



San Diego County Water Authority

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May 7, 2007

MEMBER AGENCIES

Carlsbad
Municipal Water District

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City of Escondido

City of National City

City of Oceanside

City of Poway

City of San Diego

Fallbrook
Public Utility District

Helix 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

Mr. David Todd
Supervising Land and Water Use Analyst
Office of Water Use Efficiency
Post Office Box 942836
Sacramento, CA 94236-0001

RE: San Diego County Water Authority's Updated 2005 Urban Water Management Plan

Dear Mr. Todd:

In accordance with the California Urban Water Management Planning Act (Act), the San Diego County Water Authority (Water Authority) is submitting its Updated 2005 Urban Water Management Plan (Updated 2005 Plan) to the California Department of Water Resources (DWR). The Water Authority's Board of Directors adopted the Updated 2005 Plan on April 26, 2007. A copy of the resolution adopting the Updated 2005 Plan is included in Appendix B.

Prior to adoption and in accordance with the Act, the Water Authority Board of Directors held a public hearing to receive comments on the Updated 2005 Plan. In addition, Water Authority staff worked with DWR staff to incorporate changes requested by DWR staff after its review of the Water Authority's 2005 Plan.

Please feel free to contact Dana Frieauf, Principal Water Resources Specialist, at 858-522-6749, or dfrieauf@sdcwa.org, if you have any questions or would like additional information regarding the Water Authority's Updated 2005 Plan.

Sincerely,

Ken Weinberg
Director of Water Resources

js
Enclosure

A public agency providing a safe and reliable water supply to the San Diego region

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M E M O R A N D U M

December 1, 2005

TO: Member Agency Managers

FROM: Ken Weinberg, Director of Water Resources 

RE: Information on Water Authority Supplies included in 2005 Urban Water Management Plan as required under California Water Code Section 10631 (k)

The purpose of this memorandum is to address California Water Code Section 10631 (k) of the Urban Water Management Planning Act (Act). This section requires the exchange of supply and demand information between the wholesale agency and its member agencies. The Water Authority is to provide information that identifies and quantifies, to the extent practicable, the existing and planned sources of water 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.

This supply information is included in the Water Authority's 2005 Urban Water Management Plan (2005 Plan), adopted on November 17, 2005. A copy of the 2005 Plan is attached. The Water Authority's supplies include deliveries from the Metropolitan Water District (Metropolitan). Documentation on Metropolitan's supplies is included in its 2005 Regional Urban Water Management Plan, adopted on November 8, 2005. In addition, attached is a memorandum from Metropolitan, which contains supply reliability tables documenting long-term reliability, consistent with requirements of the Act. As stated in Section 8 of the Water Authority's 2005 Plan, if the projected Water Authority and member agency supplies are developed as planned, along with implementation of Metropolitan's Integrated Resources Plan, no shortages are anticipated within the Water Authority's service area under normal, single dry-year, or multiple dry-water years through 2030.

Member agency input into development of the Water Authority's 2005 Plan was critical to its preparation and ultimate adoption by the Board. The Water Authority would like to thank its member agencies for their assistance and input during this yearlong process. The table below summarizes the activities that occurred between our agencies during this effort:

Date	Water Authority Activities
September 2004	Presented to member agencies an overview of CWA-MAIN Model used to develop regional water demand forecast.
October 2004	Held kick-off meeting with agencies to initiate update of local supply and conservation projections.
February 2005	Hosted DWR Workshop on plan preparation and additional review of local supply and conservation projections.
March – April 2005	Met individually with several member agencies on draft preliminary demand forecast and local supply and conservation projections.
May 2005	Distributed preliminary water demand forecast to member agencies. Forecast included demands on the Water Authority by member agency.
May 2005	Hosted member agency meeting to review preparation of Metropolitan’s 2005 RUWMP and discuss additional coordination issues.
June 2005	Held technical meeting with member agencies to review water demand forecast.
September 2005	Distributed updated water demand forecast that was revised based on member agency input.
September 2005	Distributed member agency draft 2005 Plan for member agency technical review.
October 2005	Addressed member agencies’ comments in public review draft of 2005 Plan that was distributed to Board members and made available to public.
November 2005	Water Authority’s 2005 Plan adopted by Board.

In addition to preparation of the urban water management plan every five years, the Water Authority prepares an annual water supply report that documents implementation of the Water Authority’s planned supply projects and programs. This report is prepared in accordance with subdivision (a) of Section 8.00.050 of the Water Authority’s Administrative Code, which states: “The General Manager shall provide each Authority member agency and the County of San Diego and each city in the County of San Diego with a copy of the Authority’s most recently adopted Urban Water Management Plan and an annual statement regarding the Authority’s water supplies and implementation of Authority’s plans and programs to meet the future water supply requirements of its member agencies as determined by the Authority pursuant to law and the memorandum of agreement between the Authority and the San Diego Association of Governments.” Staff anticipates preparing the next annual report towards the end of 2006 and will provide the document following its approval by the Water Authority’s Board of Directors.

Thank you again for your assistance in preparation of the Water Authority’s 2005 Plan. Please contact Dana Frieauf, Principal Water Resources Specialist, at dfrieauf@sdewa.org or 858-522-6749, if you have any questions on the information provided in this memorandum.

Attachments



MWD

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Date: August 18, 2005
To: Urban Water Management Plan Coordinators
From: Michael Hurley, Water Resource Management Group
Subject: Reliability Tables for the 2005 RUWMP

California Water Code §10631 of the Urban Water Management Planning Act (Act) requires wholesale water agencies to provide urban water suppliers that rely upon that wholesale agency information that identifies and quantifies, to the extent practicable, the existing and planned sources of water available from the wholesale agency under multiple dry-year, single dry-year and average year conditions, in five-year increments for the 20-year term required under the Act

Attached are the final draft reliability tables documenting Metropolitan's long-term reliability consistent with the requirements of the Act. The tables show supplies and demands under multiple dry-year, single dry-year and average year conditions. Also included are the existing and planned supplies from In-basin, California Aqueduct and Colorado River Aqueduct sources used to develop the reliability tables.

Additionally, I've attached a slightly revised draft data set at the regional level based on comments regarding local supplies from some of the member agencies.

If you have any questions or comments, please contact me at (213) 217-6221 or mhurley@mwdh2o.com.

In Basin Storage Activities

Program Capabilities

Year 2010

(acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
Metropolitan Surface Storage (DVL, Mathews, Skinner)	297,500	510,000	0
Flexible Storage in Castaic & Perris Groundwater Conjunctive-use	73,000	219,000	0
North Las Posas Storage	47,000	47,000	0
Prop 13 Storage	64,000	64,000	0
Subtotal of Current Programs	481,500	840,000	0
Programs Under Development			
Groundwater Conjunctive-use Raymond Basin	22,000	22,000	0
Prop 13 Storage Programs	1,000	1,000	0
Additional Programs ¹	55,000	55,000	0
Subtotal of Proposed Programs	78,000	78,000	0
Maximum Supply Capability	559,500	918,000	0

¹ Includes expansions of existing programs

In Basin Storage Activities

Program Capabilities

Year 2015

(acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
Metropolitan Surface Storage (DVL, Mathews, Skinner)	296,200	507,800	0
Flexible Storage in Castaic & Perris Groundwater Conjunctive-use	73,000	219,000	0
North Las Posas Storage	47,000	47,000	0
Prop 13 Storage	64,000	64,000	0
Subtotal of Current Programs	480,200	837,800	0
Programs Under Development			
Groundwater Conjunctive-use			
Raymond Basin	22,000	22,000	0
Prop 13 Storage Programs	1,000	1,000	0
Additional Programs ¹	80,000	80,000	0
Subtotal of Proposed Programs	103,000	103,000	0
Maximum Supply Capability	583,200	940,800	0

¹ Includes expansions of existing programs

In Basin Storage Activities

Program Capabilities

Year 2020

(acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
Metropolitan Surface Storage (DVL, Mathews, Skinner)	278,800	477,900	0
Flexible Storage in Castaic & Perris Groundwater Conjunctive-use	73,000	219,000	0
North Las Posas Storage	47,000	47,000	0
Prop 13 Storage	64,000	64,000	0
Subtotal of Current Programs	462,800	807,900	0
Programs Under Development			
Groundwater Conjunctive-use Raymond Basin	22,000	22,000	0
Prop 13 Storage Programs	1,000	1,000	0
Additional Programs ¹	80,000	80,000	0
Subtotal of Proposed Programs	103,000	103,000	0
Maximum Supply Capability	565,800	910,900	0

¹ Includes expansions of existing programs

In Basin Storage Activities

Program Capabilities

Year 2025

(acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
Metropolitan Surface Storage (DVL, Mathews, Skinner)	265,000	454,300	0
Flexible Storage in Castaic & Perris Groundwater Conjunctive-use	73,000	219,000	0
North Las Posas Storage	47,000	47,000	0
Prop 13 Storage	64,000	64,000	0
Subtotal of Current Programs	449,000	784,300	0
Programs Under Development			
Groundwater Conjunctive-use Raymond Basin	22,000	22,000	0
Prop 13 Storage Programs	1,000	1,000	0
Additional Programs ¹	80,000	80,000	0
Subtotal of Proposed Programs	103,000	103,000	0
Maximum Supply Capability	552,000	887,300	0

¹ Includes expansions of existing programs

In Basin Storage Activities

Program Capabilities

Year 2030

(acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
Metropolitan Surface Storage (DVL, Mathews, Skinner)	265,000	454,300	0
Flexible Storage in Castaic & Perris Groundwater Conjunctive-use	73,000	219,000	0
North Las Posas Storage	47,000	47,000	0
Prop 13 Storage	64,000	64,000	0
Subtotal of Current Programs	449,000	784,300	0
Programs Under Development			
Groundwater Conjunctive-use Raymond Basin	22,000	22,000	0
Prop 13 Storage Programs	1,000	1,000	0
Additional Programs ¹	80,000	80,000	0
Subtotal of Proposed Programs	103,000	103,000	0
Maximum Supply Capability	552,000	887,300	0

¹ Includes expansions of existing programs and North Las Posas Phase 3

California Aqueduct
 Program Capabilities
 Year 2010
 (acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
SWP Deliveries ^{1,2}	509,000	175,000	1,472,000
San Luis Carryover ³	93,000	280,000	280,000
SWP Call-back of DWCV Table A Transfer	25,600	5,000	0
Central Valley Storage and Transfers			
Semitropic Program	107,000	107,000	0
Arvin Edison Program	90,000	90,000	0
San Bernardino Valley MWD Program	37,000	70,000	20,000
Kern Delta Program	50,000	50,000	0
Subtotal of Current Programs	911,600	777,000	1,772,000
Programs Under Development			
Delta Improvements ⁴	55,000	55,000	185,000
Market Transfer Options	150,000	150,000	0
Central Valley Transfers/Purchases	125,000	125,000	0
Mojave Program	0	0	0
Subtotal of Proposed Programs	330,000	330,000	185,000
Maximum Supply Capability	1,241,600	1,107,000	1,957,000

¹ Single Dry-year figure includes 76 TAF of additional SWP supplies in 1977 per DWR

² Multiple and Single Dry year figures include DWCV Table A supplies

³ Includes DWCV carryover

⁴ Includes Phase 8 and increased pumping capacity

California Aqueduct
 Program Capabilities
 Year 2015
 (acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
SWP Deliveries ^{1,2}	509,000	175,000	1,472,000
San Luis Carryover ³	93,000	280,000	280,000
SWP Call-back of DWCV Table A Transfer	25,600	5,000	0
Central Valley Storage and Transfers			
Semitropic Program	107,000	107,000	0
Arvin Edison Program	90,000	90,000	0
San Bernardino Valley MWD Program	37,000	70,000	20,000
Kern Delta Program	50,000	50,000	0
Subtotal of Current Programs	911,600	777,000	1,772,000
Programs Under Development			
Delta Improvements ⁴	55,000	55,000	185,000
Market Transfer Options	0	0	0
Central Valley Transfers/Purchases	125,000	125,000	0
Mojave Program	34,500	34,500	0
Subtotal of Proposed Programs	214,500	214,500	185,000
Maximum Supply Capability	1,126,100	991,500	1,957,000

¹ Single Dry-year figure includes 76 TAF of additional SWP supplies in 1977 per DWR

² Multiple and Single Dry year figures include DWCV Table A supplies

³ Includes DWCV carryover

⁴ Includes Phase 8 and increased pumping capacity

California Aqueduct
 Program Capabilities
 Year 2020
 (acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
SWP Deliveries ^{1,2}	509,000	175,000	1,472,000
San Luis Carryover ³	93,000	280,000	280,000
SWP Call-back of DWCV Table A Transfer	25,600	5,000	
Central Valley Storage and Transfers			
Semitropic Program	107,000	107,000	0
Arvin Edison Program	90,000	90,000	0
San Bernardino Valley MWD Program	37,000	70,000	20,000
Kern Delta Program	50,000	50,000	0
Subtotal of Current Programs	911,600	777,000	1,772,000
Programs Under Development			
Delta Improvements ⁴	110,000	110,000	240,000
Market Transfer Options	0	0	0
Central Valley Transfers/Purchases	125,000	125,000	0
Mojave Program	34,500	34,500	0
Subtotal of Proposed Programs	269,500	269,500	240,000
Maximum Supply Capability	1,181,100	1,046,500	2,012,000

¹ Single Dry-year figure includes 76 TAF of additional SWP supplies in 1977 per DWR

² Multiple and Single Dry year figures include DWCV Table A supplies

³ Includes DWCV carryover

⁴ Includes Phase 8 and increased pumping capacity

FINAL DRAFT

California Aqueduct
Program Capabilities
 Year 2025
 (acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
SWP Deliveries ^{1,2}	509,000	175,000	1,472,000
San Luis Carryover ³	93,000	280,000	280,000
SWP Call-back of DWCV Table A Transfer	25,600	5,000	0
Central Valley Storage and Transfers			
Semitropic Program	107,000	107,000	0
Arvin Edison Program	90,000	90,000	0
San Bernardino Valley MWD Program	37,000	70,000	20,000
Kern Delta Program	50,000	50,000	0
Subtotal of Current Programs	911,600	777,000	1,772,000
Programs Under Development			
Delta Improvements ⁴	110,000	110,000	240,000
Market Transfer Options	0	0	0
Central Valley Transfers/Purchases	125,000	125,000	0
Mojave Program	34,500	34,500	0
Subtotal of Proposed Programs	269,500	269,500	240,000
Maximum Supply Capability	1,181,100	1,046,500	2,012,000

¹ Single Dry-year figure includes 76 TAF of additional SWP supplies in 1977 per DWR

² Multiple and Single Dry year figures include DWCV Table A supplies

³ Includes DWCV carryover

⁴ Includes Phase 8 and increased pumping capacity

FINAL DRAFT

California Aqueduct
 Program Capabilities
 Year 2030
 (acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
SWP Deliveries ^{1,2}	509,000	175,000	1,472,000
San Luis Carryover ³	93,000	280,000	280,000
SWP Call-back of DWCV Table A Transfer	25,600	5,000	0
Central Valley Storage and Transfers			
Semitropic Program	107,000	107,000	0
Arvin Edison Program	90,000	90,000	0
San Bernardino Valley MWD Program	37,000	70,000	20,000
Kern Delta Program	50,000	50,000	0
Subtotal of Current Programs	911,600	777,000	1,772,000
Programs Under Development			
Delta Improvements ⁴	110,000	110,000	240,000
Market Transfer Options	0	0	0
Central Valley Transfers/Purchases	125,000	125,000	0
Mojave Program	34,500	34,500	0
Subtotal of Proposed Programs	269,500	269,500	240,000
Maximum Supply Capability	1,181,100	1,046,500	2,012,000

¹ Single Dry-year figure includes 76 TAF of additional SWP supplies in 1977 per DWR

² Multiple and Single Dry year figures include DWCV Table A supplies

³ Includes DWCV carryover

⁴ Includes Phase 8 and increased pumping capacity

FINAL DRAFT

Colorado River Aqueduct
 Program Capabilities
 Year 2010
 (acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
Base Apportionment – Priority 4	526,000	526,000	526,000
IID/MWD Conservation Program	85,000	85,000	85,000
Priority 5 Apportionment	0	0	30,000
PVID Land Management Program	111,000	111,000	70,000
Subtotal of Current Programs	722,000	722,000	711,000
Programs Under Development			
Hayfield Storage Program	0	0	0
Lower Coachella Storage Program	0	0	0
Chuckwalla Storage Program	0	0	0
Salton Sea Restoration Transfer	95,000	95,000	0
Subtotal of Proposed Programs	95,000	95,000	0
Less: Coachella SWP/QSA Transfer	0	0	0
Maximum Metropolitan Supply Capability	817,000	817,000	711,000
Additional Non-Metropolitan CRA Supplies			
SDCWA/IID Transfer	60,000	70,000	70,000
Coachella & All-American Canals Lining	93,700	93,700	93,700
Maximum CRA Supply Capability	970,700	980,700	874,700
Maximum Expected CRA Deliveries	970,700	980,700	874,700

Colorado River Aqueduct
 Program Capabilities
 Year 2015
 (acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
Base Apportionment – Priority 4	503,000	503,000	503,000
IID/MWD Conservation Program	85,000	85,000	85,000
Priority 5 Apportionment	0	0	20,000
PVID Land Management Program	111,000	111,000	70,000
Subtotal of Current Programs	699,000	699,000	678,000
Programs Under Development			
Hayfield Storage Program	100,000	100,000	0
Lower Coachella Storage Program	150,000	150,000	0
Chuckwalla Storage Program	0	0	0
Salton Sea Restoration Transfer	210,000	210,000	0
Subtotal of Proposed Programs	460,000	460,000	0
Less: Coachella SWP/QSA Transfer	(35,000)	(35,000)	(35,000)
Maximum Metropolitan Supply Capability	1,124,000	1,124,000	643,000
Additional Non-Metropolitan CRA Supplies			
SDCWA/IID Transfer	100,000	100,000	100,000
Coachella & All-American Canals Lining	93,700	93,700	93,700
Maximum CRA Supply Capability	1,317,700	1,317,700	836,700
Maximum Expected CRA Deliveries	1,250,000	1,250,000	836,700

FINAL DRAFT

Colorado River Aqueduct
 Program Capabilities
 Year 2020
 (acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
Base Apportionment – Priority 4	503,000	503,000	503,000
IID/MWD Conservation Program	85,000	85,000	85,000
Priority 5 Apportionment	0	0	19,000
PVID Land Management Program	111,000	111,000	70,000
Subtotal of Current Programs	699,000	699,000	677,000
Programs Under Development			
Hayfield Storage Program	100,000	100,000	0
Lower Coachella Storage Program	150,000	150,000	0
Chuckwalla Storage Program	150,000	150,000	0
Salton Sea Restoration Transfer	0	0	0
Subtotal of Proposed Programs	400,000	400,000	0
Less: Coachella SWP/QSA Transfer	(35,000)	(35,000)	(35,000)
Maximum Metropolitan Supply Capability	1,064,000	1,064,000	642,000
Additional Non-Metropolitan CRA Supplies			
SDCWA/IID Transfer	192,500	192,500	192,500
Coachella & All-American Canals Lining	93,700	93,700	93,700
Maximum CRA Supply Capability	1,350,200	1,350,200	928,200
Maximum Expected CRA Deliveries	1,250,000	1,250,000	928,200

Colorado River Aqueduct
 Program Capabilities
 Year 2025
 (acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
Base Apportionment – Priority 4	503,000	503,000	503,000
IID/MWD Conservation Program	85,000	85,000	85,000
Priority 5 Apportionment	0	0	19,000
PVID Land Management Program	111,000	111,000	70,000
Subtotal of Current Programs	699,000	699,000	677,000
Programs Under Development			
Hayfield Storage Program	100,000	100,000	0
Lower Coachella Storage Program	150,000	150,000	0
Chuckwalla Storage Program	150,000	150,000	0
Salton Sea Restoration Transfer	0	0	0
Subtotal of Proposed Programs	400,000	400,000	0
Less: Coachella SWP/QSA Transfer	(35,000)	(35,000)	(35,000)
Maximum Metropolitan Supply Capability	1,064,000	1,064,000	642,000
Additional Non-Metropolitan CRA Supplies			
SDCWA/IID Transfer	200,000	200,000	200,000
Coachella & All-American Canals Lining	93,700	93,700	93,700
Maximum CRA Supply Capability	1,357,700	1,357,700	935,700
Maximum Expected CRA Deliveries	1,250,000	1,250,000	935,700

Colorado River Aqueduct
 Program Capabilities
 Year 2030
 (acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
Base Apportionment – Priority 4	503,000	503,000	503,000
IID/MWD Conservation Program	85,000	85,000	85,000
Priority 5 Apportionment	0	0	19,000
PVID Land Management Program	111,000	111,000	70,000
Subtotal of Current Programs	699,000	699,000	677,000
Programs Under Development			
Hayfield Storage Program	100,000	100,000	0
Lower Coachella Storage Program	150,000	150,000	0
Chuckwalla Storage Program	150,000	150,000	0
Salton Sea Restoration Transfer	0	0	0
Subtotal of Proposed Programs	400,000	400,000	0
Less: Coachella SWP/QSA Transfer	(35,000)	(35,000)	(35,000)
Maximum Metropolitan Supply Capability	1,064,000	1,064,000	642,000
Additional Non-Metropolitan CRA Supplies			
SDCWA/IID Transfer	200,000	200,000	200,000
Coachella & All-American Canals Lining	93,700	93,700	93,700
Maximum CRA Supply Capability	1,357,700	1,357,700	935,700
Maximum Expected CRA Deliveries	1,250,000	1,250,000	935,700

Multiple Dry-year Supply Capability¹ & Projected Demands					
(Repeat of 1990-92 Hydrology)					
(acre-feet per year)					
	2010	2015	2020	2025	2030
Current Supplies					
Colorado River Aqueduct ²	722,000	699,000	699,000	699,000	699,000
California Aqueduct ³	911,600	911,600	911,600	911,600	911,600
In-Basin Storage	481,500	480,200	462,800	449,000	449,000
Supplies Under Development					
Colorado River Aqueduct	95,000	460,000	400,000	400,000	400,000
California Aqueduct	330,000	214,500	269,500	269,500	269,500
In-Basin Storage	78,000	103,000	103,000	103,000	103,000
Transfers to Other Agencies	0	(35,000)	(35,000)	(35,000)	(35,000)
Metropolitan Supply Capability	2,618,100	2,833,300	2,810,900	2,797,100	2,797,100
Metropolitan Supply Capability w/CRA Maximum of 1.25 MAF⁴	2,618,100	2,765,600	2,710,700	2,689,400	2,689,400
Firm Demands on Metropolitan^{5,6}	2,410,000	2,431,000	2,459,000	2,596,000	2,729,000
Potential Reserve & Replenishment Supplies	208,100	334,600	251,700	93,400	-39,600

¹ Represents supply capability for resource programs under listed year type.

² Colorado River Aqueduct includes water management program supplies conveyed by the aqueduct

³ California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct

⁴ Maximum CRA deliveries limited to 1.25 MAF including SDCWA/IID Transfer supplies and Coachella and All-American Canals lining supplies.

⁵ Based on SCAG 2004 RTP, SANDAG 2030 forecasts, projections of member agency existing and contracted active conservation and local supplies, remaining regional targets for active conservation and local supplies, SDCWA/IID Transfer supplies and Coachella and All-American Canals lining supplies.

⁶ Includes projected firm sales plus 70% of projected IAWP agricultural sales

Single Dry-year Supply Capability¹ & Projected Demands					
(Repeat of 1977 Hydrology)					
(acre-feet per year)					
	2010	2015	2020	2025	2030
Current Supplies					
Colorado River Aqueduct ²	722,000	699,000	699,000	699,000	699,000
California Aqueduct ³	777,000	777,000	777,000	777,000	777,000
In-Basin Storage	840,000	837,800	807,900	784,300	784,300
Supplies Under Development					
Colorado River Aqueduct	95,000	460,000	400,000	400,000	400,000
California Aqueduct	330,000	214,500	269,500	269,500	269,500
In-Basin Storage	78,000	103,000	103,000	103,000	103,000
Transfers to Other Agencies	0	(35,000)	(35,000)	(35,000)	(35,000)
Metropolitan Supply Capability	2,842,000	3,056,300	3,021,400	2,997,800	2,997,800
Metropolitan Supply Capability w/CRA Maximum of 1.25 MAF⁴	2,842,000	2,988,600	2,921,200	2,890,100	2,890,100
Firm Demands on Metropolitan^{5,6}	2,326,000	2,342,000	2,377,000	2,504,000	2,631,000
Potential Reserve & Replenishment Supplies	516,000	646,600	544,200	386,100	259,100

¹ Represents supply capability for resource programs under listed year type.

² Colorado River Aqueduct includes water management program supplies conveyed by the aqueduct

³ California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct

⁴ Maximum CRA deliveries limited to 1.25 MAF including SDCWA/IID Transfer supplies and Coachella and All-American Canals lining supplies.

⁵ Based on SCAG 2004 RTP, SANDAG 2030 forecasts, projections of member agency existing and contracted active conservation and local supplies, remaining regional targets for active conservation and local supplies, SDCWA/IID Transfer supplies and Coachella and All-American Canals lining supplies.

⁶ Includes projected firm sales plus 70% of projected IAWP agricultural sales

Average Supply Capability¹ & Projected Demands					
(Average of 1922 - 2004 Hydrologies)					
(acre-feet per year)					
	2010	2015	2020	2025	2030
Current Supplies					
Colorado River Aqueduct ²	711,000	678,000	677,000	677,000	677,000
California Aqueduct ³	1,772,000	1,772,000	1,772,000	1,772,000	1,772,000
In-Basin Storage	0	0	0	0	0
Supplies Under Development					
Colorado River Aqueduct	0	0	0	0	0
California Aqueduct	185,000	185,000	240,000	240,000	240,000
In-Basin Storage	0	0	0	0	0
Transfers to Other Agencies	0	(35,000)	(35,000)	(35,000)	(35,000)
Metropolitan Supply Capability	2,668,000	2,600,000	2,654,000	2,654,000	2,654,000
Metropolitan Supply Capability w/CRA Maximum of 1.25 MAF⁴	2,668,000	2,600,000	2,654,000	2,654,000	2,654,000
Firm Demands on Metropolitan^{5,6}	2,073,000	2,095,000	2,131,000	2,258,000	2,390,000
Potential Reserve & Replenishment Supplies	595,000	505,000	523,000	396,000	264,000

¹ Represents supply capability for resource programs under listed year type.

² Colorado River Aqueduct includes water management program supplies conveyed by the aqueduct

³ California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct

⁴ Maximum CRA deliveries limited to 1.25 MAF including SDCWA/IID Transfer supplies and Coachella and All-American Canals lining supplies.

⁵ Based on SCAG 2004 RTP, SANDAG 2030 forecasts, projections of member agency existing and contracted active conservation and local supplies, remaining regional targets for active conservation and local supplies, SDCWA/IID Transfer supplies and Coachella and All-American Canals lining supplies.

⁶ Includes projected firm sales plus 70% of projected IAWP agricultural sales

Metropolitan Water District of Southern California

Average Year

Demographics (1)	2005	2010	2015	2020	2025	2030
Population	18,233,700	19,138,000	19,914,600	20,664,600	21,367,500	22,053,200
Occupied Housing Units	5,803,800	6,145,200	6,444,600	6,751,100	7,075,600	7,376,400
Single Family	3,477,300	3,651,000	3,767,600	3,945,800	4,128,700	4,250,100
Multi-Family	2,326,500	2,494,200	2,677,000	2,805,300	2,946,800	3,126,300
Persons Per Household	3.08	3.05	3.03	3.01	2.97	2.94
Urban Employment	8,186,200	8,991,300	9,402,700	9,795,200	10,163,000	10,537,600

Conservation	2005	2010	2015	2020	2025	2030
Total Conservation	735,900	865,200	955,200	1,027,600	1,106,900	1,188,300
Installed Active Devices Through 2004	91,200	85,800	63,200	23,000	900	100
IRP Conservation Target (2)	6,100	27,100	38,300	45,700	30,500	23,800
Code-Based and Price-Effect Savings (3)	388,600	502,300	603,700	708,900	825,500	914,400
Pre-1990 Conservation	250,000	250,000	250,000	250,000	250,000	250,000

Total Demands After Conservation	2005	2010	2015	2020	2025	2030
Total Demands	4,303,900	4,647,500	4,764,200	4,927,200	5,068,100	5,190,400
Retail Agricultural	347,800	318,800	285,000	250,500	215,000	194,600
Retail Municipal and Industrial	3,768,000	4,053,400	4,196,900	4,392,100	4,569,600	4,719,400
Groundwater Replenishment	140,100	200,400	212,800	215,100	214,000	206,900
Seawater Barrier	48,000	74,900	69,500	69,500	69,500	69,500

Local Supplies	2005	2010	2015	2020	2025	2030
Total Local Supplies	2,107,600	2,377,400	2,465,900	2,593,300	2,613,500	2,612,100
Groundwater	1,341,500	1,416,000	1,429,800	1,431,000	1,443,500	1,442,300
Surface Water	59,400	100,000	99,500	99,200	99,200	98,600
Los Angeles Aqueduct	373,300	252,500	253,000	252,900	253,200	253,600
IRP Local Resource Program Target	0	12,800	33,000	38,300	37,500	37,500
Groundwater Recovery	60,500	81,700	82,100	85,300	85,300	85,300
Total Recycling	221,000	328,800	350,900	376,400	377,200	377,200
<i>M&I and Agricultural</i>	152,300	180,900	204,000	229,500	230,300	230,300
<i>Groundwater Replenishment</i>	52,000	90,000	90,000	90,000	90,000	90,000
<i>Sea Water Barrier</i>	16,800	57,900	56,900	56,900	56,900	56,900
Other Imported Supplies	51,900	185,600	217,600	310,100	317,600	317,600

Demands on Metropolitan	2005	2010	2015	2020	2025	2030
Total Metropolitan Demands	2,196,100	2,270,100	2,298,300	2,334,000	2,454,500	2,578,300
Full Service (Tier I and Tier II)	1,918,900	2,007,000	2,039,100	2,085,400	2,225,400	2,364,800
Replenishment Water Rate (4)	167,500	169,200	179,700	182,800	183,100	176,800
Interim Agricultural Water Program	109,700	93,900	79,500	65,800	46,000	36,700

Firm Demands on Metropolitan (5)	1,996,000	2,073,000	2,095,000	2,131,000	2,258,000	2,390,000
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Notes:

All units are acre-feet unless specified, rounded to the nearest hundred

Totals may not sum due to rounding

(1) Growth Projections: SCAG 2004 Regional Transportation Plan; SANDAG 2030 Forecast

(2) The 2030 savings target is derived from the 2003 IRP Update forecast projections for 2030; it is not an official target for 2030.

(3) Measured from 1990; Includes plumbing codes for pre-rinse spray heads and high efficiency washing machines

(4) Replenishment Water Rate demands include: seasonal shift, groundwater spreading, and groundwater in-lieu

(5) Firm demand on Metropolitan equals Full Service demands plus 70% of the Interim Agricultural Water Program demands



San Diego County Water Authority

**UPDATED
2005
Urban Water
Management Plan**

April 2007

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Updated 2005 Urban Water Management Plan

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

**With assistance provided by the following Departments:
General Counsel
Imported Water
Public Affairs
Engineering
Finance**

April 2007

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**UPDATED 2005 URBAN WATER MANAGEMENT PLAN
TABLE OF CONTENTS**

	Page
SECTION 1 – INTRODUCTION	1-1
1.1 California Urban Water Management Planning Act	1-2
1.2 Senate Bills 610 and 221	1-2
1.3 Water Authority’s 2005 Urban Water Management Plan	1-3
1.4 History and Description of Water Authority	1-4
1.4.1 History	1-4
1.4.2 Service Area	1-4
1.4.3 Member Agencies	1-5
1.5 Water Authority Physical Water Delivery System	1-6
1.5.1 Capital Improvement Program	1-6
1.6 Service Area Characteristics	1-9
1.6.1 Regional Economy and Demographics	1-9
1.6.2 Climate	1-10
1.6.3 Population	1-11
SECTION 2 – WATER DEMANDS	2-1
2.1 Municipal and Industrial Water Demand	2-1
2.1.1 Residential Demand	2-1
2.1.2 Commercial and Industrial Demand	2-1
2.2 Agricultural Water Demand	2-2
2.3 Total Current and Historic Water Use	2-2
2.4 Projected Water Demands	2-4
2.4.1 Projected Normal Water Demands	2-5
2.4.2 Projected Dry-Year Water Demands	2-7
2.4.3 Member Agency Imported Demands on Water Authority	2-8
SECTION 3 – DEMAND MANAGEMENT	3-1
3.1 Description	3-1
3.2 Best Management Practices	3-1
3.3 Future Water Conservation Savings	3-3
3.3.1 Landscape	3-5
3.3.2 Commercial, Industrial, & Institutional	3-5
3.3.3 Residential	3-5
SECTION 4 – SAN DIEGO COUNTY WATER AUTHORITY SUPPLIES	4-1
4.1 Water Authority – IID Water Conservation Transfer Agreement	4-1
4.1.1 Implementation Status	4-2
4.1.2 Expected Supply	4-2
4.1.3 Transportation	4-2
4.1.4 Cost/Financing	4-3
4.1.5 Written Contracts or Other Proof	4-3
4.1.6 Existing and Future Supplies	4-3

4.2 All-American Canal and Coachella Canal Lining Projects	4-4
4.2.1 Implementation Status	4-4
4.2.2 Expected Supply	4-4
4.2.3 Transportation	4-5
4.2.4 Cost/Financing	4-5
4.2.5 Written Contracts or Other Proof	4-5
4.2.6 Future Supplies	4-5
4.3 Water Authority Seawater Desalination Program	4-6
4.3.1 Regional Seawater Desalination	4-7
4.3.2 Desalination Action Plan	4-7
4.3.3 Water Authority Seawater Desalination Program Goal	4-9
4.4 Summary of Water Authority Supplies	4-9
SECTION 5 – MEMBER AGENCY SUPPLIES	5-1
5.1 Surface Water	5-1
5.1.1 Description	5-1
5.1.2 Issues	5-4
5.1.3 Encouraging Optimization of Local Surface Water Reservoirs	5-4
5.1.4 Projected Surface Water Supplies	5-4
5.2 Groundwater	5-5
5.2.1 Description	5-5
5.2.2 Issues	5-8
5.2.3 Projected Groundwater Supplies	5-9
5.3 Water Recycling	5-10
5.3.1 Description	5-10
5.3.2 Issues	5-11
5.3.3 Wastewater Generation, Collection, Treatment, and Disposal	5-13
5.3.4 Encouraging Recycled Water Development	5-15
5.3.5 Projected Recycled Water Use	5-18
5.4 Seawater Desalination	5-19
5.4.1 Description	5-19
5.4.2 Issues	5-20
5.4.3 Projected Seawater Desalination Supplies	5-20
5.5 Summary of Member Agency Supplies	5-21
SECTION 6 – METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA	6-1
6.1 Description	6-1
6.1.1 Metropolitan Act Section 135; Preferential Right to Water	6-1
6.1.2 Metropolitan’s Integrated Resources Plan	6-3
6.2 Metropolitan’s Water Supplies	6-3
6.2.1 Colorado River	6-3
6.2.2 State Water Project	6-7

SECTION 7 – WATER QUALITY	7-1
7.1 Colorado River	7-1
7.2 State Water Project	7-2
7.3 Surface Water	7-3
7.4 Groundwater	7-5
7.5 Recycled Water	7-6
7.6 Seawater Desalination	7-7
Section 8 – WATER SUPPLY RELIABILITY	8-1
8.1 Development of Projected Water Resources Mix	8-1
8.2 Normal Water Year Assessment	8-1
8.3 Dry Water Year Assessment	8-2
8.4 Reliability of Supply	8-5
8.5 Regional Water Supply Goals	8-6
Section 9 – SHORTAGE CONTINGENCY ANALYSIS	9-1
9.1 Catastrophic Water Shortage	9-1
9.1.1 Emergency Response Plan	9-1
9.1.2 Water Authority’s Emergency Storage Project	9-2
9.2 Drought Management Planning	9-3
9.2.1 Introduction	9-3
9.2.2 DMP Purpose	9-3
9.2.3 DMP Technical Advisory Committee	9-4
9.2.4 DMP Principles	9-4
9.2.5 Drought Response Matrix	9-7
9.2.6 Supply Allocation Methodology	9-8
9.2.7 Revenue Impacts	9-11
9.2.8 Mandatory Water Use Prohibitions	9-11
9.2.9 Penalties for Excessive Water Use	9-11
9.3 Summary	9-12
APPENDIX A - California Urban Water Management Planning Act	
APPENDIX B – Water Authority Board of Directors Resolutions	
APPENDIX C – DWR 2005 Urban Water Management Plan Checklist	
APPENDIX D - CUWCC BMP Reports	
APPENDIX E – Documentation on Water Authority Colorado River Transfers	
APPENDIX F – Member Agency Local Supply Projections	
APPENDIX G – Drought Management Plan	

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TABLES

1-1	CIP Cost Summary by Category	1-7
1-2	Member Agency Treatment Plant Capacity	1-8
1-3	Population Forecast Within Water Authority Service Area (2005 – 2030)	1-12
2-1	Historic Water Demand Within Water Authority Service Area (1995 - 2005)	2-3
2-2	Normal Year Water Demand Forecast Adjusted For Water Conservation	2-6
2-3	Single Dry-Year Total Water Demand Forecast	2-7
2-4	Multiple Dry-Year Total Water Demand Forecast (Years 2006 – 2008)	2-8
2-5	Multiple Dry-Year Total Water Demand Forecast (Years 2011 – 2013)	2-8
2-6	Multiple Dry-Year Total Water Demand Forecast (Years 2016 – 2018)	2-8
2-7	Multiple Dry-Year Total Water Demand Forecast (Years 2021 – 2023)	2-8
2-8	Multiple Dry-Year Total Water Demand Forecast (Years 2026 – 2028)	2-8
2-9	Member Agency Imported Demand (Sales) on Water Authority	2-9
3-1	Best Management Practices for Urban Water Conservation in California	3-2
3-2	Potential Water Conservation Savings Through 2030 Within Water Authority Service Area	3-4
4-1	Existing and Projected Water Authority-IID Transfer Supplies	4-4
4-2	Projected Supply From Canal Lining Projects	4-6
4-3	Projected Water Authority Supplies	4-10
5-1	Major San Diego County Reservoirs	5-2
5-2	Projected Surface Water Supply	5-5
5-3	Projected Groundwater Supply	5-9
5-4	Programs to Encourage Recycled Water Use	5-15
5-5	Projected Recycled Water Use	5-19
5-6	Projected Local Seawater Desalination Water Supplies	5-20
5-7	Projected Member Agency Local Supplies	5-21

6-1	Seven Party Agreement Priorities	6-5
8-1	Normal Water Year Supply and Demand Assessment	8-2
8-2	Single Dry Water Year Supply and Demand Assessment	8-3
8-3	Multiple Dry Water Year Supply and Demand Assessment (2006-2008)	8-3
8-4	Multiple Dry Water Year Supply and Demand Assessment (2011-2013)	8-4
8-5	Multiple Dry Water Year Supply and Demand Assessment (2016-2018)	8-4
8-6	Multiple Dry Water Year Supply and Demand Assessment (2021-2023)	8-4
8-7	Multiple Dry Water Year Supply and Demand Assessment (2026-2028)	8-4
9-1	Drought Response Matrix	9-7

FIGURES

1-1	Water Authority Service Area	1-5
1-2	Annual Rainfall (Lindbergh Field Station)	1-10
1-3	Comparison of Average Rainfall, Standard Monthly Average Evapotranspiration, and Average Temperature	1-11
2-1	Estimated Type of Water Use – FY 2005	2-3
2-2	Projected Type of Water Use – FY 2030	2-3
2-3	Regional Historic and Projected Normal Water Demands	2-6
5-1	Major San Diego County Reservoirs	5-3
5-2	Alluvial Groundwater Basins	5-7
5-3	Wastewater Treatment and Water Recycling Facilities	5-14
6-1	Metropolitan Service Area	6-1
6-2	Projected Water Authority Preferential Right	6-2
6-3	Major Water Conveyance Facilities Serving San Diego County	6-4
7-1	Treatment Plant Average Effluent	7-7
8-1	2030 Water Supply Goals	8-6
9-1	M&I Supply Allocation Methodology	9-9

ABBREVIATIONS

2000 Plan	2000 Urban Water Management Plan
2005 Plan	2005 Urban Water Management Plan
AAC	All-American Canal
Act	Urban Water Management Planning Act
ACWA	Association of California Water Agencies
AF	acre-feet
AF/YR	acre-feet per year
Bay-Delta	San Francisco Bay/Sacramento-San Joaquin River Delta
BMPs	Best Management Practices (Water Conservation)
CC	Coachella Canal
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
CRA	Colorado River Aqueduct
CSP	Carryover Storage Project
CUWA	California Urban Water Agencies
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project (Federal)
CVWD	Coachella Valley Water District
CWA-MAIN	County Water Authority - Municipal and Industrial Needs
Delta	Sacramento - San Joaquin River Delta
DHS	Department of Health Services (State of California)
DIP	Delta Improvement Package
DMP	Drought Management Plan
DWR	Department of Water Resources (State of California)
EIR/EIS	Environmental Impact Report/Environmental Impact Statement
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
ESA	Endangered Species Act (Federal)
ESP	Emergency Storage Project

EWA	Environmental Water Account
EWDP	Emergency Water Delivery Plans
EWMPs	Efficient Water Management Practices
FAP	Financial Assistance Program
FFY	Federal Fiscal Year
Forum	Colorado River Basin Salinity Control Forum
FY	Fiscal Year
GRP	Groundwater Recovery Program
HEWs	high-efficiency clothes washers
IAWP	Interim Agricultural Water Program
IID	Imperial Irrigation District
IRP	Integrated Resources Plan
IRWMP	Integrated Regional Water Management Plan
lb/day	pounds per day
LCR MSCP	Lower Colorado River Multi-Species Conservation Program
LRP	Local Resource Program
M&I	municipal & industrial
MAF	million acre-feet
MAF/YR	million acre-feet per year
MAIN	Institute for Water Resources – Municipal and Industrial Needs
MCB Camp Pendleton	Marine Corps Base Camp Pendleton
mg/l	milligrams per liter
mgd	million gallons per day
Metropolitan	Metropolitan Water District of Southern California
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding Regarding Urban Water Conservation in California
MTBE	Methyl Tertiary Butyl Ether
MWDOC	Municipal Water District of Orange County
NEPA	National Environmental Policy Act
OAEP	Operational Area Emergency Plan
Omnibus Act	Omnibus Appropriations Act
OM&R	Operation, Maintenance, and Repair
O&M	Operations and Maintenance

PEIR	Programmatic Environmental Impact Report
ppb	parts per billion
ppm	parts per million
QSA	Quantification Settlement Agreement
Regional Board	California Regional Water Quality Control Board
RO	reverse osmosis
ROD	Record of Decision
RUWMP	Regional Urban Water Management Plan
RWDF	Reclaimed Water Development Fund
RWFMP	Regional Water Facilities Master Plan
SANDAG	San Diego Association of Governments
SDP	Metropolitan Water District of Southern California's Seawater Desalination Program
SDWA	Safe Drinking Water Act
SEMS	Standardized Emergency Management System
Skinner TP	Lake Skinner Water Treatment Plant
SONGS	San Onofre Nuclear Generating Station
SRF	State Revolving Fund
SSOA	Surface Storage Operating Agreement
SWA	Source Water Assessment
SWP	State Water Project
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committee
Transfer Agreement	Water Authority-Imperial Irrigation District Transfer Agreement
TOC	total organic carbon
TDS	total dissolved solids
ULFTs	ultra- low flush toilets
USBR	U.S. Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service
VIP	Voucher Incentive Program
Water Authority	San Diego County Water Authority
Water Use Plan	California's Colorado Water Use Plan
WRLP	Water Reclamation Loan Program
WSDM Plan	Water Surplus and Drought Management Plan

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Updated 2005 Urban Water Management Plan

In accordance with the Urban Water Management Planning Act, the San Diego County Water Authority (Water Authority) Board of Directors adopted the 2005 Urban Water Management Plan (2005 Plan) in November 2005. Since November 2005, the Board of Directors has taken two significant actions that result in the need to update the 2005 Plan. These include a change on seawater desalination development within San Diego county from a regional supply project at the Encina Power Station to a local supply project (Sections 4.3 and 5.4), and adoption of the Water Authority's Drought Management Plan (Section 9.2). Updating the plan to address these changed conditions also provides an opportunity to make clarifying edits requested by Department of Water Resources staff after its review of the 2005 Plan.

