITY OF OCEANSIDE

300 N. Coast Hwy
Oceanside CA 92054-2886
Cari Dale, Water Utilities Director
Judith Ludlow
Teresa Gomez

OLIVENHAIN MWD

1966 Olivenhain Road
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Kim Thorner, General Manager
Joey Randall
Teresa Chase

OTAY WATER DISTRICT

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Mark Watton, General Manager
Bob Kennedy

PADRE DAM MWD

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Allen Carlisle, General Manager
Melissa McChesney
Mike Uhrhammer
Robin Bier

PENDLETON MILITARY RESERVATION

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Dan Bartu

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Leah Browder, Director of Public Works
Kristen Crane
Tom Howard

RAINBOW MWD

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Dave Seymour General Manager
Sherry Rebueno

RAMONA MWD

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Ramona CA 92065-1599
Ralph McIntosh, General Manager

RINCON DEL DIABLO MWD

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Mitch Dion, General Manager
Noelle Denke

CITY OF SAN DIEGO

Public Utilities Department
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Alex Ruiz, Assistant Director - Bus Branch
Jim Fisher, Assistant Director – Water
Operations Branch
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San Diego, CA 92101
Cathy Pieroni
David Glanville
George Adrian
Marsi Steirer

SAN DIEGUITO WATER DISTRICT

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Larry Watt, General Manager
Bill O'Donnel
Blair Knoll

SANTA FE IRRIGATION DISTRICT

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Rancho Santa Fe CA 92067
Michael Bardin, General Manager
Karen Falk
Bill Hunter
Jessica Parks

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Bud Pocklington

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505 Garrett Avenue
Chula Vista CA 91910
Jim Smyth, General Manager
Peggy Strand, Assistant General Manager
Michael Garrod
Sue Mosberg

VALLECITOS WATER DISTRICT

201 Vallecitos de Oro
San Marcos CA 92069-1453
Dennis O. Lamb, General Manager
James Gumpel, P.E.
Robert Scholl

VALLEY CENTER MWD

PO Box 67
29300 Valley Center Road
Valley Center CA 92082
Gary Arant, General Manager
Trish Garcia
Wally Grabbe, P.E.

VISTA IRRIGATION DISTRICT

1391 Engineer Street
Vista CA 92081-8836
Roy Coox, General Manager
Brett Hodgkiss

YUIMA MWD

PO Box 177
34928 Valley Center Road
Pauma Valley CA 92061
Linden Burzell, General Manager

**METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA**

Water Resource Management Group
PO Box 54153
Los Angeles, CA 90054-0153
Brandon J. Goshi, Manager, Resource
Analysis Unit
Edgar Fandalian, Senior Engineer

Order Confirmation

Account Number: 1010592

Customer: SAN DIEGO COUNTY WATER AUTHO
4677 OVERLAND AVENUE
SAN DIEGO COUNTY WATER AUTH.
ATTN: DORIA LORE
SAN DIEGO, CA 92123

Telephone: (858) 522-6614

Fax: (858) 522-6567

EMail: DLORE@SDCWA.ORG

Ad Number: 0010510475

PO Number:

Date Ordered: 05/05/2011

Orderer: Gail Patton

Order Status: Live

Queue: Ready

Colors: <NONE>

Prod Colors:

Production Method: AdBooker

Ad Size: 0.95 x 8.64

Columns: 1.00 Inches: 8.64

Total Amount: \$1,047.00

Payment Method:

Payment Amount: \$0.00

Amount Due: \$1,047.00

Sales Rep: ZACH MANUEL

Telephone: (619) 718-5981

EMail: ZACH.MANUEL@UNIONTRIB.COM

Product	Zone	Placement	Position	Start Date	End Date	Insertions
SignonMobile	Full Run	Legal	Legals	05/08/2011	05/15/2011	2
SignOnSanDiego	Full Run	Legal	Legals	05/08/2011	05/15/2011	2
Union-Tribune	Full Run	Legal	Legals	05/08/2011	05/15/2011	2

Ad Content

NOTICE OF PUBLIC HEARING FOR THE PUBLIC REVIEW DRAFT 2010 URBAN WATER MANAGEMENT PLAN FOR THE SAN DIEGO COUNTY WATER AUTHORITY NOTICE IS HEREBY GIVEN to all interested in above subject matter that a Public Review Draft 2010 Urban Water Management Plan (Draft 2010 Plan) was completed by the San Diego County Water Authority (Water Authority). A public hearing on the preparation of the Draft 2010 Plan is scheduled for May 26, 2011, at 1:00 p.m. or as soon thereafter as the matter may be heard, in the Board Room at 4677 Overland Avenue, San Diego, California. The Draft 2010 Plan identifies a diverse mix of water resources planned to be developed over the next 25 years which will, along with the aggressive conservation efforts of the Water Authority and its member agencies, ensure long-term water supply reliability for the region. The Water Authority's Board of Directors is scheduled to consider the Draft 2010 Plan for adoption at its regularly scheduled meeting on June 23, 2011. The California Urban Water Management Planning Act, included in the California State Water Code, requires urban water suppliers to prepare urban water management plans and update them every five years. The Water Authority is required to update and adopt a plan for submittal to the California Department of Water Resources by July 1, 2011. The public is invited to submit written comments concerning the Draft 2010 Plan to the Water Authority. A copy of the Draft 2010 Plan is available for review on the Water Authority's website at www.sdcwa.org. The public may also request that an electronic copy of the Draft 2010 Plan be mailed for review by e-mailing their request to uwmpcomment@sdca.org. Comments on the Draft 2010 Plan must be received by June 6, 2011, and can be e-mailed to the Water Authority at uwmpcomment@sdca.org, or by writing to: Urban Water Management Plan, San Diego County Water Authority, 4677 Overland Ave., San Diego, CA 92123. If you have any questions regarding the Draft 2010 Plan, please contact Kelley Gage, Senior Water Resources Specialist, at (858) 522-6763, or Tim Bombardier, Senior Water Resources Specialist, at (858) 522-6757.

Printed: 5/5/2011 1:33 pm

350 Camino de la Reina
P.O. Box 120191, San Diego, CA 92112-0191
619-299-3131

Page 1 of 3

Ad Order: 0010510475

Order Confirmation**NOTICE OF PUBLIC
HEARING FOR THE
PUBLIC REVIEW
DRAFT 2010 URBAN
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MENT PLAN FOR THE
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San Diego County Water Authority

4677 Overland Avenue, San Diego, CA 92123

News Release

Media Contacts:

John Liarakos
(858) 522-6703 Office
(858) 761-2544 Cell
Or
Denise Vedder
(858) 522-6709 Office
(619) 770-8403 Cell

May 9, 2011

Water Authority Releases 2010 Draft Urban Water Management Plan *Agency seeks public comment on long-range planning document*

The San Diego County Water Authority is inviting public review and comment on the 2010 Urban Water Management Plan (UWMP), the agency's long-range water resources planning tool. The public can make comments through June 6, 2011.

The UWMP contains a forecast of the San Diego region's water demands and a detailed evaluation of supplies necessary to meet those demands for both normal and dry-year conditions over the next 25 years. The plan identifies existing and projected water supply projects and programs required to ensure long-term water supply reliability for the 95 percent of the county's population who live and work within the Water Authority's service area.

Copies of the draft 2010 UWMP are available for review on the Water Authority's website at www.sdcwa.org or by requesting an electronic copy at uwmpcomment@sdewa.org.

-more-

Water Authority Releases 2010 Draft Urban Water Management Plan

Page 2 of 2

Comments must be received at uwmpcomment@sdewa.org or mailed to: Urban Water Management Plan, San Diego County Water Authority, 4677 Overland Ave., San Diego, CA 92123, no later than 5 p.m. Monday, June 6, 2011.

A public hearing on the draft 2010 UWMP will be held May 26, 2011, at 1 p.m. in the Water Authority Board Room at 4677 Overland Avenue in Kearny Mesa. All public comments will be reviewed before the Water Authority Board of Directors considers the draft 2010 UWMP for adoption at its June 23, 2011 meeting.

All California urban water suppliers are required to prepare an Urban Water Management Plan under the California Urban Water Management Planning Act and update it every five years. Once adopted by the Board, the Water Authority submits the updated UWMP to the California Department of Water Resources, which uses it to determine the Water Authority's eligibility for grant funds available through programs administered by the agency.

#

The San Diego County Water Authority is a public agency serving the San Diego region as a wholesale supplier of water from the Colorado River and Northern California. The Water Authority works through its 24 member agencies to provide a safe, reliable water supply to support the region's \$186 billion economy and the quality of life of 3.1 million residents.

RESOLUTION NO. 2011- 16

**A RESOLUTION OF THE BOARD OF
DIRECTORS OF THE SAN DIEGO COUNTY
WATER AUTHORITY APPROVING THE 2010
URBAN WATER MANAGEMENT PLAN**

WHEREAS, California Water Code Section 10610 et seq., known as the Urban Water Management Planning Act (Act), requires urban water suppliers to prepare and adopt an Urban Water Management Plan every five years on or before December 31, in years ending in five and zero; and

WHEREAS, due to recent changes in the Act, State law has extended the deadline for adoption of the 2010 Urban Water Management Plans (2010 Plan) to July 1, 2011; and

WHEREAS, the Act specifies the requirements and procedures for adopting such Urban Water Management Plans; and

WHEREAS, pursuant to the Act the Water Authority prepared a draft 2010 Plan in consultation with the Water Authority's member agencies and Metropolitan Water District of Southern California in the areas of water demand forecasting and identification of local and imported supplies; and

WHEREAS, the draft 2010 Plan was made available for public review commencing May 6, 2011, and ending on June 6, 2011, notices of the availability of the draft 2010 Plan and of the public hearing to receive comments on the draft 2010 Plan on May 26, 2011, were published in accordance with applicable law; and

WHEREAS, copies of the draft 2010 Plan were distributed to Water Authority member agencies, interested parties who submitted requests for copies, as well as to each of the cities within the Water Authority's service area and the County of San Diego; and

WHEREAS, the final 2010 Plan incorporating changes to the draft Plan as a result of certain comments, were distributed to the Water Authority Board of Directors prior to the June 23, 2011, Board meeting; and

WHEREAS, the Water Authority Board of Directors, upon recommendation of the General Manager, and the information presented to it at a committee workshop on May 23, 2011, and Board meeting on May 26, 2011, has determined that the final 2010 Plan, dated June 23, 2011, and on file with the Clerk of the Board is consistent with the Act and is an accurate representation of the water resources plan for the Water Authority;

NOW THEREFORE, the Board of Directors of the San Diego County Water Authority resolves as follows:

1. The foregoing recitals are true and correct and constitute the findings and determinations of the Board.

2. The final 2010 Plan, dated June 23, 2011, on file with the Clerk of the Board, is approved and adopted.

3. The General Manager is hereby directed to:

- Submit the 2010 Plan to the California Department of Water Resources, the California State Library, each Water Authority member agency, the County of San Diego and each city within the territory of the Water Authority not later than July 23, 2011;
- Make the 2010 Plan available for public review through the Water Authority's Internet web site;
- Make the 2010 Plan available for public review at the Water Authority headquarters during the Water Authority's normal business hours;
- Implement the 2010 Plan consistent with the Water Authority's Administrative Code, adopted Operations and Capital Improvement Plan Budgets, adopted Water Facilities Master Plan and other formal action of the Board.

4. The General Manager is further directed to periodically review the 2010 Plan in accordance with applicable law and recommend to the Board amendments to the plan as may be appropriate as a result of such review.

5. This resolution is effective upon adoption.

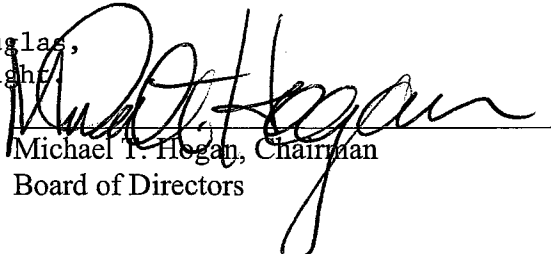
PASSED, APPROVED AND ADOPTED this 23rd day of June 2011, by the following vote:

AYES: Unless otherwise noted, all Directors present voted aye.

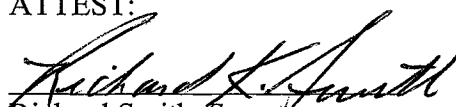
NOES: None

ABSTAIN: None

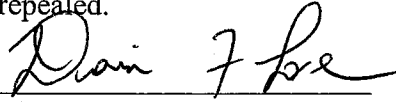
ABSENT: Bond (p), Boyle Douglas,
Lewis, Saunders, Wright


Michael T. Hogan, Chairman
Board of Directors

ATTEST:


Richard Smith, Secretary
Board of Directors

I, Doria F. Lore, Clerk of the Board of the San Diego County Water Authority, do hereby certify that the above and foregoing is a full, true and correct copy of said Resolution 2011 - 16 of said Board and that the same has not been amended or repealed.

A handwritten signature in cursive script, reading "Doria F. Lore", written over a horizontal line.

Doria F. Lore
Clerk of the Board

Appendix C:
DWR 2010 UWMP Checklist

Table I-2 Urban Water Management Plan checklist, organized by subject

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
PLAN PREPARATION				
4	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(d)(2)		Sec. 1.4; & Appendix B
6	Notify, at least 60 days prior to the public hearing on the plan required by Section 10642, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Any city or county receiving the notice may be consulted and provide comments.	10621(b)		Sec. 1.4; & Appendix B
7	Provide supporting documentation that the UWMP or any amendments to, or changes in, have been adopted as described in Section 10640 et seq.	10621(c)		Appendix B
54	Provide supporting documentation that the urban water management plan has been or will be provided to any city or county within which it provides water, no later than 60 days after the submission of this urban water management plan.	10635(b)		Sec. 1.4; & Appendix B
55	Provide supporting documentation that the water supplier has encouraged 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.	10642		Sec. 1.4; & Appendix B
56	Provide supporting documentation that the urban water supplier made the plan available for public inspection and held a public hearing about the plan. For public agencies, the hearing notice is to be provided pursuant to Section 6066 of the Government Code. The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. Privately-owned water suppliers shall provide an equivalent notice within its service area.	10642		Sec. 1.4
57	Provide supporting documentation that the plan has been adopted as prepared or modified.	10642		Appendix B – resolution of adoption
58	Provide supporting documentation as to how the water supplier plans to implement its plan.	10643		Sec. 1.4

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
59	Provide supporting documentation that, in addition to submittal to DWR, the urban water supplier has submitted this UWMP to the California State Library and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. This also includes amendments or changes.	10644(a)		Sec. 1.4; & Appendix B
60	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the urban water supplier has or will make the plan available for public review during normal business hours	10645		Sec. 1.4
SYSTEM DESCRIPTION				
8	Describe the water supplier service area.	10631(a)		Sec. 1.5.2
9	Describe the climate and other demographic factors of the service area of the supplier	10631(a)		Sec. 1.7.1 and 1.7.2
10	Indicate the current population of the service area	10631(a)	Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M.	Sec. 1.7.4
11	Provide population projections for 2015, 2020, 2025, and 2030, based on data from State, regional, or local service area population projections.	10631(a)	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Sec. 1.7.4, Table 1-6
12	Describe other demographic factors affecting the supplier's water management planning.	10631(a)		Sec. 1.7
SYSTEM DEMANDS				
1	Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	10608.20(e)		N/A – applies to retail water suppliers; see Sec. 2.4.2
2	<i>Wholesalers:</i> Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. <i>Retailers:</i> Conduct at least one public hearing that includes general discussion of the urban retail water supplier's implementation plan for complying with the Water Conservation Bill of 2009.	10608.36 10608.26(a)	Retailers and wholesalers have slightly different requirements	Sec. 3

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
3	Report progress in meeting urban water use targets using the standardized form.	10608.40		N/A – applies to retail water suppliers; see Sec. 2.4.2
25	Quantify past, current, and projected water use, identifying the uses among water use sectors, for the following: (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, conjunctive use, and (I) agriculture.	10631(e)(1)	Consider 'past' to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030. Provide numbers for each category for each of these years.	Sec. 2.3, Figure 2-1
33	Provide documentation that either the retail agency provided the wholesale agency with water use projections for at least 20 years, if the UWMP agency is a retail agency, OR, if a wholesale agency, it provided its urban retail customers with future planned and existing water source available to it from the wholesale agency during the required water-year types	10631(k)	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	Sec. 1.4; & Appendices B & I
34	Include projected water use for single-family and multifamily residential housing needed for lower income households, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)		N/A – applies to retail water suppliers; see Sec. 2.4.1
SYSTEM SUPPLIES				
13	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, and 2030.	10631(b)	The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided.	Sec. 4, 5, & 6; Sec. 9, Tables 9-1 to 9-6
14	Indicate whether groundwater is an existing or planned source of water available to the supplier. If yes, then complete 15 through 21 of the UWMP Checklist. If no, then indicate "not applicable" in lines 15 through 21 under the UWMP location column.	10631(b)	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	No, it is retail agency supply; see Sec. 5.3
15	Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	10631(b)(1)		N/A
16	Describe the groundwater basin.	10631(b)(2)		N/A

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
17	Indicate whether the groundwater basin is adjudicated? Include a copy of the court order or decree.	10631(b)(2)		N/A
18	Describe the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. If the basin is not adjudicated, indicate "not applicable" in the UWMP location column.	10631(b)(2)		N/A
19	For groundwater basins that are not adjudicated, provide information as to whether DWR has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition. If the basin is adjudicated, indicate "not applicable" in the UWMP location column.	10631(b)(2)		N/A
20	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	10631(b)(3)		N/A
21	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	10631(b)(4)	Provide projections for 2015, 2020, 2025, and 2030.	Appendix F, Table F-2
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)		Sec. 4.2 and 4.3; Sec. 11.2.3.2
30	Include a detailed description of all water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years, excluding demand management programs addressed in (f)(1). Include specific projects, describe water supply impacts, and provide a timeline for each project.	10631(h)		Sec. 4, 5, & 6; Sec. 9.2 and 9.3
31	Describe desalinated water project opportunities for long-term supply, including, but not limited to, ocean water, brackish water, and groundwater.	10631(i)		Sec. 4.4 and 4.5; Sec. 5.3 and 5.5
44	Provide information on recycled water and its potential for use as a water source in the service area of the urban water supplier. Coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	10633		Sec. 5.4; Appendix F, Table F-4
45	Describe the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	10633(a)		Sec. 5.4.3; Appendix F, Table F-3

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
46	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	10633(b)		Appendix F, Tables F-3 and F-4
47	Describe 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)		Appendix F, Table F-4
48	Describe and quantify the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.	10633(d)		Appendix F, Table F-4
49	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.	10633(e)		Sec. 5.4.5
50	Describe the 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(f)		Sec. 5.4.4
51	Provide 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 obstacles to achieving that increased use.	10633(g)		Sec. 5.4.4
WATER SHORTAGE RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING ^b				
5	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	10620(f)		Sec. 3; Sec. 5; Sec. 9
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage and provide data for (A) an average water year, (B) a single dry water year, and (C) multiple dry water years.	10631(c)(1)		Sec. 9.2, 9.3, and 9.4
23	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 supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.	10631(c)(2)		Sec. 10
35	Provide an urban water shortage contingency analysis that specifies stages of action, including up to a 50-percent water supply reduction, and an outline of specific water supply conditions at each stage	10632(a)		Sec. 11.2

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
36	Provide 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.	10632(b)		Sec. 11.2.7, Table 11-4
37	Identify 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.	10632(c)		Sec. 11.1
38	Identify 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(d)		Sec. 11.2.1.1, and 11.2.4
39	Specify 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(e)		Sec. 11.2.1, and 11.2.4
40	Indicated penalties or charges for excessive use, where applicable.	10632(f)		Sec. 11.2.5
41	Provide 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.	10632(g)		Sec. 11.2.6
42	Provide a draft water shortage contingency resolution or ordinance.	10632(h)		Appendix H
43	Indicate a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)		Sec. 11.2.1
52	Provide information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments, and the manner in which water quality affects water management strategies and supply reliability	10634	For years 2010, 2015, 2020, 2025, and 2030	Sec. 7

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
53	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing 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. Base the assessment on the information compiled under Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	10635(a)		Sec. 9; Sec. 10
DEMAND MANAGEMENT MEASURES				
26	Describe how each water demand management measures is being implemented or scheduled for implementation. Use the list provided.	10631(f)(1)	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	Sec. 3.4
27	Describe the methods the supplier uses to evaluate the effectiveness of DMMs implemented or described in the UWMP.	10631(f)(3)		Sec. 3.4.12; & Appendix D
28	Provide an estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the ability to further reduce demand.	10631(f)(4)		Sec. 3.1
29	Evaluate each water demand management measure that is not currently being implemented or scheduled for implementation. The evaluation should include economic and non-economic factors, cost-benefit analysis, available funding, and the water suppliers' legal authority to implement the work.	10631(g)	See 10631(g) for additional wording.	Appendix D
32	Include the annual reports submitted to meet the Section 6.2 requirements, if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)	Signers of the MOU that submit the annual reports are deemed compliant with Items 28 and 29.	Appendix D

a The UWMP Requirement descriptions are general summaries of what is provided in the legislation. Urban water suppliers should review the exact legislative wording prior to submitting its UWMP.

b The Subject classification is provided for clarification only. It is aligned with the organization presented in Part I of this guidebook. A water supplier is free to address the UWMP Requirement anywhere with its UWMP, but is urged to provide clarification to DWR to facilitate review.

Appendix D: CUWCC BMP Reports



CUWCC BMP COVERAGE REPORT FOR WHOLESALE AGENCIES

Foundation Best Management Practices for Urban Water Efficiency

Agency: **San Diego County Water Authority** District Name: **San Diego County Water Authority** CUWCC Unit #: **196**

Primary Contact: **Lori Swanson**

Email: **lswanson@sdewa.org**

Base Year: **Fiscal** Calendar or Fiscal Year Reporting

Report Date: **27-May-11**

Foundational BMPs

BMP 1.1.3 Wholesale Agency Assistance Programs

Date of 2009 Data Download

Date of 2010 Data Download

a) Financial investments and building partnerships Value of resources provided to retailers for:		
2009	2009 Monetary Amount for Financial Incentives	2009 Monetary Amount for Equivalent Resources
BMP 1.1 Operational Practices	\$ 1,974	no data
BMP 1.1 Operational Practices 7 FT staff	no data	\$ 749,194
BMP 2.1 Public Outreach	\$ 630,323	no data
BMP 3 Residential	\$ 1,745,337	no data
BMP 4 CII	\$ 1,022,903	no data
BMP 5 Landscape	\$ 2,566,288	no data
Total Value of Resources	\$ 5,966,825	\$ 749,194
	On Track	On Track

a) Financial investments and building partnerships Value of resources provided to retailers for:		
2010	2010 Monetary Amount for Financial Incentives	2010 Monetary Amount for Equivalent Resources
BMP 1.1 Operational Practices	\$ 1,130,601	no data
BMP 1.1 Op. Practices 8.75 FT staff	no data	\$ 911,287
BMP 2.1 Public Outreach	\$ 467,560	no data
BMP 3 Residential	\$ 487,722	no data
BMP 4 CII	\$ 410,229	no data
BMP 5 Landscape	\$ 1,178,899	no data
Total Value of Resources	\$ 3,675,011	\$ 911,287
	On Track	On Track

"On Track" if Retailer accepted offer and Wholesaler provided resources. "Not on Track" if Retailer accepted offer and Wholesaler did not provide resources.

Agency: **San Diego County Water Authority**District Name: **San Diego County Water Authority**CUWCC Unit #: **196**

b) Technical Support	2009 Technical Support Description Grant development and implementation; water savings estimates for water conservation devices; historical database that supports all SDCWA and MWD program devices; liaison between MWD and member agencies for supplemental funding agreements and MOUs.	2010 Technical Support Description Grant development and implementation; water savings estimates for water conservation devices; historical database that supports all SDCWA and MWD program devices; liaison between MWD and member agencies for supplemental funding agreements and MOUs.	" On Track" if Retailer accepted and Wholesaler provided and described Technical Support
	On Track	On Track	
c) Retail Agency	2009 Programs Managed for Retailers no data no data no data no data no data no data no data	2010 Programs Managed for Retailers no data no data no data no data no data no data no data	" On Track" if Retailer accepted and Wholesaler provided and lists programs managed for retailers
	On Track	On Track	
d) Water Shortage Allocation	2009 December 6, 2007 Has Water shortage plan or policy been adopted? http://www.sdcwa.org/water-shortage-and-drought-response-plan	2010 no data Adoption Date File Name http://www.sdcwa.org/water-shortage-and-drought-response-plan	"OnTrack" if plan /policy adopted and document provided. "Not on Track" if no water shortage plan or policy adopted or document not provided.
	On Track	On Track	
e) Non signatory Reporting of BMP implementation by non-signatory agencies	Not able to report	Not able to report	Report if possible
	On Track	On Track	
f) Encourage CUWCC Membership List Efforts to recruit retailers	List Efforts to recruit retailers SDCWA_196_2009_BMP1.1 CUWCC dues pmt.pdf	SDCWA_196_BMP 1-1 CUWCC dues pmt.pdf	"On Track" if efforts listed or dues paid.
	On Track	On Track	

Agency: **San Diego County Water Authority**District Name: **San Diego County Water Authority**CUWCC Unit #: **196****BMP 1.2 Water Loss Control**

	2009	
Complete a prescreening Audit	Yes	On Track
Metered Sales AF	558,262	
Verifiable Other Uses AF	213	
Total Supply AF	558,475	
(Metered Sales + System uses)/ Total Supply >0.89	1.00	On Track
If ratio is less than 0.9, complete a full scale Audit in 2009?	Yes	On Track
Verify Data with Records on File?	Yes	On Track
Operate a system Leak Detection Program?	Yes	On Track

Date of 2009 Data Submittal: #N/A

Date of 2010 Data Submittal: June 10, 2011

On Track if Yes

Metered sales to retail agencies

Into wholesale system

On Track if =>.89, Not on Track if No

On Track if Yes

On Track if Yes

On Track if Yes

Comments

For wholesalers AWWA methodology applies to supplies to wholesalers, sales to retail agencies or sub wholesalers, and pipelines operated by wholesalers. End use retail customers are not considered in this

	2010	
Compile Standard Water Audit using AWWA Software?	Yes	On Track
AWWA file provided to CUWCC?	Yes	On Track
AWWA Water Audit Validity Score?	94	
Completed Training in AWWA Audit Method?	yes	
Completed Training in Component Analysis Process?	Yes	
Complete Component Analysis?	no	
Repaired all leaks and breaks to the extent cost effective?	Yes	On Track
Locate and repair unreported leaks to the extent cost effective.	Yes	On Track
Maintain a record-keeping system for the repair of reported leaks, including time of report, leak location, type of leaking pipe segment or fitting, and leak running time from report to repair.		
Provided 7 types of Water Loss Control Info		
Leaks Repair	Value Real Losses	Value Apparent Losses
Miles Surveyed	Press Reduction	Cost Interventions
Water Lost from Leaks AF		
no data	\$ -	\$ -
0	No	\$ -
no data		

On Track if Yes, Not on Track if No

On Track if Yes, Not on Track if No

Info only until 2012

Info only until 2012

Info only until 2012

Info only until 2012

On Track if Yes, Not on Track if No

On Track if Yes, Not on Track if No

Info only until 2012

info only until 2012

Agency: **San Diego County Water Authority**

District Name: **San Diego County Water Authority**

CUWCC Unit #: **196**

1.3 METERING WITH COMMODITY RATES FOR ALL NEW CONNECTIONS AND RETROFIT OF EXISTING CONNECTIONS

Date of 2009 Data Submittal: May 20, 2011
Date of 2010 Data Submittal: May 20, 2011

Exemption requested?	2009 No	2010 No
At least as Effective As Requested?	No	No
Does Agency have Unmetered Deliveries to Retail Agencies or Other Wholesalers?	No	No
	Yes	Yes
Metered Accounts billed by volume of use		
Completed a written plan, policy or program to test, repair and replace meters	Yes	Yes
	On Track	On Track

Volumetric billing required for all connections on same schedule as metering

On Track if Yes, Not on Track if No



CUWCC BMP COVERAGE REPORT FOR WHOLESALE AGENCIES

Foundation Best Management Practices for Urban Water Efficiency

Agency: **San Diego County Water Authority**
WHOLESALE Water Supplier

District Name: **San Diego County Water Authority**

CUWCC Unit #: **196**

Coverage Report Date: **May 19, 2011**

Primary Contact **Lori Swanson**

Email: **lswanson@sdewa.org**

BMP 2. EDUCATION PROGRAMS

date 2009 datafile downloaded: **May 26, 2011**

BMP 2.1 Public Outreach Actions Implemented and Reported to CUWCC

date 2010 datafile downloaded: **May 26, 2011**

1) Contacts with the public (minimum = 4 times per year)

121

71

2) Water supplier contacts with media (minimum = 4 times per year, i.e., at least quarterly).