The Urban Water Management Planning Act requires an update of the plan every five years. This update is being done, prior to 2010, to maintain the Water Authority's eligibility for state grant funding and also provides updated information on the Water Authority's supplies. In accordance with its Administrative Code, the Water Authority will also prepare annual water supply reports commencing in 2008 to provide updated information on development of local and imported water supplies. The following is the Water Authority's Updated 2005 Plan:

SECTION 1 – INTRODUCTION

The mission of the Water Authority is to provide a safe and reliable supply of water to its member agencies serving the San Diego region. This Updated 2005 Urban Water Management Plan (Updated 2005 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.

Since adopting the 2000 Urban Water Management Plan (2000 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 40,500 acre-feet per year (AF/YR) over the last five years. In 2003, conserved agricultural transfer water from the Imperial Valley began flowing to the region, which will provide 200,000 AF/YR by 2021. In 2003, the Water Authority was assigned rights to 77,700 AF/YR of conserved water from projects to line the All-American and Coachella Canals. Deliveries of this conserved water from the Coachella Canal reached the region in 2007, and deliveries from the All-American Canal are projected to reach 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. Likewise, it is critical that the Metropolitan Water District of Southern California (Metropolitan) continue to provide a reliable supply of imported water to the region. The Water Authority, its member agencies, and Metropolitan must work together to ensure a diverse and reliable supply for the region.

This section of the Updated 2005 Plan describes the state laws that influence preparation of the plan, including the Urban Water Management Planning Act (Act) and Water Code Sections that were enacted with the passage of Senate Bills 610 and 221 in 2001. It also includes a discussion of the coordination that occurred in preparation of the Updated 2005 Plan as well as a general description of the Water Authority, with its physical water delivery system, service area characteristics, climate, and population projections.

1.1 CALIFORNIA URBAN WATER MANAGEMENT PLANNING ACT

The California Water Code requires all urban water suppliers in the state to prepare urban water management plans and update them every five years. These plans satisfy the requirements of the Act of 1983, including amendments that have been made to the Act. Sections 10610 through 10657 of the California Water Code details the information that must be included in these plans, as well as who must file them.

Major amendments made to the Act since the Water Authority's 2000 Plan was prepared include:

- * Description of specific water supply projects and implementation schedules to meet projected demands over the planning horizon;
- * Description of the opportunities for the development of desalinated water;
- * Additional information on groundwater, where groundwater is identified as an existing or planned water source;
- * Description of water quality over the planning horizon; and
- * Description of water management tools that maximize local resources and minimize imported water supplies.

In addition, the California Department of Water Resources (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 the Act: "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." The Act requires that each urban water supplier that provides water for municipal purposes either directly or indirectly to more than 3,000 customers or supplies more than 3,000 AF of water annually, shall prepare, update, and adopt its urban water management plan at least once every five years or before December 31, in years ending in five and zero. In accordance with the Act, the Water Authority is required to update and adopt its plan for submittal to the DWR by December 31, 2005. **Appendix A** contains the text of the Act.

1.2 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 of the Updated 2005 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.

1.3 WATER AUTHORITY'S 2005 URBAN WATER MANAGEMENT PLAN

This report constitutes an update to the Water Authority's 2005 Plan. To adequately demonstrate how the region will be reliable over the next 25 years, the Updated 2005 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. While the Updated 2005 Plan includes specific documentation on 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.

Striving for consistency among the plans of Metropolitan, the Water Authority, and its member agencies is important to accurately reflect 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 supply information. In addition, DWR and the California Urban Water Conservation Council (CUWCC) hosted a special workshop to review the requirements of the Act. At a separate workshop, the Working Group received a briefing from Metropolitan on its regional plan, and participants discussed strategies for coordination between the supply agencies.

The Water Authority further coordinated its efforts by working with the appropriate wastewater agencies. These agencies helped prepare the water recycling element of the Updated 2005 Plan, which describes the wastewater treatment requirements and water recycling potential. The Water Authority also coordinated with Metropolitan regarding projected needs for imported water deliveries. A member agency draft 2005 Plan was distributed for technical review by the Water Authority's member agencies and their comments incorporated.

In accordance with the Act, the Water Authority notified the land use jurisdictions within its service area that it was preparing an Updated 2005 Plan. Prior to adoption, the Water Authority mailed the Updated 2005 Plan to interested parties that included the Water Authority's member agencies, the San Diego Regional Chamber of Commerce, Sierra Club, County of San Diego, and cities within Water Authority's service area. The Updated 2005 Plan was also available for public review at the Water Authority and on the Water Authority's Internet homepage.

The Water Authority reviewed all of the comments received and revised the plan accordingly. The Water Authority Board of Directors held a public hearing on October 27, 2005, and adopted the Water Authority's 2005 Plan on November 17, 2005. The Board of Directors adopted the Updated 2005 Plan on April 26, 2007. **Appendix B** contains a copy of the resolution adopting the 2005 Plan and the Updated 2005 Plan.

DWR prepared a checklist based on the Act of items 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 page numbers included in the Updated 2005 Plan. The completed checklist is included in **Appendix C**.

1.4 HISTORY AND DESCRIPTION OF THE WATER AUTHORITY

1.4.1 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. Due to 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.

1.4.2 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 920,463 acres (1,438 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.

**FIGURE 1-1
WATER AUTHORITY SERVICE AREA**



1.4.3 Member Agencies

The Water Authority’s 23 member agencies purchase water from the Water Authority for retail distribution within their service territories. A 34 member Board of Directors comprised of member agency representatives governs the Water Authority. The member agencies six cities, four 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.

1.5 WATER AUTHORITY PHYSICAL WATER DELIVERY SYSTEM

The Water Authority currently purchases water from Metropolitan and transferred water from the Imperial Irrigation District (IID). These supplies are delivered to its member agencies through two aqueducts containing five large-diameter pipelines. The aqueducts follow general north-to-south alignments, and the water is delivered largely by gravity, which allows the distribution system to operate during a power outage. The Water Authority has an exchange agreement with Metropolitan, which allows delivery of the IID transfer water through Metropolitan's system. Delivery points from Metropolitan are located about six miles south of the Riverside/San Diego county line. The largest single-year of sales of imported water ever recorded by the Water Authority was 644,000 acre-feet (AF) in fiscal year (FY) 2004.

The First Aqueduct includes Pipelines 1 and 2, located in a common right-of-way. They share five common tunnels and are operated as a unit. They have a combined capacity of 180 cubic feet per second (cfs). Pipelines 3, 4, and 5 form the Second Aqueduct. These pipelines are operated independent of the First Aqueduct and are located in separate rights-of-way. Pipeline 3 has a capacity of 280 cfs; Pipeline 4 carries 470 cfs, and Pipeline 5 carries 500 cfs. **Figure 1-1** shows the locations of the Water Authority's aqueducts within San Diego County.

1.5.1 Capital Improvement Program (CIP)

The Water Authority completed a Regional Water Facilities Master Plan (RWFMP) process in 2004. The RWFMP defines the regional facilities needed to meet water demands within the Water Authority's service area through the year 2030. The Water Authority examined the changing water supply and demand forecast patterns using a probabilistic approach to facilities planning. A computer model analyzed various facility options under a range of supply and demand scenarios. This modeling resulted in an assessment of the reliability of the system measured in terms of the probability, frequency, and magnitude of water shortages for each facility option.

The water supply and capital improvements currently under way and planned for the future are designed to serve the region's needs through 2030. They include new pipelines and pump stations to convey the water, a water treatment facility, improvements to the existing water delivery system, the All-American and Coachella Canal Lining Projects, and projects to increase storage capacity throughout the county (see **Table 1-1** for the CIP cost summary by category).

The timing for implementation of the CIP projects will be evaluated based on the reliability analysis prepared for the Updated 2005 Plan. If necessary, project schedules will be adjusted to accurately reflect when the project is needed for reliability purposes.

**TABLE 1-1
CIP COST SUMMARY BY CATEGORY
(IN \$ MILLIONS)**

PROJECT CATEGORY	PROJECT COST ²
Pipeline Projects	\$1,768.3
System-wide Improvements	\$63.4
Emergency Storage Projects	\$1,176.0
Water Supply Projects	\$496.6
Flow Control & Pumping Facilities	\$67.5
Reimbursable Projects - Total Cost	\$13.9
Total Costs of Active & Future Projects	\$3,585.7
Less All Reimbursable Costs ¹	\$121.8
Net Water Authority Costs ³	\$3,463.9

¹ There are project costs within the CIP that are considered reimbursable.

² Project costs are from the recommended FY 08/09 Multi-Year Water Authority CIP Budget.

³ In June 2004, the Water Authority Board of Directors voted unanimously to select seawater desalination as the preferred RWFMP alternative and added it and 21 other major water facilities projects to the CIP. This action, the largest investment in water supply reliability and system infrastructure in the Water Authority's 60-year history, more than doubled the agency's CIP, from \$1.3 billion to more than \$3.19 billion. In July 2006, the Water Authority Board of Directors decided not to certify the final environmental impact report for the regional seawater desalination project and not to pursue the project further. The table reflects this change. See **Sections 4.3** and **5.4** for more information.

Water Authority Regional Treatment Facility

The treated water that serves the San Diego region is presently produced at local water treatment plants owned by several Water Authority member agencies, and is also imported from Metropolitan's Skinner Water Treatment Plant (Skinner TP) in Riverside County. The member agency treatment plants and capacity are shown in **Table 1-2**. A rapid increase in treated water demand over the last five years has produced significant strains on these treated water supply sources. During peak periods, local plants in the San Diego region typically operate at maximum capacity, and imported water from the Skinner TP meets the remaining demand.

**TABLE 1-2
MEMBER AGENCY TREATMENT PLANT CAPACITY**

MEMBER AGENCY	WATER TREATMENT PLANT	CAPACITY (MILLION GALLONS PER DAY)
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	150
San Diego, City of	Miramar	140
San Diego, City of	Lower Otay	40
San Dieguito Water District/Santa Fe Irrigation District	Badger	40
Sweetwater Authority	Perdue	30

To maintain an adequate level of capacity to meet increased retail customer demands throughout the San Diego region, in September 2005, the Water Authority’s Board of Directors certified an environmental impact report for the Twin Oaks Valley Water Treatment Plant and awarded a design-build-operate contract to begin final design and construction of the plant. The plant will be the Water Authority’s first water treatment plant and will produce 100-million gallons of drinking water per day beginning in 2008. The plant will help address the growing demand for additional treated water supplies in the region, especially during hot summer days.

Emergency Storage Project

Also part of the CIP, the Emergency Storage Project (ESP) is an \$1,176 million system of reservoirs, pipelines, pump stations, and other facilities that will work together to store and move water around the county in case of a prolonged interruption of the region’s imported water supply. The facilities that make up the ESP are located throughout San Diego County and are being constructed in phases. The initial phase includes the recently completed 318-foot-high Olivenhain Dam and accompanying 24,364 AF Olivenhain Reservoir. **Section 9.1.2** contains additional information on the ESP.

Carryover Storage Project

The CIP also includes budget for the Carryover Storage Project (CSP). The Water Authority's RWFMP identifies the need for additional water storage capacity to improve water supply reliability for the region. The Water Authority is currently conducting environmental reviews of project alternatives, including a possible expansion of the San Vicente Reservoir.

The Water Authority has identified three main needs for carryover storage:

Enhance water supply reliability - Carryover storage provides a reliable and readily available source of water during periods of potential shortage, such as during dry years.

Increase system efficiency - Carryover storage provides operational flexibility to serve above-normal demands, such as those occurring in dry years, from storage 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 imported deliveries during periods of availability, such as during wet years, to ensure water availability during dry years. As described in **Section 6**, the Water Authority receives delivery of State Water Project (SWP) supplies from Metropolitan, which can be significantly influenced by the need to protect environmental resources in the Sacramento-San Joaquin Bay-Delta region. This protection requires that the SWP reduce deliveries in dry years, but similarly allows for increased deliveries during wet years. Efficient management of this system therefore requires carryover storage to absorb the annual fluctuations in supply.

1.6 SERVICE AREA CHARACTERISTICS

The Water Authority's service area characteristics have undergone dramatic changes over the last several decades. The region's population grew on average by 50,000 people per year resulting in a shifting of large amounts of rural land to urban uses. This shift in land use has resulted in the region's prominent urban and suburban 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 flowers, vegetables, nursery plants, turf grass, avocados, and citrus. Based on the last survey conducted by DWR, irrigated agricultural land in the Water Authority's service area totaled 73,769 acres. San Diego County agriculture is a \$1.3 billion dollar per year industry, eighth in farm production value in the state. Shifting market forces, including the increasing cost of water, may cause a change in agricultural practices and ultimately result in the retirement of some economically marginal lands.

1.6.1 Regional Economy and Demographics

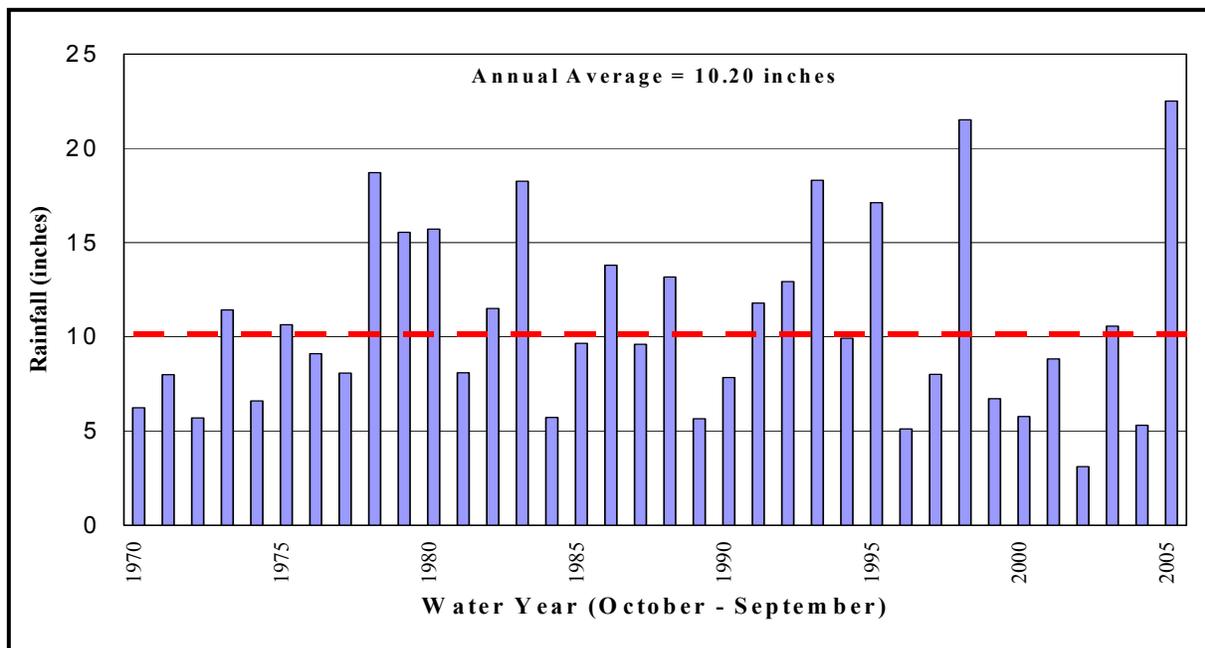
Historically, defense-related contracting and manufacturing, particularly the aerospace industry, drove the local economy. This pattern peaked in the 1980s as federal spending fueled economic growth, and local defense-related expenditures surged to \$9.6 billion in 1987. When this level of federal spending experienced sharp cuts in the early 1990s, widespread layoffs resulted and triggered a recession that lasted until 1995.

San Diego County has since rebounded, due in part to the emergence a diversified employment base that includes telecommunications, electronics, computers, software, and biotechnology. High technology and bioscience related employment now exceeds 160,000 jobs. San Diego’s gross regional product is forecast to reach \$151.1 billion in 2005, a 6.6 percent increase over 2004’s \$141.7 billion estimate. The number of people actively working averaged 1.42 million in 2004, and that number is forecast to rise by 2.1 percent in 2005, to 1.45 million. Compared to the pace of expansion recorded in the 1980s, the current growth is more moderate, and perhaps more healthy and sustainable.

1.6.2 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 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.

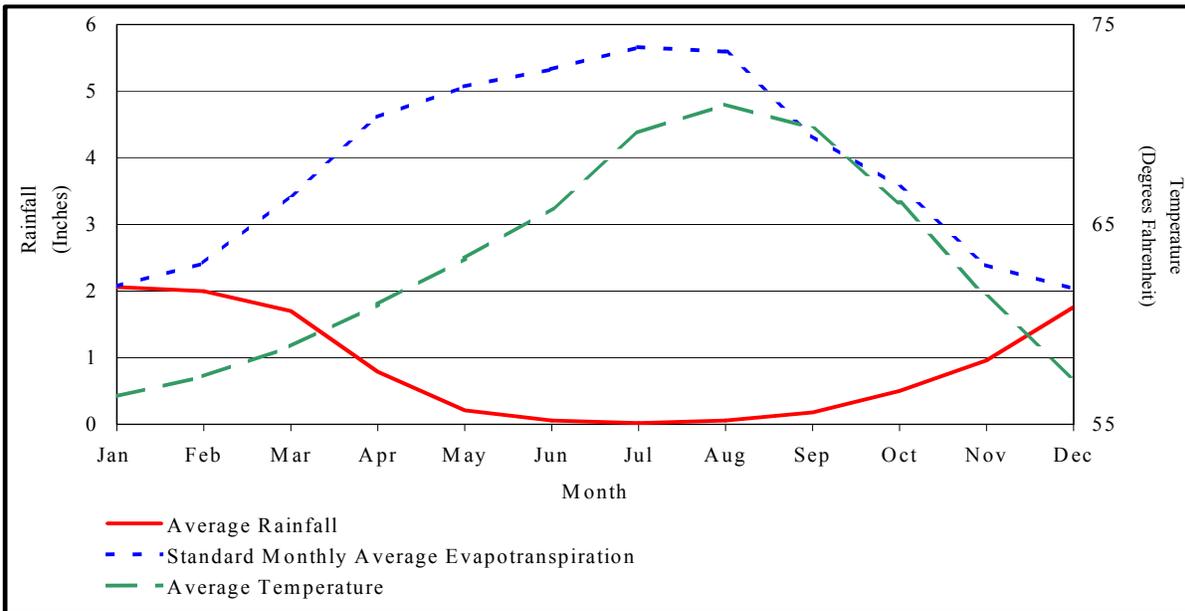
**FIGURE 1-2
ANNUAL RAINFALL
(LINDBERGH FIELD STATION)**



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 conditions resulted in record level demands during FY

2004, with total local and imported water use surpassing 715,700 AF. With record rainfall in FY 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 1-3
COMPARISON OF AVERAGE RAINFALL (Lindbergh Field), STANDARD MONTHLY AVERAGE EVAPOTRANSPIRATION (Balboa Park CIMIS Station #184), AND AVERAGE TEMPERATURE (Lindbergh Field)



1.6.3 Population

When the Water Authority was formed in 1944, the population of San Diego County totaled roughly 260,000 people. In 2004, total population within the service area reached 2.8 million. The City of San Diego represents the largest population of any member agency, with approximately 1.3 million people. The Yuima Municipal Water District has the smallest population, at just under 2,000 people. The average population density in 2004 was 3.43 people per acre, with National City having the highest density (9.32/acre) and Yuima Municipal Water District the lowest (0.15/acre).

The population of San Diego County is projected to increase by 842,300 people between 2005 and 2030, for a total county population in excess of 3.8 million. This change represents an average annual increase of about 33,700 people, for an annual growth rate of roughly 1.1 percent. These regional growth projections are based on the San Diego Association of Governments (SANDAG) 2030 Cities/County Forecast.

The Water Authority's service area population projections are also based on SANDAG's 2030 Cities/County Forecast and appear in **Table 1-3**. 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 little growth. Others, including the Otay and Vallecitos water districts, anticipate large increases in both population and water demand.

TABLE 1-3
POPULATION FORECAST WITHIN WATER AUTHORITY SERVICE AREA
(2005-2030)

YEAR	POPULATION
2005	2,947,262
2010	3,113,498
2015	3,261,691
2020	3,414,068
2025	3,554,815
2030	3,703,243
Average Annual Growth	30,239

Source: SANDAG 2030 Cities/County Forecast

SECTION 2 – WATER DEMANDS

Demand for water in the Water Authority's service area falls into two basic categories: municipal and industrial (M&I), and agricultural. M&I uses currently constitute about 80 to 85 percent of regional water consumption. Agricultural water, used mostly for irrigating groves and crops, accounts for the remaining 15 to 20 percent of demand. This section describes these use categories along with the total historic, current, and projected water demands. By 2030, total normal water demands are projected to reach 829,030 AF (includes projected near-term annexation demands), which represents about a 29 percent increase from the 642,152 AF of demand that occurred in FY 2005.

2.1 MUNICIPAL AND INDUSTRIAL WATER DEMAND

M&I demand can be subdivided into residential demand (water used for human consumption in the home, domestic purposes, and residential landscaping) and water used for commercial and industrial 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 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 be as high as 60 percent of total residential use.

Based on SANDAG data, the 2004 composition of San Diego regional housing stock was approximately 61 percent single-family homes, 35 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

Commercial water demands generally consist of incidental uses but 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 it causes per capita use to increase.

2.2 AGRICULTURAL WATER DEMAND

The coastal and inland valley areas of the county possess a moderate and virtually frost-free climate able to support a variety of sub-tropical crops, making the San Diego area a unique agricultural region. The primary crops grown for the national and international markets are avocados, citrus, cut flowers, and nursery products. To a lesser extent, local fresh market crops and livestock are produced in the Water Authority's service area. In recent years, agriculture has accounted for 10 to 20 percent of the Water Authority's total water demand depending on weather conditions.

The Water Authority is the largest consumer of agricultural water within Metropolitan's service area, accounting for over 65 percent of Metropolitan's total agricultural water demands in FY 2004. 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.

2.3 TOTAL CURRENT AND HISTORIC WATER USE

Water use in the San Diego area is closely linked to the local economy, population, and weather. Over the last half-century a prosperous local economy has stimulated population growth, which in turn produced a relatively steady increase in water demand. By 1999, a new combination of natural population increases and job creation surfaced as the primary drivers of long-term water consumption increases. In FY 2004, water demand in the Water Authority's service area reached a record level of 715,763 AF, only to drop to 642,152 AF in FY 2005 due to above average rainfall. **Table 2-1** shows the historic water demand within the Water Authority's service area.

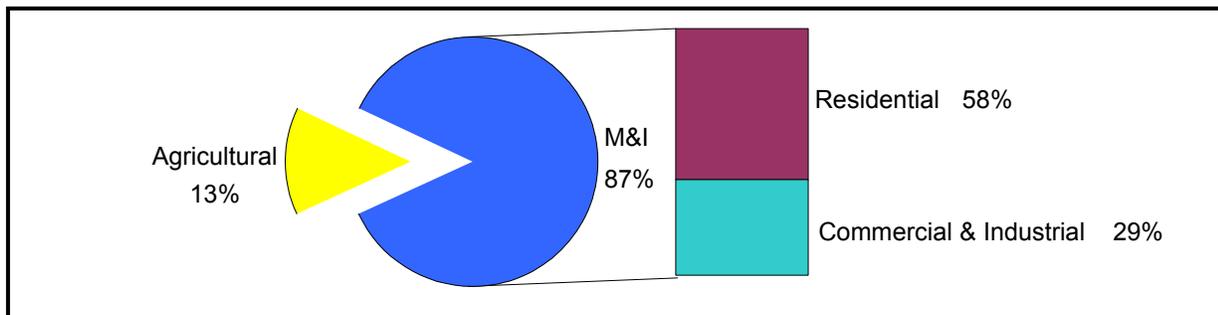
**TABLE 2-1
HISTORIC WATER DEMAND WITHIN WATER AUTHORITY SERVICE AREA
(1995-2005)**

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

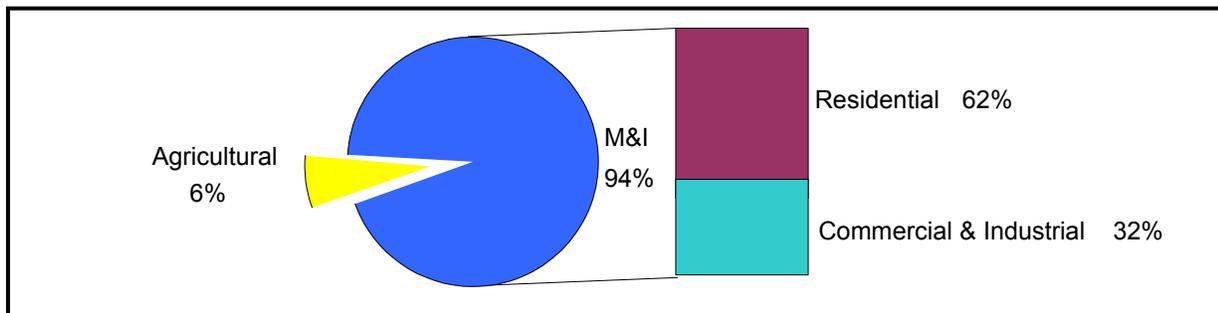
Source: Water Authority Annual Reports

Figures 2-1 and 2-2 show the estimated and projected relative percentages of various categories of water demand within the Water Authority’s service area for FY 2005 and FY 2030. In these figures, residential demand includes single-family residential and multi-family residential.

**FIGURE 2-1
ESTIMATED TYPE OF WATER USE
FY 2005**



**FIGURE 2-2
PROJECTED TYPE OF WATER USE
FY 2030**



2.4 PROJECTED WATER DEMANDS

In 1994, the Water Authority selected the Institute for Water Resources - Municipal And Industrial Needs (MAIN) computer model to forecast M&I water use for the San Diego region. The MAIN model uses demographic and economic data to project sector-level water demands (i.e. residential and non-residential demands). This econometric model 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 MAIN model was modified to reflect the San Diego region's unique parameters and is known as CWA-MAIN.

As stated, the foundation of the water demand forecast is the underlying demographic and economic projections. This was a primary reason, why, in 1992, the Water Authority and SANDAG entered into a Memorandum of Agreement (MOA), in which the Water Authority agreed to use SANDAG's current regional growth forecast for water supply planning purposes. In addition, the MOA recognizes that water supply reliability must be a component of San Diego County's regional growth management strategy as required in Proposition C (passed by San Diego County voters in 1988). The MOA ensures a strong linkage between local general plan land use forecasts and water demand projections for the San Diego region.

Consistent with previous CWA-MAIN modeling efforts, the 2005 water demand forecast update utilized the latest official SANDAG demographic projections. The new SANDAG 2030 Forecast, released in December 2003, extended the projection horizon an additional ten years to 2030. Member agency-level demographic and economic projections were compiled from this SANDAG forecast and incorporated into the MAIN model. Demand projections for the Marine Corps Base Camp Pendleton (MCB Camp Pendleton) were forecast outside of the MAIN model due to uncertainty regarding future land use development. Water-use projections for the various developments within the MCB Camp Pendleton area were based on historic demand trends, which were then added to the baseline forecast.

The M&I forecast also included an updated accounting of projected conservation savings based on projected regional implementation of the CUWCC Best Management Practices and SANDAG demographic information for the period 2005 through 2030. These savings estimates were then factored into the baseline M&I forecast. **Section 3.3** discusses the derivation of the estimated savings.

A separate agricultural model, also used in prior modeling efforts, was used to forecast water demands within the Water Authority service area. This model estimates agricultural demand met by the Water Authority's member agencies based on agricultural acreage projections provided by SANDAG, crop distribution data derived from the DWR and the California Avocado Commission, and average crop-type watering requirements based on California Irrigation Management Information System (CIMIS) data.

Utilizing SANDAG's most recent growth forecast to project future water demands is an important link to the land use plans of the cities and the county. This process ensures supplies are being planned to meet future growth. Any revisions to the land use plans are captured in SANDAG's updated forecasts. The Water Authority will update its demand forecast based on SANDAG's most recent forecast approximately every five years to coincide with preparation of

the urban water management plan. Prior to the next forecast update, local jurisdictions may require water supply availability reports under Senate Bills 610 and 221 for proposed land use developments that have a higher density than reflected in the existing growth forecast. The increased density could result in a higher demand for the parcel than originally anticipated. In evaluating the availability of supply, the Water Authority member agency can determine if “offset” supplies are available as a result of other land use decisions, which lowered water use within their service area. In addition, Metropolitan’s draft 2005 Regional Urban Water Management Plan identified potential reserve supplies in the supply capability analysis (Tables II-7, II-8, II-9), which could be available to meet the unanticipated demands. The Water Authority’s next forecast and other supply planning documents would then capture this increase in demands.

2.4.1 Projected Normal Water Demands

Table 2-2 shows projected normal water demand for the Water Authority through 2030. The baseline M&I demand forecast reflects an adjustment for estimated water conservation, MCB Camp Pendleton area demands, and forecasted agricultural water use, to produce total projected demand. Water conservation measures are expected to reduce total M&I demands by approximately 12 percent in 2030, with an estimated savings of 108,400 AF. Agricultural water use is projected to decrease by approximately 42 percent between 2010 and 2030, to an estimated 51,630 AF, primarily due to the conversion of agricultural land to residential use.

To fully quantify probable demands served by the Water Authority, lands with impending applications for annexation to the Water Authority’s service area were identified. Working with its member agencies, the Water Authority identified potential near-term annexations as being parcels that may be annexed to the Water Authority within the next five years. Estimated water demands for those parcels were provided to the Water Authority by the member agency or project proponent and then added to the forecast. Including the demands provides no assurance of annexation; approval by the Water Authority Board would be required before water service is provided to these lands. It is difficult to know exactly which parcels will be annexed and when, but including this additional demand will provide for more comprehensive supply planning and assist member agencies in complying with Senate Bills 610 and 221.

**TABLE 2-2
NORMAL YEAR WATER DEMAND FORECAST
ADJUSTED FOR WATER CONSERVATION
(2010-2030)**

YEAR	M&I BASELINE FORECAST (AF)	ESTIMATED CONSERVATION SAVINGS (AF)	M&I FORECAST REDUCED BY CONSERVATION ¹ (AF)	AGRICULTURAL FORECAST (AF) ²	TOTAL PROJECTED DEMAND (AF)	TOTAL PROJECTED DEMAND WITH PENDING ANNEXATIONS ³
2010	699,250	79,960	619,290	89,700	708,990	715,450
2015	739,020	87,310	651,710	83,130	734,840	742,900
2020	780,350	94,170	686,180	77,270	763,450	771,510
2025	830,550	101,950	728,600	58,980	787,580	795,640
2030	877,740	108,400	769,340	51,630	820,970	829,030

Source: CWA-MAIN Forecast (August 2005)

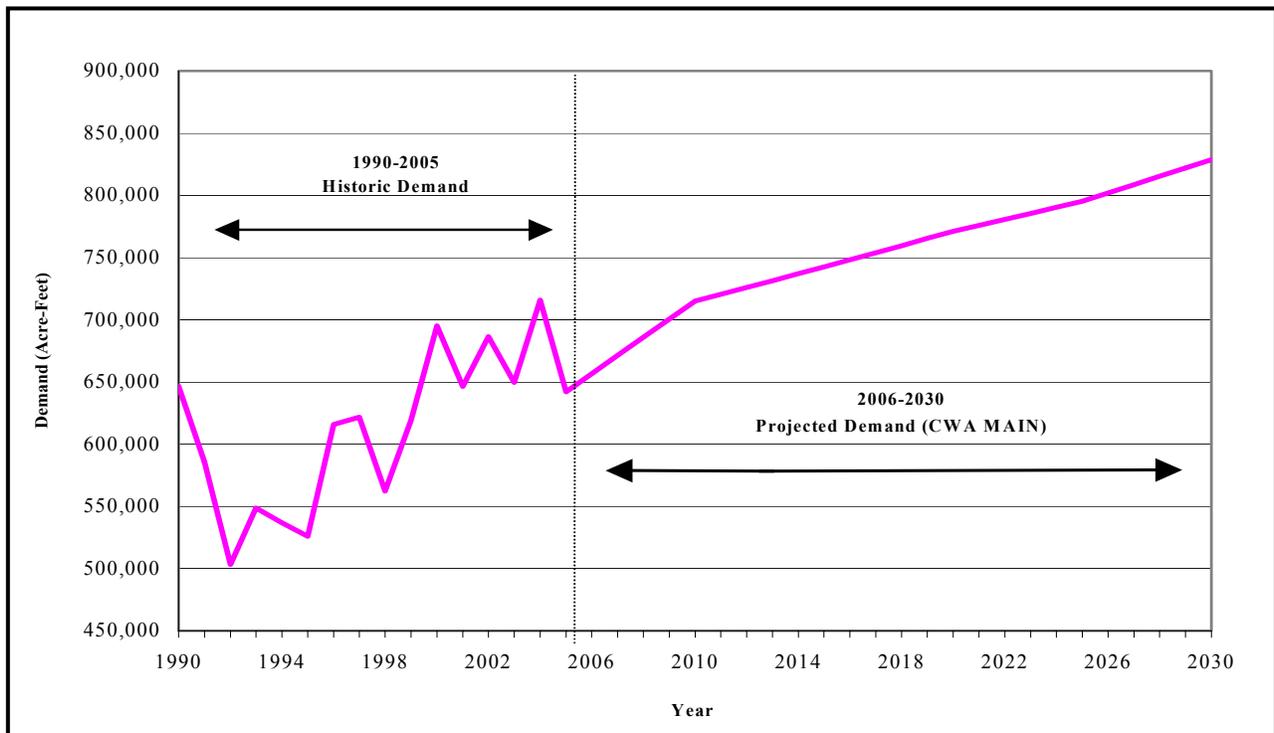
¹ Includes M&I demands for Camp Pendleton area customers.

² Includes certified IAWP agricultural water and non-credited agricultural water.

³ Estimated near-term annexation demands are 6,455AF/YR in 2010, and 8,060 AF/YR in years 2015, 2020, 2025, and 2030. The potential near-term annexations used to calculate the estimate include Otay Ranch Village 13 (1,961AF), Peaceful Valley Ranch (51AF), Sycuan Reservation (392AF), San Luis Rey MWD (includes the Meadowood development) (4,217AF), and four potential annexations to Yuima MWD (1,435AF). 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.

Figure 2-3 illustrates the projected trend in water demands over the 2005 to 2030 time frame. This figure combines historic water use and forecasted CWA-MAIN model demands based on SANDAG 2030 demographic and economic projections.

**FIGURE 2-3
REGIONAL HISTORIC AND PROJECTED NORMAL WATER DEMANDS**



2.4.2 Projected Dry-Year Water Demands

To assess water service reliability during dry-year events, the Act requires single dry-year and multiple dry-year demand projections, in five-year increments. Based on observed historic demand impacts associated with each of these events, separate approaches were taken to project single and multiple dry-year conditions.

Since the CWA-MAIN model was constructed to project water demands over discrete twelve-month periods and utilizes weather as a predictive variable; it was utilized to forecast single dry-year demands for the region. By inserting annual dry-year weather data into the model and holding all non-weather related predictive variables constant for a given year, the model produces an annual forecast of weather-driven demand. An analysis of historic dry-year events was performed to select a representative year. This analysis evaluated the relative impact of weather (e.g. high temperature and low rainfall) to resulting total water demand, and also the availability of local supplies. Using this criterion, 1989 was selected as the representative single dry-year event. Weather data for 1989 was then run through the model for each five year increment. Projected single dry-year demands are shown in **Table 2-3**.

TABLE 2-3
SINGLE DRY-YEAR TOTAL WATER DEMAND FORECAST
FIVE-YEAR INCREMENTS
(AF/YR)

	2010	2015	2020	2025	2030
Single Dry-Year Demands	767,650	795,970	825,560	848,610	883,030

The Act requires agencies to prepare multiple dry-year demand scenarios every five years for at least 20 years. An analysis of historic water demands reveals that multiple dry-year events may have a compounding effect on demands that is not captured through the modeling of discrete yearly weather patterns. For this reason, the CWA-MAIN model was not directly used to project multiple dry-year demands. Instead, an alternative method which utilized a 7% annual increase in demands was used to develop the multiple dry-year scenarios. This value is supported by the projected yearly increase in demands generated from the CWA-MAIN model single dry-year forecast. The annual 7% factor was applied to the normal year demand estimates to generate the multiple dry-year demand projections shown in **Tables 2-4, 2-5, 2-6, 2-7, and 2-8**.

**MULTIPLE DRY-YEAR TOTAL WATER DEMAND FORECAST
FIVE-YEAR INCREMENTS
(AF/YR)**

TABLE 2-4

	2006	2007	2008
Total Estimated Demands	744,520	749,780	755,030

TABLE 2-5

	2011	2012	2013
Total Estimated Demands	771,410	777,280	783,150

TABLE 2-6

	2016	2017	2018
Total Estimated Demands	801,030	807,150	813,270

TABLE 2-7

	2021	2022	2023
Total Estimated Demands	830,680	835,840	841,010

TABLE 2-8

	2026	2027	2028
Total Estimated Demands	858,480	865,630	872,770

2.4.3 Member Agency Imported Demand on the Water Authority

Table 2-9 shows the Water Authority’s historical, current, and projected imported water demands (sales) by member agency. The projected demands were calculated from the baseline demands for each member agency, as forecasted in **Section 2.4**, minus the projected local supplies and conservation savings. Therefore, the projected imported demands (sales) are directly tied to the success of local supply development (**Section 5**) and water conservation savings (**Section 2**). The forecasted sales figures in Table 2-9, should not be considered a member agency’s allocation of supplies from the Water Authority.

TABLE 2-9
MEMBER AGENCY IMPORTED DEMAND (SALES) ON WATER AUTHORITY (AF) ^{1,2}
(2000 – 2030) NORMAL YEAR FORECAST

Member Agency	2000	2005	2010	2015	2020	2025	2030
Carlsbad M.W.D. ³	19,952	20,155	19,093	0	0	0	0
Del Mar, City of	1,556	1,324	1,370	1,317	1,312	1,321	1,342
Escondido, City of	26,977	25,103	26,122	25,063	25,456	25,942	26,669
Fallbrook P.U.D.	16,824	15,809	16,239	16,276	16,586	17,056	17,402
Helix W.D.	38,483	32,060	35,050	35,533	36,274	37,284	38,348
Oceanside, City of	32,073	31,181	30,088	31,310	31,501	33,039	35,473
Olivenhain M.W.D.	19,433	21,052	19,401	21,059	22,740	25,268	26,606
Otay W.D.	29,901	37,787	43,761	50,337	57,787	64,547	73,097
Padre Dam M.W.D.	21,824	19,246	21,266	22,542	23,690	25,656	27,491
Pendleton MCB	105	834	850	850	850	850	850
Poway, City of	15,625	13,975	16,372	16,890	17,448	17,986	18,317
Rainbow M.W.D.	29,929	25,252	27,146	26,427	26,352	22,878	22,822
Ramona M.W.D.	8,267	10,359	11,858	12,198	12,438	12,638	13,650
Rincon del Diablo M.W.D.	9,119	7,732	8,968	5,471	5,939	6,401	6,905
San Diego, City of	206,433	204,039	197,320	201,109	207,584	217,449	226,821
San Dieguito W.D.	5,112	5,605	4,703	4,730	4,910	5,063	5,118
Santa Fe I.D.	8,056	9,737	11,473	11,437	11,703	12,000	12,103
Sweetwater Authority	5,520	11,331	12,398	10,136	10,546	10,999	12,180
Vallecitos W.D.	16,409	18,150	19,409	19,741	20,365	21,317	22,903
Valley Center M.W.D.	48,550	38,105	43,850	35,751	35,019	30,417	28,212
Vista I.D.	17,123	21,229	17,417	18,389	19,617	21,412	23,197
Yuima M.W.D.	2,849	2,984	2,949	2,929	2,895	2,984	3,053
Sub-Total	580,120	573,049	587,103	569,493	591,012	612,508	642,559
Near-term annexation area demands ⁴	0	0	6,455	8,062	8,062	8,062	8,062
Total	580,120	573,049	574,465	577,555	599,074	620,570	650,621

¹ Based on SANDAG 2030 Cities/County Forecast.

² Includes water conservation.

³ For years 2015 – 2030, the Water Authority demand forecast assumes that Carlsbad MWD total demands will be met by local supplies (desalinated seawater and recycled water).

⁴ Near-term annexation area demands are listed for planning purposes and are not assigned to any specific member agency.

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SECTION 3 - DEMAND MANAGEMENT

3.1 DESCRIPTION

Demand management, or water conservation, is frequently the lowest-cost resource available to the Water Authority and its member agencies. Water conservation is a critical part of the Water Authority's Updated 2005 Plan and long-term strategy for meeting water supply needs of the San Diego region. The goals of the Water Authority's water conservation program are to (1) reduce demand for more expensive, imported water; (2) demonstrate continued commitment to the Best Management Practices (BMPs) and Agricultural Efficient Water Management Practices (EWMPs); (3) ensure a reliable future water supply; and (4) reduce consumption during periods of high treated-water demand.

3.2 BEST MANAGEMENT PRACTICES

The California Urban Water Conservation Council (CUWCC) was formed in 1991 through a Memorandum of Understanding Regarding Urban Water Conservation in California (MOU). The urban Best Management Practices, or BMPs, for water conservation included in the MOU are intended to reduce California's long-term urban water demands. **Table 3-1** provides an overview of the Water Authority and its member agencies' progress in the implementation of the BMPs. Most member agencies are signatories to the MOU and submit biennial BMP reports to show compliance with the appropriate BMPs. **Appendix D** shows the Water Authority's FY 01, 02, 03, and 04 BMP Reports, as well as the Coverage Reports for FY 04. Major Water Authority activities include actively participating to develop and implement statewide BMPs; participating with member agencies, Metropolitan, the CUWCC, and the American Water Works Association Research Foundation in research and development activities; and implementing public information and education programs.

Implementation of BMPs

The Water Authority began implementing its aggressive conservation program in 1990. Some of the early programs to address the BMPs provided financial incentives for retrofitting high-water-use toilets with ultra-low-flush models and distributed low-flow showerheads to consumers. Since the program's inception, the Water Authority and its member agencies have provided incentives for the installation of over 528,000 ultra-low-flush toilets (ULFTs). In addition, financial incentives have been provided for the installation of more than 45,100 residential high-efficiency clothes washers (HEWs), 7,600 coin-operated HEWs, 355 cooling tower conductivity controllers, and 3,200 pre-rinse spray valves. The Water Authority, its member agencies, and San Diego Gas & Electric have also distributed over half-a-million showerheads to customers. Since 1990, the Water Authority has invested more than \$12 million to help implement these and other conservation programs. In addition, the Water Authority's member agencies have invested a similar amount to co-fund these conservation programs.

**TABLE 3-1
BEST MANAGEMENT PRACTICES FOR
URBAN WATER CONSERVATION IN CALIFORNIA**

BMP	DESCRIPTION	CONSERVATION PROGRAMS	COMPLIANCE ¹	SDCWA Assistanc
1	Residential Water Surveys	Residential Survey Program	√ Yes	√ Yes
2	Residential Plumbing Retrofit	Showerhead distribution	√ Yes	√ Yes
3	Distribution System Water Audits	Water Authority and member agencies independently operate separate system audits	√ Yes	
4	Metering with Commodity Rates	Member agencies operate	√ Yes	
5	Large Landscape Programs and Incentives	<ul style="list-style-type: none"> ▪ Commercial Landscape Incentive Program ▪ Landscape Assistance Program for Business and Home ▪ Protector Del Agua 	√ Yes	√ Yes
6	High-Efficiency Washing Machine (HEW) Rebate Programs	<ul style="list-style-type: none"> ▪ Residential HEW Voucher Program 	√ Yes	√ Yes
7	Public Information Programs	<ul style="list-style-type: none"> ▪ Media Coverage ▪ Xeriscape Awards ▪ WebSite ▪ Water Conservation Literature 	√ Yes	
8	School Education Programs	<ul style="list-style-type: none"> ▪ Classroom Presentations ▪ Splash Science Mobile Lab ▪ Youth Merit Badge Program ▪ Magic Show ▪ Teaching Garden ▪ Mini-grants of up to \$250 	√ Yes	
9	Commercial, Industrial & Institutional (CII) Water Conservation Programs	<ul style="list-style-type: none"> ▪ CII Voucher Program ▪ Industrial Process Improvement Program 	√ Yes	√ Yes
10	Wholesale Agency Assistance Programs	Ongoing	√ Yes	
11	Conservation Pricing	Member agencies operate	√ Yes	
12	Water Conservation Coordinator	Water Resources staff	√ Yes	
13	Water Waste Prohibition	Member agencies operate	√ Yes	
14	Residential Ultra-Low-Flush Toilet (ULFT) Replacement Programs	Residential ULFT Voucher Program	√ Yes	√ Yes

¹ The Water Authority and one or more of its member agencies comply with the statewide BMPs listed.

² The Water Authority provides financial assistance to its member agencies to implement conservation programs.

The Water Authority's FY 05 budget included \$972,000 for conservation programs that are anticipated to save 68,000 acre-feet per year over the useful life of the measures. The Water Authority's member agencies, Metropolitan, and the DWR augment this funding. In FY 05 this additional funding totaled \$4.74 million, bringing the total FY 05 amount budgeted for all conservation programs to \$5.7 million. The Water Authority provides approximately 20 percent of all conservation funding and manages most of the programs for its member agencies. The Water Authority also administers the Agriculture Water Management Program and CIMIS for agricultural use. **Appendix D**, the CUWCC BMP Reports for FY 01, 02, 03, and 04, contains additional information on implementation of the BMPs by the Water Authority.

Revenue Impacts

Water conservation is a well-established practice in ensuring that there will be a reliable water supply in the future for the increasing population and commerce of our local region. However, conservation occasionally suffers from the perception that it reduces revenues. Over the long-term, conservation measures actually serve to defer or limit rate increases by reducing the region's need for other, more expensive supplies and increased infrastructure. The Water Authority's FY 05 budget included \$972,000 for conservation programs, which represents an average cost of \$1.74 per acre-foot of projected water sales during FY 05. Conservation programs also reduce imported water demand that in turn allows the Water Authority to purchase less of Metropolitan's more expensive Tier 2 water. Tier 2 water is more expensive since it represents Metropolitan's cost to develop additional supplies.

3.3 FUTURE WATER CONSERVATION SAVINGS

Projected water savings and effectiveness provided in the Updated 2005 Plan are based on industry standard methodologies for calculating savings, as defined by the CUWCC. The Water Authority assists the CUWCC in conducting pilot programs and analyzing ways to increase the accuracy of savings calculation methodologies. Projections show that implementing existing and proposed urban BMPs would produce water savings of approximately 108,396 AF/YR by the year 2030 within the Water Authority's service area (**Table 3-2**).

This conservation target is appropriate to implement the BMPs and fulfill the Water Authority's commitment to the MOU. Additionally, this target coincides with the availability of anticipated funds from member agencies, the Water Authority, and/or Metropolitan. The estimates presented in **Table 3-2** are based on savings projections from implementing various conservation measures and the result of state and national efficiency standards. The table represents a projection of the amount of water that will be conserved based on the best information available at this time.

Future water conservation savings are based on historical activity for Residential Surveys, Residential Retrofits, High-Efficiency Clothes Washer Incentives, and Toilet Incentives. Efficiency Standards include water-saving devices installed in new residential construction as part of state-required codes, as well as toilets replaced through natural replacement outside of the toilet incentive. Updated SANDAG demographic information is utilized to determine savings for new construction through BMP implementation.

**TABLE 3-2
POTENTIAL WATER CONSERVATION SAVINGS THROUGH 2030
WITHIN WATER AUTHORITY SERVICE AREA (AF)**

Best Management Practices	2005	2010	2015	2020	2025	2030
Existing BMPs						
Residential Surveys	1,620	1,620	1,620	1,620	1,620	1,620
Residential Retrofits	8,100	8,100	8,100	8,100	8,100	8,100
Landscape ¹	3,524	18,848	21,793	24,783	27,744	30,718
Clothes Washer Incentives	495	1,281	1,672	1,672	1,672	1,672
Commercial/Industrial/Institutional	2,260	3,328	5,056	6,801	8,533	10,272
Toilet Incentives	17,553	23,616	23,616	23,616	23,616	23,616
Subtotal	33,551	56,792	61,857	66,593	71,286	75,998
Potential BMPs and Efficiency Standards						
Efficiency Standards ²	19,837	23,137	25,409	27,526	30,598	32,323
Graywater	0	25	30	40	50	50
On Demand Water Heaters	0	5	10	15	20	25
Subtotal	19,837	23,167	25,449	27,581	30,668	32,398
TOTAL ³	53,389	79,960	87,306	94,174	101,954	108,396

¹ Includes savings from Audits, Artificial Turf, WBIC (residential & commercial), Water Budget, and CLIP programs.

² Code Compliance: new construction, ULFT natural replacement @ 4%, commercial HEWs natural replacement.

³ Values may not add to exact total due to rounding.

On average, more than 50 percent of the water used in San Diego County goes to outdoor watering, and the savings potential from this irrigation is significant. Landscape savings are based on full implementation of BMP 5, through water budgets, large landscape audits, and irrigation hardware replacements. Some of these measures are labor intensive and may be a challenge to achieve due to the limited resources of member agencies.

Water savings in the Commercial, Industrial, and Institutional (CII) sector are based on both historical activity and anticipated new water-efficient products that will experience expanded use. These products include multi-load commercial HEWs, food steamers, commercial dishwashers, and waterless urinals.

Some of the BMPs that are not quantified in **Table 3-2**, such as public information and school education, do not directly result in water savings. Instead, these BMPs result in a decision by a water user to take an action that will result in savings. For example, a water user may learn about the availability of HEWs through a public information program, but water will not be saved until the user installs a new HEW. To avoid double counting, the projected savings from the machine is reflected only in the high-efficiency washing machine BMP.

The Water Authority is a statewide leader of innovative programs in water conservation. Efforts have been so successful, however, that many of the conservation programs implemented in the early 1990s

are maturing. Additional measures are now being taken to achieve further water savings, particularly in the CII and landscape sectors.

3.3.1 Landscape

Additional landscape water savings can potentially be achieved through incentives, regulations, and rates. In 2004, new programs included financial incentives for purchasing and installing self-adjusting, weather-based irrigation controllers, financial incentives to purchase improved efficiency irrigation devices, additional conservation literature, expanded water user efficient irrigation training programs, an artificial turf incentive program, and support for the Water Conservation Garden.

As a result of the passage of the Water Authority sponsored Assembly Bill 2717, the Landscape Water Conservation Task Force has convened a stakeholders workgroup to evaluate and recommend proposals for improving the efficiency of water use in new and existing urban irrigated landscapes. Potential regulations include the requirement that residential sites have a dedicated water meter for outdoor use and a dedicated water meter for indoor use. Another potential regulation would require homeowners associations to allow water-efficient landscape if desired by the homeowner.

3.3.2 Commercial, Industrial, & Institutional

For the past decade, the Water Authority has used its extensive relationships with manufacturers, suppliers and contractors to increase participation in the CII Voucher Incentive Program (VIP) with a point-of-purchase service to customers. A number of new water-saving devices have recently been incorporated into the CII Program, including a hospital x-ray processor recirculating system that can save up to 3.2 acre-feet per year per system; water pressurized brooms, which save as much as 50,000 gallons per year per location; and pre-rinse spray valves, which can save up to 50,000 gallons of water annually.

The Industrial Process Improvement Program offers financial assistance to local industries to encourage investment in water saving process improvements. In the future, the Water Authority may consider providing additional funds to qualified projects to maximize water saving possibilities in the commercial, industrial and institutional sectors. Ever-advancing technologies coupled with an aggressive marketing plan provides solid foundations for these growing programs.

3.3.3 Residential

Programs, such as the HEW and ULFT VIP that target residential customers, have been highly effective in achieving conservation savings. The Residential ULFT VIP has been effective in encouraging toilet retrofits and is being expanded to serve other markets such as new residential construction. The current program focuses on multi-family sites and incentives for dual-flush toilets to maximize the water savings. Dual-flush toilets have two flushing mechanisms, one for liquid waste (0.8-1.1 gallons per flush) and one for solid matter (1.6 gallons per flush). Each of these toilets saves 2,250 gallons per year more than standard ULFTs.

The Residential HEW VIP has evolved to encourage consumers to purchase the most water efficient models. Clothes washers eligible for incentives use 65 percent less water than standard washers. This savings will be expanded by further limiting the amount of water used in the washers that are eligible for vouchers. Effective in July 2005, only HEWs with a water efficiency factor of 6.0 or less will be eligible for incentives. The water efficiency factor is determined by the amount of water it takes to wash a cubic foot of laundry. The lower the water efficiency factor, the greater the water efficiency of the clothes washer.

Studies for hot-water-on-demand systems are proceeding, and the outcome of those studies will help determine appropriate programs for encouraging the use of these systems in new homes. Finally, the Water Authority and its member agencies will continue to cooperate with the CUWCC and Metropolitan to identify future opportunities for water conservation savings.

SECTION 4 – 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 12 years provided the direction for implementation of these actions.

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 Water Resources Plan, the Water Authority entered into a Water Conservation and Transfer Agreement with IID, an agricultural district in neighboring Imperial county, in 1998. Through the transfer agreement, the Water Authority will receive 30,000 AF in 2005, with the volume increasing annually until it reaches 200,000 AF/YR in 2021.

To further diversify regional supplies, the Water Authority's 2000 Plan identified seawater desalination as a potential supply for meeting future demands. In response to the direction provided in the 2000 Plan, the Water Authority Board of Directors approved a Seawater Desalination Action Plan in 2001. More recently, in October 2006, the Water Authority Board of Directors approved the 2006 Desalination Action Plan, which reflects seawater desalination development, including a local supply program of participating Water Authority member agencies rather than an exclusively regional program of the Water Authority (see **Section 4.3.2**).

The 2000 Plan also identified the need for other competitive imported water sources to meet the demands of the region. In 2003, as part of the execution of the Quantification Settlement Agreement (QSA) on the Colorado River, the Water Authority was assigned rights to 77,700 AF/YR of conserved water from projects to line the All-American and Coachella Canals. Deliveries of this conserved water from the Coachella Canal reached the region in 2007, and deliveries from the All-American Canal are expected to begin by 2010. This section provides specific documentation on the existing and projected supply sources being implemented by the Water Authority.

4.1 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.

4.1.1 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 1998 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** 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 have been 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. Implementation of the transfer provisions is proceeding during litigation. For further information regarding the litigation, please contact the Water Authority's General Counsel.

4.1.2 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 20,000 AF in 2004, 30,000 in 2005, and 40,000 in 2006. 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. In recognition for the value of such reliability, the 1998 contract required the Water Authority to pay a premium on transfer water under defined regional shortage circumstances. The shortage premium period duration is the period of consecutive days during which any of the following exist: i) a Water Authority shortage; ii) a shortage condition for the Lower Colorado River as declared by the Secretary; and iii) a Critical Year. Under terms of the October 2003 amendment, the shortage premium will not be included in the cost formula until Agreement Year 16.

4.1.3 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 will take delivery of the transfer water through its Colorado River Aqueduct. In exchange, Metropolitan will deliver to the Water Authority a like quantity and quality of water. The Water Authority will pay Metropolitan's applicable wheeling rate for each acre-foot of exchange water delivered. According to the water

exchange agreement, Metropolitan will make delivery of the transfer water for 35 years, unless the Water Authority elects to extend the agreement another 10 years for a total of 45 years.

4.1.4 Cost/Financing

The costs associated with the transfer are proposed to be 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 increases by a set amount for the first five years. The 2005 price for transfer water is \$276/AF. Procedures are in place to evaluate and determine market-based rates following the first five-year period.

In accordance with the October 2003 amended exchange agreement between Metropolitan and the Water Authority, the initial cost to transport the conserved water was \$253/AF. Thereafter, the price would 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 2005 is \$258/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. At the end of the fifth year of the transfer agreement (2007), the Water Authority will prepay 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. The agreement specifies that the Water Authority will contribute \$64 million for the purpose of funding environmental mitigation costs and contributing to the Salton Sea Restoration Fund.

4.1.5 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.

4.1.6 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 5-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 8** of this Updated 2005 Plan.

**TABLE 4-1
EXISTING AND PROJECTED
WATER AUTHORITY – IID TRANSFER SUPPLIES
(Normal Year - AF/YR)**

2005	2010	2015	2020	2025	2030
30,000	70,000	100,000	190,000	200,000	200,000

4.2 ALL-AMERICAN CANAL AND COACHELLA CANAL LINING PROJECTS

As part of the QSA and related contracts, the Water Authority was assigned Metropolitan’s rights to 77,700 AF/YR of conserved water from projects that will line the All-American Canal (AAC) and Coachella Canal (CC). The projects will reduce the loss of water that currently occurs through seepage, and the conserved water will be delivered to the Water Authority. This conserved water will provide the San Diego region with an additional 8.5 million acre-feet over the 110-year life of the agreement.

4.2.1 Implementation Status

Earthwork for the Coachella Canal lining project began in November 2004 and involves approximately 37 miles of canal. National Environmental Policy Act (NEPA) and CEQA documentation is complete, including an amended Record of Decision by the U.S. Bureau of Reclamation (USBR). The amendment was required after revising the project design: instead of lining the canal in place, the project entailed the construction of a parallel canal. The project was completed in 2006, and deliveries of conserved water started in 2007.

Preliminary design-related activities have begun on the AAC lining project, including ground and aerial surveying, mapping cultural resources, and geotechnical investigations. The lining project consists of constructing a concrete-lined canal parallel to 24 miles of the existing AAC from Pilot Knob to Drop 3. NEPA and CEQA documentation is complete, environmental mitigation measures have been identified and Endangered Species Act consultations are pending. Construction of the project is expected to be complete in 2010.

In July 2005, a lawsuit (*CDEM v United States*, Case No. CV-S-05-0870-KJD-PAL) was filed in the U. S. District Court for the District of Nevada on behalf of U.S. and Mexican groups challenging the lining of the AAC. The lawsuit, which names the Secretary of the Interior as a defendant, claims that seepage water from the canal belongs to water users in Mexico. California water agencies note that the seepage water is actually part of California's Colorado River allocation and not part of Mexico's allocation. The plaintiffs also allege a failure by the United States to comply with environmental laws. Federal officials have stated that they intend to vigorously defend the case.

4.2.2 Expected Supply

The AAC lining project will yield 67,700 AF of Colorado River water per year for allocation upon completion of construction. The CC lining project will yield 26,000 AF of Colorado River

water each year available for allocation upon completion of construction. The October 10, 2003, Allocation Agreement states that 16,000 AF/YR of conserved canal lining water will be allocated to the San Luis Rey Indian Water Rights Settlement Parties. The remaining amount, 77,700 AF/YR, will be available to the Water Authority. 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.

4.2.3 Transportation

The October 10, 2003, Exchange Agreement between the Water Authority and Metropolitan also provides for the delivery of the conserved water from the canal lining projects. The Water Authority will pay 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).

4.2.4 Cost/Financing

Under California Water Code Section 12560 et seq., the Water Authority will receive \$200 million in state funds for construction of the projects. In addition, under California Water Code Section 79567, \$20 million from Proposition 50 is also available for the lining projects. Additionally, the Water Authority will receive \$35 million for groundwater conjunctive use projects as part of the agreement. The Water Authority would be responsible for additional expenses above the funds provided by the state.

The rate to be paid to transport the canal lining water will be equal to the charge or charges set by Metropolitan's Board of Directors pursuant to applicable law and regulation and generally applicable to the conveyance of water by Metropolitan on behalf of its member agencies.

In accordance with the Allocation Agreement, the Water Authority will also be 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 as proposed, are to be financed through the Water Authority's rates and charges.

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 Canal Lining Projects.

4.2.6 Future Supplies

Table 4-2 shows the anticipated delivery schedule of conserved supplies from the canal lining projects in 5-year increments. Adequate documentation exists to demonstrate the availability of this supply, and therefore, the reliability analysis found in **Section 8** of this Updated 2005 Plan will show the supply yields shown in **Table 4-2**.

**TABLE 4-2
PROJECTED SUPPLY FROM CANAL LINING PROJECTS
(Normal Year - AF/YR)**

	2005	2010	2015	2020	2025	2030
CC Lining Project ¹	0	21,500	21,500	21,500	21,500	21,500
AAC Lining Project ²	0	56,200	56,200	56,200	56,200	56,200
TOTAL:	0	77,700	77,700	77,700	77,700	77,700

¹ The project was completed in 2006, and deliveries started in 2007.

² The estimated completion date is 2010.

4.3 WATER AUTHORITY SEAWATER DESALINATION PROGRAM

The development of seawater desalination in San Diego County will assist the region in diversifying its water resources, reducing dependence on imported supplies, and providing a new drought-proof treated water supply.

The Water Authority has been evaluating seawater desalination as a potential highly reliable local water resource since the early 1990s. From 1991 to 1993, the Water Authority conducted detailed studies on the feasibility of developing a seawater desalination facility at the South Bay Power Plant in the City of Chula Vista and Encina Power Station in the City of Carlsbad. During that period, the Water Authority also participated in a study for a desalination plant that would be sited at a power plant in Rosarito Beach, Mexico. The studies concluded that the environmental, regulatory, and cost issues combined to make desalinated seawater more expensive than other available water resources options.

Data gathered from recently completed projects worldwide seems to indicate that the cost of seawater desalination has decreased since the Water Authority completed its last study in 1993. This decrease is mainly due to significant technological advances in the development and manufacture of membranes. The reverse osmosis (RO) membranes used in the desalination process cost approximately half the price and are twice as productive as membranes produced ten to fifteen years ago.

Based on the potential reduction in project costs, the Water Authority's 2000 Plan identified seawater desalination as a potential supply for meeting future demands. In response to the direction provided in the 2000 Plan, the Water Authority Board approved a Seawater Desalination Action Plan in January 2001. The 2001 Action Plan covered activities related to the evaluation of seawater desalination opportunities along the San Diego County coastline.

In June 2004, following the Water Authority's RWFMP process, the Water Authority Board of Directors approved adding \$668 million to the CIP to develop a desalinated seawater supply at the Encina Power Station. However, due to uncertainties regarding the site owner's facility plans at the Encina Power Station and disparity in negotiations with the plant's private developer, the Water Authority Board of Directors, in July 2006, decided not to certify the final environmental impact report for the regional project and not to pursue the project further.

4.3.1 Regional Seawater Desalination

Even with the Water Authority Board of Director's action in July 2006, seawater desalination remains a key component of the Water Authority's diversification strategy. This Plan includes a goal of 56,000 acre-feet of local seawater desalination (see **Section 5.4**) that is expected to come from the local project at the Encina Power Station beginning in 2011, as well as a long-term regional goal of an additional 33,600 acre-feet by 2020.

In October 2006, the Water Authority Board of Directors approved the 2006 Desalination Action Plan. The plan focuses on quantifying and evaluating other local and regional water supply opportunities that can help to meet the anticipated goal of 89,000 acre-feet of new local and regional seawater desalination supplies by 2030. Given the importance of seawater desalination to San Diego county, the action plan also requires that the Water Authority stay actively engaged in the pursuit of external funding for desalination and the statewide policy debate regarding the implementation of seawater desalination as a significant new water supply for California.

4.3.2 Desalination Action Plan

The 2006 Desalination Action Plan consists of the following elements:

Complete San Onofre/Camp Pendleton Regional Desalination Feasibility Study

The Water Authority is currently preparing a detailed feasibility study of a 50-100 mgd desalination facility located along the coastline of Marine Corps Base Camp Pendleton. The majority of the cost of the study is being funded by federal appropriation grant funding and Proposition 50 state grant funding. The study scope of work is being modified in response to changes in site conditions.

Evaluate other Potential Regional Seawater Desalination Projects

In addition to Encina and Camp Pendleton, there are other potential regional project sites that could warrant further evaluation such as South County. With the South Bay Power Plant currently planned to be replaced with an air-cooled power plant and the environmental sensitivity of south San Diego Bay, it is unlikely that a desalination plant could be sited adjacent to the bay. However, other projects identified in the Feasibility Study of Seawater Desalination Development Opportunities for the San Diego/Tijuana Region, completed by the Water Authority in March 2005, may warrant further attention. These projects include a site located adjacent to the International Boundary and Water Commission Treatment Plant on the U.S. side of the border that would utilize the International Outfall for concentrate discharge. The project could potentially provide up to 25 mgd to serve demand in the South County. The study also identified a potential project in Mexico located at the Rosarito Power Plant. There are planning activities occurring in Mexico related to a project at that location.

Explore and Quantify the Potential to Develop Smaller Local Seawater Desalination and Brackish Water Desalination Projects

Until now, the focus of the Water Authority's effort to implement desalination has been the development of larger, regional projects, with a capacity greater than 25 mgd. This is due to the economies of scale present at larger desalination facility sizes. However, smaller member agency-driven brackish and seawater desalination projects could also help to meet the regional need for new water supplies.

For example, the city of Oceanside recently released a request for proposals for a seawater desalination pilot facility and feasibility study. The purpose of the study is to develop accurate production and treatment data to facilitate the implementation of a 5-10 mgd seawater desalination project at the Mission Basin Groundwater Purification Facility Site. Feedwater for the project would come from extraction wells located at the mouth of the San Luis Rey River. Another local project example would be the development of a new, brackish desalination project in South County. The Sweetwater Authority was recently awarded Proposition 50 funds to study the feasibility of an Otay River brackish groundwater desalination project. With Proposition 50 funds also recently awarded to the Water Authority to study a regional concentrate conveyance pipeline in the South County, the opportunity exists to consider potential integration of these facilities with a proposed regional seawater desalination facility at the border.

Both of these potential projects highlight the potential to integrate local seawater desalination projects with existing or proposed groundwater desalination projects. By integrating these facilities together, the potential joint use of product water conveyance and concentrate discharge pipelines could significantly improve the economics of these facilities.

Continue Water Authority's Efforts to Secure Outside Funding for Seawater Desalination Projects

Past experience in developing local supplies illustrates the importance of external funding as a catalyst to project implementation. Through federal, state, and local funding partnerships, the risk of project development is shared along with the benefits of new supplies for California. These partnerships also minimize the cost to local ratepayers. For example, almost \$95 million in federal Title XVI funds have gone to water recycling projects in San Diego County and have been instrumental in their implementation. To date, the Water Authority has received \$985,026 in federal grant funding for its seawater desalination program, as well as \$250,000 in state funding through Proposition 50.

The Water Authority is actively working to secure external funding from Metropolitan's Seawater Desalination Program. The funding would provide a \$250 per AF incentive for its member agencies that have contracted for water purchases from the privately-owned Carlsbad Desalination Project currently being developed at the Encina Power Station. The Water Authority is also a member of the New Water Supply Coalition, formerly the U.S. Desalination Coalition. The purpose of the coalition is to pass federal legislation that would provide for the issuance of federal tax credit bonds for desalination, water recycling, and groundwater remediation projects.

Continue to Advocate for Seawater Desalination at the Statewide Level

Development of new supplies in California has always had a significant regulatory and legislative component in order to create a climate conducive to project implementation. Since the Water Authority first renewed its pursuit of seawater desalination as a water supply for San Diego County in 2001, it has been engaged in efforts both locally and statewide to facilitate the implementation of seawater desalination in California.

The Water Authority is working to facilitate the development of the privately-owned Carlsbad Desalination Project, including supporting the permitting of the project through state regulatory agencies such as the California Coastal Commission and the State Lands Commission. The Water Authority also participated on the State Desalination Task Force and currently is working with other Metropolitan member agencies developing seawater desalination projects to advocate for science-based and site-specific regulation for seawater desalination projects. This effort is focused on key state permitting agencies including the State Water Resources Control Board and the California Coastal Commission. The Water Authority is also working with the Association of California Water Agencies (ACWA) Desalination Subcommittee to ensure that its policies are properly focused on ensuring the successful implementation of seawater and brackish water desalination projects in California. Continuation of this effort is important to assuring that the Water Authority maintains its options and flexibility with regard to future desalination project intake configuration.

4.3.3 Water Authority Seawater Desalination Program Goal

The Water Authority is currently focusing its efforts on the actions outlined in the Desalination Action Plan. Because seawater desalination will play an important role in both the near-term and long-term, the Water Authority established a long-term goal for future development of this supply. The goal for the Water Authority's Regional Seawater Desalination Program is 33,600 AF/YR starting in 2020, and continuing at this level through the 2030 planning period.

4.4 SUMMARY OF WATER AUTHORITY SUPPLIES

Table 4-5 shows the documented Water Authority supplies existing and currently planned to assist in meeting future demands within the Water Authority's service area. In 2005, the Water Authority's IID transfer water accounted for 30,000 AF of supply. By 2030, deliveries of water from the IID transfer and AAC and CC Lining Projects will provide an expected supply of 277,700 AF/YR. The expected Water Authority supplies from **Table 4-5** are utilized in the reliability analysis included in **Section 8**.

**TABLE 4-3
PROJECTED WATER AUTHORITY SUPPLIES
(Normal Year - AF/YR)**

	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>	<i>2025</i>	<i>2030</i>
IID Water Transfer	30,000	70,000	100,000	190,000	200,000	200,000
All-American Canal Lining Project	0	56,200	56,200	56,200	56,200	56,200
Coachella Canal Lining Project	0	21,500	21,500	21,500	21,500	21,500
TOTAL WATER AUTHORITY SUPPLIES	30,000	147,700	177,700	267,700	277,700	277,700

SECTION 5 – MEMBER AGENCY SUPPLIES

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 2000 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 two categories, “verifiable” and “other potential projects,” based on the likelihood of development. “Verifiable” projects are those with adequate documentation regarding implementation and supply utilization. “Other potential projects” are not far enough along in the planning process, but they are included with the verifiable projects to form an Updated 2005 Plan water supply goal;
4. Presented revised supply numbers to member agencies at several meetings and requested input; and
5. Distributed administrative draft of the 2005 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 of Directors approval.

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 FY 2005, total local water sources provided 11 percent of the water used in the Water Authority’s service area.

5.1 SURFACE WATER

5.1.1 Description

Seven watersheds in San Diego County contain water supply reservoirs. These watersheds start at the crest of the Peninsular Range and drain into the Pacific Ocean. Runoff within these watersheds is largely developed. The oldest functional reservoir in the county,

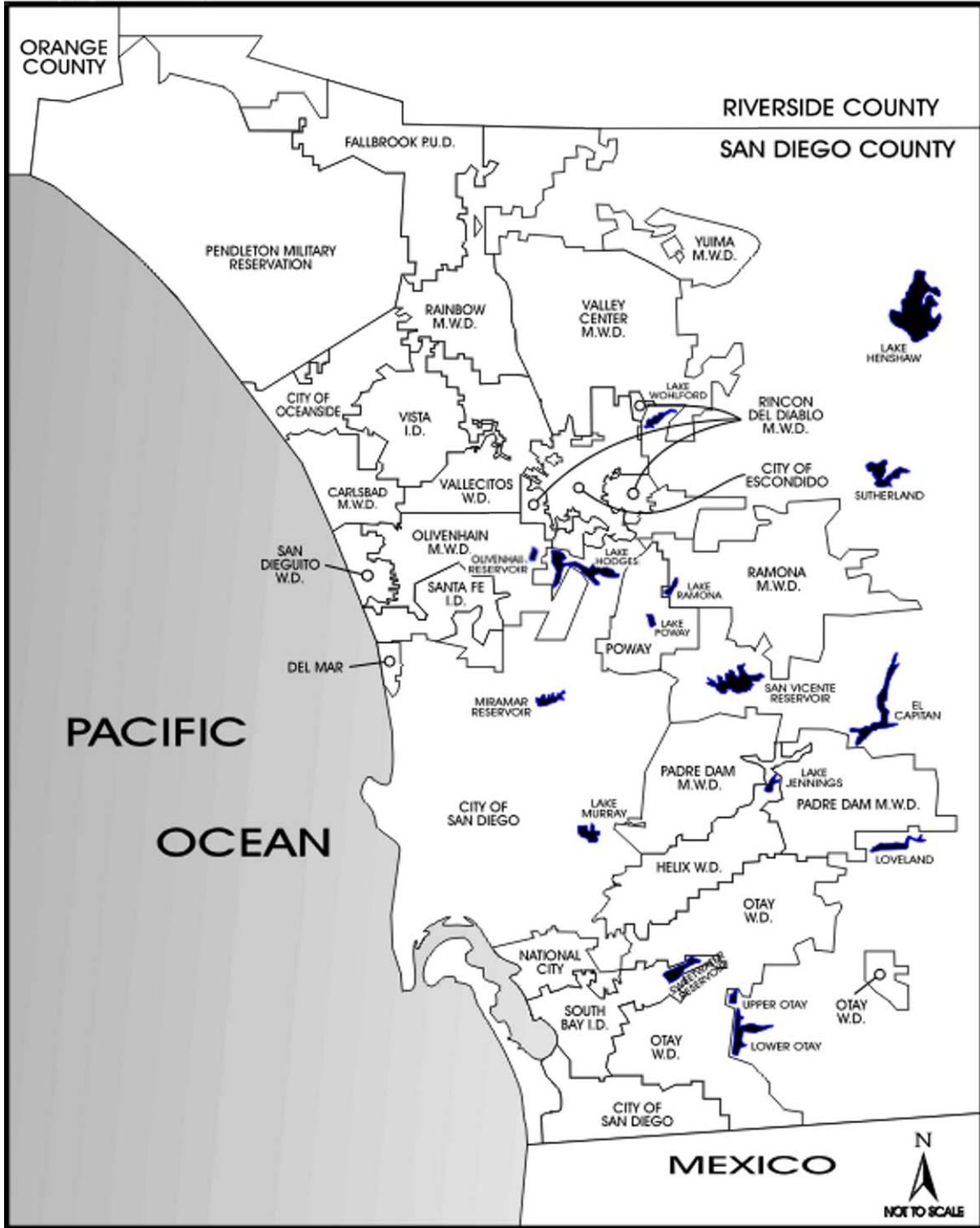
Cuyamaca Reservoir, was completed in 1887. The Olivenhain Reservoir completed in 2003 is the region’s newest. It is part of the Water Authority’s ESP and has a storage capacity of 24,364 AF. Twenty-five surface reservoirs with a combined capacity of 593,490 AF are located in the Water Authority’s service area (**Table 5-1**). **Figure 5-1** shows the location of local reservoirs.

**TABLE 5-1
MAJOR SAN DIEGO COUNTY RESERVOIRS**

MEMBER AGENCY	RESERVOIR	CAPACITY (AF)
 Carlsbad M.W.D.	Maerkle	600
 Escondido, City of	Dixon	2,606
Escondido, City of	Wohlford	6,506
 Fallbrook P.U.D.	Red Mountain	1,335
Helix W.D.	Cuyamaca	8,195
 Helix W.D.	Jennings	9,790
 Poway, City of	Poway	3,330
 Rainbow M.W.D.	Beck	625
 Rainbow M.W.D.	Morro Hill	465
 Ramona M.W.D.	Ramona	12,000
San Diego, City of	Barrett	37,947
 San Diego, City of ¹	El Capitan	112,807
San Diego, City of ²	Hodges	33,550
 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 W.D./Santa Fe I.D.	San Dieguito	883
 SDCWA/Olivenhain MWD	Olivenhain	24,364
Sweetwater Authority	Loveland	25,387
 Sweetwater Authority	Sweetwater	28,079
Valley Center M.W.D.	Turner	1,612
Vista I.D.	Henshaw	51,774
Total Capacity		593,490

-  = Connected to Water Authority aqueduct system.
- ¹ = Imported water can be delivered via San Vicente.
- ² = System connection is proposed as part of the Emergency Storage Project.

**FIGURE 5-1
MAJOR SAN DIEGO COUNTY
RESERVOIRS**



5.1.2 Issues

Management

Managing the region's reservoir system to achieve the optimal use of local and imported water is an important element of resources planning. Local surface water supplies can offset dry-year shortfalls in imported water. However, water use records indicate that local reservoirs are generally operated to maximize the use of local supplies in wet and normal years in order to reduce the need for imported water purchases. While this mode of reservoir operation reduces losses due to evaporation and spills, 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 also maintain a portion of their storage capacity for emergency storage. Many local reservoirs could be operated to maintain carryover storage, but this practice would tend to decrease their average annual yield. An environmental analysis of dedicated carryover storage capacity is being evaluated as part of the expansion of the San Vicente Reservoir, which is being implemented under the ESP. The RWFMP identified carryover storage as necessary to supplement supplies during dry weather events and to maximize the efficient use of existing and planned infrastructure.

Water Quality

See **Section 7** for water quality information.

5.1.3 Encouraging Optimization of Local Surface Water Reservoirs

To optimize the use of local storage, the Water Authority and its member agencies participate in Metropolitan's Surface Storage Operating Agreement (SSOA). The SSOA, initiated in October 2003, allows Metropolitan to store up to 70,000 AF/YR of water in the Water Authority's member agency reservoirs. The water is placed into storage in the winter months when demand is low and pipeline capacity is available, and withdrawn by the member agencies in the summer months when demand increases and pipeline capacity is restricted due to increased demands. Benefits of the SSOA include decreased peak demands on the Skinner TP, enhancement of local storage operations, and a credit on the member agency's invoice when water is withdrawn from the reservoir by the member agency. Up to 32 percent of the regional water demands have been met in the peak demands months utilizing SSOA water.

5.1.4 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 24,000 AF to a high of 174,000 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. Based on information provided by the Water Authority's member agencies, the local surface water supplies are assumed to have an average yield of 59,649 AF.

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. Specific information on the projected yields from local reservoirs is expected to be included in the member agencies’ 2005 Plans.

TABLE 5-2
PROJECTED SURFACE WATER SUPPLY
(Normal Year - AF/YR)

<i>2005^a</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>	<i>2025</i>	<i>2030</i>
45,521	59,649	59,649	59,649	59,649	59,649

^a Based on FY 2005 totals.

5.2 GROUNDWATER

Groundwater is being used to meet demands throughout the Water Authority’s service area, from the City of Oceanside in the north to National City in the south. This section provides a general description of groundwater development within the Water Authority’s service area, the issues associated with development of this supply, and projected regional yield. Specific information required under the Act on groundwater basins and projects is expected to be included in the member agencies’ 2005 Plans.

5.2.1 Description

Agencies within the Water Authority’s service area used approximately 17,844 AF of groundwater in FY 2005, which is lower than the average due to an extended period of low rainfall, which resulted in limited natural recharge into the basins. In fact, over the last five years groundwater production used to meet potable demands has been below average at about 17,000 AF/YR. Many private well owners also draw on groundwater to help meet their domestic water needs, which helps to offset demand for imported water. The amount of groundwater pumped by private wells is significant, but to date has not been accurately quantified.

Groundwater production in the Water Authority’s service area is limited by a number of elements, including lack of storage capacity in local aquifers, availability of groundwater recharge, and degraded water quality. Narrow river valleys filled with shallow sand and gravel deposits are characteristic of the most productive groundwater basins in the San Diego region. Outside of the principal alluvial aquifers and farther inland, groundwater occurs in fractured crystalline bedrock and semi-consolidated sedimentary deposits where yield and storage are limited and the aquifers are best suited for lower-yielding domestic water supply wells. **Figure 5-2** shows the location of the principal alluvial groundwater basins located 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 supplies exist that could help meet a greater portion of the region’s future water supply and storage needs. Several agencies within the Water Authority’s service area have documented potential projects that could provide an additional 21,400 AF/YR of groundwater production in

the coming years. Existing, planned and potential projects can be grouped into the following three categories:

Groundwater Extraction and Disinfection Projects

These projects are generally located in basins with higher water quality levels, where extracted groundwater requires minimal treatment for use as a potable water supply. Examples of this type of groundwater project include projects currently operated by MCB Camp Pendleton, Yuima MWD, and the Sweetwater Water Authority (National City Well Field). Another high yielding basin is the upper San Luis Rey, which provides groundwater supplies to the Vista Irrigation District and City of Escondido and is operated in conjunction with surface water supplies. The unit cost of water produced from simple groundwater extraction and disinfection projects is 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, a relatively small amount of this "least cost" groundwater is available for new supplies. However, these basins are good candidates for conjunctive-use operations, which can significantly increase the average annual production rate of groundwater.