2,207

1,198

3) An actively maintained website that is updated regularly (minimum = 4 times per year, i.e., at least quarterly).

Yes

Yes

4) Description of materials used to meet minimum requirement.

Newsletter articles on conservation
General water conservation information
Website
Landscape water conservation media campaign
News releases
Articles or stories resulting from outreach
Written editorials
Newspaper contacts

General water conservation information
Website
Flyers and/or brochures, bill stuffers, message
Landscape water conservation media campaign
News releases
Articles or stories resulting from outreach
Newspaper contacts
Television contacts

All 6 action types
implemented and
reported to CUWCC
to be 'On Track')

5) Annual budget for public outreach program.

\$ 1,176,375

\$ 1,300,133

6) Description of all other outreach programs

Description is too large for text area. Data will be stored in the BMP Reporting database when online.

Public Affairs section that helped support conservation outreach messaging -- media relations, community relations, online communications, graphic design, etc.

On Track for 6 Actions

On Track for 6 Actions

Agency: **San Diego County Water Authority**

WHOLESALE Water Supplier

District Name: **San Diego County Water Authority**CUWCC Unit #: **196**Coverage Report Date: **May 19, 2011****2.2 School Education Programs Implemented and Reported to CUWCC**

date 2009 datafile downloaded:

May 26, 2011

date 2010 datafile downloaded:

May 26, 2011

Does this wholesale agency implement School Education Programs for Sub Wholesalers or Retail unility's benefit?

2009

Yes

2010

Yes

Names of Sub Wholesale and Retail Agencies benefiting from Program?

Carlsbad MWD, City of Del Mar Water Utilities, City of Escondido Utilities Administration, Fallbrook P.U.D., Helix Water District, Lakeside Water District, City of

Carlsbad MWD, City of Del Mar Water Utilities, City of Escondido Utilities Administration, Fallbrook P.U.D., Helix Water District, Lakeside Water District, City of

1) Curriculum materials developed and/or provided by wholesale agency

3rd & 4th grade history video/dvd, "Give Water a Second Chance...Re-cycle it!" for 5th grade, Be Water Smart DVD, Water Quality Testing Kit for high school science teachers' classroom use, Water Science in a Box for 1st, 2nd and 3rd grades, "Watersheds, W

3rd & 4th grade history video/dvd, "Give Water a Second Chance...Re-cycle it!" for 5th grade, Be Water Smart DVD, Water Quality Testing Kit for high school science teachers' classroom use, Water Science in a Box for 1st, 2nd and 3rd grades, Watersheds, W

All 5 actions types implemented and reported to CUWCC to be 'On Track'

2) Materials meet state education framework requirements and are grade-level appropriate?

Yes

Yes

3) Materials Distributed to K-6?

Yes

Yes

Describe K-6 Materials

3rd & 4th grade history video/dvd, "Give Water a Second Chance...Recycle it!" booklet for 5th grade, Be Water Smart DVD for 4th-6th grades, Water Science in a Box for grades 1st, 2nd and 3rd

3rd & 4th grade history video/dvd, "Give Water a Second Chance...Recycle it!" Booklet for 5th grade, Be Water Smart DVD for 4th-6th grades

Describe materials to meet minimum requirements

Materials distributed to 7-12 students?

Yes

Yes

4) Annual budget for school education program.

\$ 450,500

\$ 451,500

Info Only

5) Description of all other water supplier education programs

Traveling Library Program, Youth and Scout Patch Program, 20-Gallon Challenge Student Pledge Contest, Splash Science Mobile Lab, H2O Where Did You Go? Theatre Program

Traveling Library Program, Youth and Scout Merit Patch Program, 20-Gallon Challenge Student Pledge Contest, WaterSm "ART" Essay Contest, Splash Science Mobile Lab, H2O Where Did You Go? Theatre Program

On Track**On Track**

The fields in red are required.



Agency name:

San Diego County Water Authority

Reporting unit name
(District name)

San Diego County Water Authority

Reporting unit number:

196

Primary contact:

First name:

Lori

Last name:

Swanson

Email:

lswanson@sdcca.org

CUWCC BMP Report Forms

You must enter the reporting unit that we have on record for your agency in order to process a coverage report.
Click here to open a table to obtain this number.

2009

BMP 1.1 Operation Practices for Wholesalers

Wholesale agency assistance programs

[View MOU](#)

a. Financial Investments and Building Partnerships

List the total monetary amount of financial incentives and equivalent resources provided to retail members to assist with, or to otherwise support, implementation of BMPs, subtotaled by BMP. List regional partnerships developed to encourage resource conservation and maximize economies of scale benefits.

BMP Section and/or Sub-section Name	Monetary Amount for Financial Incentives	Monetary Amount for Equivalent Resources
BMP 1.1 Operational Practices	\$1,974.00	
BMP 1.1 Operational Practices 7 FT staff		\$749,194.00
BMP 2.1 Public Outreach	\$630,323.00	
BMP 3 Residential	\$1,745,337.00	
BMP 4 CII	\$1,022,903.00	
BMP 5 Landscape	\$2,566,288.00	

b. Technical Support

Supply a summary of types of technical support provided to retail agencies

Grant development and implementation; water savings estimates for water conservation devices; historical database that supports all SDCWA and MWD program devices; liaison between MWD and member agencies for supplemental funding agreements and MOUs.

c. Program Management

If your wholesale agency has assumed reporting responsibility, list the programs managed on behalf of the retail agencies.

Retail Agency Name

Program Name

	Refer to email submittal of this BMP

d. Water Shortage Allocation

If a water shortage allocation plan or policy has been developed, provide the date of adoption and electronic link to the document or hardcopy.

Date Format: 05/15/2010

Enter the file name of the document.

Send it to natalie@cuwcc.org

e. Non-signatory Reporting

Receipt of reports

Enter the file name of the document.

Send it to natalie@cuwcc.org

f. Encourage CUWCC Membership

List of efforts to recruit retailers and amount of dues paid on behalf of retail agencies.

Enter the file name of the document.

Send it to natalie@cuwcc.org

The fields in red are required.



Agency name: San Diego County Water Authority
Reporting unit name (District name): San Diego County Water Authority
Reporting unit number: 196

Primary contact:

First name: Lori
Last name: Swanson
Email: lswanson@sdewa.org

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

2009 BMP 1.2 Water Loss Control

[Link to FAQs](#)

[View MOU](#)

Did your agency complete a pre-screening system audit in 2009? Yes ☒ No ☐

If yes, answer the following:

Determine metered sales in AF: 558,262.00

Definition: other accountable uses not included in metered sales, such as unbilled water use, fire suppression, etc.

Determine system verifiable uses AF: 213.00

Determine total supply into the system in AF: 558,475.00

Does your agency keep necessary data on file to verify the answers above? Yes ☒ No ☐

Did your agency complete a full-scale system water audit during 2009? Yes ☒ No ☐

Does your agency maintain in-house records of audit results or the completed AWWA worksheet for the completed audit which could be forwarded to CUWCC? Yes ☒ No ☐

Did your agency operate a system leak detection program? Yes ☒ No ☐

Comments:

The San Diego County Water Authority (SDCWA) performs realtime balancing of the distribution system by monitoring flow meters throughout the system. The realtime metering of all sources and deliveries allows SDCWA to maintain accurate balance of the system at all times and it provides early detection of unreported leaks. SDCWA also performs a monthly reconciliation of all meters and conducts a loss/gain analysis of the system to confirm the system is within 2% delivery accuracy. In addition to the meter balancing on the system, SDCWA also performs routine visual right of way inspections to ensure unreported leaks are located and repaired quickly.

The fields in red are required.

Agency name: San Diego County Water Authority

Reporting unit name

(District name) San Diego County Water Authority

Reporting unit number: 196

Primary contact:

First name

Lori

Last name

Swanson

Email:

lswanson@sdewa.org

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.



BMP 1.3 Metering with Commodity

[Link to FAQs](#)

[See the complete MOU: View MOU](#)

[See the coverage requirements for this BMP:](#)

Implementation

Does your agency have any unmetered service connections?

☒ Yes ☐ No

If YES, has your agency completed a meter retrofit plan?

☒ Yes ☐ No

Enter the number of previously unmetered accounts fitted with meters during reporting year:

Are all new service connections being metered?

☒ Yes ☐ No

Are all new service connections being billed volumetrically?

☒ Yes ☐ No

Has your agency completed and submitted electronically to the Council a written plan, policy or program to test, repair and replace meters?

☒ Yes ☐ No

Please Fill Out The Following Matrix

Account Type	# Metered Accounts	# Metered Accounts Read	# Metered Accounts Billed by Volume	Billing Frequency Per Year	# of estimated bills/yr
Other	121	121	121	Monthly	12
Other				Other	
Other				Other	
Other				Other	
Other				Other	
Other				Other	
Other				Other	
Other				Other	
Other				Other	
Other				Other	
Other				Other	

Number of CII Accounts with Mixed-use Meters

Number of CII Accounts with Mixed-use Meters Retrofitted with Dedicated Irrigation Meters during Reporting Period

Feasibility Study

Has your agency conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters? ☐ Yes ☒ No

If YES, please fill in the following information:

A. When was the Feasibility Study conducted

B. Email or provide a link to the feasibility study (or description of):

File name(s): Email files to natalie@cuwcc.org

Web address(s) URL: comma-separated list

General Comments about BMP 1.3:

1)"Other" account type are the service connections to the San Diego County Water A



The fields in red are required.

Primary contact:

Agency name: San Diego County Water Authority

First name: Lori

Reporting unit name
(District name) San Diego County Water Authority

Last name: Swanson

Reporting unit number: 196

Email: lswanson@sdcca.org

Click here to open a table that displays your agency name reporting unit name and reporting unit number. Please ensure that you enter the correct information.



2009

[Link to FAQs](#)

BMP 2.1 Public Outreach

[View MOU](#)

Is your agency performing Public Outreach for your Retailers?

Are there one or more retail agencies that count on your agency to help them comply with this BMP?

☒ Yes ☐ No

Enter the name(s) of the retail agency
(comma delimited)

Carlsbad MWD, City of Del Mar Water Utilities, City of Escondido Utilities Administration, Fallbrook P.U.D., Helix Water District, Lakeside Water District, City of Oceanside Water Utilities, Olivenhain Municipal Water District, Otay

Is your agency performing public outreach?

Report a minimum of 4 water conservation related contacts your agency had with the public during the year.

Public Information Programs List

Did at least one contact take place during each quarter of the reporting year?



Number of Public Contacts	Public Information Programs
20	Newsletter articles on conservation
2,197,500	Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets
65	General water conservation information
34	Website
1	Landscape water conservation media campaigns

Contact with the Media

Are there one or more retail agencies that count on your agency to help them comply with this BMP?

☒ Yes ☐ No

Enter the name(s) of the retail agency
(comma delimited)

Carlsbad MWD, City of Del Mar Water Utilities, City of Escondido Utilities Administration, Fallbrook P.U.D., Helix Water District, Lakeside Water District, City of Oceanside Water Utilities, Olivenhain Municipal Water

OR Wholesale Agency (Contacts with the Media)

Did at least one contact take place during each quarter of the reporting year?



Media Contacts List

Number of Media Contacts	Did at least one contact take place during each quarter of the reporting year?	Media Contact Types
17		News releases
77		Articles or stories resulting from outreach
5		Written editorials
1,649		Newspaper contacts
136		Radio contacts
323		Television contacts

Is a Wholesale Agency Performing Website Updates?

Did one or more retail agencies rely on your agency's responsibility for meeting the requirements of and for CUWCC reporting of this BMP?

☒ Yes ☐ No

Enter the name(s) of the retail agency (comma delimited)

Carlsbad MWD, City of Del Mar Water Utilities, City of Escondido Utilities Administration, Fallbrook P.U.D., Helix Water District, Lakeside Water District, City of Oceanside Water Utilities, Olivenhain Municipal Water District, Otay Water District, Padre Dam MWD, Camp Pendleton, Marine Corps Base, City of Poway Water Utilities, Rainbow Municipal Water District, Ramona Municipal Water District, Rincon del Diablo Municipal Water District, City of San Diego Water Department, San Diego Water District, Santa Fe Irrigation District, Sweetwater Authority, Vallecitos Water District, Valley Center Municipal Water District, Vista Irrigation District, Yuima Municipal Water District

Is Your Agency Performing Website Updates?

Enter your agency's URL (website address):

www.sdcwa.org, www.20gallonchallenge.com, www.waterconservationsummit.com

Describe a minimum of four water conservation related updates to your agency's website that took place during the year:

www.sdcwa.org: Updates made 17 times to post conservation-related news releases.
www.20gallonchallenge.com: Updates made 17 times to post conservation-related news releases. Other updates made periodically to reflect changes in program funding or status.
www.waterconservationsummit.com: Updates made on at least 12 occasions -- six times to post meeting agendas for the Conservation Action Committee, and six times to post minutes from Conservation Action Committee meetings.

Did at least one Website Update take place during each quarter of the reporting year?

☒ Yes ☐ No

Public Outreach Annual Budget

Enter budget for public outreach programs. You may enter total budget in a single line or break the budget into discrete categories by entering many rows. Please indicate if personnel costs are included in the entry.

Category	Amount	Personnel Costs Included? If yes, check the box.	Comments
Public Affairs	\$1,164,875	☒	Includes section of Public Affairs Department
Water Conserva	\$10,000	☐	Platinum sponsor for the Quail Botanical Garden
Water Conserva	\$1,500	☐	WaterSmart Landscape Award
		☐	
		☐	
		☐	

Comments:

On June 2, 2009, the Water Authority held its third Water Conservation Summit at Cuyamaca Community College. With water shortage allocations set to begin in

The fields in red are required.



Agency name: San Diego County Water Authority

Reporting unit name
(District name) San Diego County Water Authority

Reporting unit number: 196

Primary contact:

First name: Lori

Last name: Swanson

Email: lswanson@sdewa.org

Click here to open a table that displays your agency name reporting unit name and reporting unit number. Please ensure that you enter the correct information.

[Link to FAQs](#)

[View MOU](#)

2009

BMP 2.2 School Education Programs

School Programs

Is your agency implementing school programs which can be counted to help another agency comply with this BMP?

☒ Yes ☐ No

Enter retailer names, separated by commas:

Carlsbad MWD, City of Del Mar Water Utilities, City of Escondido Utilities Administration, Fallbrook P.U.D., Hells Water District, Lakeside Water District, City of Oceanside Water Utilities, Olivenhain Municipal Water District, Otay Water District, Padre Dam MWD, Camp Pendleton Marine Corps Base, City of Poway Water Utilities, Rainbow Municipal Water District, Ramona Municipal Water District, Rincon del Diablo Municipal Water District, City of San Diego Water Department, San Diego Water District, Santa Fe Irrigation District, Sweetwater Authority, Vallecitos Water District, Valley Center Municipal Water District, Vista Irrigation District, Yuma Municipal Water District

☒ Materials meet state education framework requirements?

Description of Materials

3rd & 4th grade history video/dvd, "Give Water a Second Chance...Re-cycle it!" for 5th grade, Be Water Smart DVD, Water Quality Testing Kit for high school science teachers' classroom use, Water Science in a Box for 1st, 2nd and 3rd grades, "Watersheds, Water & You" student workbook for 5th grade, Water Works! school-to-career curriculum, Water Smart garden curriculum.

☒ Materials distributed to K-6 Students?

Description of materials distributed to K-6 Students

3rd & 4th grade history video/dvd, "Give Water a Second Chance...Recycle it!" booklet for 5th grade, Be Water Smart DVD for 4th-6th grades, Water Science in a Box for grades 1st, 2nd and 3rd

Number of students reached

13,400

☒ Materials distributed to 7-12 Students?

Description of materials distributed to 7-12 Students

Water quality testing kits to high school science teachers for use in their classrooms - 13 science teachers trained reaching 1,009 students

Number of Distribution

30

Annual budget for school education program

\$450,500.00

Description of all other water supplier education programs

Traveling Library Program, Youth and Scout Patch Program, 20-Gallon Challenge Student Pledge Contest, Splash Science Mobile Lab, H2O Where Did You Go? Theatre Program

School Program Activities

Classroom presentations:

Number of presentations 393

Number of attendees 10,868

Large group assemblies:

Number of presentations 37

Number of attendees 19,154

Children's water festivals or other events:

Number of presentations 1 high school

Number of attendees 950

Cooperative efforts with existing science/water education programs (various workshops, science fair awards or judging) and follow-up:

Number of presentations 90

Number of attendees 3,150

Other methods of disseminating information (i.e. themed age-appropriate classroom loaner kits):

Description

n/a

Number distributed

n/a

Staffing children's booths at events & festivals:

Number of booths

n/a

Number of attendees

n/a

Water conservation contests such as poster and photo:

Description

20-Gallon Challenge Student Pledge Contest (marketing brochure drives students to website to sign up) drawings held for prizes.

Number distributed

15,000 Marketing Brochures

Offer monetary awards/funding or scholarships to students:

Number Offered

6

Total Funding

\$1,200

Teacher training workshops:

Number of presentations

7 WaterSmart Gardening Workshops and 2 Regional

Number of attendees

100 (70 WaterSmart & 30 Water Quality)

Fund and/or staff student field trips to treatment facilities, recycling facilities, water conservation gardens, etc.:

Number of tours or field trips

n/a

Number of participants

n/a

College internships in water conservation offered:

Number of internships

1

Total funding

\$15,000

Career fairs/workshops:

Number of presentations

n/a

Number of attendees

n/a

Additional program(s) supported by agency but not mentioned above:

Description

Reuben H. Fleet Science Center - 331,000 visitors/year reaching water exhibit = approx 20 % or 66,200

Number of events (if applicable)

stationary display at the Reuben H. Fleet Science Ctr

Number of participants

66,200

Total reporting period budget expenditures for school education programs (include all agency costs):

\$450,500

Comments

The San Diego County Water Authority provided partial funding for 18 schools which were reached by the Splash Science Mc

The fields in red are required.



Agency name: San Diego County Water Authority
 Reporting unit name (District name): San Diego County Water Authority
 Reporting unit number: 196

Primary contact:

First name: Lori
 Last name: Swanson
 Email: lswanson@sdcw.org

CUWCC BMP Report Forms

You must enter the reporting unit that we have on record for your agency in order to process a coverage report. Click here to open a table to obtain this number.

2010 BMP 1.1 Operation Practices for Wholesalers

[View MOU](#)

Wholesale agency assistance programs

a. Financial Investments and Building Partnerships

List the total monetary amount of financial incentives and equivalent resources provided to retail members to assist with, or to otherwise support, implementation of BMPs, subtotaled by BMP. List regional partnerships developed to encourage resource conservation and maximize economies of scale benefits.

BMP Section and/or Sub-section Name	Monetary Amount for Financial Incentives	Monetary Amount for Equivalent Resources
BMP 1.1 Operational Practices	\$1,130,601.00	
BMP 1.1 Op. Practices 8.75 FT staff		\$911,287.00
BMP 2.1 Public Outreach	\$467,560.00	
BMP 3 Residential	\$487,722.00	
BMP 4 CII	\$410,229.00	
BMP 5 Landscape	\$1,178,899.00	

b. Technical Support

Supply a summary of types of technical support provided to retail agencies

Grant development and implementation; water savings estimates for water conservation devices; historical database that supports all SDCWA and MWD program devices; liaison between MWD and member agencies for supplemental funding agreements and MOUs.

c. Program Management

If your wholesale agency has assumed reporting responsibility, list the programs managed on behalf of the retail agencies.

Retail Agency Name

Program Name

	Refer to email submittal of this BMP

d. Water Shortage Allocation

If a water shortage allocation plan or policy has been developed, provide the date of adoption and electronic link to the document or hardcopy.

Date Format: 05/15/2010

Enter the file name of the document.

Send it to natalie@cuwcc.org

e. Non-signatory Reporting

Receipt of reports

Enter the file name of the document.

Send it to natalie@cuwcc.org

f. Encourage CUWCC Membership

List of efforts to recruit retailers and amount of dues paid on behalf of retail agencies.

Enter the file name of the document.

Send it to natalie@cuwcc.org

The fields in red are required.



Agency name: San Diego County Water Authority

Reporting unit name
(District name) San Diego County Water Authority

Reporting unit number: 196

Primary contact:

First name: Lori

Last name: Swanson

Email: lswanson@sdcca.org

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

[Link to FAQs](#)

[View MOU](#)

2010 BMP 1.2 Water Loss Control

AWWA Water Audit

Agency to complete a Water Audit & Balance Using The AWWA Software ☒ Yes ☐ No
Email to natalie@cuwcc.org - Worksheets (AWWA Water Audit). Enter the name of the file below:

SDCWA_196_2010_BMP1-2 Water Loss Control_AWWA Water Audit Worksheet.pdf

Water Audit Validity Score from AWWA spreadsheet 94

Agency Completed Training In The AWWA Water Audit Method ☒ Yes ☐ No

Agency Completed Training In The Component Analysis Process ☒ Yes ☐ No

Completed/Updated the Component Analysis (at least every 4 years)? ☐ Yes ☒ No

Component Analysis Completed/Updated Date

Water Loss Performance

Agency Repaired All Reported Leaks & Breaks To The Extent Cost Effective ☒ Yes ☐ No

Recording Keeping Requirements:

Date/Time Leak Reported	Leak Location
Type of Leaking Pipe Segment or Fitting	Leak Running Time From Report to Repair
Leak Volume Estimate	Cost of Repair

Agency Located and Repaired Unreported Leaks to the Extent Cost Effective ☒ Yes ☐ No

Type of Program Activities Used to Detect Unreported Leaks

The San Diego County Water Authority (SDCWA) performs realtime balancing of the distribution system by monitoring flow meters throughout the system.

Annual Summary Information

Complete the following table with annual summary information (required for reporting years 2-5 only)

Total Leaks Repaired	Economic Value Of Real Loss	Economic Value Of Apparent Loss	Miles Of System Surveyed For Leaks	Pressure Reduction Undertaken for loss reduction	Cost Of Interventions	Water Saved (AF/Year)

Comments:

Annual summary information will begin in 2011 and will be reported on the 2011 BMP 1-2 Water Loss Control form.

The fields in red are required.

Agency name: San Diego County Water Authority

Reporting unit name

(District name) San Diego County Water Authority

Reporting unit number: 196

Primary contact:

First name:

Lori

Last name:

Swanson

Email:

lswanson@sdewa.org

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.



BMP 1.3 Metering with Commodity 2010

[Link to FAQs](#)

[See the complete MOU: View MOU](#)

[See the coverage requirements for this BMP:](#)

Implementation

Does your agency have any unmetered service connections?

☒ Yes ☐ No

If YES, has your agency completed a meter retrofit plan?

☒ Yes ☐ No

Enter the number of previously unmetered accounts fitted with meters during reporting year:

Are all new service connections being metered?

☒ Yes ☐ No

Are all new service connections being billed volumetrically?

☒ Yes ☐ No

Has your agency completed and submitted electronically to the Council a written plan, policy or program to test, repair and replace meters?

☒ Yes ☐ No

Please Fill Out The Following Matrix

Account Type	# Metered Accounts	# Metered Accounts Read	# Metered Accounts Billed by Volume	Billing Frequency Per Year	# of estimated bills/yr
Other	131	131	131	Monthly	12
Other				Other	
Other				Other	
Other				Other	
Other				Other	
Other				Other	
Other				Other	
Other				Other	
Other				Other	
Other				Other	
Other				Other	

Number of CII Accounts with Mixed-use Meters

Number of CII Accounts with Mixed-use Meters Retrofitted with Dedicated Irrigation Meters during Reporting Period

Feasibility Study

Has your agency conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters? ☐ Yes ☒ No

If YES, please fill in the following information:

A. When was the Feasibility Study conducted

B. Describe, upload or provide an electronic link to the Feasibility Study Upload File

File name(s): Email files to natalie@cuwcc.org

Web address(s) URL: comma-separated list

Comments:

1)"Other" account type are the service connections to the San Diego County Water A



The fields in red are required.

Primary contact:

Agency name: San Diego County Water Authority

First name: Lori

Reporting unit name
(District name) San Diego County Water Authority

Last name: Swanson

Reporting unit number: 196

Email: lswanson@sdwcc.org

Click here to open a table that displays your agency name reporting unit name and reporting unit number. Please ensure that you enter the correct information.



2010

BMP 2.1 Public Outreach

[Link to FAQs](#)

[View MOU](#)

Is your agency performing Public Outreach for your Retailers?

Are there one or more retail agencies that count on your agency to help them comply with this BMP?

☒ Yes ☐ No

Enter the name(s) of the retail agency
(comma delimited)

Carlsbad MWD, City of Del Mar Water Utilities, City of Escondido Utilities Administration, Fallbrook P.U.D., Helix Water District, Lakeside Water District, City of Oceanside Water Utilities, Olivenhain Municipal Water District, Otay

Is your agency performing public outreach?

Report a minimum of 4 water conservation related contacts your agency had with the public during the year.

Public Information Programs List

Did at least one contact take place during each quarter of the reporting year?



Number of Public Contacts	Public Information Programs
37	General water conservation information
18	Website
47,500	Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets
1	Landscape water conservation media campaigns
14	Newsletter articles on conservation

Contact with the Media

Are there one or more retail agencies that count on your agency to help them comply with this BMP?

☒ Yes ☐ No

Enter the name(s) of the retail agency
(comma delimited)

Carlsbad MWD, City of Del Mar Water Utilities, City of Escondido Utilities Administration, Fallbrook P.U.D., Helix Water District, Lakeside Water District, City of Oceanside Water Utilities, Olivenhain Municipal Water

OR Wholesale Agency (Contacts with the Media)

Did at least one contact take place during each quarter of the reporting year?



Media Contacts List

Number of Media Contacts	Did at least one contact take place during each quarter of the reporting year?	Media Contact Types
9		News releases
71		Articles or stories resulting from outreach
873		Newspaper contacts
171		Television contacts
72		Radio contacts
2		Written editorials

Is a Wholesale Agency Performing Website Updates?

Did one or more retail agencies rely on your agency's responsibility for meeting the requirements of and for CUWCC reporting of this BMP? ☐ Yes ☐ No

Enter the name(s) of the retail agency (comma delimited)

Carlsbad MWD, City of Del Mar Water Utilities, City of Escondido Utilities Administration, Fallbrook P.U.D., Helix Water District, Lakeside Water District, City of Oceanside Water Utilities, Olivenhain Municipal Water District, Otay Water District, Padre Dam MWD, Camp Pendleton, Marine Corps Base, City of Poway Water Utilities, Rainbow Municipal Water District, Ramona Municipal Water District, Rincon del Diablo Municipal Water District, City of San Diego Water Department, San Diego Water District, Santa Fe Irrigation District, Sweetwater Authority, Vallecitos Water District, Valley Center Municipal Water District, Vista Irrigation District, Yuma Municipal Water District

Is Your Agency Performing Website Updates?