Brackish Groundwater Recovery Projects

Groundwater that is high in Total Dissolved Solids (TDS) is typically found in basins that have been impacted by imported-water irrigation or by seawater intrusion resulting from the historical overdraft of coastal basins. Brackish groundwater recovery projects use desalination technologies, 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 two currently operating brackish groundwater recovery projects in the Water Authority's service area. Unit costs for brackish groundwater recovery projects are considerably higher than those for simple groundwater extraction projects due to the additional treatment requirements, including concentrate disposal needs. However, where economical options exist for disposal of brine, this type of groundwater project has proven to be an economically sound water supply option.

Groundwater Recharge and Recovery Projects

Artificial recharge and recovery projects or conjunctive-use projects improve groundwater basin yields by supplementing natural recharge sources with potable or recycled water, and/or inducing additional natural recharge. These projects can supply stored water to the region if imported deliveries are limited due to supply and facility constraints. The Water Authority and City of Oceanside completed a study in 2005 that evaluated the potential for a conjunctive-use project in the Mission Basin. Results from the study indicate that use of the basin for recharge and recovery may be limited due to the impact on sensitive riparian habitat and costs for recharge facilities. Oceanside plans to complete expansion of its existing demineralization facility and then monitor groundwater levels in the basin prior to proposing development of a potential conjunctive-use project. The study approach and information generated by this conjunctive-use study is being made available to other agencies within the Water Authority's service area considering development of such a project. Refer to **Section 5.2.3** for additional information on the study.

5.2.2 Issues

Local agencies must consider a number of issues when developing groundwater projects, including economic and financial considerations, legal, institutional, regulatory, environmental, and water quality issues. These issues can limit the amount of groundwater development in San Diego County.

Please see **Section 5.3.4** for information on the Water Authority's Financial Assistance Program funding opportunities for facility planning, feasibility investigations, preliminary engineering studies, environmental impact reports, and research projects related to groundwater development.

Economic and Financial Considerations

Because of the saline nature of the groundwater basins in San Diego County, the cost of groundwater development usually includes demineralization, which can be costly to construct and operate. One of the more costly elements is the facility necessary to dispose of the brine generated from the treatment process. To address this element, the United States Bureau of Reclamation (USBR), in coordination with numerous public agencies including the Water Authority, is conducting a multiyear planning study to evaluate brine concentrate management and disposal technologies.

Institutional, Legal, and Regulatory Issues

Institutional and legal issues can also impact project development. Because most basins involve multiple water agencies and numerous private wells, water rights are a concern. Agencies are often reluctant to implement groundwater development projects unless jurisdiction and water rights issues are resolved beforehand.

Uncertainty over future regulatory requirements for drinking water supplies can pose another barrier to project development. When developing facilities and compliance plans for 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.

Environmental Regulatory Constraints

Regulatory issues related to environmental protection are common to many of the groundwater projects proposed within the Water Authority's service area. These issues include potential impacts to endangered species 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. Concentrate disposal requirements for brackish groundwater recovery projects can also constrain projects sited in inland basins without access to an ocean outfall.

Water Quality

See **Section 7** for water quality information.

5.2.3 Projected Groundwater Supplies

The Water Authority worked closely with its member agencies to determine the projected yield from existing and planned groundwater projects. **Table 5-3** shows the estimated annual yield from groundwater projects in 5-year increments, based on the implementation schedules provided by the member agencies and the likelihood of development. The reliability analysis found in **Section 8** of this Updated 2005 Plan includes these projected supply yields. **Table F-2, Appendix F** contains a detailed list of the projects and projected supplies.

TABLE 5-3
PROJECTED GROUNDWATER SUPPLY
(Normal Year - AF/YR)

2005 ^a	2010	2015	2020	2025	2030
17,844	28,575	30,345	31,175	31,175	31,175

^a Based on FY 2005 totals.

Table 5-3 shows the increase in groundwater production from the current yield of 17,844 AF/YR resulting from the expansion of projects operated by the Sweetwater Authority and the City of Oceanside. To achieve this increase in groundwater yield, funding assistance is critical, as is overcoming the regulatory constraints associated with development.

The City of Oceanside anticipates that its proposed 6.37 mgd Mission Basin Desalter (4.0-mgd expansion) will be completed by the end of the year 2006. The project will include the development of the estimated remaining "safe yield" of the basin through expansion of the existing demineralization facility. The Sweetwater Authority is participating in studies with the United States Geological Survey to evaluate the San Diego Formation Aquifer and make safe use of the available yield from the aquifer.

Regional Groundwater Goal

Maximizing groundwater development is critical to diversifying the region's water supply portfolio. Beyond the verifiable yield included in **Table 5-3**, the member agencies are considering developing an estimated 21,400 AF/YR of additional yield by 2030. These projects are generally not expansions of existing projects and are still in the planning and/or conceptual stage. Funding assistance and overcoming regulatory constraints is critical to the development of this additional supply. **Table F-2, Appendix F** includes a list of the projects. When these projects become more certain, they will be included in future updates of the Water Authority's Urban Water Management Plan.

To highlight the importance of maximizing groundwater supplies within the region, a regional groundwater goal has been established: 52,575 AF/YR by 2030, in combination with the yields shown in **Table 5-3**.

Conjunctive-Use

As mentioned above, conjunctive-use projects can supply stored water to the region if imported deliveries are limited due to supply and/or facility constraints. The City of San Diego, Otay Water District, Olivenhain Municipal Water District, and the City of Oceanside are considering developing conjunctive-use projects in the future. **Table F-2, Appendix F** includes the estimated potential storage yield from these projects. If developed, they could provide 17,450 AF/YR of storage yield for the region by 2030.

Because the imported conjunctive-use projects produce minimum amounts of new yield, the regional reliability analysis in **Section 8** does not include the supply figures. In addition, the projects are still in the conceptual and/or planning stages.

Results from the Lower San Luis Rey River Valley Groundwater Storage and Recovery Feasibility Study, prepared by the Water Authority in conjunction with the City of Oceanside, also identifies significant constraints to the development of groundwater conjunctive-use projects in San Diego County. These constraints relate to the following:

- Cost to install infrastructure to deliver and extract the recharge water;
- Injecting higher quality imported water into brackish basins and then having to demineralize the water when it is extracted;
- Potential impact on sensitive riparian habitat; and
- Lack of opportunities for spreading basins.

5.3 WATER RECYCLING

A fundamental element to developing a diverse supply mix for the region and to using existing water supplies more efficiently is through implementation of water recycling projects. 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 2005 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.

5.3.1 Description

Water recycling is the treatment and disinfection of municipal wastewater to provide a water supply suitable for non-drinking purposes. 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 and for flushing toilets and urinals in non-residential buildings. As an example, the detention facility in the Otay Mesa area of San Diego County is dual-plumbed to allow use of

recycled water for toilet and urinal flushing. However, current regulations allow only new buildings to be dual-plumbed for this specific use. Additional uses for recycled water are being identified and approved as local agencies and regulators become comfortable with its use.

5.3.2 Issues

Local agencies must consider a number of issues when developing recycled water projects, including economic and financial considerations, regulatory, institutional, public acceptance, and water quality concerns related to unknown or perceived health and environmental risks. These issues, if unresolved, can limit the amount of wastewater recycled in San Diego County. In fact, the impact from the challenges associated with recycled water are apparent when comparing the 2005 recycled water projections from the Water Authority's 2000 Plan (33,400 AF) to actual FY 2005 recycled water demand (11,479 AF). The following sections discuss some of the specific challenges associated with recycled water development.

Economic and Financial Considerations

The capital-intensive cost of constructing recycled water projects 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 potable water customers to recycled water customers have also proved challenging. This situation is compounded by the seasonal nature of recycled water demands and the lack of large industrial water users in San Diego County that can use recycled water. The lack of sizeable opportunities for groundwater recharge storage compounds this situation. Recycled water demands tend to peak during the hot summer months and drop off during the winter months when landscape irrigation demands are low. 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 costs of 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 since irrigation demands are heavily influenced by hydrologic conditions.

To be financially 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 financial 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.

Regulatory

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

The DHS establishes the statewide effluent bacteriological and treatment reliability standards 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 establishing and enforcing requirements for the application and use of recycled water within the state. Permits are required from the Regional Board for each water recycling operation. As part of the permit application process, applicants are required to demonstrate that the proposed recycled water operation will not exceed the ground and surface water quality objectives in the basin management plan, and that it is in compliance with Title 22 requirements.

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 also need to work 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 regulatory issue that may hinder development of projects is the DHS groundwater recharge rule that requires treatment prior to injection of recycled water in order to reduce the total organic carbon (TOC) concentration to less than 2.0 mg/l. This requirement may increase the cost and reduce the ability to develop the limited opportunities for groundwater recharge in San Diego County.

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.

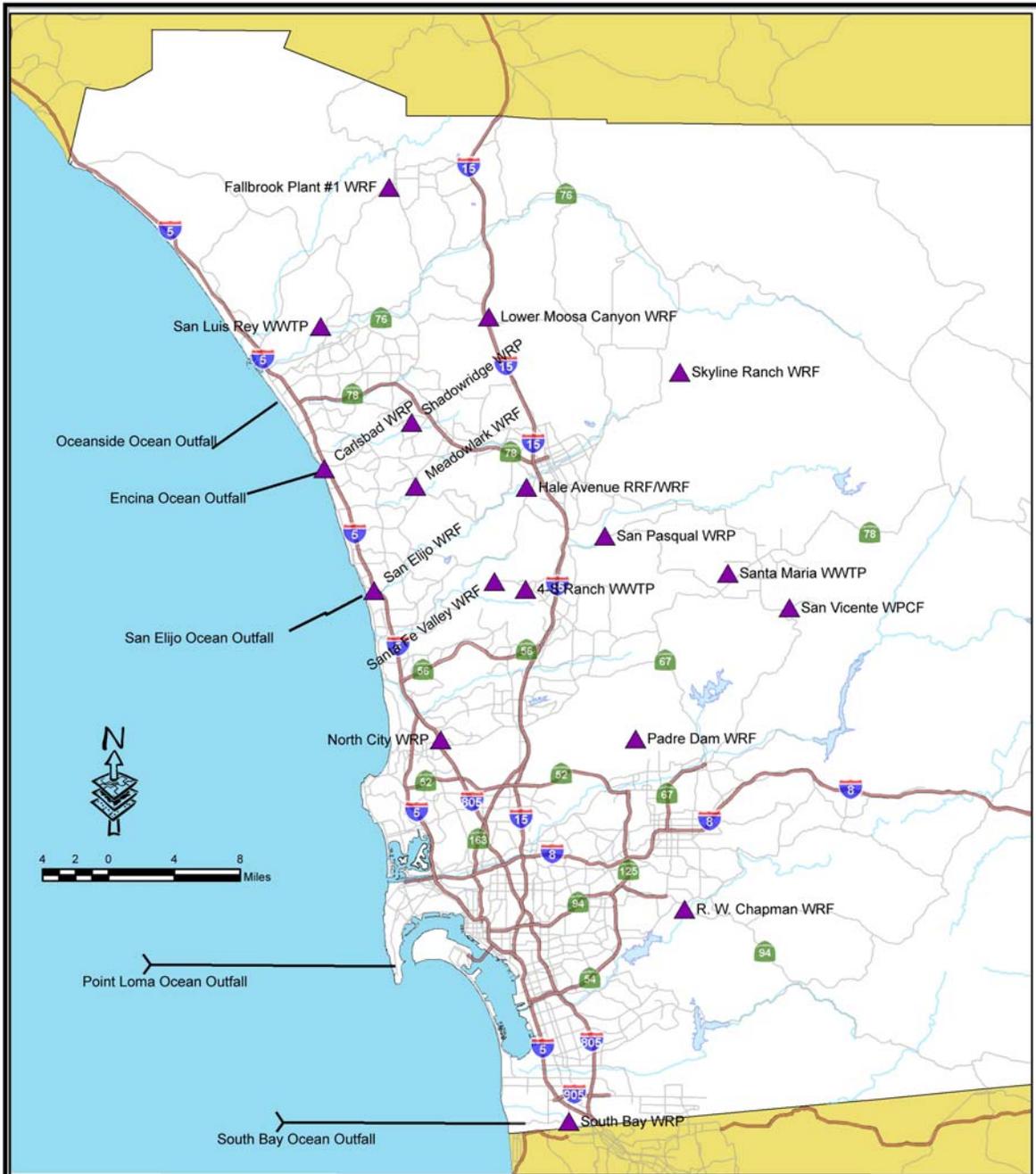
Public Acceptance

Without public acceptance, siting, financing, constructing, and operating a water-recycling project becomes increasingly difficult. The most successful means to obtaining public acceptance is through education and involvement. Agencies in the San Diego region have formed citizens advisory groups and held public workshops in an effort to increase public involvement in projects. In the Water Authority's service area, the Regional Public Information and Customer Marketing Program is being developed to promote the increased use of recycled water.

5.3.3 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. 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. **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.

**FIGURE 5-3
WASTEWATER TREATMENT AND WATER RECYCLING FACILITIES**



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- Abbreviations:
 CSD - Community Services District
 ID - Irrigation District
 MWD - Municipal Water District
 PUD - Public Utility District
 WD - Water District
 RRF - Resource Recovery Facility
 WPCF - Water Pollution Control Facility
 WRF - Water Reclamation Plant
 WRP - Water Reclamation Plant
 WWTP - Wastewater Treatment Plant



**San Diego County
Wastewater Treatment and
Water Recycling Facilities**

5.3.4 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 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.

**TABLE 5-4
PROGRAMS TO ENCOURAGE RECYCLED WATER USE**

Incentive Programs - Reclaimed Water Development Fund (Water Authority) Local Resources Program (Metropolitan)
Grants - Title XVI Funding Program (US Bureau of Reclamation) Proposition 13 Grant (State of California) Proposition 50 Grant (State of California)
Low Interest Loans - Financial Assistance Program (Water Authority) State Revolving Fund (State of California) Water Reclamation Loan Program (State of California) Proposition 13 Loan (State of California)
Long-Term Contracts - Ensure price and reliability
Funding assistance to State Water Resources Control Board to fund staff position to expedite water recycling projects.
Rate Discounts
Public Education/Information
Regional Planning
Model Water Reclamation Ordinance and Implementation Handbook - Dual Plumbing Standards Prohibits Specific Potable Water Uses

Funding Programs

Another important component of a successful recycling project is securing diversified funding and establishing funding partnerships. The Water Authority has focused on providing and facilitating the acquisition of outside funding for water recycling projects.

A number of financial assistance programs available to San Diego County agencies include: the Water Authority's Financial Assistance Program (FAP) and Reclaimed Water Development Fund (RWDF); Metropolitan's Local Resources Program (LRP); the USBR Title XVI Grant Program; and the State Water Resources Control Board (SWRCB) low-interest loan programs. Together, these programs 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 \$10.4 million to San Diego County agencies during FY 04. It is anticipated that approximately \$7.9 million will be awarded in 2005 from these funding sources. These programs are projected to ultimately reuse approximately 54,000 AF/YR.

Financial Assistance Program. The Water Authority offers FAP funding to encourage facility planning, feasibility investigations, preliminary engineering studies, environmental impact reports, research projects related to water recycling, groundwater development, and seawater desalination. Since its inception in June 1988, the FAP has provided local agencies with more than \$1.8 million for water recycling studies, \$797,000 for groundwater development studies, and over \$200,000 for seawater desalination studies. Agencies may apply for FAP funding through either a loan or a grant. FAP funds are distributed on a loan basis for feasibility studies, master plans, facility plans, and environmental reports. Repayment of the loan is required when the project has satisfactorily met CEQA requirements, or when the planned project is complete. Grant funding is also distributed through the FAP for research and development projects. To receive funding as a grant, the agency must have already secured partial funding for the project from another source.

Reclaimed Water Development Fund. To aid agencies in overcoming financial constraints associated with development of water recycling projects, the Water Authority's Board of Directors adopted the RWDF program in April 1991, which provided incentive funding of up to \$100/AF for beneficial reuse for recycling projects that demonstrated a financial need. Recently, the incentive level was increased to \$147/AF. This incentive contribution offsets costs, especially in the early years of project start-up. In order to qualify, project expenses must exceed project revenues. To date, the Water Authority has entered into RWDF agreements with nine agencies for a combined project yield of 29,857 AF/YR. In FY 04, the Water Authority provided local agencies with \$880,500 in RWDF incentives.

Local Resources Program. Metropolitan also has a program that currently underwrites local projects during the initial years of operation. The LRP provides incentives of up to \$250 AF/YR for recycled water and groundwater recovery projects. Currently, fifteen water-recycling projects in San Diego County have agreements for LRP funding. Metropolitan provided \$2,111,752 in FY 04, and \$1,796,642 in FY 05, for LRP funding. Metropolitan also provided funding through its Groundwater Recovery Program (GRP) for two groundwater recovery projects in the amounts of \$1,292,686 in FY 04, and \$709,105 in FY 05.

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 recycling projects. Title XVI of Public Law 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. PL104-266, 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. To date, San Diego agencies have been authorized to receive more than \$195 million under the Title XVI grant program, including more than \$7.3 million obligated during Federal Fiscal Year (FFY) 04. A total of \$94,591,000 has been received from this funding source to date. It is critical that funding from this program be maintained each year.

State Revolving Fund/Water Reclamation Loan Program. The SWRCB, through the Division of Financial Assistance, provides financial assistance for water recycling projects in the form of low-interest loans and/or grants for project construction and grants for project planning. The State Revolving Fund (SRF) and the Water Reclamation Loan Program (WRLP) provides agencies with low-interest construction loans for water recycling and groundwater projects. This below-market interest rate can result in substantial savings on debt service. The SRF and WRLP loans carry an interest rate equal to 50 percent of the state's general obligation bond interest rate. Approximately \$42 million was appropriated to the SWRCB in FY 03 and 04 for the funding of water recycling projects. Additional funding for FY 03 from the SWRCB included \$4 million from Proposition 13 and the 2000 Bond Law for San Diego area water recycling projects. In FY 04, an additional \$75,000 was awarded to local water recycling projects through SWRCB funding sources. An example of funding recently awarded to one of the Water Authority's member agencies was the \$1.08 million grant given to the Olivenhain Municipal Water District.

California voters passed Proposition 50, known as the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 on November 5, 2002. In spring 2005, more than \$10 million was earmarked from this bond measure for San Diego area water recycling projects. It is anticipated that disbursements will begin in late-2005.

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.

Training

The Water Authority, in partnership with other water agencies, offers a one-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 class provides information to supervisors on the water

recycling process, recycled water quality and safety issues, the duties and responsibilities of the supervisor, landscape irrigation fundamentals, maintenance and management, and cross connection control shut-down tests and inspections. Understanding similarities and differences between recycled and potable water is important to the successful operation of a recycled water system. The first class started in 1993 with 14 participants. At this time, more than 1,000 participants have been certified. Instructors include a state registered environmental health specialist, environmental assessor, water quality chemist/reclamation specialist, and landscape specialists.

Optimizing the Use of Recycled Water – Regional Perspective

While local agencies typically expand and develop their respective recycled water projects independently based on local interests, the Water Authority is conducting studies that will identify opportunities to expand the region's use of recycled water. These studies, namely, the San Diego County Water Authority Regional Recycled Water System Study, completed in March 2002, and the Regional Recycled Water Study – Phase II, scheduled for completion in December 2005, have taken a regional approach to water recycling project planning and development. Primary tasks to be completed under the Regional Recycling Water Study – Phase II include: developing strategies to overcome identified obstacles to water recycling; developing a marketing plan and regional strategies to market recycled water to target industries and customers; investigating and examining to what extent - and levels - TDS in source water affect the use and application of recycled water for local end-users; researching and identifying the impediments to the implementation of water repurification projects; and funneling planning grant funding to regional agencies to further expand the use of recycled water.

The Water Authority also participated in the California Recycled Water Task Force. This legislated task force identified constraints, impediments, and opportunities for the increased use of recycled water, and report its findings to the California Legislature by July 1, 2003. Many of the recommendations identified in the completed report entitled, "Water Recycling 2030: Recommendations of California's Recycled Water Task Force," dated June 2003, have been regionally supported and adopted. Six of the key issue areas identified in the report are currently being addressed via the Phase II Study efforts and through legislative means either supported or initiated by the Water Authority. These areas include: (1) Funding for water recycling; (2) Public dialogue/Public outreach; (3) Plumbing Code/Cross-connection control; (4) Regulations and permitting; (5) Economics of water recycling; and (6) Science and health/Indirect potable reuse.

5.3.5 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 5-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 8** of this Updated 2005 Plan. **Table F-4, Appendix F** contains a detailed list of the projects and projected supplies.

**TABLE 5-5
PROJECTED RECYCLED WATER USE
(Normal Year - AF/YR)**

<i>2005^a</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>	<i>2025</i>	<i>2030</i>
11,479	33,668	40,662	45,548	46,492	47,584

^a Based on FY 2005 totals.

The increase in recycled water use shown in **Table 5-5**, from the current use of 11,479 AF/YR, is primarily from the expansion of existing facilities. The City of Carlsbad is constructing a new treatment and distribution system to deliver close to 3,000 AF/YR of recycled water. The Otay Water District is constructing a distribution system to deliver an estimated 5,000 AF/YR of recycled water by 2030 purchased from the City of San Diego’s South Bay Water Recycling Plant.

Regional Water Recycling Goal

Maximizing recycled water development is critical to diversifying the region’s water supply portfolio. Beyond the verifiable yield included in **Table 5-5**, the member agencies are considering development of an additional 6,829 AF/YR by 2030. These projects are still in the planning and/or conceptual stage. Funding assistance and overcoming regulatory constraints is critical to the development of this additional supply. **Table F-4, Appendix F** contains a list of the projects. When development of these projects becomes more certain, they will be included in future updates of the Water Authority’s Updated 2005 Plan. In order to highlight the importance of maximizing recycled water use within the region, a regional water recycling water goal has been established. In combination with the figures shown in **Table 5-5**, the regional water-recycling goal is 54,413 AF/YR by 2030.

5.4 SEAWATER DESALINATION

The development of local seawater desalination provides a number of benefits to the San Diego region. Seawater desalination will assist the region in diversifying its water resources, reduce dependence on imported supplies, and provide a new drought-proof, treated local water supply.

5.4.1 Description

Poseidon Resources is pursuing the development of a local, privately-owned desalination project located adjacent to the Encina Power Station. The project will consist of a reverse osmosis desalination treatment facility as well as ancillary intake, discharge, and product water distribution pipelines and facilities. Poseidon has executed water purchase agreements with the following Water Authority member agencies: Carlsbad Municipal Water District; Valley Center Municipal Water District; Rincon del Diablo Municipal Water District; and Sweetwater Authority; and is pursuing water purchase agreements with other member agencies. The facility is projected to ultimately produce 56,000 AF/YR of desalinated seawater by 2011. The major planning items completed to date include certification of an environmental impact report by the City of Carlsbad, approval of a concentrate discharge permit by the San Diego Regional Water Control Board, and submittal of a Coastal Development Permit application to the California Coastal Commission.

5.4.2 Issues

No large-scale seawater desalination facility has ever been permitted/constructed in California. Perhaps the most significant issue facing this desalination project as well as others proposed along the California coastline is the ability to permit the facility, including obtaining a Coastal Development Permit from the California Coastal Commission. This project must also secure arrangements for the delivery of product water from the facility to the local water agencies. These arrangements are currently in the planning stage.

5.4.3 Projected Seawater Desalination Supplies

Seawater desalination supplies represent a significant future local resource in the Water Authority’s service area. To date, the local, privately-owned seawater desalination project has contracted with the Carlsbad Municipal Water District (up to 28,000 AF/YR depending on demands), Valley Center Municipal Water District (7,500 AF/YR), Rincon Del Diablo Municipal Water District (4,000 AF/YR), and Sweetwater Authority (2,400 AF/YR) to supply up to 41,900 AF/YR of desalinated seawater. The verifiable seawater desalination figure to be used in the Updated 2005 Plan will be based on the contract amounts and projected seawater desalination deliveries to Carlsbad MWD. As shown in **Table 5-6**, the verifiable projected local seawater desalination supplies vary each year based on Carlsbad MWD’s demands (which are less than their desalinated seawater contract amount of 28,000 AF/YR). These projected supply yields will be included in the reliability analysis found in **Section 8** of this Updated 2005 Plan. There are several contingencies related to Poseidon’s agreements with the member agencies that must be satisfied before implementation of the project and its ultimate yield can be determined. These contingencies include obtaining legal entitlements for construction of the project, determination of a mutually acceptable delivery interconnection point and delivery charge, and engagement of a third party exchange agency partner where physical delivery to the contracting agency is not practical.

**TABLE 5-6
PROJECTED LOCAL SEAWATER DESALINATION WATER SUPPLIES ¹
(Normal Year - AF/YR)**

2005	2010	2015	2020	2025	2030
0	0	34,689	36,064	37,754	40,000

¹ Deliveries to Carlsbad MWD will vary based on their actual demands and local use of recycled water. See Appendix F-4 for information on Carlsbad MWD’s projected recycled water use.

Local Seawater Desalination Goal

In order to highlight the importance of maximizing the supply of seawater desalination used within the region, a local seawater desalination goal has been established. The project proponent, Poseidon Resources, is pursuing additional agreements with other local water agencies for the remaining 16,000AF of annual production. When the 16,000AF/YR is combined with a verifiable maximum local supply of 40,000AF/YR, a local seawater desalination goal of 56,000 AF/YR is established.

5.5 SUMMARY OF MEMBER AGENCY SUPPLIES

Table 5-6 shows the projected supply figures for existing and projected local resources for the Water Authority’s service area based on input from the member agencies. These supplies are considered verifiable and will be used in the regional reliability analysis included in **Section 8**.

**TABLE 5-7
PROJECTED MEMBER AGENCY LOCAL SUPPLIES
(Normal Year - AF/YR)**

Local Supply	2005 ^a	2010	2015	2020	2025	2030
Surface Water	45,521	59,649	59,649	59,649	59,649	59,649
Groundwater	17,844	28,575	30,345	31,175	31,175	31,175
Recycled Water	11,479	33,668	40,662	45,548	46,492	47,584
Desalinated Seawater	0	0	34,689	36,064	37,754	40,000
TOTAL MEMBER AGENCY SUPPLIES	74,844	121,892	165,345	172,436	175,070	178,408

^a Based on FY 2005 totals.

The estimates for projected member agency local supplies included in **Table 5-7** could be even greater with increased funding opportunities, technological advances, and by successfully addressing regulatory and environmental issues. Maximizing groundwater, recycled water, and desalinated seawater development can provide further diversification of regional supplies. In order to highlight the importance of maximizing these supplies, a local resources goal has been established. In combination with the figures shown in **Table 5-7**, the total regional local resources goal, excluding supply from conjunctive use projects using imported or recycled water, is 220,683 AF/YR by 2030.

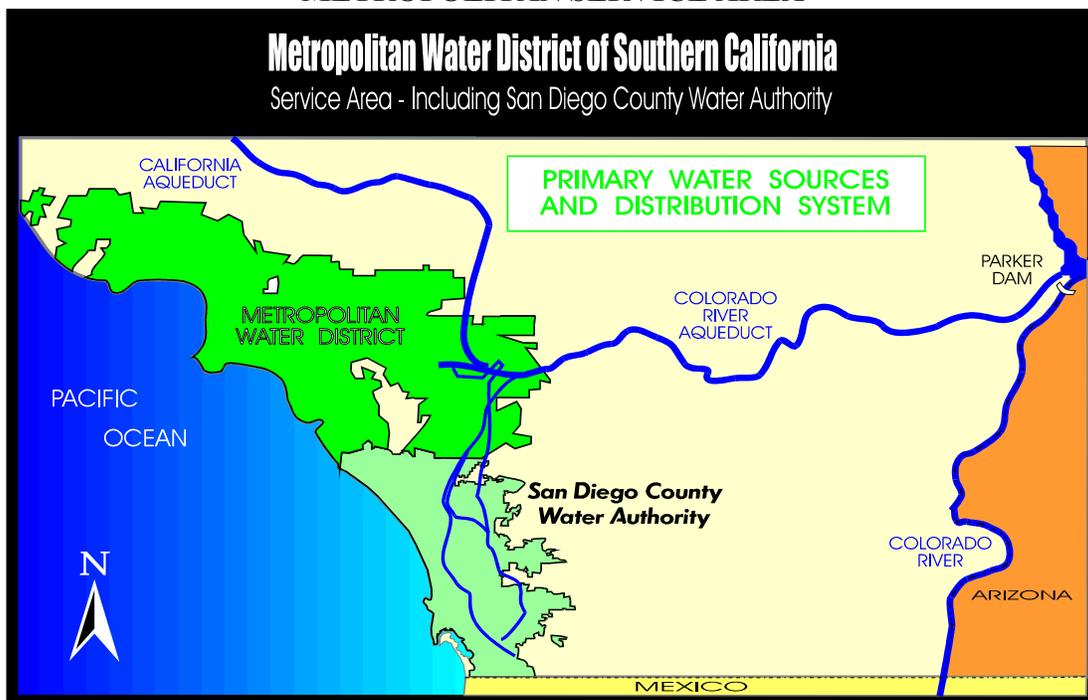
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SECTION 6 – METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

6.1 DESCRIPTION

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 18 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 27 Metropolitan member agencies, is the largest agency in terms of deliveries, purchasing 518,625 AF, or about 25 percent of all the water Metropolitan delivered in FY 05. The extent to which Metropolitan's member agencies rely upon Metropolitan supplies varies by the amount of local supplies available.

**FIGURE 6-1
METROPOLITAN SERVICE AREA**

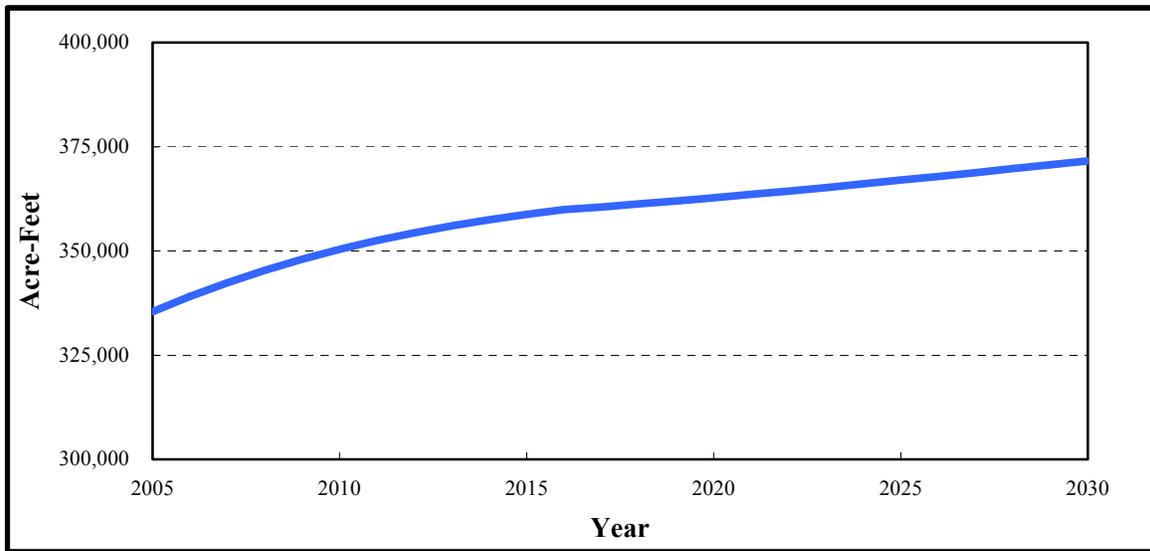


6.1.1 Metropolitan Act Section 135; Preferential Right to Water

Under Section 135 of the Metropolitan Act, preferential rights are determined by each agency's total historic payments to Metropolitan from property taxes, stand-by charges, readiness-to-serve charges, and other revenue. Revenue resulting from the purchase of Metropolitan water is

excluded, even though a portion of such revenues is used to pay for capital projects. While the Water Authority had a preferential right to 15.8 percent of Metropolitan’s water in FY 04, it purchased about 25 percent of Metropolitan’s available supply. At any time under preferential rights rules, Metropolitan may allocate water without regard to historic water use or dependence on Metropolitan. **Figure 6-2** shows the Water Authority’s projected preferential rights for the years 2005 through 2030.

**FIGURE 6-2
PROJECTED WATER AUTHORITY PREFERENTIAL RIGHT**



To seek clarification regarding the current application and legality of Section 135, the Water Authority board of directors voted in April 2004 to appeal an appellate court ruling that preserves Metropolitan’s preferential right process. In July 2004, the State Supreme Court denied the Water Authority’s appeal of an appellate court decision that Metropolitan might continue to exclude water purchases from the preferential rights calculation. The decision makes clear how much water the Water Authority may count on from Metropolitan should a member agency invoke its preferential right.

Metropolitan stated, consistent with Section 4202 of its Administrative Code, that it is prepared to provide the Water Authority’s service area with adequate supplies of water to meet expanding and increasing needs in the years ahead. When, and as additional water resources are required to meet increasing needs, Metropolitan stated that it will be prepared to deliver such supplies. In their 2005 Regional Urban Water Management Plan (RUWMP), Section II.2, Metropolitan presents its supply availability at the regional level, rather than at the member agency level. With that, the Water Authority is not able to quantify the availability of imported supplies from Metropolitan specifically for the Water Authority. However, in its plan (Section II.2, *Evaluating Supply Reliability*), Metropolitan stated that it can maintain 100% reliability in meeting direct consumptive demand under the conditions that represent normal, single-dry, and multiple-dry years through 2030.

Inferring from the supply reliability finding stated by Metropolitan, the Water Authority concludes that Metropolitan is capable of supplying imported water to meet projected demands by the Water Authority under various hydrologic conditions if the supply targets identified in their 2005 RUWMP are met. Implementation risks exist in local supply development and imported supply projects and programs. The Water Authority is working with its counterparts at Metropolitan to help ensure that Metropolitan's planning is realized, that the necessary programs and projects are implemented.

6.1.2 Metropolitan's Integrated Resources Plan

The Integrated Resources Plan (IRP) identifies a mix of resources (imported and local) that when implemented will provide 100 percent reliability for full-service demands through the attainment of regional targets set for conservation, local supplies, SWP supplies, Colorado River supplies, groundwater banking, and water transfers. The 2004 update to the IRP now includes a planning buffer supply to mitigate against the risks associated with implementation of local and imported supply programs. The planning buffer identifies an additional increment of water that could potentially be developed if other supplies are not implemented as planned. As part of implementation of the planning buffer, Metropolitan periodically evaluates supply development to ensure that the region is not over-developing supplies. If managed properly, the planning buffer will help ensure that the southern California region, including San Diego County, will have adequate supplies to meet future demands. Specific information on Metropolitan's IRP and Water Surplus and Drought Management Plan (WSDM Plan) are contained in their 2005 RUWMP.

6.2 METROPOLITAN'S WATER SUPPLIES

Metropolitan obtains its water from two sources: the CRA, which it owns and operates, and the SWP. **Figure 6-3** shows these imported water supply sources, and they are described below. Detailed documentation on Metropolitan's supplies can be found in its 2005 RUWMP.

6.2.1 Colorado River

Metropolitan was formed to import water from the Colorado River. During the 1930s, Metropolitan built the CRA to convey 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 1.3 million acre-feet per year (MAF/YR). **Figure 6-3** shows the location of the aqueduct.

Reliability Issues

Before 1964, Metropolitan had a firm annual allocation of 1.212 million acre-feet (MAF) 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. Due to

growth in demand from the other states and drought conditions, since 2003, Metropolitan's deliveries have been limited to their base apportionment plus water from a conservation program with IID.

**FIGURE 6-3
MAJOR WATER CONVEYANCE FACILITIES
SERVING SAN DIEGO COUNTY**



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 MAF of water divided as follows: (1) California, 4.4 MAF; (2) Arizona, 2.8 MAF; and (3) Nevada, 300,000 AF. The 1931 Seven Party Agreement established California's priorities for water. As shown in as shown in **Table 6-1**, Metropolitan's 4th priority of 550,000 AF is junior to that of the first three priorities, 3.85 MAF to California agricultural agencies. Water used to satisfy priorities 5(a)-6(b) must come from unused allocations within California, Arizona, or Nevada or from surplus.

**TABLE 6-1
SEVEN PARTY AGREEMENT PRIORITIES**

PRIORITY	DESCRIPTION	ACRE-FEET/YEAR
1	Palo Verde Irrigation District	Priorities 1, 2, and 3 shall not exceed 3,850,000
2	Yuma Project Reservation Division	Same as above
3 (a)	Imperial Irrigation District and lands in Imperial and Coachella valleys to be served by All-American Canal	Same as above
3 (b)	Palo Verde Irrigation District	Same as above
4	Metropolitan Water District	550,000
5 (a)	Metropolitan Water District	550,000
5 (b)	City/County of San Diego ¹	112,000
6 (a)	Imperial Irrigation District	300,000
6 (b)	Palo Verde Irrigation District	
	TOTAL	5,362,000

¹ In 1946, San Diego's rights were merged with and added to the rights of Metropolitan as one condition of the Water Authority's annexation to Metropolitan.

In recent years, Arizona and Nevada have increased water demand to near-apportionment levels, limiting the availability of unused apportionments to Metropolitan. Arizona's demand has been substantially increased by deliveries to an in-state groundwater banking program. Nevada began banking water under an interstate water banking rule established by the Department of Interior in 1999, which allows Nevada to bank water in Arizona for Nevada's future use.

Five consecutive years of drought conditions throughout the Colorado River Basin were somewhat relieved during the winter of 2004-05, and water storage levels in the main reservoirs rebounded from a rapid and steep decline. Inflow into Lake Powell was above average for water year 2005 and for the first time since 1999, the water surface elevation in Lake Powell increased. As of the end of June 2005, storage in Lake Powell was 51 percent of capacity; storage in Lake Mead was 59 percent of capacity. The draft U.S. Bureau of

Reclamation Annual Operating Plan for Colorado River System Reservoirs anticipates a “partial domestic surplus” condition for calendar year 2006, which provides limited surplus water for Metropolitan. However, since the Interim Surplus Guidelines were implemented in 2001, Metropolitan has not taken any surplus water, and instead has left those supplies as system storage in Lake Mead. It is not yet clear whether Metropolitan will take any available surplus water in calendar year 2006.

Environmental Considerations

In 1994, the U.S. Fish and Wildlife Service (USFWS) designated 1,980 miles of the Colorado River and its tributaries in Colorado, Utah, New Mexico, Arizona, California, and Nevada as critical habitat for four endangered species of native fish. In response to the 1994 designation, the Lower Colorado River Multi-Species Conservation Program (LCR MSCP) was formed. The program is a partnership of federal agencies; state and local agencies in Arizona, California, and Nevada, including the Water Authority; Native American tribes; and other non-federal participants. The partnership is responding to the need to balance the legal use of lower Colorado River water resources and the conservation of threatened and endangered species and their habitats in compliance with the federal Endangered Species Act (ESA). Taking over ten years to develop, the LCR MSCP was approved in April 2005. The program is designed to benefit at least 26 species and restore a range of habitats along the lower Colorado River, including 8,132 acres of riparian, marsh, and backwater habitat. The \$626 million program will be cooperatively funded and implemented by the partnership over the next 50 years. By meeting the needs of fish and wildlife under the ESA and preventing the listing of additional species, the program provides greater certainty of continued water and power supplies from the river for Nevada, California, and Arizona.

Current Supplies

Metropolitan currently has a firm supply from two sources: its fourth priority of 550,000 AF, and the yield of a conservation program that Metropolitan completed with IID in 1988. This program currently yields about 106,000 AF, giving Metropolitan a total supply of approximately 656,000 AF. Under certain conditions, however, Metropolitan must provide 50,000 AF of the conservation program water to the Coachella Valley Water District (CVWD). Thus, Metropolitan's firm supply is now about 606,000 AF. The remaining 600,000 AF of water needed to fill the CRA must come from the unused apportionments of other states or from surplus water.

Quantification Settlement Agreement and Future Supplies

The Water Authority, together with CVWD, IID, and Metropolitan, entered into the QSA in October 2003. The QSA resolved longstanding disputes regarding Colorado River water use among the agencies, and established a water budget for the agricultural agencies. This permitted the implementation of several water conservation and transfer agreements, including the Water Authority's transfer agreement with IID.

Transfers from IID began in late 2003 with the signing of the QSA. The Water Authority will receive up to 200,000 AF of water per year after an initial 19-year ramp-up in the water deliveries. Other supplies include about 77,700 AF from conservation projects to line the AAC and CC, located in Imperial and Coachella valleys.

6.2.2 STATE WATER PROJECT

Metropolitan's other water source, the SWP, is owned by the State of California and operated by the DWR. 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). 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 6-3** shows the California Aqueduct.

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. Actions taken by the CALFED Bay-Delta Program have improved the situation. (See below for more on the impact of CALFED on SWP supplies.) When approved by the voters in the 1960s, the SWP was planned to deliver 4.2 MAF to 32 contracting agencies. Subsequent contract amendments reduced total contracted deliveries to 4.13 MAF and the number of contracting agencies to 29. Metropolitan's contracted entitlement is 2,011,500 AF, or almost 49 percent of the total. It is important to note that 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 such, 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 (Bay-Delta) have also reduced the amount of water available for diversion. At the same time, California's population and water demand continued to grow.