Enter your agency's URL (website address):

www.sdcwa.org, www.20gallonchallenge.com, www.waterconservationsummit.com

Describe a minimum of four water conservation related updates to your agency's website that took place during the year:

www.sdcwa.org: Updated 9 times to post conservation-related news releases.
www.20gallonchallenge.com: Updated 9 times to post conservation-related news releases. Additional updates made to reflect changes in conservation programs.
www.waterconservationsummit.com: Updated 12 times – updated six times to post Conservation Action Committee meeting agendas, and six times to post Conservation Action Committee meeting minutes.

Did at least one Website Update take place during each quarter of the reporting year? ☐ Yes ☐ No

Public Outreach Annual Budget

Enter budget for public outreach programs. You may enter total budget in a single line or break the budget into discrete categories by entering many rows. Please indicate if personnel costs are included in the entry.

Category	Amount	Personnel Costs Included? If yes, check the box.	Comments
Public Affairs	\$1,288,633	☒	Public Affairs section that helped support cost+
Water Conserva+	\$10,000	☐	Platinum Sponsor for the Quail Botanical Gar+
Water Conserva+	\$1,500	☐	WaterSmart Landscape Award
		☐	
		☐	
		☐	

Comments:

The fields in red are required.



Agency name: San Diego County Water Authority
Reporting unit name (District name): San Diego County Water Authority
Reporting unit number: 196
Primary contact: First name: Lori
Last name: Swanson
Email: lswanson@sdcca.org

Click here to open a table that displays your agency name reporting unit name and reporting unit number. Please ensure that you enter the correct information.

2010

BMP 2.2 School Education Programs School Programs

[Link to FAQs](#)

[View MOU](#)

Is your agency implementing school programs which can be counted to help another agency comply with this BMP?

☒ Yes ☐ No

Enter retailer names, separated by commas:

Carlsbad MWD, City of Del Mar Water Utilities, City of Escondido Utilities Administration, Fallbrook P.U.D., Hahn Water District, Lakeside Water District, City of Oceanside Water Utilities, Olivenhain Municipal Water District, Otay Water District, Pacific Dun MWD, Camp Pendleton Marine Corps Base, City of Poway Water Utilities, Rainbow Municipal Water District, Ramona Municipal Water District, Rincon del Diablo Municipal Water District, City of San Diego Water Department, San Diego County Water District, Santa Fe Irrigation District, Sweetwater Authority, Vallecitos Water District, Valley Center Municipal Water District, Vista Irrigation District, Yuma Municipal Water District

☒ Materials meet state education framework requirements?

Description of Materials

3rd & 4th grade history video/dvd, "Give Water a Second Chance...Re-cycle it!" for 5th grade, Be Water Smart DVD, Water Quality Testing Kit for high school science teachers' classroom use, Water Science in a Box for 1st, 2nd and 3rd grades, Watersheds, Water & You" student workbook for 5th grade, Water Works! school-to-career workbook, Water Smart garden curriculum

☒ Materials distributed to K-6 Students?

Description of materials distributed to K-6 Students

3rd & 4th grade history video/dvd, "Give Water a Second Chance...Recycle it!" Booklet for 5th grade, Be Water Smart DVD for 4th-6th grades

Number of students reached

7,921

☒ Materials distributed to 7-12 Students?

Description of materials distributed to 7-12 Students

Water Quality testing kits to high school science teachers for use in their classrooms---13 trained reaching 1,530 students

Number of Distribution

30

Annual budget for school education program

\$451,500.00

Description of all other water supplier education programs

Traveling Library Program, Youth and Scout Merit Patch Program, 20-Gallon Challenge Student Pledge Contest, WaterSm "ART" Essay Contest, Splash Science Mobile Lab, H2O Where Did You Go? Theatre Program

School Program Activities

Classroom presentations:

Number of presentations

355

Number of attendees

8,923

Large group assemblies:

Number of presentations

67

Number of attendees

34,362

Children's water festivals or other events:

Number of presentations

2 elementary schools

Number of attendees

675

Cooperative efforts with existing science/water education programs (various workshops, science fair awards or judging) and follow-up:

Number of presentations

90

Number of attendees

3,150

Other methods of disseminating information (i.e. themed age-appropriate classroom loaner kits):

Description

n/a

Number distributed

n/a

Staffing children's booths at events & festivals:

Number of booths

n/a

Number of attendees

n/a

Water conservation contests such as poster and photo:

Description

20-Gallon Challenge Student Pledge Contest (marketing brochure drives students to website to sign-up, drawings held for prizes), WaterSm "ART" Essay contest

Number distributed

15,000 marketing brochures

Offer monetary awards/funding or scholarships to students:

Number Offered

6 (Science Fair)

Total Funding

\$1,200

Teacher training workshops:

Number of presentations

7 WaterSmart Gardening Workshops, and 2 Regional

Number of attendees

100 (70 Water Smart & 30 Water Quality)

Fund and/or staff student field trips to treatment facilities, recycling facilities, water conservation gardens, etc.:

Number of tours or field trips

n/a

Number of participants

n/a

College internships in water conservation offered:

Number of internships

1/2

Total funding

\$7,500

Career fairs/workshops:

Number of presentations

n/a

Number of attendees

n/a

Additional program(s) supported by agency but not mentioned above:

Description

Reuben H. Fleet Science Center -- 350,000 visitors/year reaching approximately 20% to water exhibit (70,000)

Number of events (if applicable)

Display at Reuben H. Fleet Science Ctr

Number of participants

70,000

Total reporting period budget expenditures for school education programs (include all agency costs):

\$451,500

Comments

The San Diego County Water Authority provided partial funding for 18 schools which were reached by the Splash Science Mo

Appendix E:

Documentation on Water Authority Supplies

Documentation on Water Authority Supplies

Written Contracts or Other Proof

Imperial Irrigation District (IID) - Written Contracts or other Proof

The supply and costs associated with the transfer are based primarily on the following documents:

Agreement for Transfer of Conserved Water by and between IID and the Water Authority (April 29, 1998). This Agreement provides for a market-based transaction in which the Water Authority would pay IID a unit price for agricultural water conserved by IID and transferred to the Water Authority.

Revised Fourth Amendment to Agreement between IID and the Water Authority for Transfer of Conserved Water (October 10, 2003). Consistent with the executed Quantification Settlement Agreement (QSA) and related agreements, the amendments restructure the agreement and modify it to minimize the environmental impacts of the transfer of conserved water to the Water Authority.

Amended and Restated Agreement between Metropolitan and Water Authority for the Exchange of Water (October 10, 2003). This agreement was executed pursuant to the QSA and provides for delivery of the transfer water to the Water Authority.

Environmental Cost Sharing, Funding, and Habitat Conservation Plan Development Agreement among IID, Coachella Valley Water District (CVWD), and Water Authority (October 10, 2003). This Agreement provides for the specified allocation of QSA-related environmental review, mitigation, and litigation costs for the term of the QSA, and for development of a Habitat Conservation Plan.

Quantification Settlement Agreement Joint Powers Authority Creation and Funding Agreement (October 10, 2003). The purpose of this agreement is to create and fund the QSA Joint Powers Authority and to establish the limits of the funding obligation of CVWD, IID, and Water Authority for environmental mitigation and Salton Sea restoration pursuant to SB 654 (Machado).

Fifth Amendment to Agreement Between Imperial Irrigation District and San Diego County Water Authority for Transfer of Conserved Water (December 21, 2009). This agreement implements a settlement between the Water Authority and IID regarding the base contract price of transferred water.

Federal, State, and Local Permits/Approvals

Federal Endangered Species Act Permit. The U.S. Fish and Wildlife Service (USFWS) issued a Biological Opinion on January 12, 2001, that provides incidental take authorization and certain measures required to offset species impacts on the Colorado River regarding such actions.

State Water Resources Control Board (SWRCB) Petition. SWRCB adopted Water Rights Order 2002-0016 concerning IID and Water Authority's amended joint petition for approval of a long-term transfer of conserved water from IID to the Water Authority and to change the point of diversion, place of use, and purpose of use under Permit 7643.

Environmental Impact Report (EIR) for Conservation and Transfer Agreement. As lead agency, IID certified the Final EIR for the Conservation and Transfer Agreement on June 28, 2002.

U. S. Fish and Wildlife Service Biological Draft Biological Opinion and Incidental Take Statement on the Bureau of Reclamation's Voluntary Fish and Wildlife Conservation Measures and Associated Conservation Agreements with the California Water Agencies (12/18/02). The USFWS issued the biological opinion/incidental take statement for water transfer activities involving the Bureau of Reclamation and associated with IID/other California water agencies' actions on listed species in the Imperial Valley and Salton Sea (per the June 28, 2002 EIR).

Addendum to EIR for Conservation and Transfer Agreement. IID as lead agency and Water Authority as responsible agency approved addendum to EIR in October 2003.

Environmental Impact Statement (EIS) for Conservation and Transfer Agreement. Bureau of Reclamation issued a Record of Decision on the EIS in October 2003.

CA Department of Fish and Game California Endangered Species Act Incidental Take Permit #2081-2003-024-006). The CDFG issued this permit (10/22/04) for potential take effects on state-listed/fully protected species associated with IID/other California water agencies' actions on listed species in the Imperial Valley and Salton Sea (per the June 28, 2002 EIR).

California Endangered Species Act Permit. A CESA permit was issued by California Department of Fish and Game (CDFG) on April 4, 2005, providing incidental take authorization for potential species impacts on the Colorado River.

All-American Canal (AAC) and Coachella Canal (CC) Lining - Written Contracts or other Proof

The expected supply and costs associated with the lining projects are based primarily on the following documents:

U.S. Public Law 100-675 (1988). Authorized the Department of the Interior to reduce seepage from the existing earthen AAC and CC. The law provides that conserved water will be made available to specified California contracting water agencies according to established priorities.

California Department of Water Resources - Metropolitan Funding Agreement (2001). Reimburse Metropolitan for project work necessary to construct the lining of the CC in an amount not to exceed \$74 million. Modified by First Amendment (2004) to replace Metropolitan with the Authority. Modified by Second Amendment (2004) to increase funding amount to \$83.65 million, with addition of funds from Proposition 50.

California Department of Water Resources - IID Funding Agreement (2001). Reimburse IID for project work necessary to construct a lined AAC in an amount not to exceed \$126 million.

Metropolitan - CVWD Assignment and Delegation of Design Obligations Agreement (2002). Assigns design of the CC lining project to CVWD.

Metropolitan - CVWD Financial Arrangements Agreement for Design Obligations (2002). Obligates Metropolitan to advance funds to CVWD to cover costs for CC lining project design and CVWD to invoice Metropolitan to permit the Department of Water Resources to be billed for work completed.

Allocation Agreement among the United States of America, The Metropolitan Water District of Southern California, Coachella Valley Water District, Imperial Irrigation District, San Diego County Water Authority, the La Jolla, Pala, Pauma, Rincon, and San Pasqual Bands of Mission Indians, the San Luis Rey River Indian Water Authority, the City of Escondido, and Vista Irrigation District (October 10, 2003). This agreement includes

assignment of Metropolitan's rights and interest in delivery of 77,700 AF of Colorado River water previously intended to be delivered to Metropolitan to the Water Authority. Allocates water from the AAC and CC lining projects for at least 110 years to the Water Authority, the San Luis Rey Indian Water Rights Settlement Parties, and IID, if it exercises its call rights.

Amended and Restated Agreement between Metropolitan and Water Authority for the Exchange of Water (October 10, 2003). This agreement was executed pursuant to the QSA and provides for delivery of the conserved canal lining water to the Water Authority.

Agreement between Metropolitan and Water Authority regarding Assignment of Agreements related to the AAC and CC Lining Projects. This agreement was executed in April 2004 and assigns Metropolitan's rights to the Water Authority for agreements that had been executed to facilitate funding and construction of the AAC and CC lining projects:

Assignment and Delegation of Construction Obligations for the Coachella Canal Lining Project under the Department of Water Resources Funding Agreement No. 4600001474 from the San Diego County Water Authority to the Coachella Valley Water District, dated September 8, 2004.

Agreement Regarding the Financial Arrangements between the San Diego County Water Authority and Coachella Valley Water District for the Construction Obligations for the Coachella Canal Lining Project, dated September 8, 2004.

Agreement No. 04-XX-30-W0429 Among the United States Bureau of Reclamation, the Coachella Valley Water District, and the San Diego County Water Authority for the Construction of the Coachella Canal Lining Project Pursuant to Title II of Public Law 100-675, dated October 19, 2004.

California Water Code Section 12560 et seq. This Water Code Section provides for \$200 million to be appropriated to the Department of Water Resources to help fund the canal lining projects in furtherance of implementing California's Colorado River Water Use Plan.

California Water Code Section 79567. This Water Code Section identifies \$20 million as available for appropriation by the California Legislature from the Water Security, Clean Drinking Water, Coastal, and Beach Protection Fund of 2002 (Proposition 50) to DWR for grants for canal lining and related projects necessary to reduce Colorado River water use. According to the Allocation Agreement, it is the intention of the agencies that those funds

will be available for use by the Water Authority, IID, or CVWD for the AAC and CC lining projects.

California Public Resources Code Section 75050(b)(1). This section identifies up to \$36 million as available for water conservation projects that implement the Allocation Agreement as defined in the Quantification Settlement Agreement.

Federal, State, and Local Permits/Approvals

AAC Lining Project Final EIS/EIR (March 1994). A final EIR/EIS analyzing the potential impacts of lining the AAC was completed by the Bureau of Reclamation (Reclamation) in March 1994. A Record of Decision was signed by Reclamation in July 1994, implementing the preferred alternative for lining the AAC. A re-examination and analysis of these environmental compliance documents by Reclamation in November 1999 determined that these documents continued to meet the requirements of the NEPA and the CEQA and would be valid in the future.

CC Lining Project Final EIS/EIR (April 2001). The final EIR/EIS for the CC lining project was completed in 2001. Reclamation signed the Record of Decision in April 2002. An amended Record of Decision has also been signed to take into account revisions to the project description.

Mitigation, Monitoring, and Reporting Program for Coachella Canal Lining Project, SCH #1990020408; prepared by Coachella Valley Water District, May 16, 2001.

Environmental Commitment Plan for the Coachella Canal Lining Project, approved by the US Bureau of Reclamation (Boulder City, NV) on March 4, 2003.

Environmental Commitment Plan and Addendum to the All-American Canal Lining Project EIS/EIR California State Clearinghouse Number SCH 90010472 (June 2004, prepared by IID).

Addendum to Final EIS/EIR and Amendment to Environmental Commitment Plan for the All-American Canal Lining Project (approved June 27, 2006, by IID Board of Directors).

Carlsbad Desalination Project – Written Contracts or other Proof

The expected supply and costs associated with the Carlsbad Desalination Project are based primarily on the following documents:

Development Agreement between City of Carlsbad and Poseidon (October 2009). A Development Agreement between Carlsbad and Poseidon was executed on October 5, 2009

Agreement of Term Sheet between the Water Authority and Poseidon Resources (July 2010). The Water Authority approved the Term Sheet at its July 2010 Board Meeting. The Term Sheet outlines the terms and conditions of a future Water Purchase Agreement with Poseidon and allocates the resources to prepare the draft Water Purchase Agreement.

Federal, State, and Local Permits/Approvals

Carlsbad Desalination Project Final EIR (June 2006). The City of Carlsbad certified the Final EIR and the final Notice of Determination for the project was signed on June 14, 2006.

NPDES Discharge Permit (August 2006). The Regional Water Quality Control Board issues the NPDES Discharge Permit for the project on August 16, 2006.

Drinking Water Permit (October 2006). The California Department of Health Services approved the Conditional Drinking Water Permit on October 19, 2006.

Coastal Development Permit (November 2007). The California Coastal Commission approved, with conditions, the Coastal Development Permit on November 15, 2007. The Coastal Development Permit allows construction and operation of the project in the Coastal Zone.

State Lands Commission Lease Application (August 2008). Amends lease of land by Cabrillo Power I LLC (Cabrillo) from the State Lands Commission for the lands where the project will be constructed. Cabrillo and Poseidon entered into agreement on July 1, 2003, authorizing Poseidon to use those lands to construct the project.

Addendum to Final EIR (September 2009). An Addendum to the Final EIR was certified by the City of Carlsbad and Notice of Determination for the Addendum was signed on September 15, 2009. The Addendum modified water conveyance pipeline alignments.

Carryover Storage and San Vicente Dam Raise Project – Written Contracts or other Proof

The expected dry-year supply and costs associated with 100,000 AF of carryover storage at San Vicente Dam and Reservoir are based primarily on the following documents:

Agreement Between the San Diego County Water Authority and the City of San Diego for the Emergency Storage Project (Expansion of San Vicente Reservoir) (May 1998).

Agreement allowing the Water Authority emergency storage and future carryover storage rights in San Vicente Reservoir, where the City maintains ownership and operation of the expanded San Vicente Dam and Reservoir facilities.

City of San Diego Ordinance Number O-18521 (May 1998). Ordinance passed by the City of San Diego City Council authorizing execution of above 1998 Agreement between the City and Water Authority.

Principles of Understanding Between the City of San Diego and the San Diego County Water Authority for the Emergency Storage Project (Operation of the San Vicente Reservoir and Lake Hodges Facilities) (February 2003). POU amending the 1998 Agreement clarifying operation of the expanded San Vicente Reservoir for emergency storage, and maintaining allowance for future expansion for carryover storage capacity.

Principles of Understanding Between the San Diego County Water Authority and the City of San Diego for the Operation of the San Vicente Reservoir Implemented Under the Carryover Storage Project (August 2008). POU amending the 1998 Agreement and 2003 POU establishing protocols for cooperation between the Water Authority and the City during carryover storage project implementation; issues included a reservoir regulating plan, operating plan, water quality studies, operation of existing City facilities, and land acquisition.

Federal, State, and Local Permits/Approvals

Carryover Storage and San Vicente Dam Raise EIR/EIS (April 2008). As CEQA lead agency, the Water Authority's Board of Directors certified the Final EIR/EIS on April 24,

2008. As NEPA lead agency, the U.S. Army Corps of Engineers issued a Record of Decision on the Final EIS on January 8, 2009.

California Regional Water Quality Control Board Clean Water Act Section 401 Water Quality Certification (October 2008). RWQCB issued a Section 401 Certification on October 27, 2008, Water Quality Certification Number 08C-047.

U.S. Fish & Wildlife Service Biological Opinion for the San Diego County Water Authority's Carryover Storage and San Vicente Dam Raise Project (October 2008). U.S. Fish & Wildlife Service issued a Biological Opinion on October 28, 2008, B.O. Number 2008B0061-2008F0732.

California Department of Fish & Game Streambed Alteration Agreement (October 2008). California Dept. of Fish & Game issued Streambed Alteration Agreement #1600-2008-0216-R5 on October 24, 2008, per Section 1602 of the Fish & Game Code.

U.S. Army Corps of Engineers Section 404 Permit (February 2009). U.S. Army Corps of Engineers issued a Section 404 permit on February 12, 2009, Permit Number SPL-200-01015-RRS.

Semitropic Original Water Bank - Written Contracts or other Proof

The expected supply and costs associated with out-of-county storage and transfer water are based primarily on the following documents:

Amended and Restated Assignment Agreement (June 2008). Assignment and purchase of Vidler Water Company, Inc. rights, title, interest and obligations in the Semitropic Water Banking and Exchange Program

Consent to Assignment (July 2008). Fulfills the condition precedent described in Section 3 of the Amended Assignment Agreement, including the requirements of subsections 3.1 and 3.2. The Second Amended Agreement and Third Amendment and the Fourth Amendment are incorporated in its entirety.

Memorandum of Assignment of Vidler-Semitropic Water Banking and Exchange Program (July 2008). Assigned to the Water Authority 18.5 percent of the rights and obligations of the Semitropic Water Banking and Exchange Program from Vidler Water Company, Inc.

Agreement Among The Department of Water Resources, Metropolitan Water District and Sutter Extension Water District for Storage and Conveyance of 2008 Transfer Water (April 2008). Set forth provisions governing the storage and conveyance of 13,071 af of Transfer Water (before conveyance and carriage losses) via State Water Project facilities.

Sutter Extension Water District and the Water Authority Memorandum of Understanding for Transfer of Water (February 2008 and March 2008, respectively). Memorialize the agreement for program development, environmental review, and other preliminary actions necessary for an agreement for transfer of water on the general terms provided in Memorandum.

Agreement Among The Department of Water Resources, Metropolitan Water District and Butte Water District for Storage and Conveyance of 2008 Transfer Water (April 2008). Set forth provisions governing the storage and conveyance of 10,006 af of Transfer Water (before conveyance and carriage losses) via State Water Project facilities.

Butte Water District and the Water Authority Memorandum of Understanding for Transfer of Water (February 2008 and March 2008, respectively). Memorialize the agreement for program development, environmental review, and other preliminary actions necessary for an agreement for transfer of water on the general terms provided in Memorandum.

Agreement for Exchange and Conveyance of Water between MWD and the Water Authority (September 2008). Agreement between the Water Authority and MWD to exchange water utilizing its storage and recovery rights in Semitropic's Groundwater Storage Program.

Consent Agreement (September 2008). Semitropic consents to the assignment by MWD from MWD's Semitropic Storage Account to the Water Authority's Semitropic Storage Account of approximately 16,117 af of water.

Appendix F:

Documentation on Local Supplies

Table F-1
Surface Water Projections for 2010 UWMP

Member Agency	Reservoir	Annual Member Agency Planned Local Use (AF)	Basis for Yield Determination (information provided by member agencies)
Escondido, City of	Henshaw / Wholford	7,260	25-year average
Helix WD	Cuyamaca / El Capitan	4,117	This value is based on the historical median runoff value of 4,605 AF/Y reduced by the historical evaporation rate of 10.6% (or 488 AF/Y)
San Diego, City of	Barrett El Capitan Hodges Lower Otay Morena San Vicente Sutherland Sub-Total	18,318 ^a	Median yield based on Reservoir Management Plan - post-2015 supply adjusted downward to account for increase in Cal Am demands
Sweetwater Authority	Loveland Sweetwater Sub-total	7,400	The yield is based on average production from the Sweetwater River since 1945. Note: The historic production rate flow has been revised since the last UWMP
San Dieguito W.D./ Santa Fe I.D.	San Dieguito / Hodges	5,700 ^b	Per Agreement. The split is SDWD 42.67% and SFID 57.33%
Vista I.D.	Henshaw	5,411	Median for the years 1960 - 2004
Total		48,206	

^a Surface Water projections for San Diego: 2015 - 18,318 AF/YR, 2020 - 18,052 AF/YR, 2025 - 17,990 AF/YR, 2030 - 17,654 AF/YR, 2035 - 17,401 AF/YR

^b Surface water projection for San Dieguito/Hodges is 7,500 AF/YR until the Hodges/Olivenhain Pipeline and Pump Station are complete in 2010.

Table F-2
Groundwater Projections for 2010 UWMP (Draft)

EXISTING GROUNDWATER [YIELD] PROJECTS AND PROPOSED EXPANSIONS (VERIFIABLE)

Member Agency	Project or Facility Name	Project Type	Groundwater Basin or Location	Existing (AF/YR):	Projected Yield Verifiable Projects (Existing Project Including Planned Expansions) AF/YR					
				Based on Period 2005-2009	2010	2015	2020	2025	2030	2035
Helix WD	Groundwater Production Well 101	Pump & Blend (with raw imported water)	El Monte Basin	149	150	150	150	150	150	150
Oceanside, City of	Mission Basin Desalter Facility	Brackish Groundwater Recovery & Treatment	Mission Basin (Lower San Luis Rey River Valley)	2,228	5,227	6,720	6,720	6,720	6,720	6,720
Lakeside WD	Vine Street Groundwater Production Facility	Pump & Treat (blend with imported water)	Santee Basin (San Diego River Basin)	915	900	900	900	900	900	900
MCB Camp Pendleton	South System	Pump & Conventional Treatment	Lower Santa Margarita & Las Flores Basins	8,561	7,256	6,960	6,350	7,350	8,090	8,090
	North System		San Mateo & San Onofre Basins							
San Diego, City of	San Vicente GW Production Well	Pump & Blend	Santee/El Monte	500	500	500	500	500	500	500
Sweetwater Authority	Richard A. Reynolds Desalination Facility	Brackish Groundwater Recovery	San Diego Formation	3,344	3,600	3,600	8,800	8,800	8,800	8,800
	National City Well Field	Pump & Conventional Treatment	San Diego Formation [National City Well Field]	2,132	2,200	2,200	2,200	2,200	2,200	2,200
Yuima MWD	Mutual Water Company wells within district	Groundwater Extraction	Pauma Basin (Upper San Luis Rey River Valley)	977	1,000	1,000	1,000	1,000	1,000	1,000
Total Verifiable				18,806	20,833	22,030	26,620	27,620	28,360	28,360

ADDITIONAL PLANNED PROJECTS

Member Agency	Project or Study Name	Project Type	Groundwater Basin or Location	Study / Project Status	Groundwater Additional Planned (AF/YR) for New Production					
					2010	2015	2020	2025	2030	2035
Carlsbad MWD	Mission Basin & Aqua Hedionda Groundwater	Brackish Groundwater Recovery	Mission Basin of San Luis Rey River/Aqua Hedionda	Feasibility Study	0	0	1,000	1,000	2,000	2,000
Otay WD	Rancho del Rey Groundwater Well Development (Capacity)	Groundwater Recovery	Unknown	Design contract awarded	0	500	500	500	500	500
Padre Dam MWD & Helix WD	El Monte Valley Recharge Project	Groundwater Recharge and Recovery (with Reclaimed Water)	El Monte Valley	Feasibility Study to be complete by Sept. 2010	0	0	5,000	5,000	5,000	5,000
Fallbrook PUD/ Camp Pendleton (Conjunctive-Use Project)	Santa Margarita Conjunctive-Use Project	Local Surface Water Recharge and Expansion of Camp Pendleton GW Recovery Program	Lower Santa Margarita River Basin (Upper Ysidora and Chappo Sub-basins).	Progress continues: Feasibility Study Completed & CEQA 2011	0	0	5,200	5,200	5,200	5,200
Total Verifiable + Additional Planned Yields					20,833	22,530	38,320	39,320	41,060	41,060

PROJECT CONCEPTS and ongoing Feasibility Studies (LISA Funded and others)

Member Agency	Project or Study Name	Project Type	Groundwater Basin or Location	Study / Project Status	Groundwater Conceptual (AF/YR) for New Production					
					2010	2015	2020	2025	2030	2035
City of Oceanside	Second Expansion of Mission Basin Desalter	Seawater/Brackish Groundwater Recovery and Treatment	Mission Basin Narrows near Pacific Ocean	Pilot Study Report to be Completed by June 2010	0	0	5,600	5,600	5,600	5,600
San Diego, City of	San Paqual Brackish Groundwater Recovery Project	Brackish Groundwater Recovery and Treatment	San Pasqual Basin	Feasibility Report Complete/ CEQA 2012	0	560	1,120	2,240	3,360	3,360
San Diego, City of	Mission Valley Brackish Groundwater Recovery Project	Brackish Groundwater Recovery and Treatment	Mission Valley Basin (Alluvial Aquifer / San Diego River)	Pilot Production Well Study 2012	0	0	1,760	1,760	1,760	1,760
San Diego, City of	San Diego Formation #1	Groundwater Recovery	San Diego Formation	Hydro-geologic Studies (2012)	0	0	650	1,300	1,300	1,300
San Diego, City of	San Diego Formation - Southeastern San Diego	Groundwater Recovery	San Diego Formation	Hydro-geologic Studies (2012)	0	800	1,600	1,600	1,600	1,600
San Diego, City of	San Vicente & El Capitan Seepage Recovery	Groundwater Recovery	San Diego River/ Santee-El Monte Basin	Pilot Production Well Study 2011	0	700	1,400	1,400	1,400	1,400
Sweetwater Authority / Otay WD	Otay River Valley GW Aquifer Studies & Field Investigations	Brackish Groundwater Recovery	San Diego Formation (Otay River Basin)	Hydro-geologic Studies on-going (2012)	0	0	3,900	3,900	3,900	3,900
Olivenhain MWD	San Dieguito River Basin Brackish GW Recovery and Treatment	Brackish Groundwater Recovery	San Dieguito River Groundwater Basin	Project Concept/ Feasibility Study	0	500	500	500	500	500
Otay WD	Otay Mesa Lot 7 Groundwater Well System (Capacity)	Groundwater Recovery	Unknown	Feasibility Study	0	0	400	400	400	400
Otay WD	Middle Sweetwater River Basin Groundwater Well System (Capacity)	Groundwater Recovery	Middle Sweetwater River Basin	Advanced Planning Stage	0	0	1,000	1,000	1,000	1,000

1 5-year average 2005-2009

2010 UWMP Wastewater Treatment Table F-3
San Diego Wastewater Treatment and Water Recycling Facilities Plant Capacity (Million Gallons/Day)

Operating Agency	Treatment Facility Name	Planned Treatment Capacity						Effluent Quality for TDS (mg/L)	Disposal Method
		2015			2040				
		P	S	T	P	S	T		
Carlsbad, City of	Carlsbad WRF	-	-	4.0	-	-	11.0	1,000	Irrigation
Encina Wastewater Authority	Encina WPCF	43.3	43.3	-	43.3	43.3	-	1,031	Outfall-Reuse
Escondido, City of	Hale Avenue Regional Reclam. Fac.	18.0	18.0	9.0	27.0	27.0	20.0	1,000	Reuse-Outfall-Stream
Fairbanks Ranch Comm. Ser. D	Fairbanks Ranch WPCF	0.3	0.3	-	0.3	0.3	0.3	1,100	Percolation
Fallbrook PUD	Fallbrook Plant #1 WRF	2.7	2.7	2.7	2.7	2.7	2.7	850	Reuse-Outfall
Leucadia CWD	Forest R. Gafner WRP	1.0	1.0	1.0	1.0	1.0	1.0	1,000	Reuse-Outfall
Oceanside, City of	La Salina WWTP	5.5	5.5	-	5.5	5.5	-	897	Outfall
Oceanside, City of	San Luis Rey WWTP	13.5	13.5	1.5	17.4	17.4	7.5	874	Reuse-Outfall
Olivenhain MWD	4-S Ranch WWTP	2.0	2.0	2.0	2.0	2.0	2.0	1,000	Reuse-Outfall
Otay WD	Ralph W Chapman WRF	1.3	1.3	1.3	1.3	1.3	1.3	850	Reuse- Outfall
Padre Dam MWD	Padre Dam WRF	4.0	4.0	4.0	4.0	4.0	4.0	1,000	Reuse- Outfall
Ramona MWD	Santa Maria WRP		1.1	0.4		1.5	1.5	850	Reuse-Stream
Ramona MWD	San Vicente WRP	0.8	0.8	0.8	0.8	0.8	0.8	550	Reuse-Stream
Rancho Santa Fe Com. Service District	Santa Fe Valley WRF	-	-	0.5	-	-	0.5	1,000	Irrigation
Rancho Santa Fe Com. Service District	Rancho Santa Fe WRF	0.5	0.5	-	0.6	0.6	0.6	1,100	Percolation
San Diego, City of	North City WRP	30.0	30.0	24.0	40.0	40.0	30.0	1,000	Reuse- Outfall
San Diego, City of	Point Loma WWTP	240.0	-	-	240.0	-	-	1700-2000	Outfall
San Diego, City of	South Bay WRP	15.0	15.0	13.5	21.0	21.0	15.0	1,000	Reuse-Outfall
San Elijo Joint Powers Authority	San Elijo WRF	5.3	5.3	3.0	5.3	5.3	5.3	1,000	Reuse-Outfall
Camp Pendleton Marine Corps Base	Southern Region TTP	-	-	3.8	-	-	7.5	750	Irrigation/Outfall
Camp Pendleton Marine Corps Base	Northern Region TTP	-	-	-	-	-	3.8	750	Irrigation/Percolation
Camp Pendleton Marine Corps Base	Sewage Treatment Plant #09	-	-	0.4	-	-	0.7	890	GW-Injection
Camp Pendleton Marine Corps Base	Sewage Treatment Plant #11	-	1.4	-	-	-	-	755	Percolation
Camp Pendleton Marine Corps Base	Sewage Treatment Plant #12	-	0.4	-	-	-	-	600	Percolation
Vallecitos WD	Meadowlark WRF	5.0	5.0	5.0	5.0	5.0	5.0	1,000	Reuse
Valley Center MWD	Lower Moosa Canyon WRF	0.40	0.40	0.40	0.625	0.625	0.625	1,000	Irrigation
Valley Center MWD	North Village WRF	0.075	0.075	0.075	0.225	0.225	0.225	1,000	Irrigation
Valley Center MWD	Welk WRF	-	-	-	0.125	0.125	0.125	1,000	Irrigation (Golf Course)
Valley Center MWD	Lilac Ranch WRF	-	-	-	0.088	0.088	0.088	1,000	Irrigation
Valley Center MWD	Woods Valley Ranch WRF	0.158	0.158	0.158	0.450	0.450	0.450	1,000	Irrigation (Golf Course)
Valley Center MWD	Skyline Ranch WRF	0.025	0.025	0.025	0.025	0.025	0.025	1,000	Irrigation (Golf Course)
Whispering Palms CSD	Whispering Palms WPCF	0.5	0.5	-	0.5	0.5	0.5	963	Pasture-Percolation
		104.34	107.28	39.94	118.22	119.72	77.50		

CSD - Community Services District

MWD - Municipal Water District

RRF - Resource Recovery Facility

TTP - Tertiary Treatment Plant

WPCF - Water Pollution Control Facility

WRF - Water Reclamation/Recycling Facility

WRP - Water Reclamation Plant

WWTP - Wastewater Treatment Plant

P - Primary Treatment

S - Secondary Treatment

T - Tertiary Treatment

Table F-4 2010 Update
Recycled Water Projections

EXISTING RECYCLED PROJECTS AND PROPOSED EXPANSIONS (VERIFIABLE)

Purveyor	Supply Source Treatment Plant/Agency	Treatment Level	Type of Reuse ¹	Projected Verifiable Reuse (AF/YR) ²					
				2010	2015	2020	2025	2030	2035
Carlsbad MWD	Carlsbad WRF/Carlsbad MWD	Tertiary	Landscape, Agriculture	1,324	2,707	3,264	3,264	3,264	3,264
	Gafner WRF/Leucadia CWD	Tertiary	Landscape, Agriculture	269	247	247	247	247	247
	Meadowlark WRF/Vallecitos WD	Tertiary	Landscape, Agriculture	2,188	2,188	2,989	2,989	2,989	2,989
	Mahr Reservoir/Vallecitos WD	N/A ³	Landscape, Agriculture	154					
	Sub-total			3,935	5,142	6,500	6,500	6,500	6,500
Del Mar, City of	San Elijo WRF/San Elijo JPA	Tertiary	Landscape	73	90	100	125	150	150
Escondido, City of	Hale Avenue RRF/WRF/City of Escondido	Tertiary	Landscape, Agriculture, Industrial/DPR	413	1,500	3,000	4,000	4,000	4,000
Fallbrook PUD	Fallbrook Plant #1/Fallbrook PUD	Tertiary	Landscape, Agriculture	543	543	543	543	543	543
Oceanside, City of	San Luis Rey WWTP/City of Oceanside	Tertiary	Landscape	119	550	1,500	1,500	1,500	1,500
Olivenhain MWD	4S Ranch WRF/Olivenhain MWD	Tertiary	Landscape	895	900	900	900	900	900
	Connection #1-North City Water Reclamation Plant/City of San Diego	Tertiary	Golf Course Irrigation/HOAs	785	400	400	400	400	400
	Connection #2-North City Water Reclamation Plant/City of San Diego	Tertiary	Golf Course Irrigation/HOAs	1	800	800	800	800	800
	Santa Fe Valley WRF/Rancho Santa Fe CSD	Tertiary	Landscape, Golf Course Irrigation	105	100	100	100	100	100
	Northwest Quadrant /Meadowlark WRF/Vallecitos WD	Tertiary	Landscape	580	1,000	1,000	1,000	1,000	1,000
	Sub-total			2,366	3,200	3,200	3,200	3,200	3,200
Otay WD	R. W. Chapman WRF/Otay WD	Tertiary	Landscape	1,033	1,100	1,100	1,100	1,100	1,100
	South Bay WRP/City of SD	Tertiary	Landscape	2,752	3,300	3,900	4,700	5,700	6,900
	Sub-total			3,785	4,400	5,000	5,800	6,800	8,000
Padre Dam MWD	Padre Dam WRF (Existing) /Padre Dam MWD	Tertiary	Replenishment of Santee Lakes	1,120	1,120	1,120	1,120	1,120	1,120
	Padre Dam WRF (Existing) /Padre Dam MWD	Tertiary	Landscape (Existing Distribution System)	896	896	896	896	896	896
	Sub-total			2,016	2,016	2,016	2,016	2,016	2,016
Camp Pendleton Marine Corps Base	South WWTPs/USMC	Tertiary	Landscape, Golf Course, Agriculture	527	3,300	3,400	3,900	4,000	4,000
	Sewage Treatment Plants # 11 & #12/USMC	Secondary	Percolation/Seawater Intrusion Barrier	657					
	North WWTPs/USMC	Tertiary	Landscape/Seawater Intrusion Barrier		800	800	800	800	800
	Sub-total			1,184	4,100	4,200	4,700	4,800	4,800
Poway, City of	North City WRP/City of San Diego	Tertiary	Landscape, Agriculture	425	425	425	425	425	425
Ramona MWD	Santa Maria WRP/Ramona MWD	Tertiary	Landscape, Recreational Impound, Development	209	230	230	230	230	230
	San Vicente WRP/Ramona MWD	Tertiary	Landscape (Golf Course), Agriculture (Orchard)	520	585	585	585	585	585
	Sub-total			729	815	815	815	815	815
Rincon Del Diablo MWD	Hale Avenue RRF/WRF/City of Escondido	Tertiary	Landscape, Industrial	3,279	5,279	5,779	6,279	6,779	7,279
San Diego, City of	North City WRP/City of San Diego	Tertiary	Landscape, Industrial	6,394	8,353	8,353	8,353	8,353	8,353
	South Bay WRP/City of San Diego	Tertiary	Landscape, Industrial	1,539	900	900	900	900	900
	Sub-total			7,933	9,253	9,253	9,253	9,253	9,253
San Dieguito WD	San Elijo WRF/San Elijo JPA	Tertiary	Landscape	590	700	750	800	850	870
Santa Fe ID	San Elijo WRF/San Elijo JPA	Tertiary	Landscape	497	600	600	600	600	600
Valley Center MWD	Woods Valley Ranch WRF/VCMWD	Tertiary	Landscape Irrigation/Golf Course Irrigation	44	47	47	47	47	47
Total				27,931	38,660	43,728	46,603	48,278	49,998

ADDITIONAL PLANNED PROJECTS

Purveyor	Supply Source Treatment Plant/Agency	Treatment Level	Type of Reuse ¹							
				2010	2015	2020	2025	2030	2035	Project Phase
Carlsbad MWD	Carlsbad WRF/Carlsbad MWD	Tertiary	Landscape, Agriculture		293	1,293	3,293	3,293	3,293	FS
	Mahr Reservoir/Vallecitos WD	N/A ³	Landscape, Agriculture		154	154	154	154	154	FS
	Sub-total				447	1,447	3,447	3,447	3,447	
Fallbrook PUD	Fallbrook Plant #1/Fallbrook PUD	Tertiary	Landscape, Agriculture	-	68	96	146	196	196	FS
Olivenhain MWD	Northwest Quadrant Phase B/TBD	Tertiary	Landscape			300	300	300	300	FS
	Wanket Reservoir RW Conversion/TBD	Tertiary	Landscape			300	300	300	300	FS
	Joint RW Transmission Project with SFID and OMWD/TBD	Tertiary	Landscape, Golf Course Irrigation			500	500	500	500	Concept
	Sub-total					1,100	1,100	1,100	1,100	
Padre Dam MWD	Padre Dam WRF Ph II Expansion to 10 mgd/Padre Dam MWD	Tertiary/Adv	Landscape, Golf Course Irrig, Industrial, Dust Control - Future				1,343	1,343	1,343	FS
	Padre Dam WRF Ph 1 Expansion to 4.5 mgd /Padre Dam MWD	Tertiary/Adv.	Landscape, Golf Course Irrig, Industrial, Dust Control - Ph 1 Santee Distribution System		1,697	3,489	3,489	3,489	3,489	MND, D
	Sub-total				1,697	3,489	4,832	4,832	4,832	
Poway, City of	North City WRP/City of San Diego	Tertiary	Landscape, Agriculture	125	125	125	225	225	225	FS
San Diego, City of	North City WRP Advanced Water Purification Facility (AWPF)	Tertiary	Indirect Potable Reuse			15,000	15,000	15,000	15,000	FS
Santa Fe ID	Evaluating Multiple Options/TBD	Tertiary	Landscape		200	200	600	600	600	FS
-										
Valley Center MWD	Woods Valley Ranch WRF (Phase 2)	Tertiary	Landscape Irrigation/Golf Course		-	30	59	59	59	FS
Total				125	2,537	21,487	25,409	25,459	25,459	

PROJECT CONCEPTS

Purveyor	Supply Source Treatment Plant/Agency	Treatment Level	Type of Reuse ¹							Project Phase
				2010	2015	2020	2025	2030	2035	
Fallbrook PUD	Fallbrook Plant #1/Fallbrook PUD	Tertiary	Landscape, Agriculture		582	582	582	582	582	Concept
Otay WD	North District Recycled System/R.W. Chapman WRF/Otay WD	Tertiary	Landscape		4,400	4,400	4,400	4,400	4,400	Concept
Ramona MWD	Santa Maria WRP/Ramona MWD	Tertiary	Landscape, Recreational Impound, Development		3,000	3,000	3,000	3,000	3,000	Concept
Vista Irrigation District	Shadowridge WRP	Tertiary	Landscape Irrigation				4,400	4,400	4,400	Concept
Valley Center MWD	Lower Moosa Canyon WRF	Tertiary	Landscape Irrigation		370	370	460	580	700	FS
	Woods Valley Ranch WRF (Phase 3)	Tertiary					22	50	50	FS
	North Village WRF/VCMWD	Tertiary	Landscape Irrigation		15	45	90	135	150	FS
	Welk WRF/VCMWD	Tertiary	Landscape Irrigation/Golf Course			140	140	140	140	FS
	Lilac Ranch WRF/VCMWD	Tertiary	Landscape Irrigation			15	25	60	60	FS
Sub-total					385	570	737	965	1,100	
Total					8,367	8,552	13,119	13,347	13,482	

¹ Does not include recycled water used for environmental enhancement.
² Projected verifiable projects are included in the Water Authority's 2010 UWMP reliability analysis.
³ Recycled water storage reservoir.

Appendix G:
Water Shortage and Drought Response Plan &
Implementing Resolution



Drought Management Plan



Prepared by
Water Resources Department

With Assistance from
Public Affairs Department

Drought Management Plan
Technical Advisory Committee

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DROUGHT MANAGEMENT PLAN

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Section 1 - Introduction

The primary purpose of the Drought Management Plan (DMP) is to provide the Water Authority and its member agencies with a series of potential actions to take when faced with a shortage of imported water supplies from Metropolitan due to drought conditions. The actions will help the region minimize the impacts of shortages and ensure an equitable allocation of supplies. Different from a treated water shortage allocation plan, the DMP focuses on issues associated with shortages due to supply cutbacks, not shortages due to facility constraints.

1.1 Reliability

The Water Authority and its member agencies have made substantial investments in new diversified supplies and facilities to improve water reliability in the San Diego region. As mentioned in the Water Authority's 2005 Urban Water Management Plan, if the Water Authority and member agency supplies are developed as planned and Metropolitan's Integrated Resource Plan is fully implemented, no shortages are anticipated within the Water Authority's service area through 2030. **Table 1-1**, below, shows the mix of resources identified to meet future demands in a single dry-year period.

TABLE 1-1
SAN DIEGO COUNTY WATER AUTHORITY
SINGLE DRY WATER YEAR SUPPLY AND DEMAND ASSESSMENT
(AF/YR)

	2010	2015	2020	2025	2030
Water Authority Supplies					
Regional Seawater Desalination at Encina	0	56,000	56,000	56,000	56,000
IID Water Transfer	70,000	100,000	190,000	200,000	200,000
ACC and CC Lining Projects	77,700	77,700	77,700	77,700	77,700
Sub-Total	147,700	233,700	323,700	333,700	333,700
Member Agency Supplies					
Surface Water	22,284	22,284	22,284	22,284	22,284
Water Recycling	33,668	40,662	45,548	46,492	47,584
Groundwater	10,838	10,838	10,838	10,838	10,838
Groundwater Recovery	11,400	11,400	11,400	11,400	11,400
Sub-Total	78,190	85,184	90,070	91,014	92,106
Metropolitan Water District Supplies	541,760	477,086	411,790	423,896	457,224
TOTAL PROJECTED SUPPLIES	767,650	795,970	825,560	848,610	883,030
TOTAL ESTIMATED DEMANDS w/ Conservation	767,650	795,970	825,560	848,610	883,030

Source: Water Authority's 2005 Urban Water Management Plan

Water conservation plays a critical role in long-term supply reliability for the region. The Water Authority and its member agencies are considered leaders in California in the implementation of an aggressive conservation program to use water more efficiently. The total reduction in water demand attributable to projected conservation savings over the next 25 years is identified in **Table 1-2**.

TABLE 1-2
PROJECTED CONSERVATION SAVINGS
WATER AUTHORITY SERVICE AREA
(Normal Year - AF/YR)

2010	2015	2020	2025	2030
79,960	87,306	94,174	101,954	108,396

Source: Water Authority's 2005 Urban Water Management Plan

With the objective to obtain a reliable supply as outlined in the agencies' planning documents - with no anticipated shortages - Metropolitan, Water Authority and its member agencies will need to make investments in development of projects and programs along with gaining support from the local community for implementation.

While the region has plans to provide a high level of water reliability, there will always be some level of uncertainty associated with maintaining and developing local and imported supplies. Therefore, as a prudent measure, the Water Authority and its member agencies have developed a comprehensive DMP in the event that the region faces supply shortages due to drought conditions.

1.2 Defining a Drought

The question is often asked as to what defines a drought. As stated on the California Department of Water Resources (DWR) drought preparedness website:

“Defining when a drought begins is a function of drought impacts to water users. Hydrologic conditions constituting a drought for water users in one location may not constitute a drought for water users elsewhere, or for water users having a different water supply. Individual water suppliers may use criteria such as rainfall/runoff, amount of water in storage, or expected supply from a water wholesaler to define their water supply conditions.”

Defining when supply conditions signify a drought in the San Diego region is a combination of the condition of Metropolitan's supplies and storage levels and local supply production in San Diego, both groundwater and surface water. One of the actions that may trigger initial drought conditions is when Metropolitan must take water from storage to meet demands. With the storage and supplies developed by the Water Authority, its member agencies, and Metropolitan since the last drought in 1987-1992, the region has significantly improved its ability to respond to drought conditions. As further stated on DWR's website:

“Droughts occur slowly, over a multiyear period. There is no universal definition of when a drought begins or ends. Impacts of drought are typically felt first by those most reliant on annual rainfall – ranchers engaged in dryland grazing, rural residents relying on wells in low-yield rock formations, or small water systems lacking a reliable source. Criteria used to identify statewide drought conditions do not address these localized impacts. Drought impacts increase with the length of a drought, as carry-over supplies in reservoirs are depleted and water levels in groundwater basins decline.”

1.3 Plan Summary

This first section of the report highlights the region's plans for providing a reliable supply for the next 25 years, with no anticipated shortages. It also describes the need for a DMP due to uncertainties in development and management of both imported and local supplies. This section also looks at defining a drought and the DMP report format.

The next section, Section 2 – DMP Preparation, discusses preparation of the DMP. This section includes a discussion of the formation of the member agency Technical Advisory Committee (TAC), along with the results from a questionnaire completed by the TAC members. This section also includes the principles that provided guidance in preparation of the DMP.

Section 3, Review of Historic Plans and Implementation, contains a summary of the past drought response plans and ordinances prepared by the Metropolitan Water District and the Water Authority. The section concludes with a discussion on the lessons learned from preparation and implementation of these previous plans.

The following section, Section 4 – Drought Response Matrix, includes a description of the stages and actions contained in the drought response matrix. The matrix provides guidance to the Water Authority in selecting potential regional actions that can be taken to lessen the severity of shortage conditions. This includes such items as purchasing spot transfers and utilizing carryover storage.

Section 5, Supply Allocation Methodology, provides a detailed description of the supply allocation methodology. The methodology provides the Water Authority a means to allocate its supplies to its member agencies in a shortage situation. To help describe and demonstrate the calculation procedure, an example is included for illustrative purposes.

Section 6, Water Authority/Member Agency Coordination, outlines the coordination to occur between the Water Authority and its member agencies in implementation of the DMP. A communication strategy is included that describes actions for the Water Authority to take to ensure clear communication with its member agencies, the public, and elected officials prior to and during shortage conditions.

The final section, Section 7 – Summary, summarizes the accomplishments of the DMP. There are also a series of appendices containing detailed supporting documentation.

1.4 Member Agency Coordination

The challenge in preparing the DMP was to meet the needs of the Water Authority's member agencies in a fair and equitable manner. Each of the agencies has a unique supply portfolio and customer-base. Some agencies have abundant local supplies, while others are 100 percent reliant on water supplies purchased from the Water Authority. There are member agencies that serve primarily agricultural customers, while others serve only municipal and industrial customers. Through the yearlong process of developing the DMP, these challenges were addressed and the Water Authority appreciated the involvement of the member agencies.

Section 2 – DMP Preparation

In February 1991, as a result of the 1987-1992 drought, the Water Authority prepared and adopted a Drought Response Plan that outlined the actions for the Water Authority and its member agencies to take during the supply shortage situation. In accordance with California Water Code, the Water Authority prepared an Urban Water Shortage Contingency Plan in January 1992 that included the ordinances and other procedures adopted during the 1987-1992 drought. The current DMP was prepared to identify the actions that the Water Authority and its member agencies will now take if faced with drought conditions, and specifically, how supplies will be allocated.

2.1 Member Agency Technical Advisory Committee

Preparation and implementation of a drought plan for the San Diego region must have input and support from the Water Authority's member agencies. Recognizing the importance of member agency involvement, the Water Authority formed a TAC – Technical Advisory Committee – to provide input on development of the DMP. The TAC included a representative from each of the member agencies. Key to the successful preparation of the plan was full involvement from all member agencies to ensure effective communication and understanding of member agencies' issues and concerns. To assist in this effort, a consultant team was hired to facilitate the TAC meetings and assist with technical details such as the historic context of drought plans in Southern California and the development of the allocation model. The TAC members are to be commended for their efforts to work together to develop the elements of this regional DMP.

2.2 Drought Management Plan Questionnaire

To gain an initial understanding of the TAC members' position on the DMP elements, a five-page questionnaire was distributed to the member agencies. The questionnaire consisted of eighteen questions, as well as a section for general comments. The questions were divided into the following five areas: 1) what is important in the overall design of a drought management plan; 2) what are the issues related to water transfers; 3) what role should the Emergency Storage Project play during a drought; 4) how should water be allocated in a drought; and 5) what role should a public communication strategy play during a drought. **Appendix B** contains the questionnaire results. Each of the TAC members completed the questionnaire, which was helpful to ensure that all member agency perspectives were heard. The results also provided valuable information used to develop a set of DMP Principles.

2.3 Principles

To provide guidance to the Water Authority and its member agencies in developing and implementing the DMP, twenty-three principles were developed. The principles were initially drafted based on results from the questionnaire that was completed by the TAC members (**Appendix B**). They were then revised and finalized based upon input received during a series of TAC meetings.

The principles are grouped below under the following categories: a) Overall Plan; b) Communication Strategy; c) Drought Supply Enhancement; d) Drought Response Stages; and e) Allocation Methodology.

Overall Plan

- 1. The DMP will be developed in cooperation with the member agencies and include all aspects of drought planning – including steps to avoid rationing, drought response stages, allocation methodology, pricing, and communication strategy.*

Communication Strategy

- 2. An on-going, coordinated and regional public outreach program shall be developed by the Water Authority that provides a clear and consistent message to the public regarding water supplies and specific conservation measures. The outreach program will also recognize and support member agency communication efforts that address specific retail level allocations.*
- 3. A Drought Coordination Team, made up of one representative from each member agency, will be established to assist the Water Authority in implementation of the DMP. This includes items such as formulation and implementation of the public outreach program, timing of drought stages, selection of drought supply actions, and addressing potential issues surrounding implementation of the shortage allocation methodology.*
- 4. The drought management plan should specify actions and timing of communications.*

Drought Supply Enhancement

- 5. The Water Authority and its member agencies will work cooperatively to avoid and/or minimize rationing during droughts through supply enhancement and voluntary demand reduction measures.*
- 6. Future Water Authority carryover storage supplies will be managed and utilized to assist in meeting demands during drought periods. Member agencies will be encouraged to develop carryover storage.*
- 7. The Water Authority will consider securing option and/or spot water transfers to meet the reliability goal set by the Board. The cost of this regional supply will be melded into the Water Authority's supply costs for all classes of service that benefit.*

8. *Subject to the Water Authority's wheeling policy, if a member agency purchases transfer water from a source other than the Water Authority, the full cost of the transfer, including, but not limited to, purchase costs, wheeling costs, and administrative costs, will be borne by said member agency.*
9. *ESP supplies may be available when any member agency's non-interruptible firm demands drop below a 75 percent service level.*
10. *The quantities of supplies from the ESP to be removed from storage will be based on a minimum amount necessary to meet essential health, safety, and firefighting needs, and maximum amount based on the need to ensure adequate supplies remain for a catastrophic event (e.g. earthquake).*

Drought Response Stages

11. *Develop drought response stages, which at a minimum, accomplish the following:*
 - *Can be easily communicated to the public;*
 - *Flexible to handle unexpected changes in demand and supply conditions;*
 - *Includes percent reduction (voluntary or mandatory) per stage; and*
 - *Includes both supply enhancement and emergency demand reduction methods.*
12. *Targets for achieving the emergency demand reduction measures should take into account the region's already aggressive long-term water conservation program.*
13. *The decision on when, and in which sequence drought enhancement supplies will be utilized during different stages will include consideration of the following factors:*
 - *Location – Out-of-region supplies will be utilized in the earlier stages, prior to in-county storage, because these supplies are more vulnerable to implementation risks such as seismic events;*
 - *Cost – Priority will be given to maximizing supply reliability and at the same time using the most cost-effective supplies; and*
 - *Limitations – Potential restrictions on the use of drought enhancement supplies is a factor in determining supply availability (e.g. potential restrictions on ESP supplies).*

Allocation Methodology

14. *The allocation methodology will be equitable, easy to administer, contain financial penalties and pricing signals, and a communication strategy to ensure member agencies and the public are informed and understand the need to conserve.*

- 15. In order to protect the economic health of the entire region, it is very important for the allocation methodology to avoid large, uneven retail impacts across the region. The methodology should include a minimum level of retail agency reliability to ensure equitable allocation among the member agencies.*
- 16. With the exception of allocating water from the ESP, the Water Authority shall make no distinction among customers paying the same M&I rate (e.g. non-Interim Agricultural Water Program (IAWP) agriculture, residential, commercial, and industrial).*
- 17. Additional IAWP cutbacks beyond the initial 30 percent faced by IAWP customers should be equally applied to both IAWP and M&I customers.*
- 18. A member agency that has developed local projects and instituted conservation measures should not be penalized in the computation of allocations.*
- 19. To help balance out the financial costs and risks associated with development of local resources, the shortage allocation methodology should provide an incentive to those member agencies that have developed local supplies.*
- 20. The base-year, upon which allocations will be derived, will be based on historic demands. Adjustments to the base-year will be made for demographic changes, growth, local supplies, demand hardening, and supplies allocated under interruptible service programs.*
- 21. A member agency's base-year will be adjusted to reflect the regional financial contribution from the Water Authority for development of local projects. The adjustment will take into account the risks associated with developing the local projects.*
- 22. A member agency will not be able to market its unused allocation to other agencies within the Water Authority's service area at a cost higher than the Water Authority's charges for those supplies.*
- 23. Penalty rates, along with other demand reduction measures, will be used by the Water Authority to encourage conservation during a drought.*

2.4 Report Preparation and Approval

Water Authority staff, with consultant assistance, prepared an initial draft of the DMP based on results from the TAC member discussions on DMP elements. TAC members reviewed the draft report and their comments were incorporated. On February 14, 2006, the TAC supported forwarding the report to the Water Authority's Board of Director's Water Planning Committee for their consideration. The DMP elements were presented to Water Authority's Board of Directors through a series of meetings and workshops, with final approval of the DMP on May 25, 2006.