By the late 1980s, the SWP could not meet contractor demands during drought periods. During the initial years of the 1987 – 1992 drought, DWR maintained SWP deliveries using water stored at Lake Oroville and the San Luis Reservoir. In 1991, however, the SWP

delivered only 549,113 AF of entitlement water. Of this amount, Metropolitan received 381,070 AF, or about 20 percent of its entitlement.

DWR's *Draft 2005 State Water Project Delivery Reliability Report* projected average SWP deliveries to increase slightly, and multiple dry-year deliveries to remain generally unchanged. Minimum SWP deliveries may be as low as 4% to 5% of the full Table A basic contract amount in the single driest year (1977 hydrology). However, DWR has suggested that adjustments would be made to reflect more realistic operations where carryover storage and other provisions would enhance SWP dry-year deliveries to a level that is comparable in quantity to the previous reliability report from DWR.

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 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. Between 1989 and 1999, the winter-run Chinook salmon was designated, or "listed," as an endangered species under the federal ESA and the Delta smelt, steelhead trout, and spring-run Chinook salmon were placed on the list of threatened species.

The degradation of the Bay-Delta ecosystem and the decline of Delta fisheries can be traced to numerous factors, including habitat loss, water diversions, pollution, over-fishing, and the introduction of non-native species. Regulatory protection efforts have nevertheless tended to focus on the operations of the SWP and the federal Central Valley Project (CVP). For example, in 1999, the SWP was forced to reduce pumping by about 500,000 AF to protect Delta smelt and spring-run Chinook salmon. These pumping reductions were in addition to fish protection measures built into the water quality standards established by the SWRCB. Actions taken by CALFED have stabilized this situation over the past four years, but this situation is temporary unless further actions are taken to extend it over the longer term.

Water Quality Considerations

Please see **Section 7** for water quality information.

Current Supplies

SWP delivery contracts were amended in 1995 to reflect principles developed under the December 1994 Monterey Agreement. Under the Monterey amendments, all SWP supplies are allocated to contractors in proportion to their contractual entitlements. Metropolitan's approximately 49 percent share of total SWP contract entitlements, entitles it to a proportionate share of SWP supplies. According to the November 2005 draft of Metropolitan's RUWMP, Metropolitan received an average of 1.04 million AF/YR from the SWP from 1995-2004. From 2000-2004, the annual average was 1.46 MAF.

DWR's implementation of the Monterey Agreement was successfully challenged in court by the Planning and Conservation League and others. On September 15, 2000, the Third District Court of Appeal reversed a trial court ruling for DWR and ordered a new environmental impact report (EIR) and a trial on the validity of the agreement. DWR is conducting the new environmental review, which is due for completion in 2005.

Future Supplies and the CALFED Bay-Delta Program

Metropolitan's Integrated Water Resources Plan Update (IRP Update), adopted by the Metropolitan Board of Directors in July 2004, indicates that Metropolitan's SWP target for a dry year (based on 1977 hydrology) is 463,000 AF in 2010, and 650,000 AF in 2020. The IRP Update also estimates that in the 2020-2025 period, Metropolitan's annual supply range from the SWP will be between 418,000 AF and 1.74 MAF. This figure does not include another 75,000 to 200,000 AF estimated from San Luis Reservoir carryover storage, 200,000 AF from planned CALFED projects, and 45,000 AF from the Sacramento Valley Water Management Agreement (the latter two programs are still in development and subject to change). The November 2005 RUWMP draft estimates that the SWP will be capable of serving 1.5 MAF to Metropolitan through 2030 in an average year.

Work being done by the CALFED Bay-Delta Program, which is administered by the California Bay-Delta Authority, is expected to provide the greatest opportunity for SWP supply reliability and water quality improvements. However, the outcome of this process remains uncertain. The state and federal governments organized the CALFED Program in 1995 to develop and implement a balanced, comprehensive, and long-term plan to restore the Bay-Delta's ecological health and improve water management for beneficial uses of the estuary. CALFED is working in four inter-related, over-arching categories: ecosystem restoration, levee stability, water quality improvement, and water supply reliability. The CALFED Program made the transition from planning to implementation in 2000 with the release of the Record Of Decision, final programmatic environmental EIS/EIS and *California's Water Future: A Framework for Action*.

The elements of the CALFED Program that have the greatest potential for increasing the reliability and quality of SWP supplies are included in the Delta Improvements Package (DIP), approved by the California Bay-Delta Authority in 2004 as the first major action by CALFED to implement its long-term Bay-Delta plan. Among the activities in the DIP, the most important are improvements to the existing Delta conveyance system, including expansion of the permitted capacity of the SWP pumping plant from its current level of 6,680 cfs to 8,500 cfs (and ultimately to 10,300 cfs subject to certain conditions). The conveyance system improvements would improve the reliability and quality of SWP supplies by allowing the SWP to increase pumping during those times of the year when additional water is available and when water quality is highest, and they would reduce pumping when endangered fish are migrating through the Delta. The improvements will also increase the amount of pumping capacity available for other purposes, such as water transfers.

The ability of CALFED to work with its member agencies to implement the DIP and other projects was called into question by a state appellate court decision issued on October 7, 2005, concerning CALFED's programmatic environmental impact report (PEIR), which served as the foundation of the Bay-Delta Program record of decision. While the court upheld the PEIR on a number of issues in the case, it concluded that the PEIR should have analyzed an alternative that reduced water exports from the Delta. The court also found that the PEIR inadequately discussed the environmental impacts of diverting water to meet CALFED's goals and did not include sufficient information about the Environmental Water Account. The state attorney general has asked the court for a rehearing of its ruling. If the decision stands, CALFED will have to draft a supplement to its PEIR that considers the "reduced exports" alternative, at the very least. It is currently unclear how much the ruling may affect programs and projects involving the Bay-Delta that are being undertaken by CALFED member agencies.

Another essential element of the CALFED Program is the Environmental Water Account (EWA), a pilot program that provides water at critical times to meeting ecosystem needs while minimizing water supply impacts on water-users. In addition, new surface and groundwater storage could also enhance the reliability and quality of SWP supplies. The CALFED framework calls for the construction of up to 4.75 MAF of new surface and groundwater storage over the life of the CALFED Program; however, it is not known whether any of the new storage would be constructed as part of the SWP.

The amount of water produced through the proposed conveyance improvements will depend on how the individual facilities are operated and on the level of assurances provided by the state and federal regulatory agencies. The EWA provides the SWP and CVP with regulatory assurances intended to ensure that the projects will not face additional water supply impacts due to regulatory actions taken under the federal ESA or other federal or state laws or regulations. However, while the EWA has been extended as a pilot program through 2007, it has not yet been made permanent. If CALFED succeeds in its mission of restoring stability to the Bay-Delta system, and the EWA, and the regulatory assurances, are extended beyond the initial four-year period, then the improvements described in the DIP have the potential to increase Metropolitan's share of average SWP supplies by between 93,000 and 168,000 AF/YR. If CALFED is not successful, and the Bay-Delta system continues to decline, Metropolitan's SWP supplies could even decrease in size and quality relative to existing levels.

SECTION 7 – WATER QUALITY

The Act requires that the 2005 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. 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 draft 2005 RUWMP.

7.1 COLORADO RIVER

High salinity levels and perchlorate contamination represent two areas of concern regarding the quality of Colorado River supplies. In Moab, Utah, a pile of radioactive waste near the Colorado River is also considered to be a potential threat to the Colorado River's water quality. Research on the potential impact to water quality is inconclusive, but removal of the radioactive waste is being investigated.

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 milligrams per liter (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 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. In addition, to foster 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.

Perchlorate

Ammonium perchlorate is used as the main component in solid rocket propellant, and it can also be found in some types of munitions and fireworks. Ammonium 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 perchlorate originates in the Las Vegas Wash, and the most likely source was 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 900 pounds per day (lb/day) to less than 150 lb/day.

7.2 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 by-products that are strictly 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 reduce its suitability for drinking and recycling.

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 such standards. The California Urban Water Agencies (CUWA) retained the assistance of a panel of drinking water quality and treatment experts to evaluate the source water quality necessary to allow agencies treating Delta water to comply with future drinking water regulations under a plausibly conservative regulatory scenario. The expert panel identified target bromide and total organic carbon concentrations of 50 parts per billion (ppb) and 3 parts per million (ppm), respectively. These targets were written into the Record Of Decision (ROD) adopted by CALFED in 2000.

The ROD states that CALFED will either achieve these 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." CALFED did not establish a similar target for the salinity of Delta water, a particular concern in Southern California, because of the high

salinity levels in Colorado River water, but the 2004 CALFED Drinking Water Quality Program Plan lists two “numeric targets,” less than 220 ppm over a 10-year average and less than 440 ppm as a monthly average.

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.

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 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 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.”

7.3 SURFACE WATER

The region’s water quality is influenced by a variety of factors depending on its source. As stated above, water 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.

Source water protection is fundamentally important to all of California. The DHS 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.

A similar requirement from United States Environmental Protection Agency (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 a 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.

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 recently recognized problem. Most of the work up to the present has centered on characterizing urban runoff: measuring concentrations of various constituents, attempting to relate these concentrations to such factors as land use type and rainfall intensity, and studying the effects of these constituents on street surfaces. It appears that considerable quantities of contaminants, heavy metals in particular, may enter the receiving waters through urban runoff. The federal Water Pollution Control Act Amendments of 1972 stress future "control of treatment of all-point and non-point sources of pollution." Thus, the federal government has concluded that non-point sources, such as urban runoff, are indeed harmful to the aquatic environment and that measures should be taken to control such emissions.

There are four basic approaches to controlling pollution from urban runoff: (1) prevent contaminants from reaching urban land surfaces; (2) improve street cleaning and cleaning of other areas where contaminants may be present; (3) treat runoff prior to discharge to receiving waters; and (4) control land use and development. Which approach or combination of approaches is most effective or economical has not yet been studied extensively. Thus, only the basic characteristics of each approach can be discussed. In addition to these direct approaches, measures to reduce the volume of runoff from urban areas are also available.

The fourth approach, control land use and development, is used to encourage controls on urbanization in order to reduce the volume of runoff. The usual pattern is that increased urbanization leads to higher runoff coefficients, reflecting the many impervious surfaces associated with development. Roof drains to storm sewers, paved parking lots and streets, installation of storm sewers, filling of natural recharge areas, and increased efficiency in realigned and resurfaced stream channels all are characteristics of urban growth. Development near streams and on steep slopes harms water resources. It is less disruptive to develop the lower portions of a watershed than the headwater areas, both

from the standpoint of the length of channel affected and the extent of channel enlargement necessary to convey storm water. Use of porous pavements and less reliance on roof connections to storm drains and more emphasis on local recharge would reduce the peak volume of runoff from storms. An area's mass emissions of urban drainage constituents should be quantified. Urban planning should be more cognizant of land constraints to permit greater natural recharge where possible and feasible, and to discourage intensive development of steep land, particularly in headwater areas.

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 Integrated Regional Water Management Plan (IRWMP) for the San Diego region. An important element in the IRWMP 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.

In the past, 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, DHS 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 DHS.

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).

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 5.2.1** 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.

Methyl Tertiary Butyl Ether

Until recently, MTBE was the primary oxygenate in virtually all the gasoline 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.

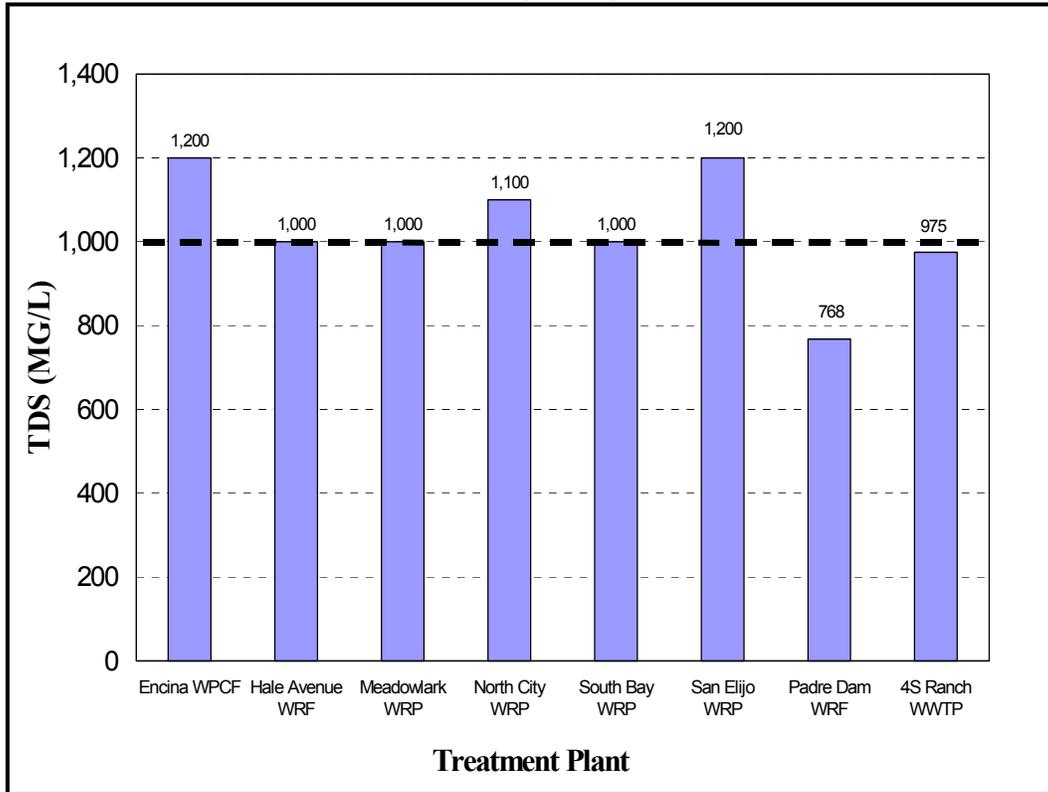
MTBE presents a significant potential problem to local groundwater basins. Leaking underground storage tanks and poor fuel-handling practices at local gas stations may provide a large source of MTBE. Improved underground storage tank requirements and monitoring, and the phase-out of MTBE as a fuel additive,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

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 60 to 100 mg/l. 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 cannot be irrigated with high-TDS water.

**FIGURE 7-1
TREATMENT PLANT AVERAGE EFFLUENT
TDS (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 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.

SECTION 8 – WATER SUPPLY RELIABILITY

As stated in the Act, every urban water supplier shall include, as part of its plan, an assessment of the reliability of its water supply. 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 Updated 2005 Plan projects reliability through the next 25 years to correspond with the growth forecast developed by SANDAG and ensure compliance with Senate Bills 610 and 221. In addition to the expected mix of resources utilized in the reliability assessment, a resources goal has been established. The goal includes the expected supplies plus other potential projects that are important to maximizing development of local resources, but are still in the conceptual phase. This section presents a summary of the water demands and supplies within the Water Authority's service area along with the reliability assessment and resources goal.

8.1 DEVELOPMENT OF PROJECTED WATER RESOURCES MIX

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

- Local agency information on projected water recycling, groundwater, surface water, and local seawater desalination supplies (discussed in **Section 5**);
- Update of the Water Authority's 2000 Plan to reflect Board action taken over the last five years related to the following items:
 - * Adoption of QSA related agreements (**Section 6.2.1**);
 - * Fourth Amendment to the Transfer Agreement (**Section 4.1**);
 - * Agreement between Metropolitan and the Water Authority regarding assignment of agreements related to the ACC and CC Lining Projects (**Section 4.2**); and

8.2 NORMAL WATER YEAR ASSESSMENT

Table 8-1 shows the normal year assessment, summarizing the total water demands for the Water Authority through the year 2030 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 the Water Authority and member agency supplies are developed as planned, along with implementation of Metropolitan's IRP, no shortages are anticipated within the Water Authority's service area in a normal year through 2030.

**TABLE 8-1
NORMAL WATER YEAR SUPPLY AND DEMAND ASSESSMENT (AF/YR) ¹**

	2010	2015	2020	2025	2030
Water Authority Supplies					
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	177,700	267,700	277,700	277,700
Member Agency Supplies					
Surface Water	59,649	59,649	59,649	59,649	59,649
Water Recycling	33,668	40,662	45,548	46,492	47,584
Groundwater	17,175	18,945	19,775	19,775	19,775
Groundwater Recovery	11,400	11,400	11,400	11,400	11,400
Seawater Desalination	0	34,689	36,064	37,754	40,000
Sub-Total	121,892	165,345	172,436	175,070	178,408
Metropolitan Water District Supplies	445,858	399,855	331,374	342,870	372,922
TOTAL PROJECTED SUPPLIES	715,450	742,900	771,510	795,640	829,030
TOTAL ESTIMATED DEMANDS w/ Conservation	715,450	742,900	771,510	795,640	829,030

¹ Normal water year demands based on 1960 – 2002 hydrology.

8.3 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 8-2** shows the single dry-year assessment. The projected groundwater and surface water yields shown in the table are based on historic 1991 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**. Therefore, estimated normal yields from these supplies are also included in the analysis.

**TABLE 8-2
SINGLE DRY WATER YEAR SUPPLY AND DEMAND ASSESSMENT
FIVE YEAR INCREMENTS
(AF/YR)**

	2010	2015	2020	2025	2030
Water Authority Supplies					
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	177,700	267,700	277,700	277,700
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
Seawater Desalination	0	34,698	36,064	37,754	40,000
Sub-Total	78,190	119,882	126,134	128,768	132,106
Metropolitan Water District Supplies	541,760	498,388	431,726	442,142	473,224
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

In accordance with the Act, Tables 8-3, 8-4, 8-5, 8-6, and 8-7 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.

**MULTIPLE DRY WATER YEAR SUPPLY AND DEMAND ASSESSMENT
FIVE-YEAR INCREMENTS
(AF/YR)**

TABLE 8-3

	2006	2007	2008
Water Authority Supplies	40,000	71,500	71,500
Member Agencies	56,670	60,230	80,900
Metropolitan Supplies	647,850	618,050	602,630
Total Estimated Supplies	744,520	749,780	755,030
Total Estimated Demands	744,520	749,780	755,030

TABLE 8-4

	2011	2012	2013
Water Authority Supplies	157,700	167,700	177,700
Member Agencies	101,012	100,431	116,970
Metropolitan Supplies	512,698	500,149	488,480
Total Estimated Supplies	771,410	777,280	783,150
Total Estimated Demands	771,410	777,280	783,150

TABLE 8-5

	2016	2017	2018
Water Authority Supplies	177,700	177,700	207,700
Member Agencies	109,214	108,149	124,194
Metropolitan Supplies	514,116	521,301	481,376
Total Estimated Supplies	801,030	807,150	813,270
Total Estimated Demands	801,030	807,150	813,270

TABLE 8-6

	2021	2022	2023
Water Authority Supplies	277,700	277,700	277,700
Member Agencies	114,752	112,960	128,288
Metropolitan Supplies	438,228	445,180	435,022
Total Estimated Supplies	830,680	835,840	841,010
Total Estimated Demands	830,680	835,840	841,010

TABLE 8-7

	2026	2027	2028
Water Authority Supplies	277,700	277,700	277,700
Member Agencies	117,524	115,873	131,343
Metropolitan Supplies	463,256	472,057	463,727
Total Estimated Supplies	858,480	865,630	872,770
Total Estimated Demands	858,480	865,630	872,770

As shown in the above tables, if the projected Water Authority and member agency supplies are developed as planned, along with implementation of Metropolitan's IRP, no shortages are anticipated within the Water Authority's service area under single dry-year or multiple dry water years through 2030. However, the Water Authority is at risk for shortages should the supplies identified in Metropolitan's IRP not be developed as planned or a Metropolitan member agency such as the City of Los Angeles invoke its Section 135, Preferential Right to Water (discussed in **Section 6.1.1**). To alleviate this risk, the Water Authority is pursuing the following options: 1) the development of additional storage; and 2) development of additional seawater desalination. Storage opportunities include local carryover storage facilities to accumulate and store water during periods of availability, as well as the acquisition of out-of-the-region conjunctive-use facilities to develop additional groundwater storage (refer to **Section 1.5.1** for discussion on Water Authority's proposed carryover storage project). A combination of storage and new supply appears to provide the most reliable solution to alleviating risks during a dry-period.

8.4 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 Updated 2005 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 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 Updated 2005 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. With a successful conservation program already in place, the Water Authority and its member agencies could effectively implement extraordinary conservation measures to assist in ensuring reliability. Another element of reliability is Metropolitan's IRP planning buffer, described in **Section 6.1.2**, which identifies an additional increment of water that could be potentially developed if other supplies are not implemented as planned. A combination of these resources would be necessary to ensure a reliable supply.

As stated in **Section 4.3** and **5.3**, seawater desalination remains a key component of the region's diversification strategy. However, because there are a number of factors that could affect implementation of seawater desalination, alternative options are being considered. This includes accelerating construction of an additional imported water conveyance pipeline, Pipeline 6, that would allow for additional supply deliveries from Metropolitan. With a regional seawater desalination project in place, Pipeline 6 would not be needed until approximately 2023. To meet demands without seawater desalination, preliminary results from Metropolitan's draft *System Overview Study* show that Pipeline 6 would be needed by 2018 and that it would take an estimated nine years to construct. A decision on implementation of a seawater desalination project prior to 2009 would allow adequate time to construct the facility. Activities associated with implementation of Pipeline 6 include the following:

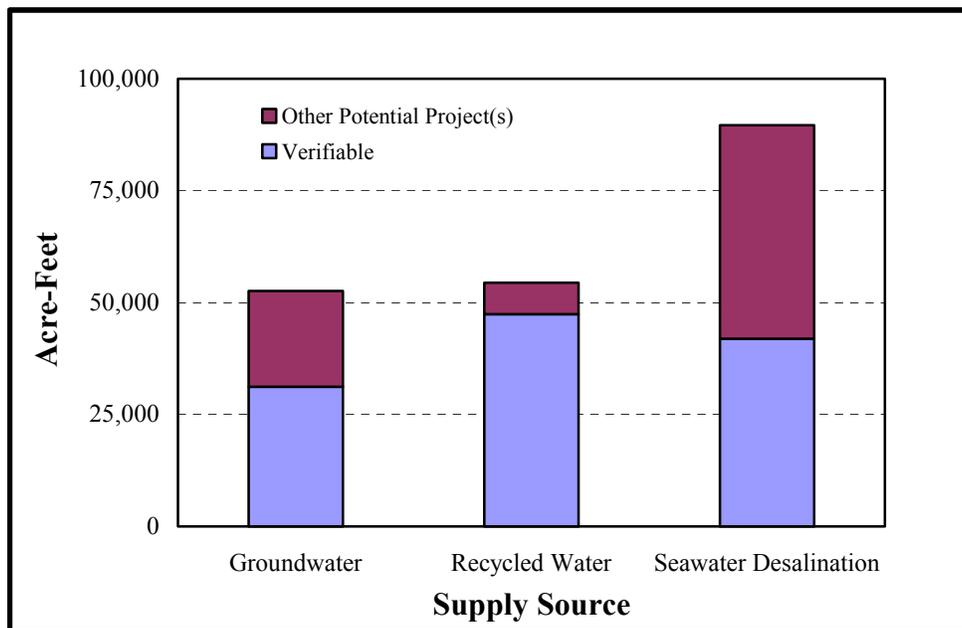
- * Coordination between Metropolitan and the Water Authority regarding planning and design of the pipeline is ongoing; and
- * An alignment for the entire approximately 30-mile pipeline was identified in the original 1993 Environmental Impact Report. Metropolitan is conducting a feasibility study to re-visit the 1993 alignment and evaluate alternative alignments north of the San Luis Rey River in light of changed conditions since 1993. The Water Authority plans to conduct a similar feasibility study of Pipeline 6 alignments south of the San Luis Rey River. Based on these updated feasibility studies, an updated environmental analysis for the project is also planned.

8.5 REGIONAL WATER SUPPLY GOALS

As stated in **Sections 4 and 5**, 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 8.2 and 8.3**. In addition to these verifiable projects, the Water Authority and its member agencies have conceptually identified other potential projects. Combining the verifiable projects and these conceptual projects forms the regional water supply goals.

These supply goals are critical 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. **Figure 8-1** shows the water supply goals for recycled water, groundwater, and seawater desalination.

**FIGURE 8-1
2030 WATER SUPPLY GOALS**



The Water Authority worked with its member agencies to determine the verifiable supplies to be included in the assessment and those projects to be included in the supply goals. Including the verifiable supplies contained in the assessment, the regional groundwater production goal is 52,575 AF/YR by 2030. The recycled water goal is 54,413 AF/YR by 2030. The specific local projects are listed in **Table F-2 and F-4** in **Appendix F**. The total regional seawater desalination goal for 2030 is 89,600 AF/YR. The goal is achieved through implementation of 40,000 AF/YR of verifiable supply from the local project at the Encina Power Station, based on the contracted amounts and supply utilization, 16,000 AF/YR of additional local supply from the same project, and 33,600 AF/YR of regional supply (Water Authority goal). Refer to **Sections 4.3 and 5.4** for additional information on the derivation of the verifiable and goal supply figures.

SECTION 9 – SHORTAGE CONTINGENCY ANALYSIS

The Act requires that urban water agencies conduct a water shortage contingency analysis as part of their 2005 plan. This section includes the Water Authority’s analysis, which addresses a catastrophic shortage situation and drought management.

9.1 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 Emergency Response Plan (ERP) and the ESP, both developed to protect public health and safety and to prevent or limit economic damage that could occur from a severe shortage of water supplies.

9.1.1 Emergency Response Plan

The Water Authority’s ERP 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 ERP describes the situations and incidents that will trigger the activation of the Water Authority’s ERP and Emergency Operations Center (EOC). It also provides direction and strategies for responding to a crisis. The Water Authority’s ERP includes:

- Authorities, policies, and procedures associated with emergency response activities;
- EOC activities - including EOC activation and deactivation guidelines;
- Multi-agency and multi-jurisdictional coordination, particularly between the Water Authority, its member agencies, and Metropolitan in accordance with Standardized Emergency Management System (SEMS) guidelines;
- Emergency staffing, management, and organization 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;
- Pre-emergency planning and emergency operations procedures.

In addition, the Water Authority’s ERP Manual uses a step-by-step approach to emergency response planning by providing such procedural tools as action checklists, resource and information lists, personnel rosters, and listings of established policies and procedures. The Water Authority’s plan parallels many of the same plan components contained in the Unified San Diego County Emergency Services Organization’s “Operational Area Emergency Plan” (OAEP). In turn, the OAEP serves to support and supplement the Water Authority’s ERP.

9.1.2 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 facilities are located throughout San Diego County and are being constructed in phases. The entire project is expected to be complete by 2012. Its initial phase includes the recently completed 318-foot-high Olivenhain Dam and accompanying 24,364 AF Olivenhain Reservoir. 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.

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 BMPs. The following steps from the final draft of 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:

1. Estimate the duration of the emergency (i.e. time needed to repair damaged pipelines);
2. 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;
3. Determine each member agency's useable local supplies during the emergency period (local supplies include surface water and groundwater);
4. Determine each member agency's level of service based on usable local supplies and net demand;
5. Adjust the allocation of ESP supplies based on a member agency's participation in the IAWP. IAWP 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%. Water not delivered to IAWP customers will be redistributed to member agencies based on the "system-wide" level of service targets;
6. 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% based on their usable local supplies; and
7. Allocate delivery of useable ESP storage supplies and Metropolitan supplies to member agencies with the goal of equalizing the level of service among the member agencies; and

The Board of Directors may authorize that supplies from the ESP be used in a prolonged drought situation where imported and local supplies do not meet 75 percent of the Water Authority's member agencies M&I demands.

9.2 DROUGHT MANAGEMENT PLANNING

9.2.1 Introduction

The last major drought in California occurred between 1987 and 1992 and caused severe water supply shortages throughout the state. During early March 1991, at the peak of the drought, Metropolitan's SWP supplies were reduced by 90 percent. Subsequently, Metropolitan voted to impose a 50 percent reduction in imported deliveries to the Water Authority. The results of Metropolitan's cutback would have been devastating to the Water Authority's businesses and residents except for the miracle March rainfall that occurred later that month. These rains allowed the SWP to reduce its level of cutback to 80 percent, and Metropolitan later rolled back its call for reduction from 50 to 31 percent. Even at this level the Water Authority was impacted more than other Metropolitan members because of its high dependence upon imported supplies from Metropolitan.

Since the 1987-1992 drought, the Water Authority and its member agencies have developed plans and implemented projects to reduce reliance on a single supply source. As mentioned in **Section 8**, if projected supplies are developed as planned and Metropolitan's IRP is fully implemented, no shortages are anticipated within the Water Authority's service area through 2030. 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. Therefore, the Water Authority developed a comprehensive Drought Management Plan (DMP) in the event that the region does face supply shortages due to drought conditions. The sections below describe the development of the DMP. A copy of the DMP is included in this Updated 2005 Plan as **Appendix G**.

In 1999, Metropolitan adopted the Water Surplus and Drought Management Plan (WSDM Plan) to integrate planned operational actions with respect to both surplus and shortage situations. (For further details on the WSDM Plan actions, refer to Metropolitan's 2005 RUWMP.) The WSDM Plan final action, to be taken in an extreme shortage stage, is the implementation of an allocation plan. An allocation plan was not developed as part of the WSDM Plan, and it is not known when Metropolitan will consider and adopt such a plan. During development of the DMP, the Water Authority made assumptions regarding the Metropolitan supplies available during drought stages. The Water Authority will adjust the DMP as necessary following Metropolitan's adoption of an allocation plan.

One of the requirements of the shortage contingency analysis included in the Act is an estimate of the minimum supplies available during each of the next three years. **Table 8-3** of **Section 8.3** shows this estimate. The sections below address other requirements of the Act applicable to the Water Authority.

9.2.2 DMP Purpose

The DMP provides the Water Authority and its member agencies with a series of actions to take when faced with a shortage of imported water supplies from Metropolitan due to drought conditions. The potential actions will help the region minimize the impacts of shortages and ensure equitable allocation of supplies.

The DMP includes a drought response matrix containing actions to be taken by the Water Authority at different drought stages. One of the actions, if warranted, is an allocation of available supplies. The Water Authority developed an allocation methodology to include in the DMP. This methodology determines the supplies available to member agencies and how local resources will be handled. A communication strategy was also prepared to help the Water Authority and its member agencies implement the DMP actions. When ultimately faced with a supply shortage, there may be factors unknown at this time that could influence the actions taken. The DMP will provide guidance on how to move forward and minimize the impacts of a shortage situation.

9.2.3 DMP Technical Advisory Committee

Preparing and implementing a DMP for the San Diego region required 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. The meetings were facilitated to ensure full involvement from all participants.

To gain an initial understanding of the TAC members' positions on the DMP elements, each member completed a questionnaire. Results from this questionnaire provided valuable information used to develop a set of principles for preparing the DMP. Proposed elements of the DMP that were developed through the DMP TAC meetings are presented in **Sections 9.2.4, 9.2.5, and 9.2.6.**

9.2.4 DMP Principles

The TAC developed principles to provide guidance to the Water Authority and its member agencies in developing and implementing the DMP. The principles are grouped below under elements of the DMP:

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.

9.2.5 Drought Response Matrix

The Act requires information on the stages of action to be undertaken in response to water supply shortages, including up to a 50 percent reduction in water supply. To meet the requirements, the Water Authority, with input from the TAC, developed a regional drought response matrix. The matrix provides guidance to the Water Authority and member agencies in selecting potential regional actions to lessen the severity of shortage conditions. Member agencies will independently adopt retail-level actions to manage potential shortages.

As shown in **Table 9-1**, the matrix proposes three main stages and identifies potential actions available to the Water Authority at each stage. 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 and supply availability along with other pertinent variables. Numerous variables can influence the reduction levels adopted during a drought. These variables include, but are not limited to, SWP allocation, conditions on the Colorado River, Water Authority supplies, local storage, local demands and timing.

**TABLE 9-1
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

Matrix Stages and Actions

Three drought stages have been identified in the matrix. 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 SWP, or both) and is withdrawing water from storage due to the drought conditions to meet normal demands. Actions initiated at this stage include monitoring supply conditions and storage levels, calling for voluntary conservation, and utilizing a prudent amount of supplies from Water Authority planned carryover storage. These actions would continue throughout the drought stages.

The second stage, supply enhancement, 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.

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. As stated in the DMP Principles, ESP supplies may be available when any member agency's non-interruptible firm demands drop below a 75 percent service level. In addition, the quantities of supplies utilized from ESP 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).

9.2.6 Supply Allocation Methodology

With the implementation of the member agencies local projects, the Water Authority's core supplies, and potential drought supply augmentation supplies, the impact from supply shortages from Metropolitan on M&I customers will be reduced and potentially avoided. Preparing a supply allocation methodology is important in order to be prepared for situations that warrant an allocation of supplies to the member agencies. Implementing a supply allocation methodology is part of the Water Authority's drought response matrix.

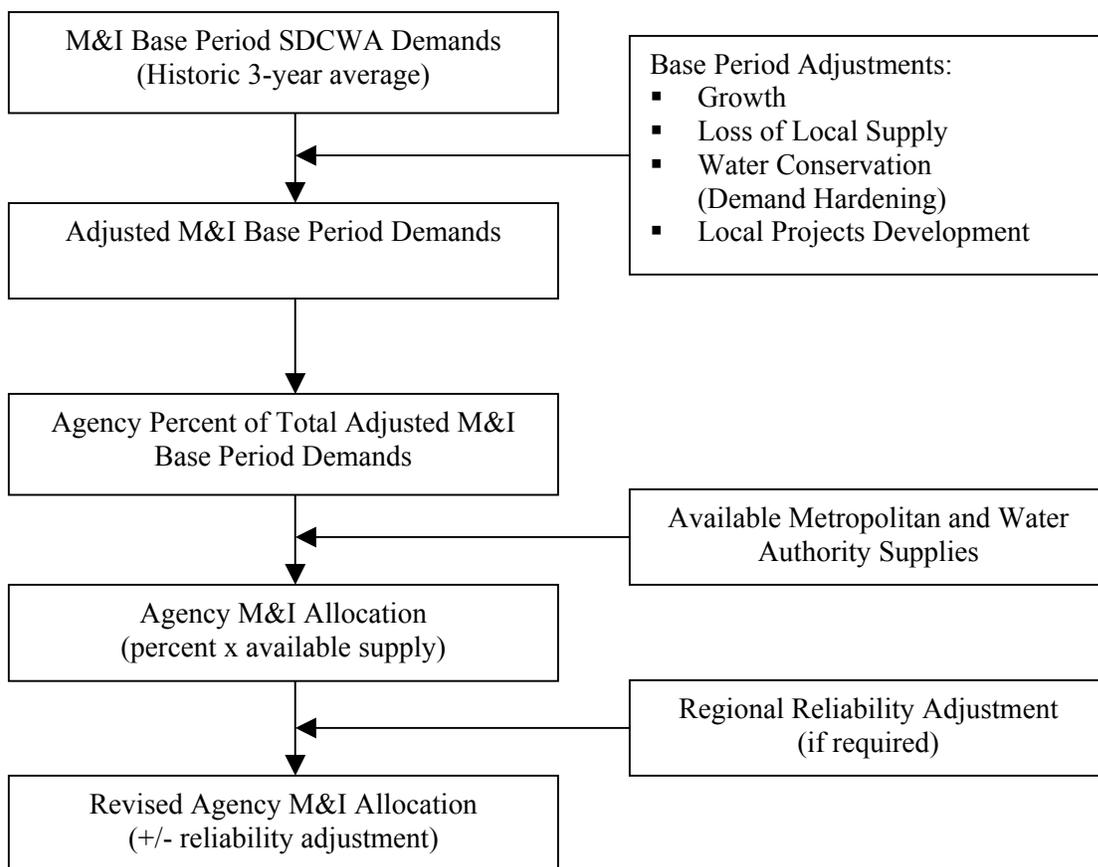
Starting with the accepted principles listed in **Section 9.2.3**, the Water Authority worked with the TAC to develop a methodology that is equitable and that recognizes the investments made by agencies that developed local supplies. The Water Authority's current rate structure notes two classes of service, M&I and IAWP. They receive different levels of service based on the rate paid and are managed separately in the allocation methodology.

IAWP customers agreed to a reduced level of service in exchange for a discounted supply rate from Metropolitan. Metropolitan prepared draft IAWP Reduction Guidelines that state that IAWP customers will be cut by 30 percent prior to cutbacks to M&I customers. The guidelines do not specify stages and/or levels of cutbacks beyond the 30 percent. Based on the guidelines

and Principle 17, up to a 30 percent cut will be made to the IAWP base prior to M&I cutbacks. Beyond 30 percent, supplies will be allocated equally between IAWP and M&I. In preparing the allocation methodology for the DMP, the Water Authority incorporated the conditions included in the guidelines.

The Water Authority developed a separate allocation methodology for those customers paying the M&I rate. They include residential, commercial, industrial, and non-IAWP agricultural customers. **Figure 9-1** provides the general approach to allocate supplies to M&I customers in a shortage situation.

**FIGURE 9-1
M&I SUPPLY ALLOCATION METHODOLOGY**



The elements of the proposed allocation methodology:

Historical Base Period

A historic base period demand is required to establish an agency's pre-allocation demand 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.

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.

Adjusted Base Period

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.

Allocation of Available Supplies

To determine the amount of the Water Authority and Metropolitan supplies that will be available to each member agency, a member agency's percent share of the total M&I adjusted base period is calculated. This percent is then applied to supplies available for M&I demands to derive an allocation for each member agency. For IAWP customers, a percent share of the total IAWP base year demands is calculated. This percent is applied to the IAWP supplies available following the initial 30 percent cutback and subsequent cutbacks to calculate an allocation of IAWP supplies for each member agency.

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.

9.2.7 Revenue Impacts

The Water Authority has taken significant steps to reduce potential revenue impacts resulting from fluctuating water sales. In FY 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. The RSF is structured in accordance with Board policy to maintain a minimum balance of at least 25 percent of the Water Authority's net water sales revenue. RSF is constrained by a maximum balance of 100 percent of the average annual water sales projected over a four-year period. As a result, the RSF is a crucial water rate management tool.

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 and Storage – are key components to the Water Authority's future revenue stability.

9.2.8 Mandatory Water Use Prohibitions

The Water Authority's powers to enforce restrictions on use are constrained by the provision of the County Water Authority Act, which states, "If available supplies become inadequate to fully meet the needs of its member agencies, the board shall adopt reasonable rules, regulations, and restrictions so that the available supplies are allocated among its member agencies for the greatest public interest and benefit." (West's Cal. Wat. C, Append. § 45-5, para. (11).) Pursuant to this authority, the Water Authority developed a drought management plan that includes rules and regulations for water allocation among its member agencies during a water shortage. These rules take into consideration whether its member agencies have developed shortage management plans to meet targeted reductions in total water demand during a shortage. Because the Water Authority's member agencies, not the Water Authority, have the direct customer service relationship with water users, the member agencies have responsibility to address mandatory use prohibitions during water shortages in their individual urban water management plans.

9.2.9 Penalties for Excessive Water Use

Should the Water Authority have to allocate imported water supplies from Metropolitan due to drought conditions, as identified in **Section 5** of the Water Authority's DMP (**Appendix G**), Metropolitan can impose surcharges (penalty pricing) on water consumption in excess of the Water Authority's imported water allocation from Metropolitan. Penalties are expected to be severe, as much as three times Metropolitan's full service water rate. See **Appendix G, page D-9**, for more information on Metropolitan's Water Surplus and Drought Management Plan (WSDM Plan).

The Water Authority's Board of Directors has the authority to adjust water rates to reflect any penalties imposed by Metropolitan under Metropolitan's WSDM Plan or other allocation programs as determined necessary by the Board of Directors. 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.

9.3 SUMMARY

The shortage contingency analysis included in this section and in **Appendix G** demonstrates that the Water Authority and its member agencies, through the ERP and ESP, are taking actions to prepare for and appropriately handle a catastrophic interruption of water supplies. The analysis also described the coordinated development of a DMP for the San Diego region. The DMP identifies the actions to be taken by the Water Authority to minimize the impacts of a supply shortage due to a drought and includes an allocation methodology to be used if cutbacks are necessary. The analysis and **Appendix G** address the appropriate requirements of the Act that are applicable to the Water Authority.

APPENDIX A

California Urban Water Management Planning Act

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Established: AB 797, Klehs, 1983

Amended: AB 2661, Klehs, 1990

AB 11X, Filante, 1991

AB 1869, Speier, 1991

AB 892, Frazee, 1993

SB 1017, McCorquodale, 1994

AB 2853, Cortese, 1994

AB 1845, Cortese, 1995

SB 1011, Polanco, 1995

AB 2552, Bates, 2000

SB 553, Kelley, 2000

SB 610, Costa, 2001

AB 901, Daucher, 2001

SB 672, Machado, 2001

SB 1348, Brulte, 2002

SB 1384, Costa, 2002

SB 1518, Torlakson, 2002

AB 105, Wiggins, 2004

SB 318, Alpert, 2004

CALIFORNIA WATER CODE DIVISION 6 PART 2.6. URBAN WATER MANAGEMENT PLANNING

CHAPTER 1. GENERAL DECLARATION AND POLICY

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.

CHAPTER 2. DEFINITIONS

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.

CHAPTER 3. URBAN WATER MANAGEMENT PLANS

Article 1. General Provisions

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 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).

Article 2. Contents of Plans

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

For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to 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) Urban water suppliers that are members of the California Urban Water Conservation Council and submit annual reports to that council

in accordance with the “Memorandum of Understanding Regarding Urban Water Conservation in California,” dated September 1991, may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g).

- (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), including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

10631.5. The department shall take into consideration whether the urban water supplier is implementing or scheduled for implementation, the water demand management activities that the urban water supplier identified in its urban water management plan, pursuant to Section 10631, in evaluating applications for grants and loans made available pursuant to Section 79163. 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.

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

- (a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.
- (b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.
- (c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including,

but not limited to, a regional power outage, an earthquake, or other disaster.

- (d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.
- (e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.
- (f) Penalties or charges for excessive use, where applicable.
- (g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.
- (h) A draft water shortage contingency resolution or ordinance.
- (i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

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 recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.
- (c) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

- (d) 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.
- (e) 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.
- (f) 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.
- (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.

Article 2.5 Water Service Reliability

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.

Articl 3. Adoption and Implementation of Plans

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 file with the department 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 filed with the department 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 outstanding elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has filed its plan with 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.

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.

CHAPTER 4. MISCELLANEOUS PROVISIONS

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.

10657.

- (a) The department shall take into consideration whether the urban water supplier has submitted an updated urban water management plan that is consistent with Section 10631, as amended by the act that adds this section, in determining whether the urban water supplier is eligible for funds made available pursuant to any program administered by the department.
- (b) This section shall remain in effect only until January 1, 2006, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2006, deletes or extends that date.

APPENDIX B

Water Authority Board of Directors

Resolution No. 2005 - 34

Resolution No. 2007 - 07

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RESOLUTION NO. 2005- 34

**A RESOLUTION OF THE BOARD OF
DIRECTORS OF THE SAN DIEGO COUNTY
WATER AUTHORITY APPROVING THE
2005 URBAN WATER MANAGEMENT PLAN**

WHEREAS, California Water Code Sections 10610 through 10657, 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, 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 2005 Urban Water Management Plan (2005 Draft 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 2005 Draft Plan was made available for public review commencing October 10, 2005, and ending on November 1, 2005, notices of the availability of the 2005 Draft Plan and of the public hearing to receive comments on the 2005 Draft Plan on October 27, 2005, were published in accordance with applicable law; and

WHEREAS, copies of the 2005 Draft Plan were distributed to 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, responses to the all written and oral comments and the final 2005 Urban Water Management Plan incorporating changes to the Draft 2005 Plan as a result of certain comments were distributed to the Water Authority Board of Directors prior to the November 17, 2005, Board meeting; and

WHEREAS, the Water Authority Board of Directors, upon recommendation of the General Manager, and the information presented to it at its meetings of October 27, 2005, and November 17, 2005, has determined that the final 2005 Urban Water Management Plan, dated November 17, 2005, 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, IT IS 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 2005 Urban Water Management Plan, dated November 17, 2005, on file with the Clerk of the Board, is approved and adopted.

3. The General Manager is hereby directed to:

- Submit the 2005 Urban Water Management 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 December 16, 2005;
- Make the 2005 Urban Water Management Plan available for public review through the Water Authority's Internet web site;
- Make the 2005 Urban Water Management Plan available for public review at the Water Authority headquarters during the Water Authority's normal business hours;
- Implement the 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 2005 Urban Water Management 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.

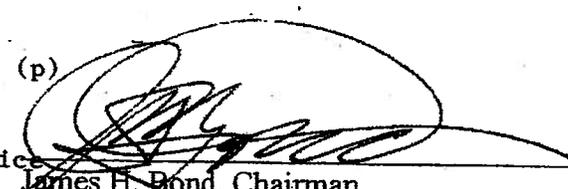
PASSED, APPROVED AND ADOPTED this 17th day of November 2005, by the following vote:

AYES: Unless noted below, all Directors voted aye.

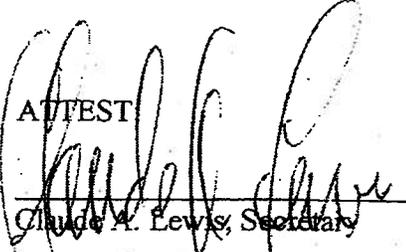
NOES:

ABSTAIN:

ABSENT: Bowersox, Croucher (p)
Haddad, Inzunza,
Irvin, Rhinerson,
and Rep. Slater-Prie

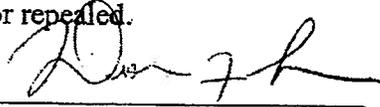

James H. Bond, Chairman
Board of Directors

ATTEST


Claude A. Lewis, 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 2005 -34 of said Board and that the same has not been amended or repealed.



Doria F. Lore
Clerk of the Board

RESOLUTION NO. 2007- 07

**A RESOLUTION OF THE BOARD OF
DIRECTORS OF THE SAN DIEGO COUNTY
WATER AUTHORITY APPROVING THE
UPDATED 2005 URBAN WATER
MANAGEMENT PLAN**

WHEREAS, California Water Code Sections 10610 through 10657, 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, the Act specifies the requirements and procedures for adopting such Urban Water Management Plans; and

WHEREAS, the Water Authority Board of Directors on November 17, 2005, adopted Resolution 2005-34, approving and adopting the Water Authority's 2005 Urban Water Management Plan (2005 Plan) in accordance with the Act; and

WHEREAS, since adoption of the 2005 Plan, the Water Authority Board of Directors took action to not pursue a regional seawater desalination facility at the Encina Power Station and adopted a Drought Management Plan; and

WHEREAS, the California Department of Water Resources (DWR) reviewed the 2005 Plan and requested clarifying edits to ensure compliance with the Act; and

WHEREAS, consistent with Board Resolution 2005-34, the General Manager has reviewed the 2005 Plan in accordance with applicable law and is recommending amendments to the 2005 Plan to reflect Board action regarding seawater desalination development, Board adoption of the Drought Management Plan, and DWR's comments, with a complete update of the Water Authority urban water management plan in 2010; and

WHEREAS, the draft Updated 2005 Plan reflects these recommended amendments and was made available for public review commencing April 12, 2007, and ending on April 26, 2007, notices of the availability of the draft Updated 2005 Plan and public hearing to receive comments on the draft Updated 2005 Plan were published in accordance with applicable law; and

WHEREAS, the Water Authority Board of Directors, upon recommendation of the General Manager, and the information presented to it at its meetings of February 22, 2007, and April 26, 2007, has determined that the Updated 2005 Plan, dated April 26, 2007, 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, IT IS 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 of Directors.
2. The Updated 2005 Plan, dated April 26, 2007, on file with the Clerk of the Board, is approved and adopted.
3. The General Manager is hereby directed to:
 - Submit the Updated 2005 Plan to DWR, 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 May 26, 2007;
 - Make the Updated 2005 Plan available for public review through the Water Authority's Internet web site;
 - Make the Updated 2005 Plan available for public review at the Water Authority headquarters during the Water Authority's normal business hours;
 - Implement the 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 Updated 2005 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.

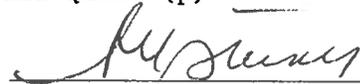
PASSED, APPROVED AND ADOPTED this 26th day of April 2007, by the following vote:

AYES: Unless noted below, all Directors present voted aye.

NOES:

ABSTAIN:

ABSENT: Martin (p), Parker, and Quist (p)



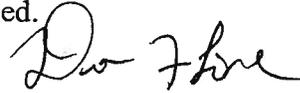
Fern Steiner, Chair
Board of Directors

ATTEST:



Mark Watton, 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 No. 2007 - 07 of said Board and that the same has not been amended or repealed.



Doria F. Lore
Clerk of the Board

APPENDIX C

DWR 2005 Urban Water Management Plan Checklist

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DWR 2005 Urban Water Management Plan Checklist (April 2007)

Water Code Section	Items to Address	Sections in Plan	Page # in Plan
10620 (d)(1)(2))	Coordination with Appropriate Agencies		
	Participated in area, regional, watershed or basin wide plan.	1.3	1-2, 1-3
	Describe the coordination of the plan preparation and anticipated benefits.	1.3	1-2, 1-3
10620 (f)	Describe resource maximization / import minimization plan		
	Describe how water management tools / options maximize resources & minimize need to import water.	3, 4, 5, 8	3-1 to 3-6, 5-1 to 5-20
10621 (a)	Plan Updated in Years Ending in Five and Zero		
	Date updated and adopted plan received.	1.3	1-3
10621 (b)	City and County Notification and Participation		
	Notify any city or county within service area of UWMP of plan review & revision.	1.3	1-3
	Consult and obtain comments from cities and counties within service area.	1.3	1-3
10631 (a)	Service Area Information		
	Include current and projected population.	1.6.3	1-10, 1-11
	Population projections were based on data from state, regional or local agency.	1.6.3	1-10
	Describe climate characteristics that affect water management.	1.6.2	1-9, 1-10
	Describe other demographic factors affecting water management.	1.6.1	1-8
10631 (b)	Water Sources		
	Identify existing and planned water supply sources.	4, 5, 6	4-1 to 4-11, 5-1 to 5-20, 6-1 to 6-10
	Provide current water supply quantities.	4, 5, 6	4-1 to 4-11, 5-1 to 5-20, 6-1 to 6-10
	Provide planned water supply quantities.	4, 5, 6	4-1 to 4-11, 5-1 to 5-20, 6-1 to 6-10

10631 (b)(1-4)	If Groundwater identified as existing or planned source		
	Has management plan.	Water Authority does not supply groundwater. General discussion on groundwater can be found in Section 5.2.	
	Attached management plan (b)(1).		
	Description of basin(s) (b)(2).		
	Basin is adjudicated.		
	If adjudicated, attached order or decree (b)(2).		
	Quantified amount of legal pumping right (b)(2).		
	DWR identified, or projected to be, in overdraft (b)(2).		
	Plan to eliminate overdraft (b)(2).		
	Analysis of location, amount & sufficiency, last five years (b)(3).		
Analysis of location & amount projected, 20 years (b)(4).			
10631 (c)(1-3)	Reliability of Supply		
	Describes the reliability of the water supply and vulnerability to seasonal or climatic shortage.	8	8-1 to 8-7
10631 (c)	Water Sources Not Available on a Consistent Basis		
	Describe the reliability of the water supply due to seasonal or climatic shortages.	8	8-5 to 8-6
	Describe the vulnerability of the water supply to seasonal or climatic shortages.	8	8-5 to 8-6
	Describe plans to supplement or replace inconsistent sources with alternative sources or DMMs.	8.4	8-5 to 8-6
10631 (d)	Transfer or Exchange Opportunities		
	Describe short-term and long-term exchange or transfer opportunities.	4.1	4-1 to 4-6
10631 (e)(1)(2)	Water Use Provisions		
	Quantify past water use by sector.	2.3	2-2 to 2-3
	Quantify current water use by sector.	2.3	2-2 to 2-3
	Project future water use by sector.	2.4	2-4 to 2-6
	Identify and quantify sales to other agencies.	2.3	2-2, 2-3

10631 (f)	2005 Urban Water Management Plan "Review of DMMs for Completeness" Form	Included in Appendix D	
10631 (g)	Planned Water Supply Projects and Programs, including non-implemented DMMs		
	No non-implemented / not scheduled DMMs.	See Section 3 and Appendix D	
	Cost-Benefit includes economic and non-economic factors (environmental, social, health, customer impact, and technological factors).		
	Cost-Benefit analysis includes total benefits and total costs.		
	Identifies funding available for Projects with higher per-unit-cost than DMMs.		
Identifies Suppliers' legal authority to implement DMMs, efforts to implement the measures and efforts to identify cost share partners.			
10631 (h)	Planned Water Supply Projects and Programs		
	Detailed description of expected future supply projects & programs.	4, 5, 8	4-1 to 4-11, 5-1 to 5-20, 8-1 to 8-7
	Timeline for each proposed project.	4, 5, 8, Appendix F	F-1, F-2, F-3, F-4
	Quantification of each project's normal yield (AFY).	8.2	8-1, 8-2
	Quantification of each project's single dry-year yield (AFY).	8.3	8-2, 8-3
	Quantification of each project's multiple dry-year yield (AFY).	8.3	8-3, 8-4
10631 (i)	Opportunities for development of desalinated water		
	Describes opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply	4.3, 5.2	4-6 to 4-11, 5-5 to 5-10
10631 (j)	District is a CUWCC signatory		
	Agency is a CUWCC member.	3.2	3-1
	2003-04 annual updates are attached to plan.	Appendix D	
	Both annual updates are considered completed by CUWCC website.	3.2, Appendix D	3-1, Appendix D
10631 (k)	If Supplier receives or projects receiving water from a wholesale supplier		
	Agency receives, or projects receiving, wholesale water.	1.3	1-3
	Agency provided written demand projections to wholesaler, 20 years.	8.2, 8.3	8-1 to 8-4
	Wholesaler provided written water availability projections, by source, to agency, 20 years.	6.1.1	6-2 to 6-3
	Reliability of wholesale supply provided in writing by wholesale agency.	6.1.1	6-2 to 6-3

10632	Water Shortage Contingency Plan Section		
	Water shortage contingency plan section.	9	9-1 to 9-12
10632 (a)	Stages of Action		
	Provide stages of action.	Appendix G	4-1 to 4-4
	Provide the water supply conditions for each stage.	Appendix G	4-1 to 4-4
	Includes plan for 50 percent supply shortage.	Appendix G	4-1 to 4-4
10632 (b)	Three-Year Minimum Water Supply		
	Identifies driest 3-year period.	8.3	8-3
	Minimum water supply available by source for the next three years.	8.3	8-3
10632 (c)	Preparation for catastrophic water supply interruption		
	Provided catastrophic supply interruption plan.	1.5, 9.1	1-6, 9-1 to 9-2
10632 (d)	Prohibitions		
	List the mandatory prohibitions against specific water use practices during water shortages.	9.2.9	9-11
10632 (e)	Consumption Reduction Methods		
	List the consumption reduction methods the water supplier will use to reduce water use in the most restrictive stages with up to a 50% reduction.	Appendix G	5-1 to 5-14
10632 (f)	Penalties		
	List excessive use penalties or charges for excessive use.	9.2.9	9-11 to 9-12
10632 (g)	Revenue and Expenditure Impacts		
	Describe how actions and conditions impact revenues.	9.2.7	9-11
	Describe how actions and conditions impact expenditures.	9.2.7	9-11
	Describe measures to overcome the revenue and expenditure impacts.	9.2.7	9-11
10632 (h)	Water Shortage Contingency Ordinance/Resolution		
	Attach a copy of the draft water shortage contingency resolution or ordinance.	Appendix G	1-1 to 7-2

10632 (i)	Reduction Measuring Mechanism		
	Provided mechanisms for determining actual reductions.	Appendix G	5-1 to 5-14
10633	Recycling Plan Agency Coordination		
	Describe the coordination of the recycling plan preparation information to the extent available.	5.3	5-10 to 5-19
10633 (a)	Wastewater System Description		
	Describe the wastewater collection and treatment systems in the supplier's service area.	5.3.3	5-13
	Quantify the volume of wastewater collected and treated.	Appendix F	F-3
10633 (a - d)	Wastewater Disposal and Recycled Water Uses		
	Describes methods of wastewater disposal.	5.3.3, Appendix F	5-13, F-3
	Describe the current type, place, and use of recycled water.	Appendix F	F-4
	Describe and quantify potential uses of recycled water.	5.3.5, Appendix F	5-19, F-4
	Determination of technical and economic feasibility of serving the potential uses.	5.3.2	5-11 to 5-13
10633 (e)	Projected Uses of Recycled Water		
	Projected use of recycled water, 20 years.	5.3.5, Appendix F	5-19, F-4
	Compare UWMP 2000 projections with UWMP 2005 actual.	5.3.2	5-11
10633 (f)	Plan to Optimize Use of Recycled Water		
	Describe actions that might be taken to encourage recycled water uses.	5.3.4	5-15 to 5-18
	Describe projected results of these actions in terms of acre-feet of recycled water used per year.	5.3.4	5-15 to 5-17
	Provide a recycled water use optimization plan which includes actions to facilitate the use of recycled water (dual distribution systems, promote recirculating uses).	5.3.4	5-15 to 5-17
10634	Water quality impacts on availability of supply		
	Discusses water quality impacts (by source) upon water management strategies and supply reliability.	7	7-1 to 7-8
10635 (a)	Supply and Demand Comparison to 20 Years		
	Compare the projected normal water supply to projected normal water use over the next 20 years, in 5-year increments.	8.2	8-1 to 8-2

10635 (a)	Supply and Demand Comparison: Single-dry Year Scenario		
	Compare the projected single-dry year water supply to projected single-dry year water use over the next 20 years, in 5-year increments.	8.3	8-2 to 8-3
10635 (a)	Supply and Demand Comparison: Multiple-dry Year Scenario		
	Project a multiple-dry year period (as identified in Table 9) occurring between 2006-2010 and compare projected supply and demand during those years.	8.3	8-3
	Project a multiple-dry year period (as identified in Table 9) occurring between 2011-2015 and compare projected supply and demand during those years.	8.3	8-4
	Project a multiple-dry year period (as identified in Table 9) occurring between 2016-2020 and compare projected supply and demand during those years.	8.3	8-4
	Project a multiple-dry year period (as identified in Table 9) occurring between 2021-2025 and compare projected supply and demand during those years.	8.3	8-4
	Provision of Water Service Reliability section to cities/counties within service area.	1.3, 8.2, 8.3	8-1 to 8-4
	Provided Water Service Reliability section of UWMP to cities and counties within which it provides water supplies within 60 days of UWMP submission to DWR.	Appendix B	
10642	Does the Plan Include Public Participation and Plan Adoption		
	Attach a copy of adoption resolution.	Appendix B	
	Encourage involvement of social, cultural & economic community groups.	1.3	1-2 to 1-3
	Plan available for public inspection.	1.3	1-2 to 1-3
	Provide proof of public hearing	Appendix B	
	Provided meeting notice to local governments.	Appendix B	
10643	Review of implementation of 2000 UWMP		
	Reviewed implementation plan and schedule of 2000 UWMP.	1	1-1
	Implemented in accordance with the schedule set forth in plan.	1	1-1
10644 (a)	Provision of 2005 UWMP to local governments		
	Provide 2005 UWMP to DWR, and cities and counties within 30 days of adoption.	Appendix B	
10645	Does the plan or correspondence accompanying it show where it is available for public review		
	Does UWMP or correspondence accompanying it show where it is available for public review.	1.3	1-3

APPENDIX D

CUWCC BMP Reports

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BMP 03 Coverage: System Water Audits, Leak Detection and Repair

Reporting Unit:
San Diego County Water Authority

Reporting Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet one of two conditions to be in compliance with BMP 3:

Condition 1: Perform a prescreening audit. If the result is equal to or greater than 0.9 nothing more needs be done.

Condition 2: Perform a prescreening audit. If the result is less than 0.9, perform a full audit in accordance with AWWA's Manual of Water Supply Practices, Water Audits, and Leak Detection.

Test for Conditions 1 and 2

<u>Report Year</u>	<u>Report Period</u>	<u>Pre-Screen Completed</u>	<u>Pre-Screen Result</u>	<u>Full Audit Indicated</u>	<u>Full Audit Completed</u>
1999	99-00	NO	106.1%	No	NO
2000	99-00	NO	97.9%	No	NO
2001	01-02	YES	99.6%	No	NO
2002	01-02	YES	101.3%	No	NO
2003	03-04	YES	99.8%	No	NO
2004	03-04	YES	100.2%	No	NO

BMP 3 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 07 Coverage: Public Information Programs

Reporting Unit:
San Diego County Water Authority

Reporting Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet one condition to comply with BMP 7.

Condition 1: Implement and maintain a public information program consistent with BMP 7's definition.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 7 Implementation Year</u>	<u>RU Has Public Information Program?</u>
1999	99-00	2	YES
2000	99-00	3	YES
2001	01-02	4	YES
2002	01-02	5	YES
2003	03-04	6	YES
2004	03-04	7	YES

BMP 7 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 08 Coverage: School Education Programs

Reporting Unit:
San Diego County Water Authority

Reporting Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet one condition to comply with BMP 8.

Condition 1: Implement and maintain a school education program consistent with BMP 8's definition.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 8 Implementation Year</u>	<u>RU Has School Education Program?</u>
1999	99-00	2	YES
2000	99-00	3	YES
2001	01-02	4	YES
2002	01-02	5	YES
2003	03-04	6	YES
2004	03-04	7	YES

BMP 8 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 11 Coverage: Conservation Pricing

Reporting Unit:
San Diego County Water Authority

Reporting Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one condition to comply with BMP 11.

Agency shall maintain rate structure consistent with BMP 11's definition of conservation pricing. Implementation methods shall be at least as effective as eliminating non-conserving pricing and adopting conserving pricing. For signatories supplying both water and sewer service, this BMP applies to pricing of both water and sewer service. Signatories that supply water but not sewer service shall make good faith efforts to work with sewer agencies so that those sewer agencies adopt conservation pricing for sewer service.

a) Non-conserving pricing provides no incentives to customers to reduce use. Such pricing is characterized by one or more of the following components: rates in which the unit price decreases as the quantity used increases (declining block rates); rates that involve charging customers a fixed amount per billing cycle regardless of the quantity used; pricing in which the typical bill is determined by high fixed charges and low commodity charges.

b) Conservation pricing provides incentives to customers to reduce average or peak use, or both. Such pricing includes: rates designed to recover the cost of providing service; and billing for water and sewer service based on metered water use. Conservation pricing is also characterized by one or more of the following components: rates in which the unit rate is constant regardless of the quantity used (uniform rates) or increases as the quantity used increases (increasing block rates); seasonal rates or excess-use surcharges to reduce peak demands during summer months; rates based upon the longrun marginal cost or the cost of adding the next unit of capacity to the system.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>RU Employed Non Conserving Rate Structure</u>	<u>RU Meets BMP 11 Coverage Requirement</u>
1999	99-00	NO	YES
2000	99-00	NO	YES
2001	01-02	NO	YES
2002	01-02	NO	YES
2003	03-04	NO	YES
2004	03-04	NO	YES

BMP 11 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 12 Coverage: Conservation Coordinator

Reporting Unit:
Alameda County Water District

Reporting Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

Agency shall staff and maintain the position of conservation coordinator and provide support staff as necessary.

Test for Compliance

<u>Report Year</u>	<u>Report Period</u>	<u>Conservation Coordinator Position Staffed?</u>	<u>Total Staff on Team (incl. CC)</u>
1999	99-00	YES	3
2000	99-00	YES	3
2001	01-02	YES	3
2002	01-02	YES	3
2003	03-04	YES	2
2004	03-04	YES	2

BMP 12 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:

**San Diego County Water
Authority**

BMP Form Status:
100% Complete

Year:
2001

A. Implementation

1. Has your agency completed a pre-screening system audit for this reporting year? yes
2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production:
 - a. Determine metered sales (AF) 589289
 - b. Determine other system verifiable uses (AF) 0
 - c. Determine total supply into the system (AF) 591441
 - d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required. 1.00
3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production? yes
4. Did your agency complete a full-scale audit during this report year? no
5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit? yes
6. Does your agency operate a system leak detection program? yes
 - a. If yes, describe the leak detection program:

AQUEDUCT PROTECTION PROGRAM. The Water Authority strategically shuts down and drains sections of its entire pipeline. Engineers enter the pipeline and inspect them internally. When deterioration is discovered, the Water Authority repairs or replaces the affected sections of pipe before they can fail. Since the program was initiated in 1990, no section of inspected pipeline has failed.

B. Survey Data

1. Total number of miles of distribution system line. 279
2. Number of miles of distribution system line surveyed. 29.2

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	610000	610000
2. Actual Expenditures	700000	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Note on #2. Metered deliveries include previously purchased water in storage sold to member agencies.

BMP 07: Public Information Programs

Reporting Unit:

San Diego County Water Authority

BMP Form Status:
100% Complete

Year:
2001

A. Implementation

1. Does your agency maintain an active public information program to promote and educate customers about water conservation? yes

a. If YES, describe the program and how it's organized.

The Authority's Public Affairs Department promotes water awareness through ongoing interaction with the media, participation in community events, and the publication of numerous educational materials. As a water wholesaler, the San Diego County Water Authority's partners with its 23 member agencies by hosting Joint Public Information Committee meetings, providing a Speaker's Bureau, training, and an Educational Program which offers a wide array of education opportunities and materials for students from kindergarten through high school.

2. Indicate which and how many of the following activities are included in your public information program.

Public Information Program Activity	Yes/No	Number of Events
a. Paid Advertising	yes	2
b. Public Service Announcement	yes	1
c. Bill Inserts / Newsletters / Brochures	yes	10
d. Bill showing water usage in comparison to previous year's usage	no	
e. Demonstration Gardens	yes	1
f. Special Events, Media Events	yes	2
g. Speaker's Bureau	yes	10
h. Program to coordinate with other government agencies, industry and public interest groups and media	yes	

B. Conservation Information Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	53252	53252
2. Actual Expenditures	53252	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 08: School Education Programs

Reporting Unit:

San Diego County Water Authority

BMP Form Status:
100% Complete

Year:
2001

A. Implementation

1. Has your agency implemented a school information program to promote water conservation? yes

2. Please provide information on your school programs (by grade level):

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	yes	0	0	0
Grades 4th-6th	yes	0	0	0
Grades 7th-8th	yes	0	0	0
High School	yes	0	0	0

3. Did your Agency's materials meet state education framework requirements? yes

4. When did your Agency begin implementing this program? 9/1/1990

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	410628	410628
2. Actual Expenditures	411806	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

The Authority's regional School Program is an established program with a renowned reputation throughout the region. The Program offers students from kindergarden through high school, a wide array of educational opportunities including the Splash Mobile, water testing kits, and computer programs. The Program is available to over 400 elementary schools, over 80 middle schools, as well as over 60 high schools. Teachers are offered classroom presentations, mini-grants, and curriculum materials including videos, workbooks and other informational handouts. Since this Program reflects educational activity to all retail agencies, the number of class presentations, students reached, and teacher workshops are recorded in each of the Authority's member agencies BMP Report. However, the Authority has recorded overall expenditures in this wholesale report.

BMP 10: Wholesale Agency Assistance Programs

Reporting Unit:
**San Diego County Water
 Authority**

BMP Form Status: **100% Complete** Year: **2001**

A. Implementation

1. Financial Support by BMP

BMP	Financial Incentives Offered?	Budgeted Amount	Amount Awarded	BMP	Financial Incentives Offered?	Budgeted Amount	Amount Awarded
1	yes	20000	7125	8	yes	410628	411806
2	No	0	0	9	yes	100000	111203
3	No	610000	700000	10	yes	805775	726007
4	No			11	No		
5	yes	50000	31682	12	No		
6	yes	50000	50000	13	No		
7	No	53252	53252	14	yes	600000	428152

2. Technical Support

- a. Has your agency conducted or funded workshops addressing CUWCC procedures for calculating program savings, costs and cost-effectiveness? yes
- b. Has your agency conducted or funded workshops addressing retail agencies' BMP implementation reporting requirements? yes
- c. Has your agency conducted or funded workshops addressing:
- 1) ULFT replacement yes
 - 2) Residential retrofits yes
 - 3) Commercial, industrial, and institutional surveys yes
 - 4) Residential and large turf irrigation yes
 - 5) Conservation-related rates and pricing yes

3. Staff Resources by BMP

Qualified No. FTE

Qualified No. FTE

BMP	Staff Available for BMP?	Staff Assigned to BMP	BMP	Staff Available for BMP?	Staff Assigned to BMP
1	yes	1	8	yes	3
2	No	0	9	yes	1
3	yes	18	10	yes	1
4	yes	1	11	yes	1
5	yes	1	12	yes	1
6	yes	1	13	yes	1
7	yes	1	14	yes	1

4. Regional Programs by BMP

BMP	Implementation/ Management Program?	BMP	Implementation/ Management Program?
1	yes	8	yes
2	No	9	yes
3	yes	10	yes
4	yes	11	yes
5	yes	12	yes
6	yes	13	yes
7	yes	14	yes

B. Wholesale Agency Assistance Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	805775	981186
2. Actual Expenditures	726007	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

A.1. Costs associated to programs were included, but not staffing costs (except BMP7 which is staffing costs) A.3. Conservation staff consists of one Water Resources Manager, two WR Specialists, one Assistant WR Specialist. In addition, there are support staff such as Management Analyst, and Quality Control staff. Each program manager has several programs to manage. However, consultant's time was not included since all consultants work on a variety of programs. Therefore, staff resources is a conservative number for overall conservation effort.

BMP 11: Conservation Pricing

Reporting Unit:
San Diego County Water Authority

BMP Form
Status:
100% Complete

Year:
2001

A. Implementation

Rate Structure Data Volumetric Rates for Water Service by Customer Class

1. Residential

- a. Water Rate Structure Uniform
- b. Sewer Rate Structure Service Not Provided
- c. Total Revenue from Volumetric Rates \$0
- d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources \$0

2. Commercial

- a. Water Rate Structure Uniform
- b. Sewer Rate Structure Service Not Provided
- c. Total Revenue from Volumetric Rates \$0
- d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources \$0

3. Industrial

- a. Water Rate Structure Uniform
- b. Sewer Rate Structure Service Not Provided
- c. Total Revenue from Volumetric Rates \$0
- d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources \$0

4. Institutional / Government

- a. Water Rate Structure Uniform
- b. Sewer Rate Structure Service Not Provided
- c. Total Revenue from Volumetric Rates \$0
- d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources \$0

5. Irrigation

- a. Water Rate Structure Uniform
- b. Sewer Rate Structure Service Not Provided
- c. Total Revenue from Volumetric Rates \$0
- d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources \$0

6. Other

- a. Water Rate Structure Uniform
- b. Sewer Rate Structure Service Not Provided
- c. Total Revenue from Volumetric Rates \$256966097

d. Total Revenue from Non-Volumetric
Charges, Fees and other Revenue Sources \$99287528

B. Conservation Pricing Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 12: Conservation Coordinator

Reporting Unit:
**San Diego County Water
Authority**

BMP Form Status:
100% Complete

Year:
2001

A. Implementation

1. Does your Agency have a conservation coordinator? yes
2. Is this a full-time position? yes
3. If no, is the coordinator supplied by another agency with which you cooperate in a regional conservation program ?
4. Partner agency's name: NA
5. If your agency supplies the conservation coordinator:
 - a. What percent is this conservation coordinator's position? 100%
 - b. Coordinator's Name Bill Jacoby
 - c. Coordinator's Title Water Resources Manager
 - d. Coordinator's Experience and Number of Years 18 years in program implementation and policy making
 - e. Date Coordinator's position was created (mm/dd/yyyy) 11/15/1988
6. Number of conservation staff, including Conservation Coordinator. 5

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	97307	97307
2. Actual Expenditures	97307	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:

San Diego County Water Authority

BMP Form Status:
100% Complete

Year:
2002

A. Implementation

1. Has your agency completed a pre-screening system audit for this reporting year? yes
2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production:
 - a. Determine metered sales (AF) 659244
 - b. Determine other system verifiable uses (AF) 0
 - c. Determine total supply into the system (AF) 650695
 - d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required. 1.01
3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production? yes
4. Did your agency complete a full-scale audit during this report year? no
5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit? yes
6. Does your agency operate a system leak detection program? yes
 - a. If yes, describe the leak detection program:

AQUEDUCT PROTECTION PROGRAM. The Water Authority strategically shuts down and drains sections of its entire pipeline. Engineers enter the pipeline and inspect them internally. When deterioration is discovered, the Water Authority repairs or replaces the affected sections of pipe before they can fail. Since the program was initiated in 1990, no section of inspected pipeline has failed.

B. Survey Data

1. Total number of miles of distribution system line. 279
2. Number of miles of distribution system line surveyed. 54.5

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	610000	610000
2. Actual Expenditures	965000	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Note on #2. Metered deliveries include previously purchased water in storage sold to member agencies.

BMP 07: Public Information Programs

Reporting Unit:
**San Diego County Water
Authority**

BMP Form Status:
100% Complete

Year:
2002

A. Implementation

1. Does your agency maintain an active public information program to promote and educate customers about water conservation? yes

a. If YES, describe the program and how it's organized.

The Authority's Public Affairs Department promotes water awareness through ongoing interaction with the media, participation in community events, and the publication of numerous educational materials. As a water wholesaler, the San Diego County Water Authority's partners with its 23 member agencies by hosting Joint Public Information Committee meetings, providing a Speaker's Bureau, training, and an Educational Program which offers a wide array of education opportunities and materials for students from kindergarten through high school.

2. Indicate which and how many of the following activities are included in your public information program.

Public Information Program Activity	Yes/No	Number of Events
a. Paid Advertising	yes	4
b. Public Service Announcement	yes	4
c. Bill Inserts / Newsletters / Brochures	yes	12
d. Bill showing water usage in comparison to previous year's usage	no	
e. Demonstration Gardens	yes	1
f. Special Events, Media Events	yes	2
g. Speaker's Bureau	yes	15
h. Program to coordinate with other government agencies, industry and public interest groups and media	yes	

B. Conservation Information Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	53252	53252
2. Actual Expenditures	53252	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 08: School Education Programs

Reporting Unit:
San Diego County Water Authority

BMP Form Status:
100% Complete

Year:
2002

A. Implementation

1. Has your agency implemented a school information program to promote water conservation? yes

2. Please provide information on your school programs (by grade level):

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	yes	0	0	0
Grades 4th-6th	yes	0	0	0
Grades 7th-8th	yes	0	0	0
High School	yes	0	0	0

3. Did your Agency's materials meet state education framework requirements? yes

4. When did your Agency begin implementing this program? 9/1/1990

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	410628	461256
2. Actual Expenditures	411806	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

The Authority's regional School Program is an established program with a renowned reputation throughout the region. The Program offers students from kindergarden through high school, a wide array of educational opportunities including the Splash Mobile, water testing kits, and computer programs. The Program is available to over 400 elementary schools, over 80 middle schools, as well as over 60 high schools. Teachers are offered classroom presentations, mini-grants, and curriculum materials including videos, workbooks and other informational handouts. Since this Program reflects educational activity to all retail agencies, the number of class presentations, students reached, and teacher workshops are recorded in each of the Authority's member agencies BMP Report. However, the Authority has recorded overall expenditures in this wholesale report.

BMP 10: Wholesale Agency Assistance Programs

Reporting Unit:

San Diego County Water Authority

BMP Form Status:
100% Complete

Year:
2002

A. Implementation

1. Financial Support by BMP

BMP	Financial Incentives Offered?	Budgeted Amount	Amount Awarded	BMP	Financial Incentives Offered?	Budgeted Amount	Amount Awarded
1	yes	20000	6353	8	yes	410628	411806
2	No			9	yes	100000	105715
3	No	610000	965000	10	yes	981186	913368
4	No			11	No		
5	yes	45000	24387	12	No		
6	yes	100000	107639	13	No		
7	yes	53252	53252	14	yes	600000	611582

2. Technical Support

- a. Has your agency conducted or funded workshops addressing CUWCC procedures for calculating program savings, costs and cost-effectiveness? yes
- b. Has your agency conducted or funded workshops addressing retail agencies' BMP implementation reporting requirements? yes
- c. Has your agency conducted or funded workshops addressing:
- 1) ULFT replacement yes
 - 2) Residential retrofits yes
 - 3) Commercial, industrial, and institutional surveys yes
 - 4) Residential and large turf irrigation yes
 - 5) Conservation-related rates and pricing yes

3. Staff Resources by BMP

Qualified No. FTE

Qualified No. FTE

BMP	Staff Available for BMP?	Staff Assigned to BMP	BMP	Staff Available for BMP?	Staff Assigned to BMP
1	yes	1	8	yes	3
2	No	0	9	yes	1
3	yes	18	10	yes	1
4	yes	1	11	yes	1
5	yes	1	12	yes	1
6	yes	1	13	yes	1
7	yes	1	14	yes	1

4. Regional Programs by BMP

BMP	Implementation/ Management Program?	BMP	Implementation/ Management Program?
1	yes	8	yes
2	No	9	yes
3	yes	10	yes
4	yes	11	yes
5	yes	12	yes
6	yes	13	yes
7	yes	14	yes

B. Wholesale Agency Assistance Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	981186	990000
2. Actual Expenditures	913368	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Internal conservation staff consists of one Water Resources Manager, two WR Specialists, one Assistant WR Specialist. In addition, there are several support staff such as a Management Analyst and Quality Control staff. Each program manager is responsible for more than one program, however, consultant time is not added to the above table. The number of FTE shown in BMP 10 (wholesale agency) are the same FTE that are reflected in various BMPs.

BMP 11: Conservation Pricing

Reporting Unit:
San Diego County Water Authority

BMP Form
Status:
100% Complete

Year:
2002

A. Implementation

Rate Structure Data Volumetric Rates for Water Service by Customer Class

1. Residential

- a. Water Rate Structure Uniform
- b. Sewer Rate Structure Service Not Provided
- c. Total Revenue from Volumetric Rates \$0
- d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources \$0

2. Commercial

- a. Water Rate Structure Uniform
- b. Sewer Rate Structure Service Not Provided
- c. Total Revenue from Volumetric Rates \$0
- d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources \$0

3. Industrial

- a. Water Rate Structure Uniform
- b. Sewer Rate Structure Service Not Provided
- c. Total Revenue from Volumetric Rates \$0
- d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources \$0

4. Institutional / Government

- a. Water Rate Structure Uniform
- b. Sewer Rate Structure Service Not Provided
- c. Total Revenue from Volumetric Rates \$0
- d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources \$0

5. Irrigation

- a. Water Rate Structure Uniform
- b. Sewer Rate Structure Service Not Provided
- c. Total Revenue from Volumetric Rates \$0
- d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources \$0

6. Other

- a. Water Rate Structure Uniform
- b. Sewer Rate Structure Service Not Provided
- c. Total Revenue from Volumetric Rates \$285092217

d. Total Revenue from Non-Volumetric
Charges, Fees and other Revenue Sources \$94946607

B. Conservation Pricing Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 12: Conservation Coordinator

Reporting Unit:
**San Diego County Water
Authority**

BMP Form Status:
100% Complete

Year:
2002

A. Implementation

1. Does your Agency have a conservation coordinator? yes
2. Is this a full-time position? yes
3. If no, is the coordinator supplied by another agency with which you cooperate in a regional conservation program ?
4. Partner agency's name: NA
5. If your agency supplies the conservation coordinator:
 - a. What percent is this conservation coordinator's position? 100%
 - b. Coordinator's Name Bill Jacoby
 - c. Coordinator's Title Water Resources Manager
 - d. Coordinator's Experience and Number of Years 19 years in program implementation and policy making
 - e. Date Coordinator's position was created (mm/dd/yyyy) 11/15/1988
6. Number of conservation staff, including Conservation Coordinator. 5

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	97307	98728
2. Actual Expenditures	97307	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 12: Conservation Coordinator

Reporting Unit:

**San Diego County Water
Authority**

BMP Form Status:
100% Complete

Year:
2002

A. Implementation

1. Does your Agency have a conservation coordinator? yes
2. Is this a full-time position? yes
3. If no, is the coordinator supplied by another agency with which you cooperate in a regional conservation program ?
4. Partner agency's name: NA
5. If your agency supplies the conservation coordinator:
 - a. What percent is this conservation coordinator's position? 100%
 - b. Coordinator's Name Bill Jacoby
 - c. Coordinator's Title Water Resources Manager
 - d. Coordinator's Experience and Number of Years 19 years in program implementation and policy making
 - e. Date Coordinator's position was created (mm/dd/yyyy) 11/15/1988
6. Number of conservation staff, including Conservation Coordinator. 5

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	97307	98728
2. Actual Expenditures	97307	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 03 Coverage: System Water Audits, Leak Detection and Repair

Reporting Unit:
San Diego County Water Authority

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one of two conditions to be in compliance with BMP 3:

Condition 1: Perform a prescreening audit. If the result is equal to or greater than 0.9 nothing more needs be done.

Condition 2: Perform a prescreening audit. If the result is less than 0.9, perform a full audit in accordance with AWWA's Manual of Water Supply Practices, Water Audits, and Leak Detection.

Test for Conditions 1 and 2

<u>Report Year</u>	<u>Report Period</u>	<u>Pre-Screen Completed</u>	<u>Pre-Screen Result</u>	<u>Full Audit Indicated</u>	<u>Full Audit Completed</u>
1999	99-00	NO	106.1%	No	NO
2000	99-00	NO	97.9%	No	NO
2001	01-02	YES	99.6%	No	NO
2002	01-02	YES	101.3%	No	NO
2003	03-04	YES	99.8%	No	NO
2004	03-04	YES	100.2%	No	NO

BMP 3 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 07 Coverage: Public Information Programs

Reporting Unit:
San Diego County Water Authority

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet one condition to comply with BMP 7.

Condition 1: Implement and maintain a public information program consistent with BMP 7's definition.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 7 Implementation Year</u>	<u>RU Has Public Information Program?</u>
1999	99-00	2	YES
2000	99-00	3	YES
2001	01-02	4	YES
2002	01-02	5	YES
2003	03-04	6	YES
2004	03-04	7	YES

BMP 7 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 08 Coverage: School Education Programs

Reporting Unit:
San Diego County Water Authority

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet one condition to comply with BMP 8.

Condition 1: Implement and maintain a school education program consistent with BMP 8's definition.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 8 Implementation Year</u>	<u>RU Has School Education Program?</u>
1999	99-00	2	YES
2000	99-00	3	YES
2001	01-02	4	YES
2002	01-02	5	YES
2003	03-04	6	YES
2004	03-04	7	YES

BMP 8 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 11 Coverage: Conservation Pricing

Reporting Unit:
San Diego County Water Authority

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one condition to comply with BMP 11.