Section 3 – Review of Historic Plans and Implementation

“Experience is not always the kindest of teachers, but it is surely the best.”¹ Thus, it was important to review the historical context of drought plans in Southern California and examine how those drought plans were implemented, and what impact they had on the Water Authority. Historically, due to the dependence on deliveries from Metropolitan, the Water Authority’s guidelines for drought management actions have paralleled Metropolitan’s adopted plans for supply management in drought situations. Lessons learned from the creation and implementation of these plans were used when preparing the DMP. This section summarizes those historical drought plans and lessons learned. Detailed information regarding the historical drought plans can be found in **Appendix C** (Water Authority) and **Appendix D** (Metropolitan).

Metropolitan began delivering water in 1941 and had been able to meet demands through system expansion through much of its history. However, during the drought of 1976-1977, Metropolitan first experienced demands that were greater than supplies. During the 1976-77 drought, Metropolitan asked for and received voluntary reductions in deliveries of 10 percent. It was then, that Metropolitan began considering how to deal with future supply shortages. The sections below describe the four drought plans that Metropolitan has had since that time, along with the Water Authority’s actions to implement those plans.

3.1 Metropolitan’s 1981 Interruptible Water Service Program

The first drought plan that Metropolitan’s Board of Directors adopted was the Interruptible Water Service Program in 1981. This program combined a rate structure and drought plan. The Interruptible Water Service Program was intended to deliver water at a discounted rate in return for the ability to interrupt the deliveries as required. Water that did not receive a discount was deemed to be “noninterruptible.”

Deliveries for groundwater or reservoir storage, agricultural purposes, and seawater barrier injection were considered to be interruptible water. An agency had an obligation to take a reduction or interruption in deliveries for three years after taking interruptible water deliveries.

When the 1987-1992 drought occurred, many member agencies that had purchased the interruptible water were not able to manage an interruption in deliveries. Some agencies did not have the facilities in place to produce stored water, others did not have the water in storage, while others preferred to have customers conserve rather than produce from storage.² Additionally, there was concern expressed by some farmers that trees and vines

¹ Spanish Proverb, *The Columbia World of Quotations*, 1996.

² Memorandums dated June 4, 1990, and July 19, 1990, to Chief of Operations, and September 10, 1990, Water Problems Committee Public Hearing minutes, pgs. 1-6, and attachments.

and livestock would be permanently destroyed by interrupting their water service.³ In response and as the drought deepened, Metropolitan's Board of Directors adopted the Incremental Interruption and Conservation Plan.

3.2 Metropolitan's 1990 Incremental Interruption and Conservation Plan

The Incremental Interruption and Conservation Plan (IICP) was devised to reduce both noninterruptible and interruptible deliveries. Metropolitan's Board of Directors attempted to rectify the inequity of agencies receiving past discounts for interruptible water service by reducing water taken as interruptible water at a greater percentage than water taken as noninterruptible water. Stages of reductions in deliveries for "firm" and "nonfirm" water deliveries were created based on the amount of supply available to Metropolitan and projected demands. This reduction in deliveries occurred for 14 months starting in February 1991.

The IICP used fiscal year 1989-90 sales as the basis of its allocation. These sales were broken down into monthly targets. The targets were adjusted for loss of local supply, growth, conservation, and reclamation. The percentage reduction in deliveries was then applied. For part of the allocation period, agencies that took less water than their IICP target received an incentive of \$99 per acre-foot. These incentives were eliminated as the combined revenue impacts of reduced sales and large incentive payments affected Metropolitan. Agencies that took more than their target paid a disincentive of two times the untreated noninterruptible rate in addition to paying the noninterruptible rate for delivery of the water. Monthly overages and underages were allowed to offset one another over the course of the year through an annual reconciliation. At the beginning of the allocation, billing for disincentives occurred monthly. This was later changed to a quarterly basis. Additionally, a time limit was placed on applying for adjustments.

3.3 Water Authority's 1991 Drought Response Plan

In response to the continuing drought and Metropolitan's adoption of the IICP, the Water Authority adopted its own Drought Response Plan in 1991. The Board Letter and Drought Response Plan are included in **Appendix C**. The Drought Response Plan had four components as summarized below.

1. Drought Response Program

The Water Authority tied its response stages to the IICP. However, reductions were not broken down between "firm" and "nonfirm" deliveries in the base year. Rather, it reduced deliveries to its agencies uniformly based on fiscal year 1989-90 sales. Incentive and disincentive payments were assessed using the same formula as Metropolitan. Additionally, a Response Stage Activities matrix was developed for the member agencies. This matrix arranged water management techniques, such as

³ Metropolitan Water District of Southern California, *Draft Paper on Events Leading Up to and Chronology of the 1990-92 Drought Years and Supply Reliability Improvements Achieved as a Result of the Drought*.

no outside irrigation except with water reclaimed from indoor use, to the reduction levels corresponding to the stage of the IICP. Through its member agency response to the public information program and prohibitions of water use, the Water Authority, overall, was able to stay within its allocation of water from Metropolitan.

2. Conservation Program

The Water Authority had long-term conservation programs in place prior to the allocation of water. Once the allocation of water began, additional short-term conservation programs, such as assistance to public institutions for conserving water, were added.

3. Member Agency Assistance Activities

Beyond the Response Stage Activities matrix, the Water Authority provided other assistance to member agencies, such as a member agency workshop on penalty pricing methods.

4. Public Information Activities

There were two objectives to the activities. The first was to highlight the drought situation and the need for immediate cutbacks in water usage. The second was to develop continuing methods to assist member agencies and educate the public on water supplies.

3.4 Department of Water Resources Drought Water Bank

Supplies from a Drought Water Bank were made available by DWR for one year, in 1991, to State Water Contractors. Metropolitan was able to obtain 215,000 acre-feet of the bank water. It sold some water directly to member agencies and melded the remainder with the rest of its supplies. Water sold directly to agencies was sold at DWR's melded rate of \$175 per acre-foot plus Metropolitan's noninterruptible rate. The Water Authority contracted for 21,600 acre-feet of bank water, and took delivery of 20,100 acre-feet of bank water. The Water Authority melded the bank water into its other supplies.

3.5 Metropolitan's 1995 Drought Management Plan

The 1995 Drought Management Plan (1995 Plan) was the first time that Metropolitan formalized a plan which addressed the actions to take during a drought prior to reducing or interrupting deliveries of water. These actions included calling on water from various storage programs and participating in water bank and transfer options.

The 1995 Plan included a modified IICP. The modifications to the IICP included using an average of three fiscal years rather than one fiscal year for the base period and the

establishment of an Interagency Advisory Committee to assist Metropolitan's General Manager during an allocation.

The 1995 Plan was adopted for only one year. As part of Metropolitan's integrated water resources planning process, it was intended that a more permanent drought management plan, which also incorporated surplus conditions, be prepared to create a general policy direction on the basic sequence of water resource management steps to take under surplus or shortage conditions. This plan, adopted in 1999, became known as the Water Surplus and Drought Management Plan (**Section 3.7**).

3.6 1994 Ordinance of the San Diego County Water Authority Establishing Contingency Plans, Rules, Regulations, and Restrictions so that Available Water Supplies are Allocated among Member Agencies for the Greatest Public Interest and Benefit

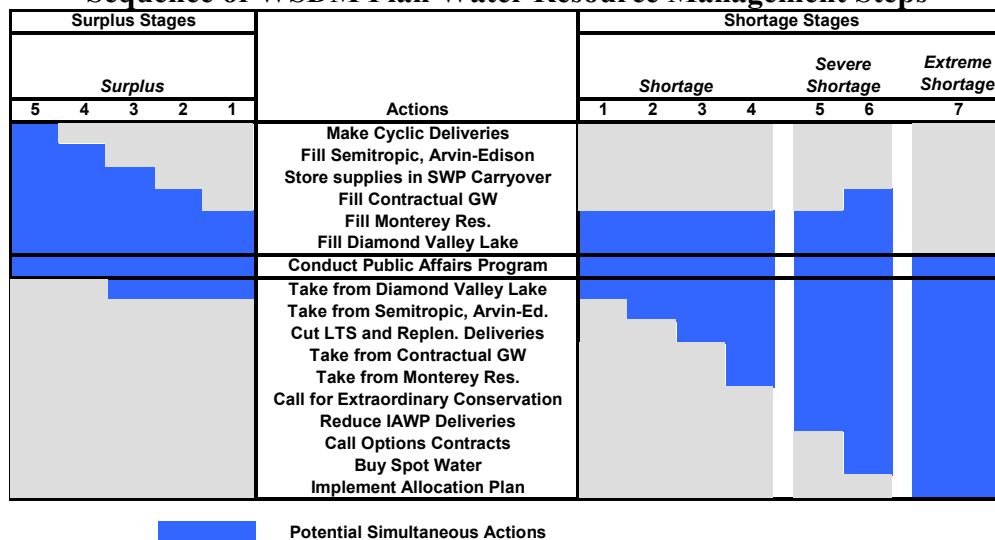
The Water Authority, in response to Metropolitan adopting its 1995 Plan (in October 1994), adopted its own water shortage contingency ordinance (**Appendix C**) a month later, in November 1994. The water resource portion of the ordinance included two basic components. First, if Metropolitan had to implement the IICP, the Water Authority would act to minimize shortages to its service area by making available stored water that it owned and securing other water supplies. And second, if the Water Authority continued to have a supply shortage it would allocate water supplies using Metropolitan's 1995 Plan-modified IICP as a template. This allocation included having separate cutback percentages for IAWP deliveries and firm deliveries, using the same three-year base period as the basis for the firm allocation, and passing through any penalties on a pro-rata basis to those agencies that received deliveries in excess of their allocation. If a member agency was not able to reduce its deliveries to within 5 percent of its monthly allocation, then its daily deliveries could be reduced by the Water Authority in a manner to ensure compliance. In addition to the basic concepts listed above, an appeals board was established to review actions taken by the Water Authority's General Manager if a member agency did not agree with the actions. The appeals board consisted of five Water Authority Board members.

3.7 Metropolitan's Water Surplus and Drought Management Plan

The Water Surplus and Drought Management Plan (WSDM) is the drought management plan that Metropolitan currently operates under. Based on water supplies and projected demands, varying actions may be taken by Metropolitan. These actions are shown in **Figure 3-1**.⁴ The matrix acts as a "framework." Actual responses would be based on conditions at the time of need.

⁴ Metropolitan Water District of Southern California, *Water Surplus and Drought Management Plan*, 1999, page 28.

Figure 3-1
Sequence of WSDM Plan Water Resource Management Steps



A water allocation methodology in the event “rationing” becomes necessary is not included in the WSDM Plan. A draft methodology was devised and specific concepts of an allocation are laid out in the WSDM Plan. These concepts include the goal that overall retail demands would be used to minimize uneven impacts to agencies within Metropolitan’s service area. The final allocation plan was not adopted, in part, due to this concept. Agencies that had invested heavily to develop local supplies or for conservation felt that they were being treated unfairly and that there was no incentive to continue with these local investments since overall retail demands were used as the starting point for the drought allocation.

3.8 Interim Agricultural Water Program Reduction Guidelines

Metropolitan converted the “Interruptible Program” for agricultural users into the Interim Agricultural Water Program (IAWP) in May 1994. The IAWP provides for the delivery of surplus water for agricultural purposes at a discounted rate in exchange for up to a 30 percent reduction in demand by participating agricultural water users prior to implementation of municipal and industrial water use rationing. This reduction enables Metropolitan to better conserve limited supplies during shortages.

For the past several years and until the fall of 2004, Metropolitan’s service area experienced dry conditions combined with high demands. Metropolitan and its member agencies began preparing a plan to reduce IAWP deliveries in the 2004-2005 water year (October through April) in the event that a reduction was necessary. This plan, although not finalized, is included in **Appendix E**.

3.9 Lessons Learned

As review of the historical plans occurred, it became apparent that certain lessons could be learned from them about both what to do and not to do before and during an allocation. These lessons include:

Effective Communications

It is important that Directors, agency staff, governmental officials, the news media, and the public understand the water supply situation, how the Water Authority is prepared to meet demands, and ultimately if required, how an allocation plan would be implemented. Permanent outreach activities that educate the public about the region's water supplies are vital. Additionally, a communication team that has a plan that it can work during a drought in a proactive, rather than reactive mode, will help in the implementation of the drought plan. A proactive approach will also help manage rapidly changing conditions during a shortage. In response to these observations, a communication strategy has included in the DMP that establishes a drought communication team. Please refer to **Section 6** for a more complete discussion of the communication plan.

Advance Supply and Facility Planning

Agencies should have supply and facility plans in place ahead of time to avoid supply shortage situations. The planning should include storing surplus supplies when and where possible, having the facilities in place to withdraw these supplies, and being prepared with a staged plan on how to deal with shortages. The Water Authority and its member agencies have accomplished this through development of urban water management plans, facility master plans, and the DMP.

Avoid Rationing as much as Possible

This avoidance includes entering into option contracts, voluntary conservation, and encouraging the development of local supplies. Although all of these methods have some cost associated with them, they are likely not as high as the economic impacts of water supply shortages to the region. This DMP, through its Drought Response Matrix and possible supply enhancement actions, provides a plan to potentially avoid rationing when feasible. The Drought Response Matrix is discussed further in **Section 4**.

Develop an Allocation Methodology that Encourages Local Supply Development

By developing local supplies, the reliability of both the individual member agency that developed the supply, as well as the region, is improved. Thus, any drought plan should encourage the development of local supplies, not hinder them. The allocation

methodology in this DMP encourages local supply development in two ways. First, it uses historic Water Authority demands, not retail demands, as the basis for allocating water. Second, an adjustment for the development of local projects (recycled water, groundwater recovery, and seawater desalination) is provided in the allocation methodology. This adjustment provides a 30 percent credit on the yield of locally developed reliable supplies in the base period (discussed in **Section 5**).

Review and Remind Agencies of DMP Annually

This review educates staff members who are new to the Water Authority or its member agencies on how the DMP works. One of the problems with the 1981 Interruptible Water Service Program was that the reason for Metropolitan providing the discount was lost with the departure of staff members who had worked on the program. Thus, implementation of the plan could not occur and a new plan, the IICP, had to be formulated at the last minute. An annual review and reminder of the DMP will help reduce any last minute confusion.

Make Adjustments in Allocation Methodology Simple to Administer

By having a fairly simple preset formula that uses historic information for adjustments and a three-year average base period, administering adjustments in the DMP allocation methodology will be easier and less time consuming.

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Section 4 – Drought Response Matrix

4.1 Introduction

The Water Authority exists to provide, as far as practicable, each of its member agencies with adequate supplies of water to meet their expanding and increasing needs. In times of extreme drought, where the San Diego region could experience shortages of supply from Metropolitan, the Water Authority needs to take actions to try to both reduce and eliminate shortages. A Drought Response Matrix was developed to provide guidance to the Water Authority and its member agencies to select potential regional actions to lessen the severity of shortage conditions. The matrix is shown below in **Table 4-1**.

Table 4-1
Drought Response Matrix – Firm Demands

POTENTIAL SDCWA DROUGHT ACTIONS	STAGES		
	Voluntary	SDCWA Supply Enhancement	Mandatory Cutbacks
Ongoing BMP implementation	X	X	X
Communication strategy	X	X	X
Monitoring supply conditions and storage levels	X	X	X
Call for voluntary conservation	X	X	X
Draw from SDCWA Carryover Storage	X	X	X
Secure transfer option contracts	X	X	X
Buy phase 1 spot transfers (cost at or below Tier 2 rate)		X	X
Call transfer options		X	X
Buy phase 2 spot transfers (cost at or above Tier 2 rate)		X	X
Implement allocation methodology			X
Utilize ESP Supplies			X

The matrix includes a list of potential actions available to the Water Authority at each of the three main stages. To determine the specific actions that should be taken at each stage, the Water Authority and its member agencies will evaluate conditions specific to the timing, supply availability, and cost, along with other pertinent variables. Numerous variables can influence the supply reduction levels during a drought. These variables include, but are not limited to, State Water Project allocation, conditions on the Colorado River, Water Authority supplies, local storage, local demands, and timing. Member agencies will independently adopt retail-level actions to manage potential shortages.

4.2 Drought Response Matrix Stages

The potential actions are grouped into the following three stages:

Voluntary

The first stage of the drought response matrix is considered voluntary. The voluntary stage would likely occur when Metropolitan has been experiencing shortages in its imported water supply (from either the Colorado River or the State Water Project, or both) and is withdrawing water from storage due to the drought conditions to meet normal demands.

Water Authority Supply Enhancement

This stage could occur in year three or four of a dry period and represents that point in time when Metropolitan reduces water deliveries to its member agencies. The Water Authority's Board of Directors will then consider the potential actions in this stage, or others that may surface, to eliminate any cutbacks to the member agencies from the reduction in Metropolitan supplies.

Mandatory Cutbacks

The final stage follows once both Metropolitan and the Water Authority Board have exhausted all supply enhancement options due to lack of supplies and/or increasing costs, and mandatory cutbacks are required. The actions taken at this stage include implementation of the allocation methodology and potential utilization of ESP supplies. It should be noted that members of the DMP TAC expressed strong opinions that the ESP supplies only be used during a hydrologic drought as a last resort, if at all. Should the dry weather continue and the region enter a sixth year of drought, some communities may begin facing health and safety issues.

4.3 Potential Water Authority Drought Actions

The following is a brief description of each of the potential Water Authority actions that may be taken in a drought situation.

Ongoing Best Management Practices Implementation

The Water Authority and its member agencies continue to implement the California Urban Water Conservation Council's comprehensive water conservation Best Management Practices.

Communication Strategy

A Communication Strategy will be in place prior to the drought and continue through all stages. The strategy is a coordinated effort between the Water Authority and its member agencies. It includes phases of response and corresponding activities to take during each phase. Refer to **Section 6** for additional information.

Monitoring Supply Conditions and Storage Levels

Water Authority staff monitors State Water Project and Colorado River supplies, along with supply levels in Metropolitan's storage facilities and programs. Reports will be made to the member agencies and the Water Authority's Board of Directors on the status of the supply conditions. This action is also an important element of the Communication Strategy.

Call for Voluntary Conservation

The Water Authority and its member agencies will ask the public to implement voluntary water conservation practices. The voluntary water conservation measures are in addition to the region's ongoing implementation of the BMPs. Voluntary water conservation measures may focus on outdoor water conservation, elimination of run-off, and leak detection. The shift from indoor water conservation to outdoor water conservation is due to demand hardening that is the result of 15 years worth of indoor water conservation efforts that targeted homes and businesses. The specifics of the voluntary water conservation measures will be determined by member agencies, with the Water Authority providing regional messages and assistance. The action will be closely coordinated through the Communication Strategy.

Draw from Water Authority Carryover Storage

The Water Authority will draw from its non-ESP storage in order to meet member agency demands. This could include supplies available through the Water Authority's proposed carryover storage project that is scheduled for completion in 2011.

Secure Transfer Option Contracts

The Water Authority secures transfer option contracts for supplies from outside of the region. Transfer options are multi-year contracts that allow the Water Authority to obtain a specified quantity of water at some future date. The amount secured will depend on supply need and cost. A minimum payment for water is usually required in order to secure the transfer. This payment must be made even if the water is not needed.

Buy Phase 1 Spot Transfers

The Water Authority buys Phase 1 spot transfers from outside of the region. Spot transfers make water available for a limited duration (typically one year or less) through a contract entered into in the same year that the water is delivered. The cost for this block of water would be at or below the Tier 2 water rate. Purchase of spot transfers are categorized into two phases to provide the Board the ability to determine action based on cost. The cost includes purchase and conveyance. Examples of a spot transfer are supplies purchased through DWR's Drought Water Bank during the 1987-1992 drought (See Section 3.4). The transfer water will be melded in with the remaining supplies available to the Water Authority.

Call Transfer Options

The Water Authority buys the previously secured transfer options. In addition to the cost to purchase the transfer water, the Water Authority needs to pay for conveyance between the location

of the sale and the San Diego region. Additional costs could include storage, treatment, and seepage losses depending upon the origin of the transfer water. The transfer water will be melded in with the remaining supplies available to the Water Authority.

Buy Phase 2 Spot Transfers

The Water Authority buys Phase 2 spot transfers from outside of the region. The transfer water will be melded in with the remaining supplies available to the Water Authority.

Implement Allocation Methodology

The Water Authority's Board of Directors determines that all potential actions have been taken to avoid shortages and the remaining action is to implement the allocation methodology outlined in **Section 5**.

Utilize Emergency Storage Project Supplies

The Water Authority draws from its ESP supplies when any member agency's non-interruptible firm demands drop below a 75% service level. The quantities of supplies drawn from storage are based on the minimum amount necessary to meet essential health, safety, and firefighting needs. It is also based on the maximum amount needed to ensure adequate supplies remain for a catastrophic event.

The drought response matrix provides guidance to the Board on potential actions that the Water Authority could take at certain stages of drought. There are variables, unknown at this time, which may influence the options available to the Water Authority's Board of Directors. This will need to be taken account when it is time to implement the matrix.

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Section 5 - Supply Allocation Methodology

5.1 Introduction

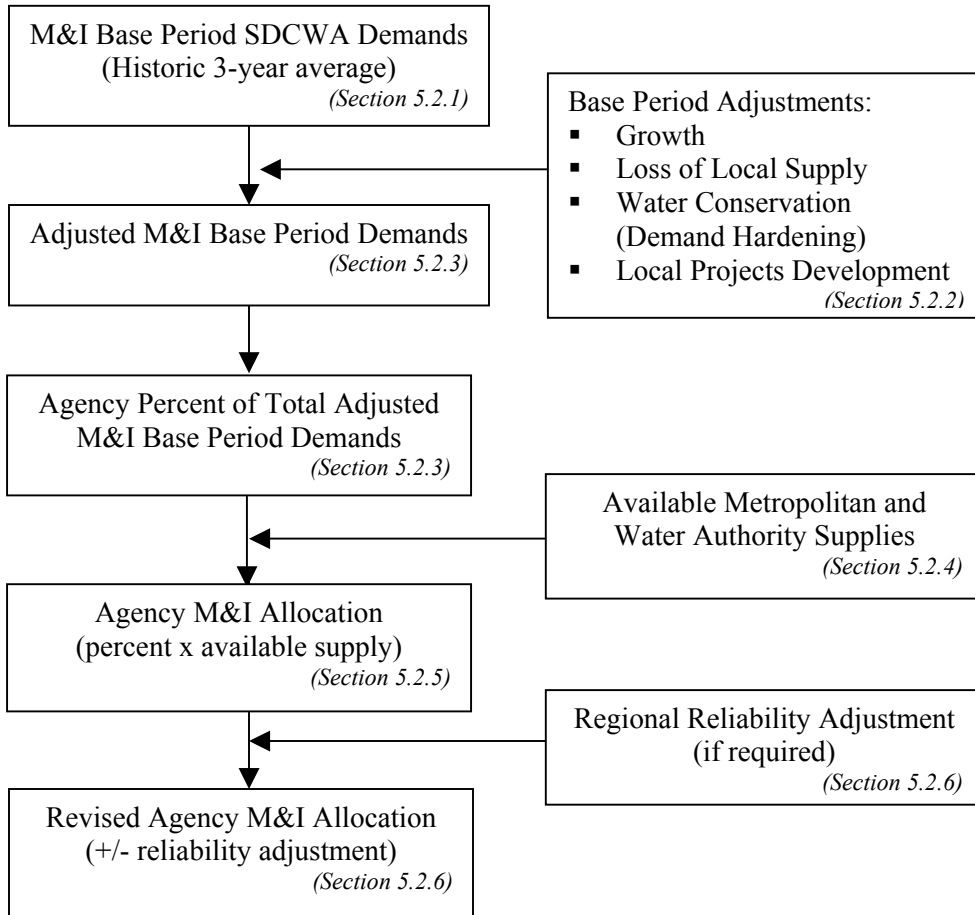
As outlined in the Drought Response Matrix discussed in **Section 4**, after the Water Authority's Board of Directors has exhausted available supply enhancement options and can no longer avoid cutbacks, implementation of an allocation methodology will occur. The challenge in developing the methodology was to meet the diverse needs of the member agencies in a fair and equitable manner. Each of the Water Authority's member agencies has a different demand profile and unique supply portfolio. Some agencies have abundant local supplies, while others are 100 percent reliant on water supplies purchased from the Water Authority. There are member agencies that serve primarily agricultural customers, while others serve only municipal and industrial customers.

This section includes a description of the supply allocation methodology developed through a collaborative effort between the Water Authority and its member agencies. The goal of the methodology is to provide an equitable means of apportioning the Water Authority's municipal and industrial (M&I) supplies during periods of supply shortages consistent with the TAC approved principles discussed in **Section 2.3**. Through the TAC meetings, Water Authority staff and designated member agency representatives have collectively agreed to the allocation methodology described in this section.

The methodology distinguishes between Metropolitan's two distinct classes of service – "Full Service" and surplus water. Full Service water has the highest supply reliability and is priced at Metropolitan's total cost of service. Typically, Full Service water is used to meet the Water Authority's M&I sector demands. In contrast, Metropolitan's surplus water supplies are subject to first cutback during supply shortage conditions. Regional surplus supplies are primarily obtained through Metropolitan's IAWP program. IAWP water is subject to up to a 30 percent cutback in any one year during a shortage before any reductions in Full Service water are implemented. To account for this lower reliability level, surplus water supplies are priced below the Metropolitan Full Service rate. A further discussion on the reduction of the IAWP class of service can be found in **Section 3.8**.

To provide an overview of the allocation methodology for M&I customers, a schematic has been prepared that includes the principal steps in the process. As shown in **Figure 5-1**, the methodology begins with a determination of each agency's base period demands. From this base, adjustments are added to account for each agency's local supply conditions and their individual demand characteristics. This calculation results in an adjusted base period demand for each member agency. Next, the amount of M&I supplies available from the Water Authority is determined. This includes the Water Authority's own supplies along with supplies available from Metropolitan. The individual member agency's percent share of the total regional M&I adjusted base period demand is calculated. This percentage is then multiplied by the total Water Authority M&I supplies available to derive an allocation for each member agency. In the rare circumstance of severe imported supply shortages, a regional reliability adjustment will be applied to avoid large uneven retail impacts. Each box shown in **Figure 5-1** contains a reference number to the corresponding subsection that describes the step in detail.

Figure 5-1
M&I Supply Allocation Methodology



5.2 Description of Allocation Methodology

To help describe the allocation methodology and demonstrate the calculation procedures, the following example was developed. The example was prepared for illustration purposes only. For this sample analysis, demand and local supply data for five representative agencies was established to approximate a cross-section of urban and agricultural characteristics unique to the region. Other agency attributes such as demand, estimated growth, conservation, and local supply availability were also based on local agency characteristics.

The first step in determining the severity of necessary cutbacks during any water supply shortage event is an assessment of available supply compared to estimated demands. Because the majority of the region's water supply originates from outside the San Diego area, the severity of regional drought cutbacks is driven by the availability of imported supplies. However, imported supplies developed by the Water Authority are less vulnerable to reductions due to their higher priority water

right. The high reliability of the IID transfer water and conserved water resulting from the lining of the All-American Canal and Coachella Canals assures that these supplies will be available to the Water Authority during extreme hydrologic events. As a result, imported Metropolitan supplies and local surface water would be most susceptible to a reduction during a drought. Additionally, in the absence of adopted Metropolitan supply allocation guidelines, there is a degree of uncertainty as to the Water Authority's share of Metropolitan's supplies during a shortage. Therefore, an estimated percent cutback in Metropolitan supplies to the Water Authority was assumed to illustrate the allocation methodology.

In the example, agricultural purchases under Metropolitan's IAWP program are cutback by 30 percent – the maximum allowable in any one year before reductions in Full Service water are imposed. The example further assumes that a 20 percent reduction in the remaining Metropolitan supplies occurs.

5.2.1 Historic Base Period Demands on the Water Authority (Unadjusted)

A historic base period demand is required to establish each agency's pre-allocation demands on the Water Authority. Base period M&I demands are calculated using data from the three most recently completed fiscal years immediately preceding the year in which an allocation process is needed due to supply shortages. Each agency's base period M&I demand is established by calculating their three-year average of demand.

Base period demands for agriculture are certified through Metropolitan's IAWP program and are calculated using a different approach. For IAWP demands, only the most recently completed single fiscal year prior to the imposition of an allocation is considered. This calculation is required by Metropolitan's Draft IAWP Reduction Guidelines.

For illustrative purposes, **Table 5-1** contains historic base period demands for the sample agencies. In the event that consecutive multi-year allocations are required, base period demands (based on the three years prior to the first year of allocations) are to remain fixed for the duration of the allocation.

Table 5-1
Example
Historic Base Period Demands on Water Authority

	Agency A	Agency B	Agency C	Agency D	Agency E
SDCWA M&I Demand (three-year average)	2,200	6,500	181,000	43,100	25,000
IAWP Demand (previous year)	0	19,000	200	100	0

5.2.2 Adjustments

M&I adjustments to be applied to the base period were developed to equitably account for relevant factors in calculating each agency's allocation. Such factors include growth, demand hardening levels due to conservation, local supply availability from groundwater and surface reservoirs, and

efforts taken by local agencies to develop reliable local projects such as recycled water, groundwater recovery, and seawater desalination. The adjustments are intended to acknowledge unique agency characteristics and provide an incentive for agencies to decrease their reliance on imported supplies over the long-term. Consistent with the Draft IAWP Reduction Guidelines, no adjustments are made to the IAWP base demand.

The following is a summary of each M&I adjustment:

Growth

Because the base period is fixed, a growth adjustment is applied that estimates the increase in demand due to growth from the base period to the allocation year. This adjustment is calculated using the average number of new meters purchased by each agency over the three-year base period. New meter data is derived from annual Water Authority Capacity Charge records. Water demands associated with these meters are calculated using an annual equivalent demand per meter estimate. For meters under one inch, demand is estimated at 0.5 acre-feet per year, consistent with average residential water use. The adjustment is based on the annual demand increase associated with the average annual meter purchases over the three-year period. Due to the two-year difference between the base period and allocation year, the calculated growth adjustment is doubled. The growth adjustment calculation is expressed as:

$$= (\text{Average Number of Meters by Size}) \times (\text{Equivalent Demand per Meter by Size})$$

Table 5-2 illustrates the growth adjustment calculations for each sample agency.

**Table 5-2
Growth Adjustment**

Three-Year Average of New Meters by Size

Meter Size	Agency A (new meters)	Agency B (new meters)	Agency C (new meters)	Agency D (new meters)	Agency E (new meters)
5/8"	14	49	1,467	2,000	70
1"	4	38	800	41	25
1.5	0	1	123	35	10
2	0	1	93	21	0

Estimated Demand per Meter

Meter Size	Demand per Meter (AF/YR)
5/8"	0.5
1"	0.8
1.5	1.5
2	2.6

Total Annual Meter Demand

Meter Size	Agency A (AF)	Agency B (AF)	Agency C (AF)	Agency D (AF)	Agency E (AF)
5/8"	7	25	733	1,000	35
1"	3	31	640	33	20
1.5	0	2	185	52	15
2	0	2	242	55	0
Total	10	60	1,800	1,140	70
2-Year Growth	20	120	3,600	2,280	140

Water Conservation (Demand Hardening)

On-going water conservation programs are an effective method of reducing reliance on imported supplies. However, these savings curtail an agency's ability to further reduce their demands during supply shortages (demand hardening). To avoid penalizing agencies that have undertaken such conservation activities for the long-term, an adjustment for these savings is applied. The conservation adjustment is calculated using an average of active conservation program savings, as tracked by the Water Authority, over the most recently completed three fiscal years - similar to the base period calculation. Inclusion of only active conservation measures such as the installation of high-efficiency clothes washers ensures that legislatively mandated conservation savings (attributable to growth) are excluded. The adjustment added to the base period is the three-year average conservation savings. Estimated annual savings and resulting conservation adjustments for the sample agencies are shown below in **Table 5-3**.

Table 5-3
Conservation Adjustment (AF)

Year	Agency A	Agency B	Agency C	Agency D	Agency E
1	25	20	17,650	1,475	995
2	30	25	18,000	1,500	1,000
3	35	15	18,350	1,525	1,005
Average	30	20	18,000	1,500	1,000

Loss of Local Supply

Some agencies have invested heavily in surface and groundwater supplies, thereby reducing their reliance on imported water and providing other regional benefits such as surface water treatment

capacity. Typically, these supplies are based on the amount of local runoff from annual rainfall. Because local rainfall is subject to drought cycles, a Loss of Local Supply Adjustment was developed to recognize the benefit of these historic supplies and not penalize agencies for diminished local supplies during shortage conditions. The adjustment is calculated as the difference between the average local supply use over the most recently completed three fiscal years and the estimated allocation-year local supply use. The adjustment is 50 percent of the local supply difference. An agency that has developed recycled water supplies, brackish groundwater recovery, or desalinated ocean water may apply for this adjustment if it deems necessary; however, this will preclude that agency from applying for the Local Projects Development Adjustment described in the next sub-section.

The Loss of Local Supply Adjustment for the sample agencies is shown in **Table 5-4**. For purposes of the sample calculation, it was assumed that a 25 percent loss of local supply volume occurs during the allocation year.

Table 5-4
Loss of Local Supply Adjustment (AF)

Year	Agency A	Agency B	Agency C	Agency D	Agency E
1	0	0	39,500	0	6,500
2	0	0	34,400	0	5,700
3	0	0	22,100	0	4,600
Average	0	0	32,000	0	5,600
Assumed 25% Reduction	0	0	8,000	0	1,400
50% of Difference	0	0	4,000	0	700

Local Projects Development

The development of highly reliable in-region supplies, such as brackish groundwater recovery, recycled water, and seawater desalination result in a dual benefit. They add to the region's supply diversity and are a dependable source during shortages of imported water. An adjustment is made for the regional benefit of these annually reliable supplies. The adjustment recognizes both the investment made by the local agency and the regional financial contribution made by the Water Authority. Similar to the base period calculation time frame, a three-year average of beneficial use from these reliable supplies is employed to calculate the adjustment. The Local Projects Development adjustment is 30 percent of the three-year average. In addition to the incentive from the adjustment, the member agency will be able to utilize 100% of their local project's supply that is available during a drought. **Table 5-5** on the following page shows the Local Projects Adjustment.

Table 5-5
Local Projects Development Adjustment (AF)

Year	Agency A	Agency B	Agency C	Agency D	Agency E
1	65	0	4,900	1,310	1,850
2	64	0	4,950	1,350	2,100
3	66	0	5,150	1,340	2,050
Average	65	0	5,000	1,333	2,000
30% Credit	20	0	1,500	400	600

5.2.3 Adjusted Base Period Demands and Supply Allocation Percentages

An agency's adjusted base period M&I demand is calculated by adding the applicable adjustments to their initial base period M&I demand. The adjusted base period M&I demand amount is then used to generate an agency's pro-rata percent share of the total adjusted base period M&I demand. It is this percentage that is used to calculate an agency's imported M&I supply allocation volume. **Table 5-6** illustrates the calculation for the sample agencies.

Table 5-6
Adjusted Base Period M&I Demand and
Imported M&I Supply Allocation Percentages (AF)

Agency	Base Period M&I Demand on SDCWA	Growth Adjustment	Loss of Local Supply Adjustment	Conservation Adjustment	Local Projects Development Adjustment	Adjusted Base Period M&I Demand	Pro-rata Share of Adjusted Base Period M&I Demand
A	2,200	20	0	30	20	2,270	0.8%
B	6,500	120	0	20	0	6,640	2.3%
C	181,000	3,600	4,000	18,000	1,500	208,100	71.3%
D	43,100	2,280	0	1,500	400	47,280	16.2%
E	25,000	140	700	1,000	600	27,440	9.4%
Total						291,730	

IAWP allocation percentages are also calculated based on an agency's pro-rata share of demand. However, the based period IAWP demand used for this calculation is not adjusted as described in **Section 5.2.2**. **Table 5-7** shows the pro-rata percent share of IAWP demands for the sample agencies.

Table 5-7
Base Period IAWP Demand and
IAWP Supply Allocation Percentages (AF)

Agency	Base Period IAWP Demand on SDCWA	Pro-rata Share of Base Period IAWP Demand
A	0	0.0%
B	19,000	98.5%
C	200	1.0%
D	100	0.5%
E	0	0.0%
Total:	19,300	

5.2.4 Water Authority Supply Availability and Net Cutback Percentages

The next step in the allocation methodology is to identify the total supplies available to meet member agency demands during shortage events. M&I supplies are equal to the sum of non-IAWP water from Metropolitan, the Water Authority's existing Imperial Irrigation District transfer water, conserved water from planned canal lining programs, and projected supplies from future seawater desalination project(s). These additional supplies developed by the Water Authority help to reduce demands on Metropolitan, and therefore decrease the impact from reductions in Metropolitan's supplies. This is demonstrated in the calculations shown in **Table 5-8**.

As discussed in **Section 5.2**, Metropolitan has yet to adopt drought allocation procedures. Lacking any definitive methodology, a simplifying assumption was made to estimate the Water Authority's share of Metropolitan's drought supplies. For this example, it is assumed that Metropolitan's allocation process results in a drought supply allotment equal to 80 percent of the Water Authority's M&I demand on Metropolitan. In the example, Water Authority supplies are set at 20,000 acre-feet per year. Total M&I supply availability is computed by combining Water Authority supplies and Metropolitan M&I drought supplies (**Table 5-8**).

As noted in **Section 5.1**, IAWP supply is subject to up to a 30 percent reduction prior to cutbacks in imported M&I supplies (Full Service water) from Metropolitan. In this example the 30 percent cutback has occurred, resulting in an initial imported IAWP supply of 13,642 acre-feet. At this time, Metropolitan has not made clear what will occur if further IAWP reductions are needed beyond the initial 30 percent cut. However, the Water Authority, as agreed to by the TAC, has applied any further cutback to the remaining IAWP demands at an equal level as M&I demand reduction. Thus, an additional 20 percent cutback (the M&I cutback) on the remaining IAWP supply is taken. This results in a net 44 percent reduction to IAWP supply availability (**Table 5-8**).

Table 5-8
Supply Availability (AF)

M&I Supply Availability

Allocation-Year M&I Demand	273,360
SDCWA Supply	20,000
M&I Demand on Metropolitan	253,360
Metropolitan Cutback to M&I Supplies	20%
Net Metropolitan M&I Supply Availability	202,688
Total SDCWA M&I Supply Availability	222,688
Net Cutback to Imported M&I Supply	18%

IAWP Supply Availability

Allocation-Year IAWP Demand	19,300
Metropolitan Cutback to IAWP Supply	30%
Initial IAWP Supply	13,510
Additional Cutback to Initial IAWP Supply (based on Metropolitan M&I Cutback level)	20%
Additional Cutback Volume	2,702
Total IAWP Supply Availability	10,808
Net Cutback to IAWP Supply	44%

5.2.5 Member Agency Allocation of Water Authority Supplies

One of the final steps in the allocation methodology is to determine the agency level allocation of available M&I and IAWP supplies. This is calculated by multiplying total available supplies by each agency's percent share of the adjusted base period demand (base period for IAWP), as shown in the following equation:

$$= (\text{Available Regional Imported Supply Type}) \times (\text{Agency's Pro-rata Share of Demand Type})$$

For the example, data from **Tables 5-6, 5-7, and 5-8** are used to calculate M&I and IAWP allocations for the sample agencies. The results are shown in **Table 5-9**.

**Table 5-9
Supply Allocation Volumes**

Agency	Pro-rata Share of Adjusted Base Period SDCWA M&I Demands	SDCWA M&I Allocation Volume	Pro-rata Share of Base Period IAWP Demands	IAWP Allocation Volume
A	0.8%	1,781	0.0%	0
B	2.3%	5,122	98.5%	10,646
C	71.3%	158,777	1.0%	108
D	16.2%	36,075	0.5%	54
E	9.4%	20,933	0.0%	0
Total	100.0%	222,687	100.0%	10,808

Unless Water Authority supply cutbacks are severe, at or exceeding 30%, the calculation is now complete and each agency knows their allocated volume of Water Authority supplies. If the cutback is severe, the methodology includes a regional reliability adjustment, which is discussed in the next section.

5.2.6 M&I Regional Reliability Adjustment (if needed)

In accordance with Principle 15, which states, *“In order to protect the economic health of the entire region, it is very important for the allocation methodology to avoid large, uneven retail impacts across the region. The methodology should include a minimum level of retail agency reliability to ensure equitable allocation among the member agencies,”* a regional M&I reliability floor was established. The floor, if needed, is set at 5% below the region’s total M&I level of service and is triggered when the net cutback to total Water Authority supplies reaches or exceeds 30 percent. Taking into account the supply development by the Water Authority, its member agencies, and Metropolitan, this level of cutback is very unlikely. The first step in determining the adjustment is calculation of the M&I level of service for each member agency and region, which is shown below.

Level of Service

The level of service value is computed as the ratio of total supplies available to an agency, including allocated imported supplies and local resources, to projected M&I demand during that same period. Thus, in order to calculate Level of Service estimates, projected member agency allocation-year demand and supply projections are necessary.

Table 5-10 contains estimated allocation-year M&I demands and supplies used for this example. The second column titled, M&I Demand on SDCWA, has been computed for this example by adding the demand increase associated with the growth adjustment and the estimated loss of local potable supply volume to the base period M&I demand. Included in the next column are projected allocation-year local potable supplies used to offset imported demand. These supplies are calculated by subtracting the assumed volumetric loss of local potable supply from the base period average of local potable supplies. Finally, brackish groundwater and recycled water use projections are based on member agency estimates of allocation-year facility operations.

Table 5-10
Allocation-Year Demand and Supply (AF)

Agency	M&I Demand on SDCWA	Local Potable Supplies	Recycled & Brk GW Supplies	Total M&I Demands
A	2,220	0	80	2,300
B	6,620	0	0	6,620
C	192,600	24,000	4,500	221,100
D	45,380	0	3,800	49,180
E	26,540	4,200	6,000	36,740
Total	273,360	28,200	14,380	315,940

Summing an agency's M&I allocation volume (**Table 5-9**) and projected allocation-year total local supplies (**Table 5-10**) results in their total M&I supply during a cutback. This value is then divided by the projected total M&I demand (**Table 5-10**) to generate the agency's estimated M&I level of service. A summary of agency level allocations and resulting levels of service is shown in **Table 5-11**. The M&I level of service of the agencies' and region are utilized in severe cutback levels to calculate the regional reliability adjustment.

Table 5-11
Allocation and Resulting Level of Service (AF)
20% Cutback to Metropolitan M&I Supply

Available Supply

M&I 222,688

Agency	Pro-rata Share of Adjusted Base Period SDCWA M&I Demand	SDCWA M&I Allocation Volume	Estimated Local Potable Supplies	Estimated Recycled & Brk GW Supplies	Total M&I Supply	Projected Total M&I Demand	M&I Level of Service
A	0.8%	1,782	0	80	1,862	2,300	80.9%
B	2.3%	5,122	0	0	5,122	6,620	77.4%
C	71.3%	158,777	24,000	4,500	187,277	221,100	84.7%
D	16.2%	36,075	0	3,800	39,875	49,180	81.1%
E	9.4%	20,933	4,200	6,000	31,133	36,740	84.7%
Total	100.0%	222,688	28,200	14,380	265,268	315,940	

Total Regional M&I Level of Service - (265,268 / 315,940) = 84%

Net 44% cutback to IAWP demand results in 56% IAWP level of service for IAWP program participants

M&I Regional Reliability Adjustment Calculation

The regional M&I reliability floor effectively reallocates a portion of the Water Authority's M&I supplies necessary to bring all agencies up to the minimum M&I level of service. This floor is set at five percent below the region's total M&I level of service and is triggered when the net cutback to total Water Authority M&I supplies reaches or exceeds 30 percent. The volume of imported supplies required to meet this shortfall is provided by those agencies with a total M&I level of service exceeding the region's total M&I level of service. An agency's contribution is calculated by multiplying its pro-rata percent share of the aggregated exceedance volumes by the total M&I level of service shortfall. However, an agency's contribution cannot exceed quantities that would lower its total M&I level of service below the regional M&I level of service.

Data from the previous example is used to illustrate the regional M&I reliability floor adjustment procedure. In this scenario the reduction in Metropolitan's M&I supply is elevated to 40 percent. As a result, the net cutback in Water Authority total M&I supplies increases to 37 percent, which triggers the reliability adjustment. A detailed summary of the regional M&I reliability floor calculation is shown in **Table 5-12**.

5.2.7 Data Reconciliation

Since allocations are based on estimated values, an assessment of each agency's actual demand and supply utilization during a cutback is necessary. Through this process, a final accounting of appropriate allocation volumes will be calculated. The reconciliation of certified and actual data will occur at the end of the allocation period or at the end of twelve months, whichever comes first. Agencies are required to certify the following information: number of new meters, M&I and IAWP demands, and local use from potable and recycled sources.

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Table 5-12
Regional Reliability Floor (AF)
40% Cutback to Metropolitan M&I Supply

Available Supply

M&I **172,016**
IAPW **8,106**

Regional Reliability

Regional M&I Level of Service(214,596/315,940)= **68%**
Regional M&I Reliability Floor (-5%) **63%**

Level of Service

Agency	Pro-rata Share of Adjusted Base Period SDCWA M&I Demand	SDCWA M&I Allocation Volume	Pro-rata Share of IAPW Demand	IAPW Allocation Volume	Estimated Local Potable Supplies	Estimated Recycled & Brk GW Supplies	Total M&I Supply	Projected Total M&I Demand	M&I Level of Service
A	0.8%	1,376	0.0%	0	0	80	1,456	2,300	63.3%
B	2.3%	3,956	98.5%	7,984	0	0	3,956	6,620	59.8%
C	71.3%	122,647	1.0%	81	24,000	4,500	151,147	221,100	68.4%
D	16.2%	27,867	0.5%	41	0	3,800	31,667	49,180	64.4%
E	9.4%	16,170	0.0%	0	4,200	6,000	26,370	36,740	71.8%
Total	100.0%	172,016	100.0%	8,106	28,200	14,380	214,596	315,940	

Regional M&I Reliability Floor Reallocation

Agency	Total M&I Floor Check	Total M&I Shortfall	Pro-rata Share of Total M&I Shortfall	Exceedance of Regional Reliability Average	Exceedance Volume	Pro-rata Share of Exceedance	Exceedance Agency Contribution	Revised SDCWA M&I Allocation	Revised M&I Level of Service	Total Level of Service
A	0%	0	0%	0.0%	0	0.0%	0	1,376	63.3%	63.3%
B	-3.2%	215	100%	0.0%	0	0.0%	0	4,171	63.0%	47.4%
C	0.0%	0	0.0%	0.4%	799	31.0%	67	122,580	68.3%	68.3%
D	0.0%	0	0.0%	0.0%	0	0.0%	0	27,867	64.4%	64.3%
E	0.0%	0	0.0%	3.8%	1,775	69.0%	148	16,022	71.4%	71.4%

Shortfall Calculation

Exceedance Calculation

M&I Reallocation

5.3 Member Agency Transfers Secured Following Allocation Methodology

The Water Authority's member agencies have the option of purchasing water from an entity and using, among other facilities, the State Water Project, the Colorado River Aqueduct, Metropolitan's distribution system, and the Water Authority's distribution system to wheel the water. In addition to the cost of the transfer water, the member agency would pay the applicable wheeling rate to utilize these facilities. This transfer water would not be considered a Water Authority supply or local supply when allocating Water Authority supplies under the methodology included in the DMP. Rather, the transfer water would be "on top" of the allocation, and thus, not factored into the allocation methodology base period or be eligible for the local project development adjustment.

Water Authority staff will assist member agencies in entering into agreements with the wheeling entities. Additionally, the Water Authority may need to be a signatory to some of the wheeling agreements, such as an agreement with Metropolitan. However, it will be the member agency's responsibility to find the transfer water, enter into an agreement with the selling entity, and comply with any other requirements (e.g. CEQA, NEPA). Any transfer water identified by the Water Authority during its search that it chooses not to purchase will also be available for purchase by its member agencies.

Section 6 - Water Authority/Member Agency Coordination

6.1 Introduction

Communication and coordination between agencies, the public, and public officials are vital for the successful implementation of the DMP elements. To facilitate this effort, two member agency groups will be formed to handle coordination of activities and communication. The first group is the Member Agency Advisory Team (advisory team) that will assist the Water Authority's General Manager with issues that arise during the implementation of the DMP. This will include actions related to implementation of the Drought Response Matrix (**Section 4**) and the Allocation Methodology (**Section 5**). The second group is a Drought Communication Team (communication team) that will aid in the coordination of communications with the press and public. The existing Joint Public Information Council (JPIC) can sit as the communication team.

Please note that while the communication team will only need to convene once a drought has begun, as with the advisory team, communications about water supplies and conservation are an on-going activity by the Water Authority and its member agencies. These activities currently occur through the JPIC, making that body the logical group to assume the responsibilities of the communication team. During a supply shortage, communication activities will increase and closer coordination will be necessary. This section describes the advisory team and the communications strategy.

6.2 Member Agency Advisory Team

The advisory team will be made up of the general managers of the Water Authority's member agencies or their representatives. The advisory team will focus on decisions related to actions included in the Drought Response Matrix, including the Allocation Methodology. The intensity of the drought will determine how often the advisory team meets. It may meet infrequently if water is only being withdrawn from storage, or the meetings may be scheduled monthly and possibly more often if the allocation of water begins. Also, during the implementation of the Drought Response Matrix actions, policy issues may arise where the Water Authority's General Manager may desire input from the member agencies before making a recommendation to the Water Authority's Board of Directors. The advisory team could be convened at this time to provide input. The policy decisions related to implementation of the matrix actions could include recommendations on:

1. What drought response action(s) to take to avoid rationing;
2. How much to spend to avoid rationing;
3. Adding a new rule to adjust the base period for an exception; and
4. Modifying a portion of the DMP that is not working as expected.

The advisory team will also be the body to which a member agency may appeal should the Water Authority's General Manager deny an adjustment during rationing. Should the

member agency want to appeal the advisory team's recommendation, it may then ask the Water Authority's Board of Directors for a review.

Additionally, the Water Authority's General Manager may wish to convene the advisory team to provide an update on supply conditions or conservation performance during a drought. This meeting may simply be for communication purposes or for further input to develop new programs to help avert the impacts of a drought.

6.3 Communication Strategy

During drought periods, it is necessary for any responsible water agency to activate an established drought communication strategy. The purposes of such a strategy are manifold, but all activities need to result in the reduced consumption of water during the drought period.

Given that priority, the remaining purposes include:

1. To ensure that all constituents believe they are being treated fairly in relationship to all other constituents;
2. To satisfy the political community that the agencies have done a good job managing the drought;
3. To cause constituents to understand that all reasonable steps have been taken to avoid the need to restrict water consumption during a drought;
4. To avoid the confusion of different jurisdictions asking their constituents to react substantially differently from other, proximate jurisdictions; and
5. To emerge from the drought period having demonstrated an agency's ability to provide leadership, good planning, equality and to have minimized the impacts of water shortages on its constituents.

For our purposes, communications is defined as the following:

“A two-way flow of information contrasted to the one-way dictates of a person or entity in power.”

Communication involves making plans, discussing those plans with those who are impacted, taking suggestions from those impacted and modifying the plan to respond to those needs. Issuing a press release that states, “everyone must reduce their water consumption by 10 percent,” is not sufficient communication. Thus, any communications strategy must include a process for feedback and plan modification. By the very nature of drought, the impacts can range from slight (during the early years of a drought period) to dramatic or onerous (during the latter years of a drought period). A communications strategy must account for the level of alarm to avoid later non-compliance due to the “cry-wolf” syndrome and to maintain credibility in the media.

A communication team has been established as part of the DMP to address this two-way flow of information on a Water Authority and member agency level. Additionally, the communication team will be able to coordinate information flow to/from the media, public officials, and the general public when needed. As part of the communication strategy, the Water Authority should also make an effort to coordinate communications with water agencies in Riverside County that share the same source of water from Metropolitan.

6.4 Five Phases of Drought Response

The Communications Strategy has five phases with respect to drought conditions, including a normal period. While the correlation between events (available water supply) and the duration of the drought is imperfect, experience indicates that Southern California, in general, can manage through three years of drought without great inconvenience to consumers. Historically, year four and beyond of a drought have resulted in calls for serious reductions in water use. A drought continuing beyond year four could result in mandatory reductions of deliveries to member agencies of Metropolitan and corresponding reductions in deliveries to sub-agencies of Metropolitan's member agencies, including reductions to, and by, the Water Authority.

Since the Water Authority is dependent on Metropolitan for water imported from other hydrologic basins, a drought period localized to San Diego County may not result in water shortages if adequate imported water is available. At the same time, heavy rainfall in San Diego County occurring during a lengthy dry period on the watersheds of the Colorado River and the California State Water Project could result in water-use restrictions during a local deluge. These anomalies are likely not well understood by most consumers in San Diego County (or any other county, for that matter) and will need to be part of a consumer education process.

Each of the five phases of drought response is described below, along with suggested activities to take.

6.4.1 Normal Periods

A normal period is the condition where available water supplies more or less match demand with little water left over for storage for use in some future year. This occurs prior to the stages included in the Drought Response Matrix, which are shown in **Section 4**. This condition is permanent in Southern California. Without regard to calendar year 2005, and in all probability, 2006, Metropolitan and its member agencies tend to be in water balance give or take a few hundred thousand acre-feet of water. While demand remains somewhat constant, supply hits peaks and valleys over any running period of time. On average, water supply and demand tend to be close to one another. Averages only work, however, when there is adequate storage to hold water made available by the peak wet years in order to deliver that water during the dry years. Absent such storage, the ability to meet consumer demands year in and year out would be seriously hampered.

Southern California water agencies would be oscillating from drought to abundance on a regular basis.