Agency shall maintain rate structure consistent with BMP 11's definition of conservation pricing. Implementation methods shall be at least as effective as eliminating non-conserving pricing and adopting conserving pricing. For signatories supplying both water and sewer service, this BMP applies to pricing of both water and sewer service. Signatories that supply water but not sewer service shall make good faith efforts to work with sewer agencies so that those sewer agencies adopt conservation pricing for sewer service.

a) Non-conserving pricing provides no incentives to customers to reduce use. Such pricing is characterized by one or more of the following components: rates in which the unit price decreases as the quantity used increases (declining block rates); rates that involve charging customers a fixed amount per billing cycle regardless of the quantity used; pricing in which the typical bill is determined by high fixed charges and low commodity charges.

b) Conservation pricing provides incentives to customers to reduce average or peak use, or both. Such pricing includes: rates designed to recover the cost of providing service; and billing for water and sewer service based on metered water use. Conservation pricing is also characterized by one or more of the following components: rates in which the unit rate is constant regardless of the quantity used (uniform rates) or increases as the quantity used increases (increasing block rates); seasonal rates or excess-use surcharges to reduce peak demands during summer months; rates based upon the longrun marginal cost or the cost of adding the next unit of capacity to the system.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>RU Employed Non Conserving Rate Structure</u>	<u>RU Meets BMP 11 Coverage Requirement</u>
1999	99-00	NO	YES
2000	99-00	NO	YES
2001	01-02	NO	YES
2002	01-02	NO	YES
2003	03-04	NO	YES
2004	03-04	NO	YES

BMP 11 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 12 Coverage: Conservation Coordinator

Reporting Unit:
Triunfo Sanitation District

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? Yes

Agency shall staff and maintain the position of conservation coordinator and provide support staff as necessary.

Test for Compliance

<u>Report Year</u>	<u>Report Period</u>	<u>Conservation Coordinator Position Staffed?</u>	<u>Total Staff on Team (incl. CC)</u>
1999	99-00	YES	2
2000	99-00	YES	3
2001	01-02	YES	3
2002	01-02	YES	3
2003	03-04	YES	1
2004	03-04	YES	1

BMP 12 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:

San Diego County Water Authority

BMP Form Status:
100% Complete

Year:
2003

A. Implementation

1. Has your agency completed a pre-screening system audit for this reporting year? yes
2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production:
 - a. Determine metered sales (AF) 614939
 - b. Determine other system verifiable uses (AF) 0
 - c. Determine total supply into the system (AF) 615892
 - d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required. 1.00
3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production? yes
4. Did your agency complete a full-scale audit during this report year? no
5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit? yes
6. Does your agency operate a system leak detection program? yes
 - a. If yes, describe the leak detection program:

AQUEDUCT PROTECTION PROGRAM. The Water Authority strategically shuts down and drains sections of its entire pipeline. Engineers enter the pipeline and inspect them internally. When deterioration is discovered, the Water Authority repairs or replaces the affected sections of pipe before they can fail. This systematic maintenance and repair program prevents leaks. Since the program was initiated in 1990, no section of inspected pipeline has failed

B. Survey Data

1. Total number of miles of distribution system line. 300
2. Number of miles of distribution system line surveyed. 53.9

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	797500	869100
2. Actual Expenditures	885294	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

BMP 07: Public Information Programs

Reporting Unit:
**San Diego County Water
Authority**

BMP Form Status:
100% Complete

Year:
2003

A. Implementation

1. Does your agency maintain an active public information program to promote and educate customers about water conservation? yes

a. If YES, describe the program and how it's organized.

The Authority's Public Affairs Department promotes water awareness through ongoing interaction with the media, participation in community events, and the publication of numerous educational materials. As a water wholesaler, the San Diego County Water Authority's partners with its 23 member agencies by hosting Joint Public Information Committee meetings, providing a Speaker's Bureau, training, and an Educational Program which offers a wide array of education opportunities and materials for students from kindergarten through high school.

2. Indicate which and how many of the following activities are included in your public information program.

Public Information Program Activity	Yes/No	Number of Events
a. Paid Advertising	yes	4
b. Public Service Announcement	yes	2
c. Bill Inserts / Newsletters / Brochures	yes	10
d. Bill showing water usage in comparison to previous year's usage	no	
e. Demonstration Gardens	yes	6
f. Special Events, Media Events	yes	5
g. Speaker's Bureau	yes	80
h. Program to coordinate with other government agencies, industry and public interest groups and media	yes	

B. Conservation Information Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	53252	56736
2. Actual Expenditures	53252	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 08: School Education Programs

Reporting Unit:
San Diego County Water Authority

BMP Form Status:
100% Complete

Year:
2003

A. Implementation

1. Has your agency implemented a school information program to promote water conservation? yes

2. Please provide information on your school programs (by grade level):

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	yes	153	23204	0
Grades 4th-6th	yes	910	44486	94
Grades 7th-8th	yes	0	0	0
High School	yes	0	0	0

3. Did your Agency's materials meet state education framework requirements? yes

4. When did your Agency begin implementing this program? 09/01/1990

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	473717	563810
2. Actual Expenditures	492505	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

The Water Authority's regional School Program is an established program with a renowned reputation throughout the region. The Program offers students from kindergarden through high school, a wide array of educational opportunities including the Splash Mobile, water testing kits, and computer programs. Classroom presentations reach over 44,000 students in the San Diego County, and almost 100 workshops are provided for local teachers. The Program is available to over 417 elementary schools, over 90 middle schools, as well as over 71 high schools. Teachers are offered classroom presentations, mini-grants, and curriculum materials including videos, workbooks and other informational handouts. Since this Program reflects educational activity to all retail agencies, the number of class presentations, students reached, and teacher workshops are recorded in each of the Authority's member agencies BMP Report. However, the Water Authority has recorded overall expenditures in this wholesale report.

BMP 10: Wholesale Agency Assistance Programs

Reporting Unit:

San Diego County Water Authority

BMP Form Status:

100% Complete

Year:

2003

A. Implementation

1. Financial Support by BMP

BMP	Financial Incentives Offered?	Budgeted Amount	Amount Awarded	BMP	Financial Incentives Offered?	Budgeted Amount	Amount Awarded
1	yes	26000	12650	8	yes	473717	492505
2	No			9	yes	150000	108288
3	No	610000	610000	10	yes	985435	945040
4	No			11	No		
5	yes	45000	33523	12	No		
6	yes	150000	194985	13	No		
7	yes	53252	58577	14	yes	550000	595593

2. Technical Support

- a. Has your agency conducted or funded workshops addressing CUWCC procedures for calculating program savings, costs and cost-effectiveness? yes
- b. Has your agency conducted or funded workshops addressing retail agencies' BMP implementation reporting requirements? yes
- c. Has your agency conducted or funded workshops addressing:
- 1) ULFT replacement yes
 - 2) Residential retrofits yes
 - 3) Commercial, industrial, and institutional surveys yes
 - 4) Residential and large turf irrigation yes
 - 5) Conservation-related rates and pricing yes

3. Staff Resources by BMP

Qualified No. FTE

Qualified No. FTE

BMP	Staff Available for BMP?	Staff Assigned to BMP	BMP	Staff Available for BMP?	Staff Assigned to BMP
1	yes	1	8	yes	3
2	No	0	9	yes	1
3	yes	18	10	yes	1
4	yes	1	11	yes	1
5	yes	1	12	yes	1
6	yes	1	13	No	
7	yes	1	14	yes	1

4. Regional Programs by BMP

BMP	Implementation/ Management Program?	BMP	Implementation/ Management Program?
1	yes	8	yes
2	No	9	yes
3	yes	10	yes
4	No	11	yes
5	yes	12	yes
6	yes	13	No
7	yes	14	yes

B. Wholesale Agency Assistance Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	373680	394526
2. Actual Expenditures	373680	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Internal conservation staff consists of one Water Resources Manager, two WR Specialists, one Assistant WR Specialist. In addition, there are several support staff such as a Management Analyst and Quality Control staff. Each program manager is responsible for more than one program, however, consultant time is not added to the above table. The number of FTE shown in BMP 10 (wholesale agency) are the same FTE that are reflected in various BMPs.

BMP 11: Conservation Pricing

Reporting Unit:
San Diego County Water Authority

BMP Form
Status:
100% Complete

Year:
2003

A. Implementation

Rate Structure Data Volumetric Rates for Water Service by Customer Class

1. Residential

- a. Water Rate Structure Uniform
- b. Sewer Rate Structure Service Not Provided
- c. Total Revenue from Volumetric Rates \$274280932
- d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources \$96009705

2. Commercial

- a. Water Rate Structure
- b. Sewer Rate Structure
- c. Total Revenue from Volumetric Rates \$
- d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources \$

3. Industrial

- a. Water Rate Structure
- b. Sewer Rate Structure
- c. Total Revenue from Volumetric Rates \$
- d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources \$

4. Institutional / Government

- a. Water Rate Structure
- b. Sewer Rate Structure
- c. Total Revenue from Volumetric Rates \$
- d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources \$

5. Irrigation

- a. Water Rate Structure
- b. Sewer Rate Structure
- c. Total Revenue from Volumetric Rates \$
- d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources \$

6. Other

- a. Water Rate Structure
- b. Sewer Rate Structure
- c. Total Revenue from Volumetric Rates \$

d. Total Revenue from Non-Volumetric
Charges, Fees and other Revenue \$
Sources

B. Conservation Pricing Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

1.a. Unbundled. Choice not available.

BMP 12: Conservation Coordinator

Reporting Unit:
**San Diego County Water
Authority**

BMP Form Status:
100% Complete

Year:
2003

A. Implementation

1. Does your Agency have a conservation coordinator? yes
2. Is this a full-time position? yes
3. If no, is the coordinator supplied by another agency with which you cooperate in a regional conservation program ?
4. Partner agency's name: NA
5. If your agency supplies the conservation coordinator:
 - a. What percent is this conservation coordinator's position? 100%
 - b. Coordinator's Name Bill Jacoby
 - c. Coordinator's Title Water Resources Manager
 - d. Coordinator's Experience and Number of Years 20 years in program implementation & policy making
 - e. Date Coordinator's position was created (mm/dd/yyyy) 11/15/1988
6. Number of conservation staff, including Conservation Coordinator. 5

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	98728	119574
2. Actual Expenditures	98728	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:

San Diego County Water
Authority

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

1. Has your agency completed a pre-screening system audit for this reporting year? yes
2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production:
 - a. Determine metered sales (AF) 642659
 - b. Determine other system verifiable uses (AF) 0
 - c. Determine total supply into the system (AF) 641086
 - d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required. 1.00
3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production? yes
4. Did your agency complete a full-scale audit during this report year? no
5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit? yes
6. Does your agency operate a system leak detection program? yes
 - a. If yes, describe the leak detection program:

AQUEDUCT PROTECTION PROGRAM. The Water Authority strategically shuts down and drains sections of its entire pipeline. Engineers enter the pipeline and inspect them internally. When deterioration is discovered, the Water Authority repairs or replaces the affected sections of pipe before they can fail. This systematic maintenance and repair program prevents leaks. Since the program was initiated in 1990, no section of inspected pipeline has failed

B. Survey Data

1. Total number of miles of distribution system line. 300
2. Number of miles of distribution system line surveyed. 59.1

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	869100	869100
2. Actual Expenditures	2211419	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Note: Substantial increase in Actual Expenditures reflects aggressive preventative maintenance on pipeline

BMP 07: Public Information Programs

Reporting Unit:
**San Diego County Water
Authority**

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

1. Does your agency maintain an active public information program to promote and educate customers about water conservation? yes

a. If YES, describe the program and how it's organized.

The Authority's Public Affairs Department promotes water awareness through ongoing interaction with the media, participation in community events, and the publication of numerous educational materials. As a water wholesaler, the San Diego County Water Authority's partners with its 23 member agencies by hosting Joint Public Information Committee meetings, providing a Speaker's Bureau, training, and an Educational Program which offers a wide array of education opportunities and materials for students from kindergarten through high school.

2. Indicate which and how many of the following activities are included in your public information program.

Public Information Program Activity	Yes/No	Number of Events
a. Paid Advertising	yes	4
b. Public Service Announcement	yes	2
c. Bill Inserts / Newsletters / Brochures	yes	10
d. Bill showing water usage in comparison to previous year's usage	no	
e. Demonstration Gardens	yes	6
f. Special Events, Media Events	yes	5
g. Speaker's Bureau	yes	80
h. Program to coordinate with other government agencies, industry and public interest groups and media	yes	

B. Conservation Information Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	56736	56736
2. Actual Expenditures	56736	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 08: School Education Programs

Reporting Unit:

San Diego County Water
Authority

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

1. Has your agency implemented a school information program to promote water conservation? yes

2. Please provide information on your school programs (by grade level):

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	yes	153	23204	0
Grades 4th-6th	yes	910	44486	94
Grades 7th-8th	yes	0	0	0
High School	yes	0	0	0

3. Did your Agency's materials meet state education framework requirements? yes

4. When did your Agency begin implementing this program? 09/01/1990

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	563810	563810
2. Actual Expenditures	492505	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

The Water Authority's regional School Program is an established program with a renowned reputation throughout the region. The Program offers students from kindergarden through high school, a wide array of educational opportunities including the Splash Mobile, water testing kits, and computer programs. Classroom presentations reach over 44,000 students in the San Diego County, and almost 100 workshops are provided for local teachers. The Program is available to over 417 elementary schools, over 90 middle schools, as well as over 71 high schools. Teachers are offered classroom presentations, mini-grants, and curriculum materials including videos, workbooks and other informational handouts. Since this Program reflects educational activity to all retail agencies, the number of class presentations, students reached, and teacher workshops are recorded in each of the Authority's member agencies BMP Report. However, the Water Authority has recorded overall expenditures in this wholesale report.

BMP 10: Wholesale Agency Assistance Programs

Reporting Unit:
San Diego County Water Authority

BMP Form Status: **100% Complete**
 Year: **2004**

A. Implementation

1. Financial Support by BMP

BMP	Financial Incentives Offered?	Budgeted Amount	Amount Awarded	BMP	Financial Incentives Offered?	Budgeted Amount	Amount Awarded
1	yes	26000	13437	8	yes	492505	563810
2	No			9	yes	150000	108289
3	No	610000	610000	10	yes	851500	938685
4	No			11	No		
5	yes	45000	31692	12	No		
6	yes	237000	275962	13	No		
7	yes	58500	64434	14	yes	393500	461991

2. Technical Support

- a. Has your agency conducted or funded workshops addressing CUWCC procedures for calculating program savings, costs and cost-effectiveness? yes
- b. Has your agency conducted or funded workshops addressing retail agencies' BMP implementation reporting requirements? yes
- c. Has your agency conducted or funded workshops addressing:
 - 1) ULFT replacement yes
 - 2) Residential retrofits yes
 - 3) Commercial, industrial, and institutional surveys yes
 - 4) Residential and large turf irrigation yes
 - 5) Conservation-related rates and pricing yes

3. Staff Resources by BMP

Qualified	No. FTE	Qualified	No. FTE
-----------	---------	-----------	---------

BMP	Staff Available for BMP?	Staff Assigned to BMP	BMP	Staff Available for BMP?	Staff Assigned to BMP
1	yes	1	8	yes	3
2	No		9	yes	1
3	yes	18	10	yes	1
4	yes	1	11	yes	1
5	yes	1	12	yes	1
6	yes	1	13	No	
7	yes	1	14	yes	1

4. Regional Programs by BMP

BMP	Implementation/ Management Program?	BMP	Implementation/ Management Program?
1	yes	8	yes
2	No	9	yes
3	yes	10	yes
4	No	11	yes
5	yes	12	yes
6	yes	13	No
7	yes	14	yes

B. Wholesale Agency Assistance Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	851500	851500
2. Actual Expenditures	938685	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Internal conservation staff consists of one Water Resources Manager, two WR Specialists, one Assistant WR Specialist. In addition, there are several support staff such as a Management Analyst and Quality Control staff. Each program manager is responsible for more than one program, however, consultant time is not added to the above table. The number of FTE shown in BMP 10 (wholesale agency) are the same FTE that are reflected in various BMPs.

BMP 11: Conservation Pricing

Reporting Unit:
San Diego County Water Authority

BMP Form
Status:
100% Complete

Year:
2004

A. Implementation

Rate Structure Data Volumetric Rates for Water Service by Customer Class

1. Residential

- a. Water Rate Structure Uniform
- b. Sewer Rate Structure Service Not Provided
- c. Total Revenue from Volumetric Rates \$289577982
- d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources \$74935351

2. Commercial

- a. Water Rate Structure
- b. Sewer Rate Structure
- c. Total Revenue from Volumetric Rates \$
- d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources \$

3. Industrial

- a. Water Rate Structure
- b. Sewer Rate Structure
- c. Total Revenue from Volumetric Rates \$
- d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources \$

4. Institutional / Government

- a. Water Rate Structure
- b. Sewer Rate Structure
- c. Total Revenue from Volumetric Rates \$
- d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources \$

5. Irrigation

- a. Water Rate Structure
- b. Sewer Rate Structure
- c. Total Revenue from Volumetric Rates \$
- d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources \$

6. Other

- a. Water Rate Structure
- b. Sewer Rate Structure
- c. Total Revenue from Volumetric Rates \$

d. Total Revenue from Non-Volumetric
Charges, Fees and other Revenue \$
Sources

B. Conservation Pricing Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as"
variant of this BMP? No

a. If YES, please explain in detail how your implementation of this
BMP differs from Exhibit 1 and why you consider it to be "at least as
effective as."

D. Comments

6. Other. Unbundled. No such choice available.

BMP 12: Conservation Coordinator

Reporting Unit:

**San Diego County Water
Authority**

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

1. Does your Agency have a conservation coordinator? yes
2. Is this a full-time position? yes
3. If no, is the coordinator supplied by another agency with which you cooperate in a regional conservation program ?
4. Partner agency's name: NA
5. If your agency supplies the conservation coordinator:
 - a. What percent is this conservation coordinator's position? 100%
 - b. Coordinator's Name Bill Jacoby
 - c. Coordinator's Title Water Resources Manager
 - d. Coordinator's Experience and Number of Years 21 years in program implementation & policy making
 - e. Date Coordinator's position was created (mm/dd/yyyy) 11/15/1988
6. Number of conservation staff, including Conservation Coordinator. 5

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	119574	119574
2. Actual Expenditures	119574	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

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APPENDIX E

Documentation on Water Authority Colorado River Transfers

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Documentation on Water Authority Colorado River Transfers

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).

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).

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APPENDIX F

Member Agency Local Supply Projections

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Table F-1
Surface Water Projections for 2005 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	6,439	66-year (average based on the filling of El Capitan (1934-2000))
San Diego, City of	Barrett	29,000	Median yield based on Reservoir Management Plan
	El Capitan		
	Hodges		
	Lower Otay		
	Morena		
	San Vicente		
	Sutherland		
	Sub-Total		
Sweetwater Authority	Loveland	5,400	Planned local use is the 50th percentile of usable runoff for Loveland and Sweetwater Reservoirs. Years used were 1926 through 2004
	Sweetwater		
	Sub-total		
San Dieguito W.D./ Santa Fe I.D.	San Dieguito / Hodges	5700 ^a	Per Agreement. The split is SDWD 42.67% and SFID 57.33%
Vista I.D.	Henshaw	5,850	Median for the years 1960 - 2004
Total		59,649	

^a Surface water projection for San Dieguito/Hodges is 7,500 AF/YR until the Hodges/Olivenhain Pipeline and Pump Station are complete in 2008.

**Table F-2
Groundwater Projections for 2005 UWMP**

Existing and Projected Groundwater Yield Projects

Member Agency	Project Type	Groundwater Basin or Location	Projected Verifiable Projects (AF/YR) ¹						Regional Groundwater Goal (AF/YR) Includes Verifiable Projects and Other Potential Projects				
			2005	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030
Fallbrook PUD	Conjunctive-Use Project	Lower Santa Margarita River Basin	-	-	-	-	-	-	6,400	6,400	6,400	6,400	6,400
Helix WD	Pump & Blend	El Monte Basin	127	200	200	200	200	200	200	200	200	200	200
Oceanside, City of	Brackish Recovery	Mission Basin (Lower San Luis Rey River Valley)	2,227	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000
Padre Dam MWD (Lakeside & Riverview WD)	Pump & Treat	Santee Basin (San Diego River Basin)	-	775	775	775	775	775	775	775	775	775	775
MCB Camp Pendleton	Pump & Treat (Conjunctive Use)	South System: Lower Santa Margarita & Las Flores Basins	8,800	8,800	8,800	8,800	8,800	8,800	11,600	11,600	11,600	11,600	11,600
	Pump & Treat	North System: San Mateo & San Onofre Basins	2,000	2,000	3,770	4,600	4,600	4,600	2,000	3,770	4,600	4,600	4,600
San Diego, City of	Brackish Recovery	San Pasqual Valley	-	-	-	-	-	-	5,000	5,000	5,000	5,000	5,000
	Brackish Recovery	Mission Valley (Alluvial Aquifer / San Diego River)	-	-	-	-	-	-	1,600	1,600	1,600	1,600	1,600
	Brackish Recovery	San Diego Formation	-	-	-	-	-	-	2,800	2,800	5,600	5,600	5,600
Sweetwater Authority	Brackish Recovery	L. Sweetwater R. Basin Brackish GW Treatment	1,974	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400
	Pump & Treat	National City Well Field / San Diego Formation	1,793	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400
Yuima MWD	Pump & Blend	Pauma Basin (Upper San Luis Rey River Valley)	923	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Total			17,844	28,575	30,345	31,175	31,175	31,175	47,175	48,945	52,575	52,575	52,575

Projected Imported or Recycled Water Conjunctive Use Projects

Oceanside, City of	Conjunctive-Use Project	Lower San Luis Rey River / Mission Basin	-	-	-	-	-	-	-	3,500	3,500	3,500	3,500
Olivenhain MWD	Conjunctive-Use Project	Lower San Dieguito River Basin	-	-	-	-	-	-	-	100	100	150	150
Otay WD and San Diego, City of	Conjunctive-Use Project	Tijuana Valley/San Diego Formation	-	-	-	-	-	-	3,800	3,800	3,800	3,800	3,800
San Diego, City of	Conjunctive-Use Project	San Pasqual Valley	-	-	-	-	-	-	10,000	10,000	10,000	10,000	10,000
Total			-	-	-	-	-	-	13,800	17,400	17,400	17,450	17,450

¹ Projected verifiable projects are included in the Water Authority's 2005 UWMP reliability analysis.

**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
		2010			2040				
		P	S	T	P	S	T		
Carlsbad, City of	Carlsbad WRF	-	-	4.0	-	-	16.0	1,000	Irrigation
Encina Joint Powers Authority	Encina WPCF	32.0	32.0	-	36.0	36.0	-	1,300	Outfall-Reuse
Escondido, City of	Hale Avenue RRF/WRF	18.0	18.0	9.0	21.0	21.0	9.0	1,000	Reuse-Outfall-Stream
Fairbanks Ranch Comm. Ser. D	Fairbanks Ranch WPCF	0.3	0.3	0.3	0.3	0.3	0.3	960	Percolation
Fallbrook PUD	Fallbrook Plant #1 WRF	2.0	2.0	2.0	4.6	4.6	2.0	720	Reuse-Outfall
Leucadia CWD	Gafner WRF	2.0	2.0	2.0	2.0	2.0	2.0	1,300	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	5.0	17.4	17.4	10.0	874	Reuse-Outfall-Percolation
Olivenhain MWD	4-S Ranch WWTP	2.0	2.0	2.0	2.0	2.0	2.0	925	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	14.0	14.0	4.0	900	Reuse- Outfall
Ramona MWD	Santa Maria WWTP	1.5	1.5	0.4	1.5	1.5	1.5	867	Reuse-Stream
Ramona MWD	San Vicente WWTP	0.8	0.8	0.8	0.8	0.8	0.8	612	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	0.6	0.6	-	0.8	0.8	-	900	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	-	-	1,850	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	3.7	3.7	3.7	3.7	3.7	3.7	1,151	Reuse-Outfall
U.S. Marine Corps	Camp Pendleton WWTP #01	1.1	1.1	-	1.5	1.5	-	1,030	Effluent sent to CP #02
U.S. Marine Corps	Camp Pendleton WWTP #02	0.9	0.9	-	0.9	0.9	-	960	Reuse
U.S. Marine Corps	Camp Pendleton WWTP #03	0.9	0.9	-	1.1	1.1	-	980	Percolation
U.S. Marine Corps	Camp Pendleton WWTP #09	0.4	0.4	-	0.7	0.7	-	890	Percolation
U.S. Marine Corps	Camp Pendleton WWTP #11	1.4	1.4	-	3.2	3.2	-	755	Percolation
U.S. Marine Corps	Camp Pendleton WWTP #12	0.4	0.4	-	0.4	0.4	-	600	GW-Recharge
U.S. Marine Corps	Camp Pendleton WWTP #13	2.0	2.0	-	2.5	2.5	-	895	GW-Recharge
Vallecitos WD	Meadowlark WRP	3.0	3.0	3.0	3.0	3.0	3.0	1,000	Reuse-Land
Valley Center MWD	Lower Moosa Canyon WRF	0.40	0.40	0.40	1.00	1.00	1.00	1,000	Percolation/Irrigation
Valley Center MWD	Central Valley Area (North) WRF	-	-	-	0.22	0.22	0.22	1,000	Irrigation
Valley Center MWD	Lilac Ranch WRF	-	-	-	0.09	0.09	0.09	1,000	Irrigation
Valley Center MWD	Live Oak Ranch WRF	-	-	-	0.04	0.04	0.04	1,000	Irrigation
Valley Center MWD	Orchard Run WRF	0.08	0.08	0.08	0.08	0.08	0.08	1,000	Irrigation
Valley Center MWD	Woods Valley Ranch WRF	0.15	0.15	0.15	0.15	0.15	0.15	1,000	Irrigation
Valley Center MWD	Skyline Ranch WRF	0.02	0.02	-	0.02	0.02	-	1,000	Percolation
Whispering Palms CSD	Whispering Palms WPCF	0.4	0.4	-	0.4	0.4	0.4	963	Reuse-Percolation
		383.34	143.34	76.05	427.13	187.13	103.04		

CSD - Community Services District
MWD - Municipal Water District
RRF - Resource Recovery Facility
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
Recycled Water Projections**

Purveyor	Supply Source Treatment Plant/Agency	Treatment Level	Type of Reuse ¹	Projected Verifiable Reuse (AF/YR) ²						Regional Water Recycling Goal (AF/YR) Includes Verifiable Projects and Other Potential Projects					
				2005	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030	
Carlsbad MWD	Carlsbad WRF/Carlsbad MWD	Tertiary	Landscape, Agriculture	-	2,419	2,707	2,707	2,707	2,707	2,707	2,419	2,707	2,707	2,707	2,707
	Gafner WRF/Leucadia CWD	Tertiary	Landscape, Agriculture	245	265	-	-	-	-	-	265	-	-	-	-
	Meadowlark WRF/Vallecitos WD	Tertiary	Landscape, Agriculture	1,097	2,656	2,658	2,658	2,658	2,658	2,656	2,658	2,658	2,658	2,658	2,658
	Mahr Reservoir/Vallecitos WD	N/A ³	Landscape, Agriculture	-	-	-	-	-	-	-	151	151	151	151	151
Sub-total				1,342	5,340	5,365	5,365	5,365	5,365	5,365	5,491	5,516	5,516	5,516	5,516
Del Mar, City of	San Elijo WRF/San Elijo JPA	Tertiary	Landscape	54	80	140	150	150	150	80	140	150	150	150	
Escondido, City of	Hale Avenue RRF/WRF/City of Escondido	Tertiary	Landscape, Agriculture, Industrial	57	1,500	3,000	3,000	3,000	3,000	1,500	3,000	3,000	3,000	3,000	
Fallbrook PUD	Fallbrook Plant #1/Fallbrook PUD	Tertiary	Landscape, Agriculture	315	480	530	590	600	600	480	530	590	600	600	
Oceanside, City of	San Luis Rey WWTP/City of Oceanside	Tertiary	Landscape	110	550	550	1,500	1,500	1,500	550	550	1,500	1,500	1,500	
Olivenhain MWD	4-S Ranch WWTP/Olivenhain MWD	Tertiary	Landscape	443	1,600	1,800	1,800	1,800	1,800	1,600	1,800	1,800	1,800	1,800	
	City of SD North City Reclamation Facility	Tertiary	Golf Course Irrigation	-	400	100	100	100	100	400	100	100	100	100	
	Santa Fe Valley WRF/Olivenhain MWD	Tertiary	Landscape, Golf Course Irrigation	-	120	150	200	200	200	120	150	200	200	200	
	Meadowlark WRF/Vallecitos WD	Tertiary	Landscape	-	1,000	1,200	1,200	1,200	1,200	1,000	1,200	1,200	1,200	1,200	
Sub-total				443	3,120	3,250	3,300	3,300	3,300	3,120	3,250	3,300	3,300	3,300	
Otay WD	R. W. Chapman WRF	Tertiary	Landscape, Environmental	1,038	1,456	1,456	1,456	1,456	1,456	1,456	1,456	1,456	1,456	1,456	
	South Bay WRP/City of SD	Tertiary	Landscape, Environmental	-	2,584	3,228	3,974	4,838	5,840	2,584	3,228	3,974	4,838	5,840	
Sub-total				1,038	4,040	4,684	5,430	6,294	7,296	4,040	4,684	5,430	6,294	7,296	
Padre Dam MWD	Padre Dam WRF/Padre Dam MWD	Tertiary	Landscape, Industrial, Agriculture, Environmental	652	800	800	800	800	800	1,350	1,425	1,500	1,500	1,500	
Pendleton	Camp Pendleton WWTPs/USMC	Secondary	Landscape	1,881	3,800	4,450	4,450	4,450	4,450	3,800	4,450	4,450	4,450	4,450	
Poway, City of	NC WRP & San Pasqual WRP/City of SD	Tertiary	Landscape, Agriculture	-	425	425	425	425	425	600	650	650	650	650	
Ramona MWD	Santa Maria WWTP/Ramona MWD	Tertiary	Landscape, Recreational Impound, Development	175	230	230	230	230	230	830	830	830	830	830	
	San Vicente WPCF/Ramona MWD	Tertiary	Landscape (Golf Course), Agriculture (Orchard)	676	650	650	650	650	650	650	650	650	650	650	
Sub-total				851	880	880	880	880	880	1,480	1,480	1,480	1,480	1,480	
Rincon	Hale Avenue RRF/WRF/City of Escondido	Tertiary	Landscape, Industrial	52	4,074	4,074	4,074	4,074	4,074	4,074	4,074	4,074	4,074	4,074	
San Diego, City of	North City WRP/City of San Diego	Tertiary	Landscape, Industrial	3,323	6,325	10,000	13,000	13,000	13,000	6,325	10,000	13,000	13,000	13,000	
	South Bay WRP/City of San Diego	Tertiary	Landscape, Industrial	-	200	200	200	200	200	550	550	550	550	550	
Sub-total				3,323	6,525	10,200	13,200	13,200	13,200	6,875	10,550	13,550	13,550	13,550	
San Dieguito WD	San Elijo WRF/San Elijo JPA	Tertiary	Landscape	593	810	830	850	870	870	810	830	850	870	870	
Santa Fe ID	San Elijo WRF/San Elijo JPA	Tertiary	Landscape	408	800	1,000	1,025	1,040	1,100	800	1,000	1,025	1,040	1,100	
Sweetwater	South Bay WRP/City of San Diego	Tertiary	Landscape, Industrial	-	-	-	-	-	-	-	3,500	3,500	3,500	3,500	
Valley Center MWD	Lower Moosa Canyon WRF/VC MWD	Tertiary	Percolation	332	360	400	425	460	490	560	840	1,120	1,120	1,120	
	Skyline Ranch WRF/VC MWD	Secondary	Landscape Irrigation	28	28	28	28	28	28	28	28	28	28	28	
	Woods Valley Ranch WRF/VC MWD	Tertiary	Landscape Irrigation	-	56	56	56	56	56	126	168	210	252	252	
	Orchard Run WRF/VC MWD	Tertiary	Landscape Irrigation	-	-	-	-	-	-	28	56	84	84	84	
	Central Valley Area (North) WRF/VC MWD	Tertiary	Landscape Irrigation/Grove Irrigation	-	-	-	-	-	-	84	126	168	210	252	
	Live Oak Ranch WRF/VC MWD	Tertiary	Landscape Irrigation/Grove Irrigation	-	-	-	-	-	-	14	28	42	42	42	
	Lilac Ranch WRF/VC MWD	Tertiary	Landscape Irrigation	-	-	-	-	-	-	21	42	63	99	99	
Sub-total				360	444	484	509	544	574	861	1,288	1,715	1,835	1,877	
Total				11,479	33,668	40,662	45,548	46,492	47,584	35,911	46,917	52,280	53,309	54,413	

¹ Does not include recycled water used for environmental enhancement.
² Projected verifiable projects are included in the Water Authority's 2005 UWMP reliability analysis.
³ Recycled water storage reservoir.

APPENDIX G

Water Authority Drought Management Plan

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Drought Management Plan



Prepared by
Water Resources Department

With Assistance from
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Drought Management Plan
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DROUGHT MANAGEMENT PLAN

TABLE OF CONTENTS

	Page
SECTION 1 – INTRODUCTION	1-1
1.1 Reliability	1-1
1.2 Defining a Drought	1-2
1.3 Report Summary	1-3
1.4 Member Agency Coordination	1-3
SECTION 2 – DMP PREPARATION	2-1
2.1 Member Agency Technical Advisory Committee	2-1
2.2 Drought Management Plan Questionnaire	2-1
2.3 Principles	2-1
2.4 Report Preparation and Approval	2-4
SECTION 3 – REVIEW OF HISTORIC PLANS AND IMPLEMENTATION	3-1
3.1 Metropolitan’s 1981 Interruptible Water Service Program	3-1
3.2 Metropolitan’s 1990 Incremental Interruption and Conservation Plan	3-2
3.3 Water Authority’s 1991 Drought Response Plan	3-2
3.4 Department of Water Resources Drought Water Bank	3-3
3.5 Metropolitan’s 1995 Drought Management Plan	3-3
3.6 1994 Ordinance of the San Diego County Water Authority Establishing Contingency Plan, Rules, Regulations, and Restrictions so that Available Water Supplies are Allocated among Member Agencies for the Greatest Public Interest and Benefit	3-4
3.7 Metropolitan’s Water Surplus and Drought Management Plan	3-4
3.8 Interim Agricultural Water Program Reduction Guidelines	3-5
3.9 Lessons Learned	3-6
SECTION 4 – DROUGHT RESPONSE MATRIX	4-1
4.1 Introduction	4-1
4.2 Drought Response Matrix Stages	4-2
4.3 Potential Water Authority Drought Actions	4-2
SECTION 5 – SUPPLY ALLOCATION METHODOLOGY	5-1
5.1 Introduction	5-1
5.2 Description of Allocation Methodology	5-2
5.2.1 Historic Base Period Demands on the Water Authority (Unadjusted)	5-3
5.2.2 Adjustments	5-3
5.2.3 Adjusted Base Period Demands and Supply Allocation Percentages	5-7
5.2.4 Water Authority Supply Availability and Net Cutback Percentages	5-8
5.2.5 Member Agency Allocation of Water Authority Supplies	5-9
5.2.6 M&I Regional Reliability Adjustment (if needed)	5-10
5.2.7 Data Reconciliation	5-12
5.3 Member Agency Transfers Secured Following Allocation Methodology	5-14

SECTION 6 – WATER AUTHORITY/MEMBER AGENCY COORDINATION	6-1
6.1 Introduction	6-1
6.2 Member Agency Advisory Team	6-1
6.3 Communication Strategy	6-2
6.4 Five Phases of Drought Response	6-3
6.4.1 Normal Periods	6-3
6.4.2 Phase One	6-5
6.4.3 Phase Two	6-6
6.4.4 Phase Three	6-7
6.4.5 Phase Four	6-8
6.5 Conclusion	6-9
SECTION 7 – SUMMARY	7-1
APPENDIX A – Allocation Methodology Terms	
APPENDIX B – Questionnaire Results	
APPENDIX C – Water Authority Historical Drought Plans	
APPENDIX D – Summary of Metropolitan Water District Historical Drought Plans	
APPENDIX E – Metropolitan’s Draft IAWP Reduction Guidelines	
APPENDIX F – Member Agency DMP TAC Memorandum to Board of Directors	

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

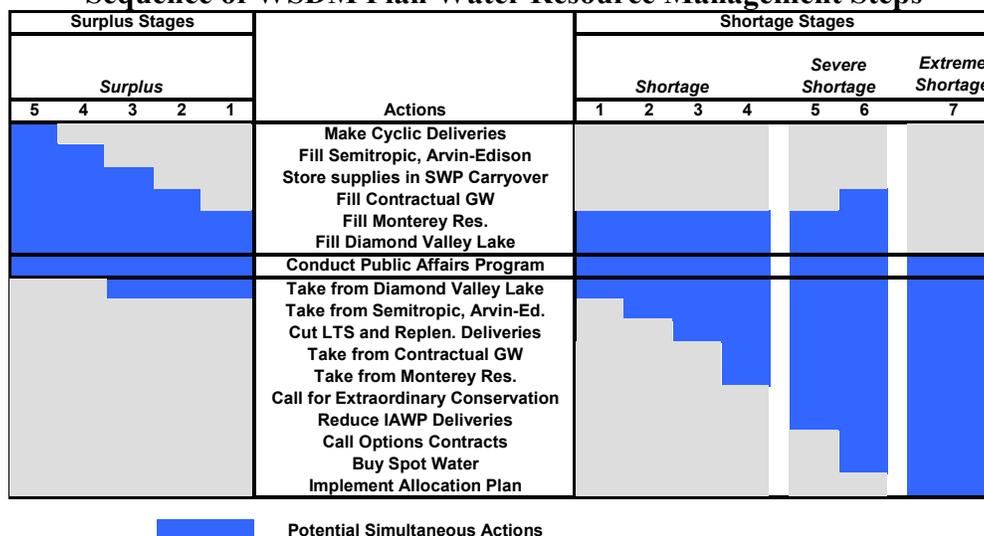
The Water Authority, in response to Metropolitan adopting its 1995 Plan (in October 1994), adopted its own water shortage contingency ordinance (**Appendix C**) a month later, in November 1994. The water resource portion of the ordinance included two basic components. First, if Metropolitan had to implement 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

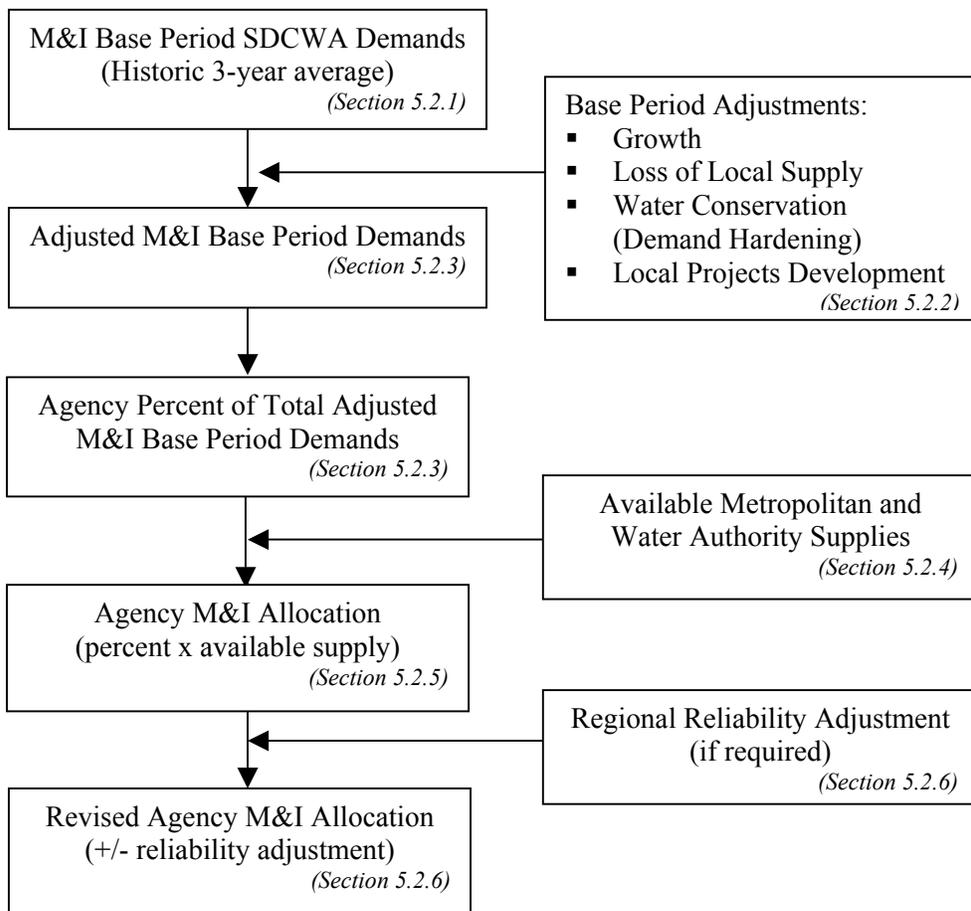
As outlined in the Drought Response Matrix discussed in **Section 4**, after the Water Authority's Board of Directors has exhausted available supply enhancement options and can no longer avoid cutbacks, implementation of an allocation methodology will occur. The challenge in developing the methodology 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:

$$= (Average\ Number\ of\ Meters\ by\ Size) \times (Equivalent\ Demand\ per\ Meter\ by\ Size)$$

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
IAWP 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 IAWP Demand	IAWP 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>	<u>Phase One (Response Matrix Stage: Voluntary)¹</u>	<u>Phase Two (Response Matrix Stage: Supply Enhancement)</u>	<u>Phase Three (Response Matrix Stage: Mandatory Cutbacks)</u>	<u>Phase Four (Response Matrix Stage: Mandatory Cutbacks)</u>
Supplies and Demands Balance	Metropolitan Withdraws Water From Storage to Meet Demands	Metropolitan Supplies Short, Water Authority Total Supplies Meet Demands	Metropolitan Supplies Restricted, Water Authority Supplies Restricted	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.