Actions taken by the Water Authority and its member agencies during normal periods to diversify supplies include implementation of Best Management Practices, development of brackish groundwater and seawater desalination projects, increasing the use of recycled water, and increasing the amount of local storage. The Water Authority and its member agencies will continue the effort to educate consumers about the need for, and the cost of, these types of projects.

Urging people to conserve water as part of a daily routine is a continuous process. Such lifestyle conservation often causes a “hardening of demands.” Demand hardening makes it more difficult to conserve additional supplies during a drought. This is taken into account in the Communication Strategy and accommodated during drought planning. Activities during this phase are considered part of “normal” business activities, the communication team does not need to convene for normal periods other than to continue its work as the JPIC.

Normal Period Activities

Normal period communication represents essentially what the Water Authority and its member agencies currently do – offer a high quality, multifaceted public outreach and education program in the form of news releases, publications, brochures, participation in special events, tours, and the remainder of its comprehensive program. As part of this DMP, the following steps will be added to the “everyday” communication tasks:

1. A current list of all people who have attended tours of Water Authority facilities will be maintained. Communications with these people will be held from time to time by way of letters or broadsides addressed to this special group of community leaders who have some inside information and may be viewed by their peers as a “water expert”.
2. An e-mail list of drought coordinators at all member agencies, cities, and the county will be created and maintained. The coordinators for member agencies would include the agency’s general manager or representative and communication team member. The list will be updated on a continuous basis. This list will be used to communicate how the Water Authority and its member agencies need to react to whatever drought stage is current. Suggestions from these people will be encouraged. The people on this list will be contacted before a program or drought event goes public. Such a list may already exist as the JPIC. Special efforts should be made to keep this list current.
3. A separate list of contacts at the offices of all municipal, county, state and federal elected officials will be created and maintained. During a drought emergency, a quick message to them about what the Water Authority’s message will be to the general public will be distributed.

4. E-mail lists will be kept current by sending a message to each list once every three months with the following message: “The Water Authority is attempting to keep this list current in the event of a drought emergency. If there is change in your organization, please respond to this message with the name of the new person.” If e-mails are returned as undeliverable, staff will need to research the reason.

6.4.2 Phase One

Phase One of the Communication Strategy occurs when Metropolitan experiences shortages in its imported water supply (from either the Colorado River or the State Water Project, or both) and must remove water from storage to meet normal demand. In all likelihood, during Phase One, the Water Authority will be in the “Voluntary” column of its Drought Response Matrix. This could be the first year of a multi-year dry period, but that cannot be known in advance. What is known is that Metropolitan will likely begin the following year with less water in storage than it had at the beginning of the year. If year two is a wet year and Metropolitan is able to restore its storage while meeting all normal demands, the period has passed with little notice or concern by most consumers. Nonetheless, as part of the communications process, consumers will need to be made aware that the water agencies are dipping into their savings account to meet demand. Consumers will also need to be reminded that conserving water now leaves more water for the future. The communication team will convene to discuss the supply situation, review any new communication messages that the Water Authority is formulating as a result of the supply situation and provide feedback. The Water Authority’s obligation is to take into account comments received from the member agencies through the communication team and make modifications as appropriate. Because the communication team is, by its nature, a large group, team members have an obligation to ensure that comments are on point and additive to the communication process.

Phase One Activities

Phase One communications will include monthly updates to the drought coordinators list that might coincide with a meeting of the board of directors where a similar update might be provided. An advisory will also be prepared for the media – print and electronic – that explains what the current drought means to the state and region and how the Water Authority has prepared to cope with it. This advisory is, in effect, a status report to the media that is not intended for publication, but rather for the media’s edification. If it does get published, that’s acceptable, but it is important for the Water Authority to continue maintaining personal relationships with members of the media by making them insiders to what is going on. Thus, if the drought should worsen, the media is not surprised as events unfold and also does not need a crash education course on water supplies. Media outlets in Riverside County that may be outside the Water Authority’s usual media program should be included in drought news. Contact with media that primarily serve consumers outside of the Water Authority’s service area should, as a courtesy, be coordinated with the local Metropolitan Water District member agency or agencies. The

communication team will be able to review and provide feedback to the Water Authority on advisories, as well as other messages to be distributed to the public.

The media's help will be sought to urge people to be conscious of how they are using water and advising them that reducing use now will help everyone in the future if the drought continues. This will be used as an opportunity to help ensure people understand how well the Water Authority and Metropolitan have positioned themselves to deal with the early stages of drought. The elected officials' e-mail list will also be employed. Hearing news from the Water Authority first, before being read in or heard on the media will establish the Water Authority as the primary message carrier on drought. Brief messages on a monthly basis to this list should be adequate unless conditions approach very serious levels of water shortages.

6.4.3 Phase Two

Phase Two could occur in year three or four of a dry period and represents that point in time when Metropolitan may restrict water deliveries to its member agencies through one means or another, but the Water Authority has adequate water either in storage or purchased from outside the region to avoid rationing to its member agencies. In all likelihood, the Water Authority would be in the "SDCWA Supply Enhancement" column of its Drought Response Matrix under Phase Two.

Phase Two communications require that people substantially reduce their use of water to retain water in storage for the following year. Phase Two should communicate the importance of water-use reductions without implying a sense of dire urgency. Consumers should be told that the more they conserve during Phase Two, the less would be the impact in the event of a Phase Three. The communication team will continue to convene to discuss the supply situation, review any new communication messages that the Water Authority is formulating as a result of the supply situation and provide feedback.

Phase Two Activities

Phase Two communications are essentially the same as in Phase One, except the communication is more frequent and the communication team is drawn into the message-building activities. This is an even more important opportunity to explain the Authority's preparedness in relation to other parts of the drought-stricken area that may not be as well prepared and that the Water Authority and its member agencies have anticipated this problem and are dealing with it. The communication team e-mail list will be used in making sure that messages are reasonably consistent throughout the service area. Coordination with Metropolitan's drought team will also be a priority, because they will have materials and easy access to data and to media contacts that may be of use to the Water Authority. Because of the joint reliance on the Skinner Treatment Plant by multiple agencies, coordination with other Metropolitan member agencies is important. During Phase Two it would be appropriate to begin preparing print and broadcast advertising that can be placed very quickly, if needed, in Phase Three.

6.4.4 Phase Three

Phase Three could occur in year four or five of an ongoing drought. It represents the period when Metropolitan is unable to meet all member agency demands and locally supplied or purchased and wheeled water is inadequate to make up the difference. In all likelihood, the Water Authority will be in the “Mandatory Cutbacks” column of its Drought Response Matrix under Phase Three.

Phase Three Activities

In this phase, the communications strategy needs to have solid results in terms of reducing demand, and a sense of urgency must be communicated to consumers. At the same time, consumers must understand the nature of the matter – that this is the fourth or fifth year of an on-going drought; that the Water Authority and its member agencies have been managing their resources well; that the duration of the drought cannot be known and that every gallon saved this year is a gallon that will be available next year should the drought continue. Communication during this period will likely result in the most contentiousness as member agencies and consumers are asked to make significant sacrifices. Because of differing levels of local supplies and local political philosophies, member agencies may perceive different levels of concern and want to protect their customers from more urgent messages. The communication team should be sensitive to this potential. Differences in localized responses to a drought emergency should be discussed openly within the communication team in order to avoid conflicting messages in media that transcends political borders and tends to confuse consumers.

One of the possible consequences of calls for urgent conservation is that after such sacrifices it could start raining during the winter months negating the effects of the drought and allowing some people to be critical of the agencies because they seemingly sacrificed for nothing. Because water sales are reduced, sales revenue to that agency is reduced. That, in turn, raises the water rate to cover fixed costs. Nearly every staff member and board member has heard consumers complain that “I reduced my water use and they raised my rates. Maybe I should have used more.” These are potential outcomes that must be addressed in any communications strategy.

Most agencies established a separate fund made available to stabilize rates during such periods. The DMP TAC endorsed the use of rate stabilization funds during this period. In this phase, communication with the communication team and the elected officials list is critical. The Water Authority must determine how all of its member agencies will be impacted; are there opportunities outside of what has been identified to supplement supplies?; can elected officials help spread the message? The communication team will involve the media in weekly briefings either in person or via e-mail. High demand water users, such as the California Landscape Contractors Association, Biotech Trade Assoc., agriculture, and hotel/motels, will be contacted by the Water Authority or the member agencies as appropriate to determine to what degree, if any, they can reduce water use. Paid advertising on radio, television, and newspapers will be considered if it is determined necessary to supplement media outreach through news contacts, interviews,

reporter briefings, and news releases. The tour guest list should be considered as a source of information within local neighborhoods where community leaders are regarded by some as water experts. To the extent that their peers approach them for information about the drought or how well the Water Authority and its member agencies are responding, the better informed they are, the better will be the information they pass along to their peer group.

Before the DMP allocation methodology is implemented, the elected officials e-mail list should be used to explain to them what is about to happen. The Water Authority should post a graphic on its website showing reservoir capacities and levels and the media should be advised that they are welcome to pull that graphic off the website for use as often as they can use it. Trained people will be assigned to take media calls at all hours. These people must be available and they must know how to respond.

6.4.5 Phase Four

Phase Four is a situation where water must be reserved for health and safety purposes. The Water Authority would be in the “Mandatory Cutbacks” column of its Drought Response Matrix under Phase Four. This is the unlikeliest of events, but plans must be made to address it. In this phase, Metropolitan is drastically restricting deliveries through one means or another and the Water Authority, although enhancing Metropolitan’s supplies with its own, is passing a large portion of the shortage through to its member agencies. The drought event will be major news within the region and the communication team will likely be in reactive mode rather than a proactive mode. If the steps noted below in the first four phases are taken, the Water Authority and member agencies will be well positioned to be viewed as having acted proactively during the first four phases and are responding honestly and competently to the drought.

Phase Four Activities

In Phase Four, the media will be covering this story on a daily basis and severe water restrictions will be in place. The communication team will be prepared to receive numerous complaints of inequities and the wasting of water. Additionally, water sensitive businesses (nurseries, car washes, etc.) will be seeking relief and it is possible that the state will have declared a drought emergency. Communications during this phase will be largely reactive. Nonetheless, the e-mail lists noted above, as well as the steps the Water Authority and its member agencies took prior to this phase will provide the perception in the media that the agencies are drought experts. If Sacramento has ordered certain severe conservation measures, as Metropolitan will have done already, the Water Authority will be chasing the story rather than managing it. A program of paid advertising specific to water conservation activities should be developed as part of the Phase Two activities and discussed with the communication team so they can be distributed in short order. While the Water Authority would likely be the primary “spokesagency” in the *San Diego Union-Tribune* for the region, member agencies will be encouraged to play the same role with local newspapers as well as with local politicians to explain their own situation since local supplies may vary. Because of Metropolitan’s

size and significance in supplying water, it is possible that the media will turn to that organization for drought information. The Water Authority will ask Metropolitan, should the local media contact them, to refer the media to the Water Authority for information specific to the region.

Table 6-1, on the following page, provides a summary of the phases of the General Communication Strategy discussed above. The Drought Response Matrix stage anticipated under each phase is also identified in the table. Please refer to **Section 4** for details on Drought Response Matrix stages.

6.5 Conclusion

The Communication Strategy presented in this section serves as a guidebook for the Water Authority if the San Diego region is ever faced with a prolonged drought situation. The phases and corresponding activities may vary because each drought situation is unique, but with a strategy available, the Water Authority and its member agencies will be able to be proactive if a long-term drought scenario occurs. The advisory team is also a critical element in implementation of the Drought Response Matrix and Allocation Methodology of the DMP. Successful implementation of these two elements will only occur through coordination with the member agencies.

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Table 6-1
General Communication Strategy

<u>Normal Period</u> Supplies and Demands Balance	<u>Phase One</u> (Response Matrix Stage: Voluntary)¹ Metropolitan Withdraws Water From Storage to Meet Demands	<u>Phase Two</u> (Response Matrix Stage: Supply Enhancement) Metropolitan Supplies Short, Water Authority Total Supplies Meet Demands	<u>Phase Three</u> (Response Matrix Stage: Mandatory Cutbacks) Metropolitan Supplies Restricted, Water Authority Supplies Restricted	<u>Phase Four</u> (Response Matrix Stage: Mandatory Cutbacks) Supplies at Health and Safety Level
Current Outreach	Convene communication team as needed	Communication team meets monthly	Communication team meets at a minimum weekly	Communication team meets daily
Create and maintain list of tour attendees, drought coordinators, elected officials	Monthly updates to drought coordinators	Same activities as Phase One	Weekly media briefings	Continue media briefings
Check e-mail lists every three months	Prepare, review, and distribute media advisory	Coordinate with Metropolitan's Drought Team	Weekly elected officials briefing	Continue elected official briefings
Utilize Public Access Television	E-mail elected officials on monthly basis		Drought speakers bureau implemented	Paid Advertising
			Advertising if possible	Continue other steps taken previously
			Graphics on website	
			Utilize trained phone personnel to respond to drought-related inquiries	

¹ Refer to **Section 4** for details on the Drought Response Matrix stages shown.

Section 7– Summary

The Water Authority anticipates that through implementation of member agency and Water Authority planned projects and successful implementation of Metropolitan’s Integrated Water Resources Plan, a higher degree of reliability will be attained in the region to avoid rationing levels experienced during the 1987-1992 drought. While the region has plans to provide a high level of reliability, there will always be some level of uncertainty associated with maintaining and developing local and imported supplies. The DMP encompasses not only a way to allocate water when supplies fall short of demands, but it addresses ways to avoid rationing through supply enhancement. The DMP also contains a strategy to communicate with the Water Authority’s stakeholders regarding water supplies. The DMP, combined with the Water Authority’s Urban Water Management Plan and Regional Facilities Master Plan, serve as excellent planning tools to provide guidance to the Water Authority and its member agencies on maintaining and planning for water supply reliability within the San Diego region.

Working collaboratively with the member agencies, the Water Authority was able to prepare a comprehensive DMP that contains the following elements:

1. *Initial principles that helped frame the issues and guide discussions at the TAC meetings in development of the DMP elements, including the supply allocation methodology included in **Section 2**.*
2. *A Drought Response Matrix that identifies potential actions that the Water Authority can take to avoid an allocation of water supplies to the member agencies. The Drought Response Matrix is described in **Section 4**.*
3. *A methodology for the allocation of Water Authority supplies (**Section 5**) that achieves the following:*
 - a. *Encourages local supply development and increased regional reliability through the use of the local supply development adjustment, conservation credits, and tying an allocation of water to Water Authority demands rather than total retail demands;*
 - b. *Achieves equity among member agencies by adjusting for local supply development, growth, loss of local supplies, and demand hardening; and*
 - c. *Avoids large uneven retail impacts to the region during the deepest stage of a drought by implementing the regional reliability adjustment which brings agencies up to a minimum allocation floor.*
4. *A communication strategy that identifies a phased approach to coordinating with member agencies, public, and media in response to drought conditions. (**Section 6**)*

The DMP serves as guidance to the Water Authority and its member agencies. With the many unknown conditions associated with any potential long-term drought, the Water Authority understands that elements of this plan may need to be modified to meet the needs at that time. With the DMP in place, the Water Authority and its member agencies will be better prepared to work with the public to minimize the effects of a prolonged drought.

APPENDICES

**The appendices for the Drought Management Plan can be viewed
online via the Water Authority's website at:**

<http://www.sdcwa.org/water-shortage-and-drought-response-plan>

RESOLUTION NO. 2008-11

A RESOLUTION OF THE SAN DIEGO COUNTY WATER AUTHORITY
ESTABLISHING PROCEDURES AND POLICIES FOR ADMINISTRATION OF THE
DROUGHT MANAGEMENT PLAN WATER SUPPLY ALLOCATION METHODOLOGY

WHEREAS, pursuant to the County Water Authority Act, the San Diego County Water Authority exists to provide, as far as practicable, each of its member agencies with reliable and adequate supplies of water to meet their needs, and to establish reasonable rules, regulations and restrictions for the allocation of available supplies for the greatest public interest and benefit; and

WHEREAS, the water supply needs of Water Authority member agencies includes supplies to serve current demands and reasonably anticipated future demands; and

WHEREAS, providing a reliable water supply includes the obligation to manage water and use of water; and

WHEREAS, on May 25, 2006, the Water Authority Board of Directors adopted Resolution No. 2006-16, approving and adopting a comprehensive Drought Management Plan of specific actions to be taken by the Water Authority and its member agencies during anticipated or actual water supply shortages; and

WHEREAS, the Drought Management Plan establishes the methodology by which with the Water Authority will allocate supplies under various supply reduction scenarios; and

WHEREAS, the Water Authority Board of Directors desires to establish administrative procedures and policies for implementation of the allocation methodology established by the Drought Management Plan;

NOW, THEREFORE, the Board of Directors of the San Diego County Water Authority resolves as follows:

Section 1. Municipal and Industrial Water Supply Allocations\

The provisions of this section shall govern the establishment and adoption of a water supply allocation whenever the Water Authority Board of Directors determines it is necessary to allocate water as provided in the Drought Management Plan. This section applies to allocation of water for all uses except Interim Agricultural Water Program uses which are subject to Section 7 of this resolution.

a. Water Supply Allocation Period

An allocation period shall be for 12 months, from July 1 of a given year through the following June 30, unless otherwise specifically determined by the Board. It is the intention of the Board of Directors that the Water Authority's allocation period be consistent, to the extent feasible, with the Metropolitan Water District of Southern California February 2008 Water Supply Allocation Plan, or later update of such plan, adopted by the Metropolitan Water District of Southern California.

b. Establish Water Supply Allocation

The General Manager shall establish the supply allocation for each member agency based on the Supply Allocation Methodology included in the Water Authority's Drought Management Plan. The three-year base period described in the Drought Management Plan shall be determined prior to commencement of the water allocation period and shall include the three most recent consecutive non-allocation years. The General Manager shall coordinate with member agencies to obtain and analyze historic data such as, but not limited to, total water use, local water use, new meters assessed a capacity charge, conservation savings and projected local supply, in order to finalize the allocation data to be utilized by the Water Authority in calculating the supply allocation. This coordination shall occur during January through April of a year in which the General Manager determines an allocation may be necessary beginning July 1. During this coordination period, member agencies will have

an opportunity to provide updated projections for local supply based upon changes in local supply conditions caused by winter runoff. Member agencies shall provide water use and other information upon request of the General Manager. The Integrated Contingency Plan, Emergency Storage Project or Treated Water Shortage Plan shall govern allocations in response to an unanticipated or catastrophic event.

c. Adoption Supply Allocation

The General Managers recommendation for allocation shall be submitted to the Water Planning Committee for recommendation to the Board of Directors. The determination by the Board of Directors of the allocation for each member agency shall be final, subject only to modification by the Board because of significant changes in Water Authority supply conditions or pursuant to Section 3.

Section 2. Monthly Reporting

The General Manager shall provide monthly reports of each member agency's actual imported and local water use data compared to their allocation to the Water Planning Committee, Member Agency Advisory Team, member agencies, and the Board of Directors. In order to provide an accurate accounting of member agencies' performance, member agencies shall provide monthly total water use data and other information in a timely manner upon request of the General Manager.

Section 3. Modifications to Supply Allocations Due to Changes in Local Conditions

A member agency may request a modification to its approved allocation based upon new information justifying a recalculation of the allocation because of significant changes in local circumstances, e.g. surface water or local supply changes. Information shall not be considered new if it reasonably could have been made available before the initial establishment of the allocation. The General Manager may initiate a modification to a member agency's allocation at any time if the General Manager determines that information provided by the member agency was inaccurate or incomplete. Requests for modification

that, alone or in the aggregate, total more than 10 percent of the requesting agency's allocation or greater than 500 acre feet within a single allocation period must be approved by the Board of Directors. All other modification requests are considered minor and may be approved by the General Manager after consultation with the Member Agency Advisory Team.

A member agency may initiate a request for modification by providing written notice and supporting documentation to the General Manager no later than December 30 within an allocation period running from July 1 to June 30. The General Manager shall review the request and provide a written response supporting or opposing the modification, and the reasons for support or opposition, within 30 days of the member agency request.

The Member Agency Advisory Team shall review the Member agency request and the General Manager's written response prior to making a recommendation regarding the modification. The Member Agency Advisory Team shall consider all circumstances surrounding the request, including the period of time impacted by the changed local circumstances. If the Member Agency Advisory Team recommends approval or modified approval of the determination, the General Manager shall forward the modification to the Board of Directors for final action, with the exception of minor modifications which become effective upon approval by the General Manager.

If the Member Agency Advisory Team denies a request for modification, the member agency may request, within five days, an appeal of the Member Agency Advisory Team decision to the Board of Directors at the next regular Board Meeting that is not less than 20 days from the date of the Member Agency Advisory Team recommendation. The decision of the Board of Directors is final.

Section 4. Reconciliation

Within six months of the end of an allocation period, the General Manager shall conduct a final accounting of member agency deliveries during the allocation period

compared with the member agency supply allocations, including any modifications provided in Section 3 of this resolution. As part of the reconciliation, member agencies shall provide actual local water use for the allocation period and other information upon request of the General Manager. Upon completion of the reconciliation, the General Manager shall notify each member agency of their performance in meeting their supply allocation.

Section 5. Monetary Penalties from MWD

The Water Authority is subject to monetary penalties imposed by Metropolitan Water District of Southern California in the event it exceeds its annual water allocation from Metropolitan Water District of Southern California. Upon the Water Authority's reconciliation of its own water supply allocation as described in Section 4, any Metropolitan Water District of Southern California penalties levied upon the Water Authority shall in turn be assessed on a pro rata basis to the Water Authority member agencies that exceeded their Water Authority allocation.

Section 6. Exemption for Participants in the Interim Agricultural Water Program

Supply allocations to Interim Agricultural Water Program customers shall be established, monitored, and enforced based on Metropolitan Water District of Southern California's Interim Agricultural Water Program reduction guidelines and the Water Authority's Interim Agricultural Water Program Regional Reduction Plan and are not subject to the provisions of this resolution. If the Interim Agricultural Water Program is terminated, the Board of Directors may allocate water for agriculture according to the methodology provided in the Drought Management Plan.

Section 7. Reserved Discretion

The Water Authority Board of Directors reserves its discretion to amend any of the provisions of this resolution as changed circumstances warrant. Nothing in this resolution shall limit the discretion or powers of the Board of Directors under Water Code section 350.

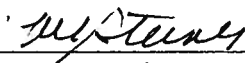
PASSED, APPROVED AND ADOPTED this 24th day of July, 2008.

AYES: Unless otherwise noted all Directors present voted aye.

NOES:

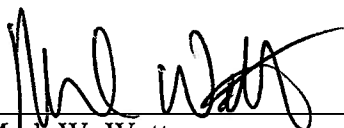
ABSTAIN:

ABSENT: Arant, Bond, (p), Johnson, Knutson, Lewinger, Lewis (p) and Tu



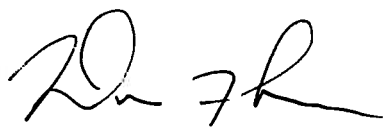
Fern M. Steiner
Chair

ATTEST:



Mark W. Watton
Secretary

I, Doria F. Lore, Clerk of the Board of the San Diego County Water Authority, certify that the vote shown above is correct and this Resolution No. 2008-11 was duly adopted at the meeting of the Board of Directors on the date stated above.



Doria F. Lore
Clerk of the Board

Appendix H:

Drought Model Ordinance

ORDINANCE NO. _____

**AN ORDINANCE OF [AGENCY] ADOPTING A DROUGHT
RESPONSE CONSERVATION PROGRAM**

WHEREAS, article 10, section 2 of the California Constitution declares that waters of the State are to be put to beneficial use, that waste, unreasonable use, or unreasonable method of use of water be prevented, and that water be conserved for the public welfare; and

WHEREAS, conservation of current water supplies and minimization of the effects of water supply shortages that are the result of drought are essential to the public health, safety and welfare; and

WHEREAS, regulation of the time of certain water use, manner of certain water use, design of rates, method of application of water for certain uses, installation and use of water-saving devices, provide an effective and immediately available means of conserving water; and

WHEREAS, California Water Code sections 375 et seq. authorize water suppliers to adopt and enforce a comprehensive water conservation program; and

WHEREAS, adoption and enforcement of a comprehensive water conservation program will allow the [AGENCY] to delay or avoid implementing measures such as water rationing or more restrictive water use regulations pursuant to a declared water shortage emergency as authorized by California Water Code sections 350 et seq.; and

WHEREAS, San Diego County is a semi-arid region and local water resources are scarce. The region is dependent upon imported water supplies provided by the San Diego County Water Authority, which obtains a substantial portion of its supplies from the Metropolitan Water District of Southern California. Because the region is dependent upon imported water supplies, weather and other conditions in other portions of this State and of the Southwestern United States affect the availability of water for use in San Diego County; and

WHEREAS, the San Diego County Water Authority has adopted an Urban Water Management Plan that includes water conservation as a necessary and effective component of the Water Authority's programs to provide a reliable supply of water to meet the needs of the Water Authority's 24 member public agencies, including the [AGENCY]. The Water Authority's Urban Water Management Plan also includes a contingency analysis of actions to be taken in response to water supply shortages. This ordinance is consistent with the Water Authority's Urban Water Management Plan; and

WHEREAS, as anticipated by its Urban Water Management Plan, the San Diego County Water Authority, in cooperation and consultation with its member public agencies, has

adopted a Drought Management Plan, which establishes a progressive program for responding to water supply limitations resulting from drought conditions. This ordinance is intended to be consistent with and to implement the Water Authority's Drought Management Plan; and

WHEREAS, the Water Authority's Drought Management Plan contains three stages containing regional actions to be taken to lessen or avoid supply shortages. This ordinance contains drought response levels that correspond with the Drought Management Plan stages; and

WHEREAS, the [AGENCY], due to the geographic and climatic conditions within its territory and its dependence upon water imported and provided by the San Diego County Water Authority, may experience shortages due to drought conditions, regulatory restrictions enacted upon imported supplies and other factors. The [AGENCY] has adopted an Urban Water Management Plan that includes water conservation as a necessary and effective component of its programs to provide a reliable supply of water to meet the needs of the public within its service territory. The [AGENCY's] Urban Water Management Plan also includes a contingency analysis of actions to be taken in response to water supply shortages. This ordinance is consistent with the Urban Water Management Plan adopted by the [AGENCY]; and

WHEREAS the water conservation measures and progressive restrictions on water use and method of use identified by this ordinance provide certainty to water users and enable [AGENCY] to control water use, provide water supplies, and plan and implement water management measures in a fair and orderly manner for the benefit of the public.

NOW, THEREFORE, the [LEGISLATIVE BODY] of [AGENCY] does ordain as follows:

SECTION 1.0 DECLARATION OF NECESSITY AND INTENT

(a) This ordinance establishes water management requirements necessary to conserve water, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, prevent unreasonable use of water, prevent unreasonable method of use of water within the [AGENCY] in order to assure adequate supplies of water to meet the needs of the public, and further the public health, safety, and welfare, recognizing that water is a scarce natural resource that requires careful management not only in times of drought, but at all times.

(b) This ordinance establishes regulations to be implemented during times of declared water shortages, or declared water shortage emergencies. It establishes four levels of drought response actions to be implemented in times of shortage, with increasing restrictions on water use in response to worsening drought conditions and decreasing available supplies.

(c) Level 1 condition drought response measures are voluntary and will be reinforced through local and regional public education and awareness measures that may

be funded in part by [AGENCY]. During drought response condition Levels 2 through 4, all conservation measures and water-use restrictions are mandatory and become increasingly restrictive in order to attain escalating conservation goals.

(d) During a Drought Response Level 2 condition or higher, the water conservation measures and water use restrictions established by this ordinance are mandatory and violations are subject to criminal, civil, and administrative penalties and remedies specified in this ordinance and as provided in [AGENCY] Administrative or Municipal Code.

SECTION 2.0 DEFINITIONS

(a) The following words and phrases whenever used in this chapter shall have the meaning defined in this section:

1. “Grower” refers to those engaged in the growing or raising, in conformity with recognized practices of husbandry, for the purpose of commerce, trade, or industry, or for use by public educational or correctional institutions, of agricultural, horticultural or floricultural products, and produced: (1) for human consumption or for the market, or (2) for the feeding of fowl or livestock produced for human consumption or for the market, or (3) for the feeding of fowl or livestock for the purpose of obtaining their products for human consumption or for the market. “Grower” does not refer to customers who purchase water subject to the Metropolitan Interim Agricultural Water Program or the Water Authority Special Agricultural Rate programs.

2. “Water Authority” means the San Diego County Water Authority.

3. “DMP” means the Water Authority’s Drought Management Plan in existence on the effective date of this ordinance and as readopted or amended from time to time, or an equivalent plan of the Water Authority to manage or allocate supplies during shortages.

4. “Metropolitan” means the Metropolitan Water District of Southern California.

5. “Person” means any natural person, corporation, public or private entity, public or private association, public or private agency, government agency or institution, school district, college, university, or any other user of water provided by the [AGENCY].

SECTION 3.0 APPLICATION

(a) The provisions of this ordinance apply to any person in the use of any water provided by the [AGENCY].

(b) This ordinance is intended solely to further the conservation of water. It is not intended to implement any provision of federal, State, or local statutes, ordinances, or regulations relating to protection of water quality or control of drainage or runoff. Refer to the local jurisdiction or Regional Water Quality Control Board for information on any stormwater ordinances and stormwater management plans.

(c) Nothing in this ordinance is intended to affect or limit the ability of the [AGENCY] to declare and respond to an emergency, including an emergency that affects the ability of the [AGENCY] to supply water.

(d) The provisions of this ordinance do not apply to use of water from private wells or to recycled water.

(e) Nothing in this ordinance shall apply to use of water that is subject to a special supply program, such as the Metropolitan Interim Agricultural Water Program or the Water Authority Special Agricultural Rate programs. Violations of the conditions of special supply programs are subject to the penalties established under the applicable program. A person using water subject to a special supply program and other water provided by the [AGENCY] is subject to this ordinance in the use of the other water.

SECTION 4.0 DROUGHT RESPONSE LEVEL 1 – DROUGHT WATCH CONDITION

(a) A Drought Response Level 1 condition is also referred to as a “Drought Watch” condition. A Level 1 condition applies when the Water Authority notifies its member agencies that due to drought or other supply reductions, there is a reasonable probability there will be supply shortages and that a consumer demand reduction of up to 10 percent is required in order to ensure that sufficient supplies will be available to meet anticipated demands. The General Manager shall declare the existence of a Drought Response Level 1 and take action to implement the Level 1 conservation practices identified in this ordinance.

(b) During a Level 1 Drought Watch condition, [AGENCY] will increase its public education and outreach efforts to emphasize increased public awareness of the need to implement the following water conservation practices. [The same water conservation practices become mandatory if [AGENCY] declares a Level 2 Drought Alert condition]:

1. Stop washing down paved surfaces, including but not limited to sidewalks, driveways, parking lots, tennis courts, or patios, except when it is necessary to alleviate safety or sanitation hazards.

2. Stop water waste resulting from inefficient landscape irrigation, such as runoff, low head drainage, or overspray, etc. Similarly, stop water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.
 3. Irrigate residential and commercial landscape before 10 a.m. and after 6 p.m. only.
 4. Use a hand-held hose equipped with a positive shut-off nozzle or bucket to water landscaped areas, including trees and shrubs located on residential and commercial properties that are not irrigated by a landscape irrigation system.
 5. Irrigate nursery and commercial grower's products before 10 a.m. and after 6 p.m. only. Watering is permitted at any time with a hand-held hose equipped with a positive shut-off nozzle, a bucket, or when a drip/micro-irrigation system/equipment is used. Irrigation of nursery propagation beds is permitted at any time. Watering of livestock is permitted at any time.
 6. Use re-circulated water to operate ornamental fountains.
 7. Wash vehicles using a bucket and a hand-held hose with positive shut-off nozzle, mobile high pressure/low volume wash system, or at a commercial site that re-circulates (reclaims) water on-site. Avoid washing during hot conditions when additional water is required due to evaporation.
 8. Serve and refill water in restaurants and other food service establishments only upon request.
 9. Offer guests in hotels, motels, and other commercial lodging establishments the option of not laundering towels and linens daily.
 10. Repair all water leaks within five (5) days of notification by the [AGENCY] unless other arrangements are made with the General Manager.
 11. Use recycled or non-potable water for construction purposes when available.
- (c) During a Drought Response Level 2 condition or higher, all persons shall be required to implement the conservation practices established in a Drought Response Level 1 condition.

SECTION 5.0 DROUGHT RESPONSE LEVEL 2 – DROUGHT ALERT CONDITION

(a) A Drought Response Level 2 condition is also referred to as a “Drought Alert” condition. A Level 2 condition applies when the Water Authority notifies its member agencies that due to cutbacks caused by drought or other reduction in supplies, a consumer demand reduction of up to 20 percent is required in order to have sufficient supplies available to meet anticipated demands. The [AGENCY] Board of Directors shall declare the existence of a Drought Response Level 2 condition and implement the mandatory Level 2 conservation measures identified in this ordinance.

(b) All persons using [AGENCY] water shall comply with Level 1 Drought Watch water conservation practices during a Level 2 Drought Alert, and shall also comply with the following additional conservation measures:

1. Limit residential and commercial landscape irrigation to no more than three (3) assigned days per week on a schedule established by the General Manager and posted by the [AGENCY]. During the months of November through May, landscape irrigation is limited to no more than once per week on a schedule established by the General Manager and posted by the [AGENCY]. This section shall not apply to commercial growers or nurseries.
2. Limit lawn watering and landscape irrigation using sprinklers to no more than ten (10) minutes per watering station per assigned day. This provision does not apply to landscape irrigation systems using water efficient devices, including but not limited to: weather based controllers, drip/micro-irrigation systems and stream rotor sprinklers.
3. Water landscaped areas, including trees and shrubs located on residential and commercial properties, and not irrigated by a landscape irrigation system governed by section 5 (b) (1), on the same schedule set forth in section 5 (b) (1) by using a bucket, hand-held hose with positive shut-off nozzle, or low-volume non-spray irrigation.
4. Repair all leaks within seventy-two (72) hours of notification by the [AGENCY] unless other arrangements are made with the General Manager.
5. Stop operating ornamental fountains or similar decorative water features unless recycled water is used.

SECTION 6.0 DROUGHT RESPONSE LEVEL 3 – DROUGHT CRITICAL CONDITION

(a) A Drought Response Level 3 condition is also referred to as a “Drought Critical” condition. A Level 3 condition applies when the Water Authority notifies its member agencies that due to increasing cutbacks caused by drought or other reduction of

supplies, a consumer demand reduction of up to 40 percent is required in order to have sufficient supplies available to meet anticipated demands. The [AGENCY] Board of Directors shall declare the existence of a Drought Response Level 3 condition and implement the Level 3 conservation measures identified in this ordinance.

(b) All persons using [AGENCY] water shall comply with Level 1 Drought Watch and Level 2 Drought Alert water conservation practices during a Level 3 Drought Critical condition and shall also comply with the following additional mandatory conservation measures:

1. Limit residential and commercial landscape irrigation to no more than two (2) assigned days per week on a schedule established by the General Manager and posted by the [AGENCY]. During the months of November through May, landscape irrigation is limited to no more than once per week on a schedule established by the General Manager and posted by the [AGENCY]. This section shall not apply to commercial growers or nurseries.

2. Water landscaped areas, including trees and shrubs located on residential and commercial properties, and not irrigated by a landscape irrigation system governed by section 6 (b) (1), on the same schedule set forth in section 6 (b) (1) by using a bucket, hand-held hose with a positive shut-off nozzle, or low-volume non-spray irrigation.

3. Stop filling or re-filling ornamental lakes or ponds, except to the extent needed to sustain aquatic life, provided that such animals are of significant value and have been actively managed within the water feature prior to declaration of a drought response level under this ordinance.

4. Stop washing vehicles except at commercial carwashes that recirculate water, or by high pressure/low volume wash systems.

5. Repair all leaks within forty-eight (48) hours of notification by the [AGENCY] unless other arrangements are made with the General Manager.

(c) Upon the declaration of a Drought Response Level 3 condition, no new potable water service shall be provided, no new temporary meters or permanent meters shall be provided, and no statements of immediate ability to serve or provide potable water service (such as, will serve letters, certificates, or letters of availability) shall be issued, except under the following circumstances:

1. A valid, unexpired building permit has been issued for the project;
or
2. The project is necessary to protect the public's health, safety, and welfare; or

3. The applicant provides substantial evidence of an enforceable commitment that water demands for the project will be offset prior to the provision of a new water meter(s) to the satisfaction of [AGENCY].

This provision shall not be construed to preclude the resetting or turn-on of meters to provide continuation of water service or to restore service that has been interrupted for a period of one year or less.

(d) Upon the declaration of a Drought Response Level 3 condition, [AGENCY] will suspend consideration of annexations to its service area.

(e) The [AGENCY] may establish a water allocation for property served by the [AGENCY] using a method that does not penalize persons for the implementation of conservation methods or the installation of water saving devices. If the [AGENCY] establishes a water allocation it shall provide notice of the allocation by including it in the regular billing statement for the fee or charge or by any other mailing to the address to which the [AGENCY] customarily mails the billing statement for fees or charges for on-going water service. Following the effective date of the water allocation as established by the [AGENCY], any person that uses water in excess of the allocation shall be subject to a penalty in the amount of \$___ for each billing unit of water in excess of the allocation. The penalty for excess water usage shall be cumulative to any other remedy or penalty that may be imposed for violation of this ordinance.

SECTION 7.0 DROUGHT RESPONSE LEVEL 4 – DROUGHT EMERGENCY CONDITION

(a) A Drought Response Level 4 condition is also referred to as a “Drought Emergency” condition. A Level 4 condition applies when the Water Authority Board of Directors declares a water shortage emergency pursuant to California Water Code section 350 and notifies its member agencies that Level 4 requires a demand reduction of more than 40 percent in order for the [AGENCY] to have maximum supplies available to meet anticipated demands. The [AGENCY] shall declare a Drought Emergency in the manner and on the grounds provided in California Water Code section 350.

(b) All persons using [AGENCY] water shall comply with conservation measures required during Level 1 Drought Watch, Level 2 Drought Alert, and Level 3 Drought Critical conditions and shall also comply with the following additional mandatory conservation measures:

1. Stop all landscape irrigation, except crops and landscape products of commercial growers and nurseries. This restriction shall not apply to the following categories of use unless the [AGENCY] has determined that recycled water is available and may be lawfully applied to the use.

A. Maintenance of trees and shrubs that are watered on the same schedule set forth in section 6 (b) (1) by using a bucket, hand-held hose with a positive shut-off nozzle, or low-volume non-spray irrigation;

B. Maintenance of existing landscaping necessary for fire protection as specified by the Fire Marshal of the local fire protection agency having jurisdiction over the property to be irrigated;

C. Maintenance of existing landscaping for erosion control;

D. Maintenance of plant materials identified to be rare or essential to the well being of rare animals;

E. Maintenance of landscaping within active public parks and playing fields, day care centers, school grounds, cemeteries, and golf course greens, provided that such irrigation does not exceed two (2) days per week according to the schedule established under section 6 (b) (1);

F. Watering of livestock; and

G. Public works projects and actively irrigated environmental mitigation projects.

2. Repair all water leaks within twenty-four (24) hours of notification by the [AGENCY] unless other arrangements are made with the General Manager.

(c) The [AGENCY] may establish a water allocation for property served by the [AGENCY]. If the [AGENCY] establishes a water allocation it shall provide notice of the allocation by including it in the regular billing statement for the fee or charge or by any other mailing to the address to which the [AGENCY] customarily mails the billing statement for fees or charges for on-going water service. Following the effective date of the water allocation as established by the [AGENCY], any person that uses water in excess of the allocation shall be subject to a penalty in the amount of \$___ for each billing unit of water in excess of the allocation. The penalty for excess water usage shall be cumulative to any other remedy or penalty that may be imposed for violation of this ordinance.

SECTION 8.0 CORRELATION BETWEEN DROUGHT MANAGEMENT PLAN AND DROUGHT RESPONSE LEVELS

(a) The correlation between the Water Authority's DMP stages and the [AGENCY'S] drought response levels identified in this ordinance is described herein. Under DMP Stage 1, the [AGENCY] would implement Drought Response Level 1 actions. Under DMP Stage 2, the [AGENCY] would implement Drought Response Level

1 or Level 2 actions. Under DMP Stage 3, the [AGENCY] would implement Drought Response Level 2, Level 3, or Level 4 actions.

(b) The drought response levels identified in this ordinance correspond with the Water Authority DMP as identified in the following table:

Drought Response Levels	Use Restrictions	Conservation Target	DMP Stage
1 - Drought Watch	Voluntary	Up to 10%	Stage 1 or 2
2 - Drought Alert	Mandatory	Up to 20%	Stage 2 or 3
3 - Drought Critical	Mandatory	Up to 40%	Stage 3
4 - Drought Emergency	Mandatory	Above 40%	Stage 3

SECTION 9.0 PROCEDURES FOR DETERMINATION AND NOTIFICATION OF DROUGHT RESPONSE LEVEL

(a) The existence of a Drought Response Level 1 condition may be declared by the General Manager upon a written determination of the existence of the facts and circumstances supporting the determination. A copy of the written determination shall be filed with the Clerk or Secretary of the [AGENCY] and provided to the [AGENCY] Board of Directors. The General Manager may publish a notice of the determination of existence of Drought Response Level 1 condition in one or more newspapers, including a newspaper of general circulation within the [AGENCY]. The [AGENCY] may also post notice of the condition on their website.

(b) The existence of Drought Response Level 2 or Level 3 conditions may be declared by resolution of the [AGENCY] Board of Directors adopted at a regular or special public meeting held in accordance with State law. The mandatory conservation measures applicable to Drought Response Level 2 or Level 3 conditions shall take effect on the tenth (10) day after the date the response level is declared. Within five (5) days following the declaration of the response level, the [AGENCY] shall publish a copy of the resolution in a newspaper used for publication of official notices.

(c) The existence of a Drought Response Level 4 condition may be declared in accordance with the procedures specified in California Water Code sections 351 and 352. The mandatory conservation measures applicable to Drought Response Level 4 conditions shall take effect on the tenth (10) day after the date the response level is declared. Within five (5) days following the declaration of the response level, the [AGENCY] shall publish a copy of the resolution in a newspaper used for publication of official notices. If the [AGENCY] establishes a water allocation, it shall provide notice of the allocation by including it in the regular billing statement for the fee or charge or by any other mailing to the address to which the [AGENCY] customarily mails the billing statement for fees or charges for on-going water service. Water allocation shall be effective on the fifth (5) day following the date of mailing or at such later date as specified in the notice.

(d) The [AGENCY] Board of Directors may declare an end to a Drought Response Level by the adoption of a resolution at any regular or special meeting held in accordance with State law.

SECTION 10.0 HARSHIP VARIANCE

(a) If, due to unique circumstances, a specific requirement of this ordinance would result in undue hardship to a person using agency water or to property upon which agency water is used, that is disproportionate to the impacts to [AGENCY] water users generally or to similar property or classes of water uses, then the person may apply for a variance to the requirements as provided in this section.

(b) The variance may be granted or conditionally granted, only upon a written finding of the existence of facts demonstrating an undue hardship to a person using agency water or to property upon with agency water is used, that is disproportionate to the impacts to [AGENCY] water users generally or to similar property or classes of water use due to specific and unique circumstances of the user or the user's property.

1. Application. Application for a variance shall be a form prescribed by [AGENCY] and shall be accompanied by a non-refundable processing fee in an amount set by resolution of the [AGENCY] Board of Directors.

2. Supporting Documentation. The application shall be accompanied by photographs, maps, drawings, and other information, including a written statement of the applicant.

3. Required Findings for Variance. An application for a variance shall be denied unless the approving authority finds, based on the information provided in the application, supporting documents, or such additional information as may be requested, and on water use information for the property as shown by the records of the [AGENCY], all of the following:

A. That the variance does not constitute a grant of special privilege inconsistent with the limitations upon other [AGENCY] customers.

B. That because of special circumstances applicable to the property or its use, the strict application of this ordinance would have a disproportionate impact on the property or use that exceeds the impacts to customers generally.

C. That the authorizing of such variance will not be of substantial detriment to adjacent properties, and will not materially affect the ability of the [AGENCY] to effectuate the purpose of this chapter and will not be detrimental to the public interest.

D. That the condition or situation of the subject property or the intended use of the property for which the variance is sought is not common, recurrent or general in nature.

4. Approval Authority. The General Manager shall exercise approval authority and act upon any completed application no later than 10 days after submittal and may approve, conditionally approve, or deny the variance. The applicant requesting the variance shall be promptly notified in writing of any action taken. Unless specified otherwise at the time a variance is approved, the variance applies to the subject property during the term of the mandatory drought response.

5. Appeals to [AGENCY] Board of Directors. An applicant may appeal a decision or condition of the General Manager on a variance application to the [AGENCY] Board of Directors within 10 days of the decision upon written request for a hearing. The request shall state the grounds for the appeal. At a public meeting, the [AGENCY] Board of Directors shall act as the approval authority and review the appeal de novo by following the regular variance procedure. The decision of the [AGENCY] Board of Directors is final.

SECTION 11.0 VIOLATIONS AND PENALTIES

(a) Any person, who uses, causes to be used, or permits the use of water in violation of this ordinance is guilty of an offense punishable as provided herein.

(b) Each day that a violation of this ordinance occurs is a separate offense.

(c) Administrative fines may be levied for each violation of a provision of this ordinance as follows:

1. One hundred dollars for a first violation.
2. Two hundred dollars for a second violation of any provision of this ordinance within one year.
3. Five hundred dollars for each additional violation of this ordinance within one year.

(d) Violation of a provision of this ordinance is subject to enforcement through installation of a flow-restricting device in the meter.

(e) Each violation of this ordinance may be prosecuted as a misdemeanor punishable by imprisonment in the county jail for not more than thirty (30) days or by a fine not exceeding \$1,000, or by both as provided in Water Code section 377.

(f) Willful violations of the mandatory conservation measures and water use restrictions as set forth in Section 7.0 and applicable during a Level 4 Drought

Emergency condition may be enforced by discontinuing service to the property at which the violation occurs as provided by Water Code section 356.

(g) All remedies provided for herein shall be cumulative and not exclusive.

SECTION 12.0 EFFECTIVE DATE

This ordinance is effective immediately upon adoption or as otherwise established by State law for [AGENCY].

PASSED, APPROVED AND ADOPTED this [DATE] by the following vote:

AYES;

NOES:

ABSTAIN:

ABSENT:

[President/Chair of Legislative Body]

Appendix I:
Water Authority Demands Provided by Metropolitan

Final
(July 22, 2010)

San Diego County Water Authority

Average Year
(Average of 1922-2004 Hydrology)

Demographics ¹	2010	2015	2020	2025	2030	2035
Population	3,109,155	3,274,281	3,438,837	3,598,896	3,758,954	3,898,950
Occupied Housing Units	1,062,295	1,116,246	1,167,953	1,219,534	1,271,114	1,312,408
Single Family	634,487	655,773	672,144	682,196	692,247	695,520
Multi-Family	427,809	460,472	495,809	537,338	578,867	616,888
Persons Per Household	2.84	2.84	2.84	2.85	2.85	2.86
Urban Employment	1,351,248	1,446,465	1,528,532	1,601,035	1,665,482	1,727,637

Conservation	2010	2015	2020	2025	2030	2035
Conservation ²	97,885	109,329	117,979	129,841	142,048	153,236
Installed Active Device Through 2009	25,050	20,518	8,279	2,469	151	0
Code-Based and Price-Effect Savings	72,835	88,811	109,700	127,372	141,898	153,236

Total Demands After Conservation	2010	2015	2020	2025	2030	2035
Total Demand	672,954	719,421	744,318	754,541	773,477	792,695
Retail Municipal and Industrial ³	579,978	632,946	663,653	692,374	718,752	737,960
Retail Agricultural	90,909	84,250	78,311	59,775	52,326	52,326
Seawater Barrier	0	0	0	0	0	0
Groundwater Replenishment	2,067	2,225	2,354	2,392	2,400	2,409

Local Supplies	2010	2015	2020	2025	2030	2035
Total Local Supplies	89,222	108,142	110,972	113,683	116,240	118,236
Groundwater Production	12,100	12,100	12,100	12,100	12,100	12,100
Surface Production	44,622	59,583	59,583	59,583	59,583	59,583
Los Angeles Aqueduct	0	0	0	0	0	0
Groundwater Recovery	6,031	6,868	7,297	7,699	8,101	8,503
Recycling	26,469	29,591	31,992	34,301	36,456	38,050
M&I and Agricultural	24,402	27,366	29,638	31,909	34,056	35,641
Groundwater Replenishment	2,067	2,225	2,354	2,392	2,400	2,409
Seawater Barrier	0	0	0	0	0	0
Other Non-Metropolitan Imports	0	0	0	0	0	0

Demands on Metropolitan	2010	2015	2020	2025	2030	2035
Total Metropolitan Demands	583,731	611,279	633,346	640,857	657,237	674,458
Full Service (Tier I and Tier II)	532,512	611,279	633,346	640,857	657,237	674,458
Replenishment Water ⁴	0	0	0	0	0	0
Interim Agricultural Water Program	51,219	0	0	0	0	0

All units are acre-feet except in Demographics Section.

1. Growth projections are based on SCAG 2008 Regional Transportation Plan and SANDAG Series 12 Forecast.
2. Includes code-based, price-effect and existing active savings through CY2009; does not include future active conservation savings.
Conservation is 1990 base year. Pre-1990 add 250,000 acre-feet.
3. Retail M&I projections include conservation.
4. Replenishment Water include direct and in-lieu replenishment.

Final
(July 22, 2010)

San Diego County Water Authority

Single Dry-Year
(Repeat of 1977 Hydrology)

Demographics ¹	2010	2015	2020	2025	2030	2035
Population	3,109,155	3,274,281	3,438,837	3,598,896	3,758,954	3,898,950
Occupied Housing Units	1,062,295	1,116,246	1,167,953	1,219,534	1,271,114	1,312,408
Single Family	634,487	655,773	672,144	682,196	692,247	695,520
Multi-Family	427,809	460,472	495,809	537,338	578,867	616,888
Persons Per Household	2.84	2.84	2.84	2.85	2.85	2.86
Urban Employment	1,351,248	1,446,465	1,528,532	1,601,035	1,665,482	1,727,637

Conservation	2010	2015	2020	2025	2030	2035
Conservation ²	97,885	109,329	117,979	129,841	142,048	153,236
Installed Active Device Through 2009	25,050	20,518	8,279	2,469	151	0
Code-Based and Price-Effect Savings	72,835	88,811	109,700	127,372	141,898	153,236

Total Demands After Conservation	2010	2015	2020	2025	2030	2035
Total Demand	683,956	730,335	755,030	764,115	782,706	802,067
Retail Municipal and Industrial ³	584,340	637,706	668,645	697,582	724,158	743,510
Retail Agricultural	97,549	90,404	84,031	64,141	56,148	56,148
Seawater Barrier	0	0	0	0	0	0
Groundwater Replenishment	2,067	2,225	2,354	2,392	2,400	2,409

Local Supplies	2010	2015	2020	2025	2030	2035
Total Local Supplies	85,761	103,757	106,587	109,298	111,855	113,851
Groundwater Production	12,100	12,100	12,100	12,100	12,100	12,100
Surface Production	41,161	55,198	55,198	55,198	55,198	55,198
Los Angeles Aqueduct	0	0	0	0	0	0
Groundwater Recovery	6,031	6,868	7,297	7,699	8,101	8,503
Recycling	26,469	29,591	31,992	34,301	36,456	38,050
M&I and Agricultural	24,402	27,366	29,638	31,909	34,056	35,641
Groundwater Replenishment	2,067	2,225	2,354	2,392	2,400	2,409
Seawater Barrier	0	0	0	0	0	0
Other Non-Metropolitan Imports	0	0	0	0	0	0

Demands on Metropolitan	2010	2015	2020	2025	2030	2035
Total Metropolitan Demands	598,195	626,578	648,442	654,816	670,850	688,216
Full Service (Tier I and Tier II)	546,976	626,578	648,442	654,816	670,850	688,216
Replenishment Water ⁴	0	0	0	0	0	0
Interim Agricultural Water Program	51,219	0	0	0	0	0

All units are acre-feet except in Demographics Section.

1. Growth projections are based on SCAG 2008 Regional Transportation Plan and SANDAG Series 12 Forecast.
2. Includes code-based, price-effect and existing active savings through CY2009; does not include future active conservation savings.
Conservation is 1990 base year. Pre-1990 add 250,000 acre-feet.
3. Retail M&I projections include conservation.
4. Replenishment Water include direct and in-lieu replenishment.

Final
(July 22, 2010)

San Diego County Water Authority

Multi Dry-Year
(Repeat of 1990-1992 Hydrology)

Demographics ¹	2015	2020	2025	2030	2035
Population	3,274,281	3,438,837	3,598,896	3,758,954	3,898,950
Occupied Housing Units	1,116,246	1,167,953	1,219,534	1,271,114	1,312,408
Single Family	655,773	672,144	682,196	692,247	695,520
Multi-Family	460,472	495,809	537,338	578,867	616,888
Persons Per Household	2.84	2.84	2.85	2.85	2.86
Urban Employment	1,446,465	1,528,532	1,601,035	1,665,482	1,727,637

Conservation	2015	2020	2025	2030	2035
Conservation ²	109,329	117,979	129,841	142,048	153,236
Installed Active Device Through 2009	20,518	8,279	2,469	151	0
Code-Based and Price-Effect Savings	88,811	109,700	127,372	141,898	153,236

Total Demands After Conservation	2015	2020	2025	2030	2035
Total Demand	731,381	761,432	775,038	792,419	812,000
Retail Municipal and Industrial ³	640,105	676,353	706,316	733,944	755,205
Retail Agricultural	89,081	82,745	66,332	56,077	54,389
Seawater Barrier	0	0	0	0	0
Groundwater Replenishment	2,195	2,334	2,390	2,398	2,407

Local Supplies	2015	2020	2025	2030	2035
Total Local Supplies	95,859	98,915	101,643	104,235	106,420
Groundwater Production	12,100	12,100	12,100	12,100	12,100
Surface Production	48,080	48,080	48,080	48,080	48,080
Los Angeles Aqueduct	0	0	0	0	0
Groundwater Recovery	6,701	7,217	7,619	8,021	8,423
Recycling	28,978	31,518	33,844	36,034	37,818
M&I and Agricultural	26,783	29,184	31,454	33,636	35,411
Groundwater Replenishment	2,195	2,334	2,390	2,398	2,407
Seawater Barrier	0	0	0	0	0
Other Non-Metropolitan Imports	0	0	0	0	0

Demands on Metropolitan	2015	2020	2025	2030	2035
Total Metropolitan Demands	618,450	662,517	673,396	688,185	705,581
Full Service (Tier I and Tier II)	618,450	662,517	673,396	688,185	705,581
Replenishment Water ⁴	0	0	0	0	0

All units are acre-feet except in Demographics Section.

1. Growth projections are based on SCAG 2008 Regional Transportation Plan and SANDAG Series 12 Forecast.
2. Includes code-based, price-effect and existing active savings through CY2009; does not include future active conservation savings.
Conservation is 1990 base year. Pre-1990 add 250,000 acre-feet.
3. Retail M&I projections include conservation.
4. Replenishment Water include direct and in-lieu replenishment.