APPENDIX A

List of Terms and Descriptions

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Appendix A

List of Terms and Descriptions

Historic Base Period –

- ◆ Period used to establish each agency’s normal demands on the Water Authority.
- ◆ M&I demand calculated as average of most recently completed three fiscal years prior to the year in which the decision to allocate is made.
- ◆ IAWP demand based on most recently completed fiscal year.
- ◆ Three fiscal-year rolling average stops when allocation begins, and restarts once allocation is over.

Adjusted Base Period –

- ◆ Pre-drought level demand modified for adjustments.
- ◆ Includes growth, water conservation, loss of local supply, and local projects development adjustments.

Growth Adjustment –

- ◆ Modification used to account for the assumed demand increase between the base period and the end of the allocation year.
- ◆ Calculated using the average number of new meters purchased by each agency over the base period.
- ◆ Demand increase is based on meter size.

Water Conservation Adjustment –

- ◆ Modification used to account for demand hardening and to incentivize participation.
- ◆ Calculated using a three-year average of active conservation program savings as tracked by the Water Authority over the base period.
- ◆ Credit level set at 100% of average conservation savings.

Loss of Local Supply Adjustment -

- ◆ Modification used to account for reduction in local supplies due to drought.
- ◆ Calculated as the difference between the average local supply use over the base period and the estimated allocation-year local supply use.
- ◆ Credit level set at 50% of certified loss.
- ◆ Agency should re-certify loss of local supply as production changes during the year.
- ◆ Reconciliation at end of fiscal year to verify actual production.

Local Projects Development Adjustment –

- ◆ Modification used to account for development of highly reliable local supplies and to incentivize action.
- ◆ Calculated as the average beneficial use of recycled water and brackish groundwater over the base period.
- ◆ Credit level set at 30% of beneficial use.

Regional Reliability Adjustment -

- ◆ Adjustment made to agency allocations to keep each agency's level of service within a pre-determined range of the regional average.
- ◆ M&I level of service floor is 5 percent below the region's total M&I level of service.
- ◆ Adjustment is triggered when the net cutback to total Water Authority M&I supplies reaches or exceeds 30 percent.
- ◆ Agencies over the region's total M&I level of service have a portion of their exceedance water reallocated to other agencies.
- ◆ Agencies under the regional M&I level of service floor receive water from the agencies that exceed the region's total M&I level of service.
- ◆ An agency's contribution to the regional reliability adjustment cannot exceed quantities that would lower their total M&I level of service below the regional reliability total.

IAWP Cuts -

- ◆ Per MWD Program guidelines, IAWP takes initial 30 percent cut during supply shortages.
- ◆ IAWP cutbacks beyond 30 percent are applied at the same level of M&I reduction

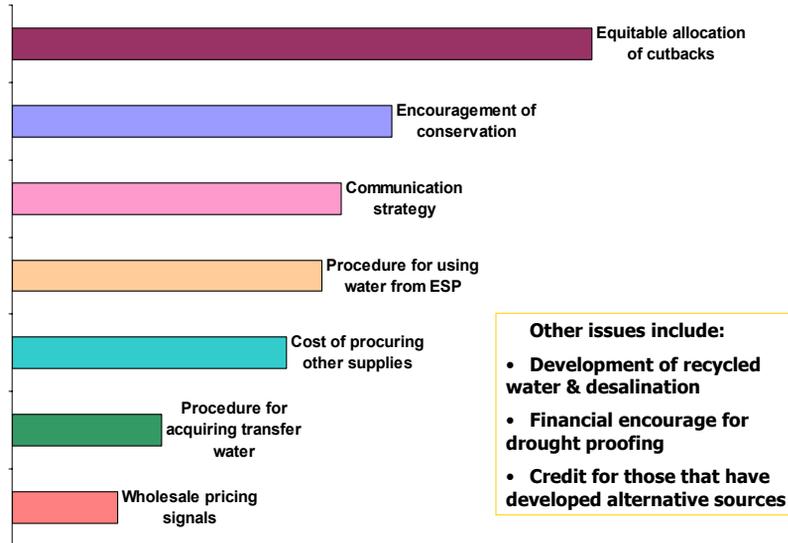
APPENDIX B

Questionnaire Results

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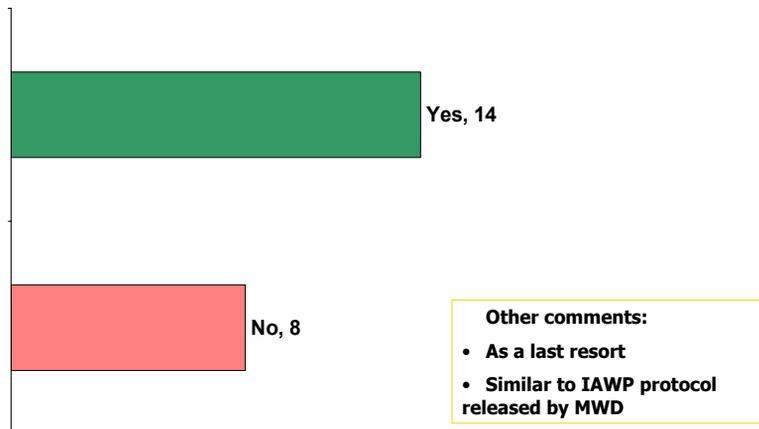
Questionnaire Result #1

The most important issue regarding a Drought Management Plan?



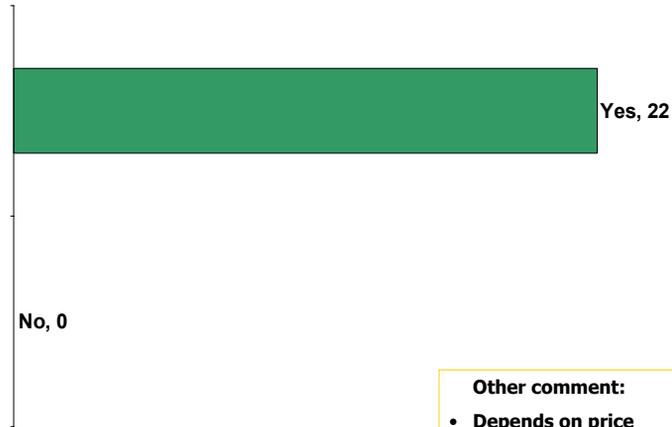
Questionnaire Result #2

Is it appropriate to use wholesale pricing signals to encourage conservation?



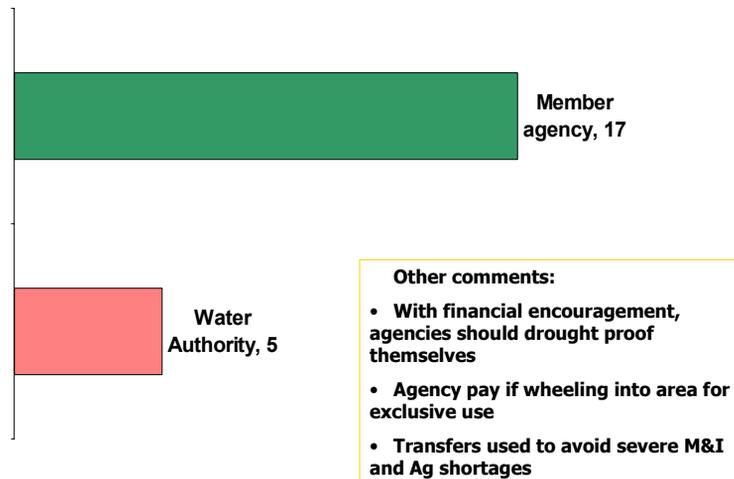
Questionnaire Result #3

Should the Water Authority utilize water transfer options to avoid rationing?



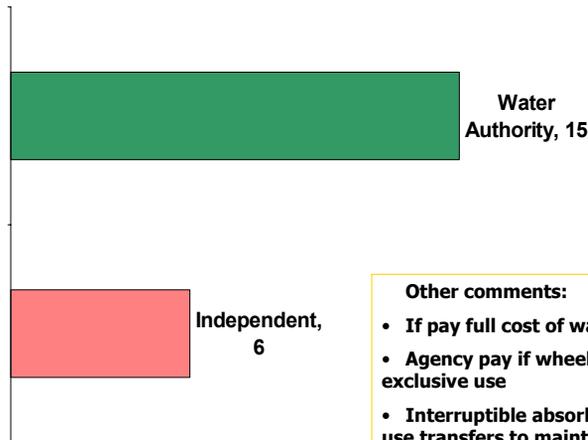
Questionnaire Result #4

Who should pay for the transfer?



Questionnaire Result #5

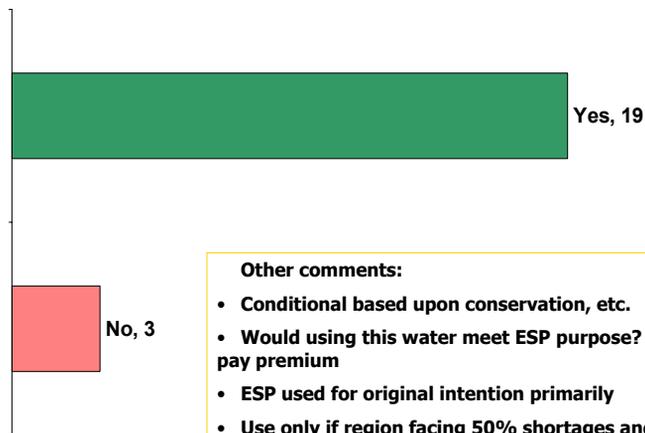
Should interruptible customers increase their service level through Water Authority transfers or independently?



- Other comments:**
- If pay full cost of water transfer
 - Agency pay if wheeling into area for exclusive use
 - Interruptible absorb 30% cut then use transfers to maintain 70% service level

Questionnaire Result #6

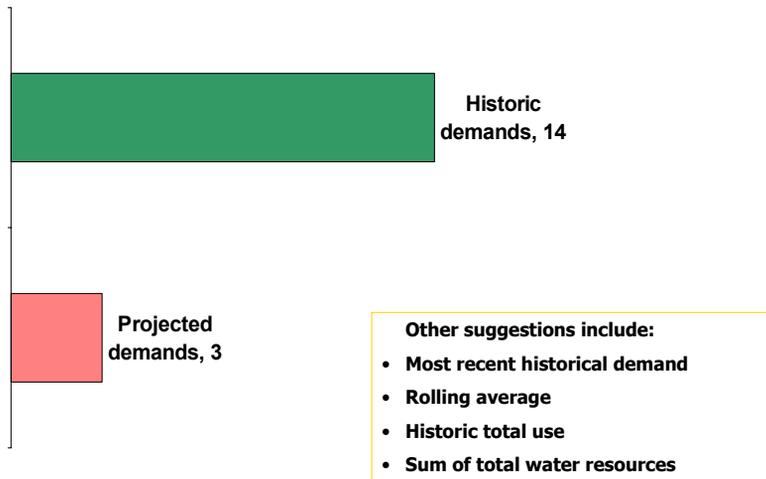
Should some amount of ESP water be withdrawn once a member agency drops below a 75% level of service?



- Other comments:**
- Conditional based upon conservation, etc.
 - Would using this water meet ESP purpose? If yes, pay premium
 - ESP used for original intention primarily
 - Use only if region facing 50% shortages and only up to half.

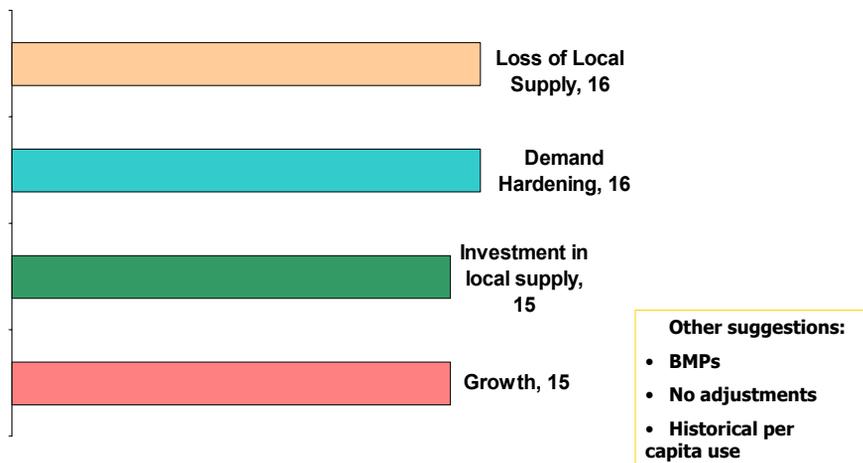
Questionnaire Result #7

The Base Year should be based on:



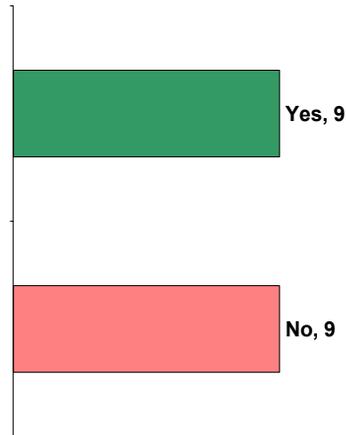
Questionnaire Result #8

Allocation Adjustments that would increase the Base Year should be made for:



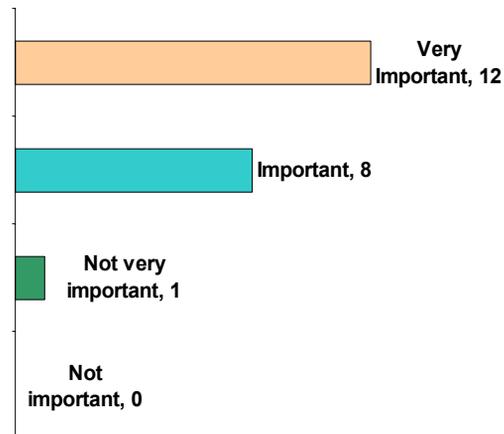
Questionnaire Result #9

If an agency is receiving funding for local projects, should its allocation reflect this financial contribution?



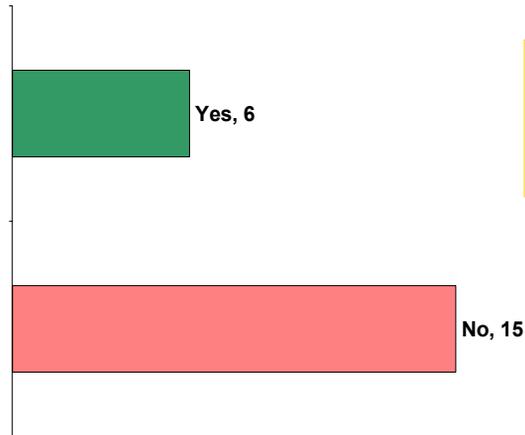
Questionnaire Result #10

How important is avoiding large, uneven retail impacts, to protect economic health of entire region?



Questionnaire Result # 11

Should a member agency pay a premium for water rather than conserve during an allocation?

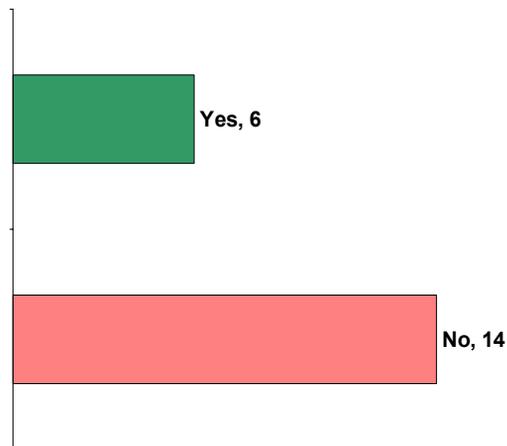


Other comment:

- Each agency should absorb 20% cut for M&I and 30% for ag then be able to access transfers from MWD or SDCWA

Questionnaire Result #12

Should agencies be able to market their unused allocation within the Water Authority for profit to other agencies?

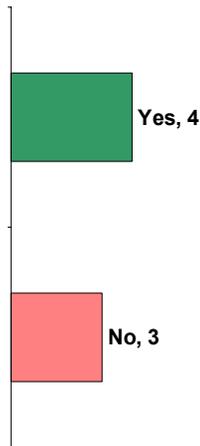


Other comment:

- A member agency does not own an "allocation" of water. If a member agency of the SDCWA does not need all of its allocation, then that supply should be reallocated to other member agencies

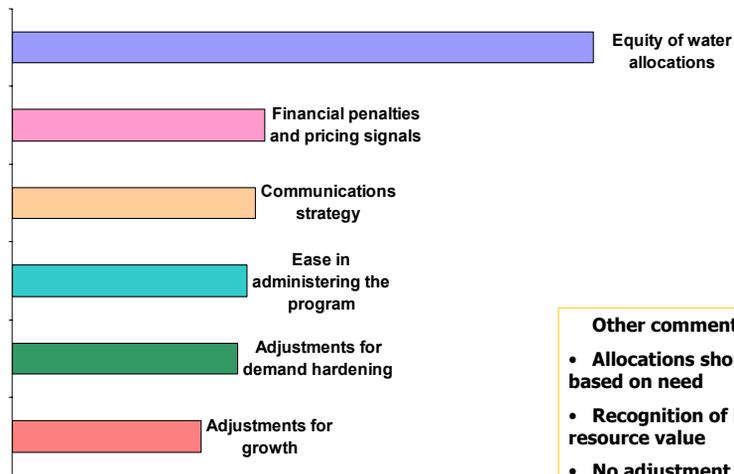
Questionnaire Result #13

Should an agency receive adjustments which it is then able to market?



Questionnaire Result #14

Please rank the most important issue regarding a shortage allocation methodology.

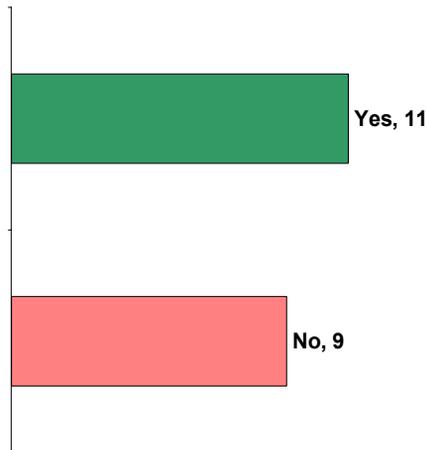


Other comments:

- Allocations should be based on need
- Recognition of local resource value
- No adjustment for growth

Questionnaire Result #15

Should IAWP cutbacks beyond the initial 30% be equally applied to both IAWP and M & I?

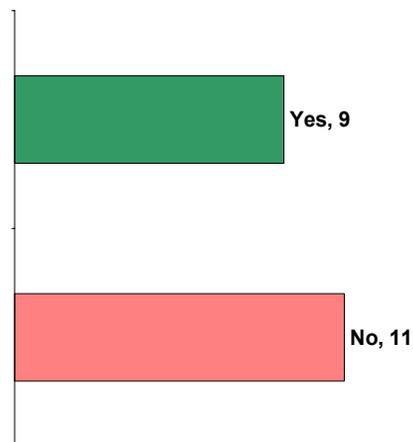


Other comments:

- IAWP has a plan for reductions that was considered in the pricing
- IAWP cutbacks should be administered as per the IAWP Program.

Questionnaire Result #16

For allocations, should a distinction be made among the different classes of customers paying the M & I rate?



Other comments:

- Priority Use:
 1. Commercial & Industrial,
 2. Residential,
 3. Non-IAWP Ag.
- There is no legal, administrative or economic justification for such a distinction at this time, so it should not be considered until it is established by some formal mechanism, such as the SDCWA Rate Structure.

Questionnaire Result #17

Should a communications strategy specify actions and timing of communications?



Questionnaire Result #18

Should a "Drought Coordination Team" be established to support communication efforts?



Other comment:

- Should have Board involved too.

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APPENDIX C

Water Authority Historical Drought Plans



San Diego County Water Authority

3211 Fifth Avenue • San Diego, California 92103-5718
(619) 297-3218 FAX 297-0511

February 8, 1991

TO: Board of Directors
VIA: Water Policy Committee
FROM: Lester A. Snow, General Manager
RE: Drought Response Plan (Action)

SUMMARY

As a result of the continuation of the statewide drought into its fifth year, Southern California and the Authority's service area face water shortages of unprecedented magnitude. Attached is a Drought Response Plan for the Authority which outlines efforts to be taken by the Authority and recommendations for our member agencies during the drought. This plan coordinates all Authority activities with the implementation of the Incremental Interruption and Conservation Program as adopted by your Board in December of 1990. The intent of the Plan is to produce a flexible document which sets Authority policies and guidance for member agencies and the public which can be applicable as drought severity changes. A revised copy of the Plan is attached to this memo which supercedes the draft Plan dated January 1991 reviewed at the joint Water Policy and Public Information meeting on January 24.

FISCAL IMPACT

The activities proposed in the Drought Response Plan can be funded within the existing budget utilizing contingency funds with the exception of the proposal for additional public information activities. This proposal is presented as item # 4 on the Public Information Committee agenda.

RECOMMENDATION

That the Board approve the Drought Response Plan.

DETAILED REPORT

The attached drought response plan lays out the Authority's plan of action in the continuing drought. The Plan made up of four main components: 1) a drought response program, including implementation of the IICP, and a matrix of recommended water

MEMBER AGENCIES

CITIES
• Del Mar • Escondido • National City
• Oceanside • Poway • San Diego

IRRIGATION DISTRICTS
• Santa Fe • South Bay

COUNTY WATER DISTRICT
• Vallecitos

MUNICIPAL WATER DISTRICTS
• Buena Colorado • Rainbow
• Corbin • Ramona
• Olivenhain • Rincon del Diablo
• Padre Dam • Valley Center
• Yuima

COUNTY
• San Diego
(ex officio)

WATER DISTRICTS
• Helix • Otay
• San Diego

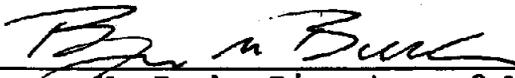
PUBLIC UTILITY DISTRICT
• Fallbrook

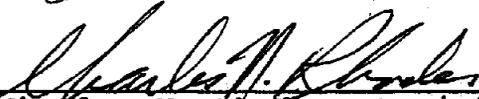
FEDERAL AGENCY
• Pendleton Military Reservation

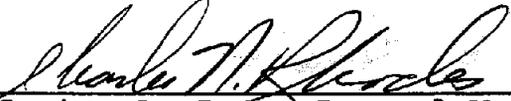
management techniques for water users and member agencies; 2) Conservation programs; 3) Member Agency assistance activities; and 4) Public Information activities designed to explain the drought situation and encourage appropriate responses by the public.

The intent of the Plan is to reconcile and coordinate current CWA drought management programs with the implementation of the IICP, previously adopted by the Board. To that end, the Plan matches drought response water conservation actions (the matrix of Response Stage Actions) with IICP stages, thus avoiding confusion between the current model water management ordinance and the IICP. Member agencies can select items from each stage in the matrix and tailor an ordinance to their local situation.

The conservation activities proposed in the Drought Response Plan can be funded within the existing budget utilizing contingency funds with the exception of the proposal for additional public information activities. This proposal is presented as item # 4 on the Public Information Committee agenda. Those specific program activities described in Chapter 3 of the Plan which are not already approved will be brought before the Board for approval prior to implementation.

Prepared by: 
Byron M. Buck, Director of Water Resources Planning

Reviewed by: 
Charles N. Rhodes, Assistant General Manager,
Resources

Approved by: 
FOR Lester A. Snow, General Manager
attachment

San Diego County Water Authority

Drought Response Plan

February 1991

San Diego County Water Authority
Drought Response Plan

CONTENTS

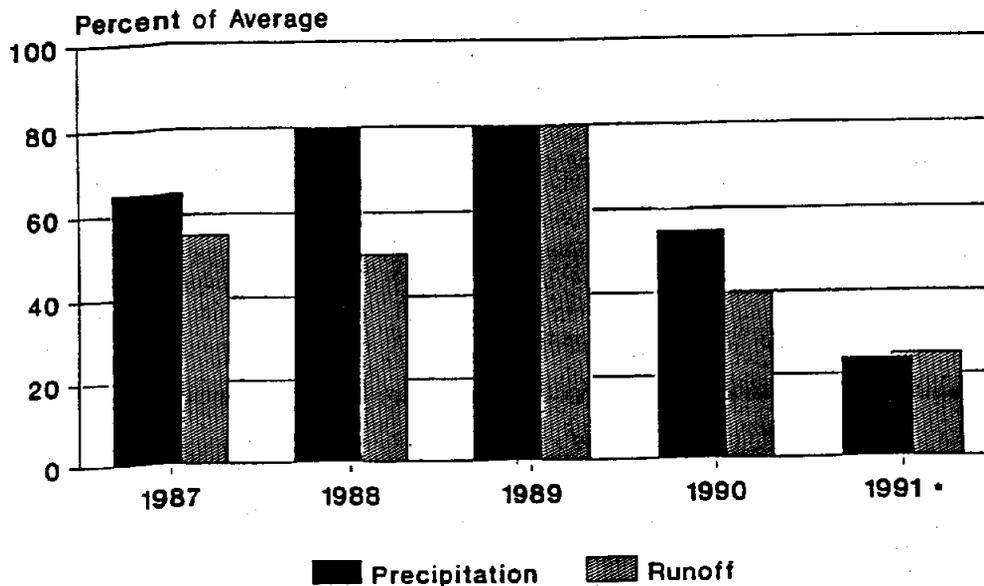
Section

1. Drought Management Overview
2. Drought Response Program
 - a. Member Agency 1990 Water Delivery Targets by Response Stage
 - b. Recommended Response Stage Actions
3. Summary of CWA Conservation Programs
 - a. Long-term Demand Management Programs Which Will Also Reduce Short-Term Consumption
 - b. Drought Related Activities
4. CWA Public Information Programs
5. CWA Member Agency Coordination and Assistance
6. Appendices

1. Drought Management Overview

California appears to be entering the fifth consecutive year of below-normal precipitation and runoff as shown below.

California Annual Precipitation and Runoff 1987-1991



* as of January 8, 1991

While Southern California has been insulated from the first four years of drought due to prudent supply management, a fifth year of drought will have a much greater impact upon our water supply. Actions must be taken to both respond to the current shortage and guard against potentially devastating effects of a sixth year of drought. Other areas of the state including the Bay area and Central Coast have been more severely affected by the drought and have had to respond with specific programs limiting the availability of the water, intensively informing the public and increasing marginal water prices (see appendix 1). General observations from these programs are that:

- 1) The situation must be portrayed clearly and the public must realize they must respond as individuals;
- 2) Water management programs need to be concise and clearly understood;
- 3) Water management programs need to be perceived as necessary and equitable; and,
- 4) Programs need to respond to local circumstances.

2. Drought Response Program

The San Diego County Water Authority supplied 95% of the water used in the region during 1990. All of this water was purchased from the Metropolitan Water District of Southern California. Metropolitan has established water delivery reduction goals and a financial incentive and penalty system known as the Incremental Interruption and Conservation Program (IICP) to help achieve those goals for its member agencies such as the Water Authority. As such, it is important that the Authority respond to the current drought in a clear, concise and definitive fashion consistent with meeting the IICP water delivery reduction goals set by Metropolitan. However, recognizing that the Authority is a regional water wholesaler, it is important to provide flexibility such that member agencies are able to respond to the unique water use patterns and circumstances of their customers. In order to achieve this balance, a two part response program has been prepared setting the staged delivery reduction targets to Authority member agencies and outlining conservation methods for member agencies and their customers to consider employing, consistent with those reduction stages.

a. Water Authority and Member Agency Water Delivery Reduction Targets

The most clear and concise expression to a Water Authority member agency of what is expected in a drought is to assign water delivery reduction targets. In order to emphasize the importance of achieving the targets a price incentive and penalty system was established by the Authority Board of Directors on December 13, 1990 (resolution 90-59). This resolution, which appears in the appendices, authorizes and directs the Authority's General Manager to implement guidelines for achieving IICP water delivery reduction goals of the Authority.

The IICP reduction goals for the Authority are divided in stages consistent with MWD's stages. In accordance with the Board's resolution reductions in water deliveries from MWD have been calculated region wide and are imposed uniformly upon CWA member agencies in the following stages.

Stage I (voluntary)	5%
Stage II	7.8%
Stage III	14.7%
Stage IV	21.6%
Stage V	28.5%

Based upon 1989-1990 water deliveries as adjusted by previous local conservation efforts and expected growth in deliveries, each Water Authority member agency has been assigned a water delivery reduction target for each stage as indicated below. Member agency water deliveries below reduction targets will receive incentive payments of \$99/AF (one half the regular raw water rate). Deliveries exceeding targets will receive a penalty surcharge of \$394/AF (twice the raw water rate) in addition to the regular water rate. Should raw water rates be increased by Metropolitan, incentive and penalties will increase as the one half price and double price multipliers will be assessed respectively. Incentives and penalties will be assessed monthly. If agencies accumulate both incentives and penalties over the course of program implementation, a reconciliation will be made at the end of the program or annually every September 30th while the program is in effect.

ESTIMATED CWA MEMBER AGENCY BASE YEAR IICP ALLOCATION SUMMARY

AGENCY	89-90 BASE ALLOCATION TOTAL	MAY/JUNE CONSERVATION ADJUSTMENT	ADJUSTED BASE YEAR TOTAL	STAGE 1 TOTAL (5.0%)	STAGE 2 TOTAL (7.9%)	STAGE 3 TOTAL (14.8%)	STAGE 4 TOTAL (21.8%)	STAGE 5 TOTAL (28.7%)
BUENO COLORADO	19,083.8	334.3	19,418.1	18,447.2	17,877.8	16,534.7	15,191.6	13,848.5
CARLSBAD	17,918.8	281.5	18,200.3	17,290.3	16,756.6	15,497.7	14,238.9	12,980.0
DEL MAR	1,449.9	18.3	1,468.2	1,394.8	1,351.7	1,250.2	1,148.6	1,047.1
ESCONDIDO	26,048.4	525.8	26,574.2	25,245.5	24,466.2	22,628.2	20,790.1	18,952.1
FALLBROOK	17,271.4	261.3	17,532.7	16,656.1	16,141.9	14,929.2	13,716.6	12,503.9
HELIX	42,988.4	438.4	43,426.8	41,255.5	39,982.0	36,978.3	33,974.6	30,970.9
OCEANSIDE	28,763.1	530.3	29,293.4	27,828.7	26,969.7	24,943.6	22,917.5	20,891.3
OLIVENHAIN	13,480.8	153.9	13,634.7	12,953.0	12,553.1	11,610.1	10,667.0	9,723.9
OTAY	22,951.8	257.1	23,208.9	22,048.5	21,367.9	19,762.6	18,157.3	16,552.0
PADRE DAM	21,068.2	373.3	21,441.5	20,369.4	19,740.7	18,257.6	16,774.6	15,291.5
PENDLETON	156.8	1.1	157.9	150.0	145.4	134.5	123.5	112.6
POWAY	13,631.0	236.2	13,867.2	13,173.8	12,767.2	11,808.0	10,848.9	9,889.7
RAINBOW	33,417.4	623.1	34,040.5	32,338.5	31,340.2	28,985.8	26,631.3	24,276.8
RAMONA	14,480.2	736.7	15,216.9	14,456.1	14,009.8	12,957.3	11,904.8	10,852.3
RINCON	8,740.6	147.6	8,888.2	8,443.8	8,183.1	7,568.4	6,953.6	6,338.8
SAN DIEGO	254,182.4	4,754.6	258,937.0	245,990.2	238,396.9	220,487.1	202,577.3	184,667.5
SAN DIEGUITO	7,465.9	111.0	7,576.9	7,198.1	6,975.9	6,451.8	5,927.7	5,403.7
SANTA FE	10,691.7	235.9	10,927.6	10,381.2	10,060.8	9,304.9	8,549.1	7,793.3
SWEETWATER	32,629.6	238.2	32,867.8	31,224.4	30,260.6	27,987.2	25,713.9	23,440.5
VALLECITOS	13,461.6	242.7	13,704.3	13,019.1	12,617.2	11,669.3	10,721.4	9,773.6
VALLEY CENTER	52,534.8	1,010.9	53,545.7	50,868.4	49,298.2	45,594.6	41,891.0	38,187.5
YUIMA	2,166.5	10.2	2,176.7	2,067.9	2,004.0	1,853.5	1,702.9	1,552.4
TOTAL:	654,583.1	11,522.4	666,105.5	632,800.2	613,266.9	567,194.6	521,122.3	475,050.0

NOTE: Phase totals for the IICP are based on overall percentage reductions from the base year totals. Actual allocations will be made monthly, and will be adjusted for growth and loss of local supplies, as approved under guidelines adopted by the Authority's Board of Directors.

b. Recommended Response Stage Actions

In order to achieve the savings necessary to manage a water supply during a drought, specific actions by water users must occur. Based upon experience of the Authority in development of a model water management ordinance, experience of member agencies in implementing water management ordinances and experiences of other regions in the state which have had to implement drought related water reductions, the Authority has compiled water management techniques in a matrix. These techniques are arrayed in accordance with the staged reduction levels as set by the IICP. Under each stage the corresponding techniques are recommended to be implemented by member agencies, specific water users and the general public as means which will help achieve the identified level of water savings. Actual savings by agency will vary due to local circumstances, publicity and enforcement of water management measures. As each stage of the Drought Response Program are instituted, the corresponding Response Stage Activities are recommended.

While the response stage activities in the matrix are designed to complement the target savings of the IICP, the activities would be appropriate for use during any situation where increased levels of water savings were needed.

RESPONSE STRATEGIES

User Type	Stage I	Stage II	Stage III	Stage IV	Stage V	Stage VI	Water Emergency
Household and household members	<p>INDOOR</p> <p>Check toilets for leaks and repair. Don't use toilets as ashtrays or waste baskets. If you have an older toilet, install a weighted plastic bottle in toilet tank which does not interfere with flush mechanism.</p> <p>Limit shower time. Install water saving showerheads.</p> <p>Replace old toilets with ultra-low flow 1.6 gal./flush toilets.</p> <p>Run only fully loaded dishwashers, washing machines.</p> <p>Keep bottle of water in refrigerator for drinking.</p> <p>Shut off faucet while brushing teeth and shaving.</p> <p>If hand washing dishes, use one full basin to rinse rather than running water.</p>	<p>OUTDOOR</p> <p>Water lawns only during morning, evening and nighttime hours. Avoid overwatering - if your lawn springs back when stepped on, it doesn't need water. When lawn watering, deep soak infrequently - rather than using sprinklers frequently aerate and dethatch lawns. Aim sprinklers so they water lawn and garden not pavement. Use mulch around trees and plants. Use a broom to clean paved areas - never a hose.</p> <p>Check irrigation/sprinkler system for leaks and repairs. Reset irrigation clocks by season - water once a week in winter, no more than 3 times a week in summer.</p> <p>Turn system off during rainy periods. Reset if power outage occurs.</p> <p>Install pool/spa covers.</p> <p>Wash vehicles with hand held hose with positive shut off nozzle and bucket only. Avoid mid-day hours.</p> <p>Replace inactively used turf areas with drought-tolerant landscaping.</p>	<p>Same as Stage II plus respond to penalty pricing of retail agency.</p>	<p>Same as Stage III plus water no more than twice per week.</p> <p>Capture shower, sink warm-up water with bucket and use outdoors or to flush toilets.</p> <p>Turn off or disconnect home reverse-osmosis water units and water softeners which discharge water.</p>	<p>Same as Stage IV except outside watering with a hand-held hose with positive shutoff or drip irrigation systems only. Eliminate sprinkler use.</p>	<p>Same as V and no outside irrigation except with water reclaimed from indoor use with hand held bucket to effect a 40% cutback.</p>	<p>No outdoor watering or vehicle washing at home. Save bath/shower water for flushing toilets.</p> <p>Flush toilets for solids only. No refilling of pools, spas, fountains.</p>

Authority Drought Response Program

R E S P O N S E S T A G E A C T I O N S

User Type	Stage I	Stage II	Stage III	Stage IV	Stage V	Stage VI	Water Emergency
Agriculture	<p>Use drip irrigation and micro sprinklers for perennial crops and all nurseries.</p> <p>Check system for malfunctions.</p> <p>Utilize CIMIS irrigation demand climate information: Call 1-800-339-9954 for daily information or 1-800-336-3023 for weekly data.</p> <p>Request an audit of your irrigation system. North County: (619) 728-1332.</p>	<p>Same as I.</p> <p>Increase surveillance of irrigation system.</p> <p>Effect a 10% cutback.</p>	<p>Same as II, but effect a 15% cutback on normal demands through watering of less productive perennial plants, pruning and stumping.</p>	<p>Same as III, but effect a 20% cutback.</p>	<p>Same as III, but effect a 30% cutback.</p>	<p>Same as III, but effect a 40% cutback.</p>	<p>Temporarily discontinue all irrigation depending upon circumstances of emergency.</p>

Authority Drought Response Program

R E S P O N S E S T A G E A C T I O N S

User Type	Stage I	Stage II	Stage III	Stage IV	Stage V	Stage VI	Water Emergency
Restaurants and food service	<p>Serve water only upon request.</p> <p>Use brooms to clean outdoor paved areas. Spot clean with water only.</p>	<p>Wash vegetables and prepare foods in tubs of water where possible - no running water. Effect a 10% cutback.</p>	<p>Stage II plus reduce landscape irrigation. Effect a 15% cutback.</p>	<p>Same as Stage III. Limit irrigation to twice a week. Effect a 20% cutback. Turn off or disconnect reverse osmosis water treatment units and water softeners which discharge water.</p>	<p>Same as Stage III. Effect a 30% cutback.</p>	<p>Same as Stage III. Effect a 40% cutback.</p>	<p>Eliminate outdoor irrigation. Use disposable table service.</p>
Car washes	<p>Use water recirculation pumps. Check for leaks in system.</p>	<p>Same as Stage I. Effect a 10% cutback.</p>	<p>Same as Stage I. Effect a 15% cutback.</p>	<p>Same as Stage I. Effect a 20% cutback.</p>	<p>Same as Stage I. Effect a 30% cutback.</p>	<p>Same as Stage III. Effect a 40% cutback.</p>	<p>Terminate operations if so directed.</p>
Hotels and other lodging facilities	<p>Check for plumbing leaks. Start replacement of non-conserving toilets and showerheads. Reduce outside irrigation.</p>	<p>Same as Stage I plus reduce air conditioning system water use. Effect a 10% cutback.</p>	<p>Same as Stage I but reduce consumption by 15% through flow restriction or operational hours limitation.</p>	<p>Same as Stage III plus reduce consumption by 20%.</p>	<p>Same as Stage III plus reduce overall consumption by 30%.</p>	<p>Same as Stage III. Effect a 40% cutback.</p>	<p>Eliminate outdoor irrigation. Post emergency notices in rooms asking limited water use.</p>

Authority Drought Response Program

R E S P O N S E S T A G E A C T I O N S

User Type	Stage I	Stage II	Stage III	Stage IV	Stage V	Stage VI	Water Emergency
Landscape (except residential)	<p>Irrigate only during evening, night and morning hours.</p> <p>Check irrigation systems for leaks, broken parts and sprinkler aim. Repair as necessary.</p> <p>Set irrigation schedules appropriate to season.</p> <p>Call for a landscape audit (728-1332 North County and 442-0559 South County).</p> <p>Conversion of non-functional turf areas to drought tolerant plants (i.e., those areas not used for activities).</p> <p>Convert shrubs and planter areas to drip irrigation.</p>	<p>Stage I actions plus reduce watering of low use areas.</p> <p>Effect a 10% cutback.</p>	<p>Stage II plus eliminate water of non-functional turf areas (i.e. areas not used for activities).</p> <p>Effect a 15% cutback.</p>	<p>Stage III plus irrigate no more than twice per week. Effect a 20% cutback.</p>	<p>Eliminate watering of ornamental turf areas. Water only actively used turf area no more than twice per week. Effect a 30% cutback.</p>	<p>Stage V plus irrigate playing fields only. Effect a 40% cutback.</p>	<p>No outdoor watering</p>

R E S P O N S E B E A C T I O N S

Retail Water Delivery Agencies	Stage I	Stage II	Stage III	Stage IV	Stage V	Stage VI	Water Emergency
<p>Divide customer classes into minimum categories of</p> <ul style="list-style-type: none"> • Residential <ul style="list-style-type: none"> -single family -multi family • Commercial • Industrial • Agricultural • Institutional <p>Institute inclining block pricing for M & I uses.</p> <p>Adopt mandatory water management or anti-waste ordinances.</p> <p>Establishment of construction use Best Management Practices for construction water.</p>	<p>Same as I plus employ public information campaign to cut waste using adopted ordinance or suggested user response stage actions.</p>	<p>Same as Stage II plus penalty pricing. With surcharges for exceeding targets of 15% cutback.</p> <p>Actively enforce use ordinances with personnel and flow restrictors for repeat violators.</p>	<p>Same as III but require 20% cutback with surcharge for use beyond allotment.</p>	<p>Same as IV but 30% cutback.</p>	<p>Same as Stage IV but 40% cutback.</p>	<p>Ban outdoor watering for emergency duration. Recommend minimal indoor uses.</p>	
<p>Adopt mandatory water management or anti-waste ordinances.</p> <p>Establishment of construction use Best Management Practices for construction water.</p>	<p>Same as Stage I with 10% cutback.</p>	<p>Same as Stage II plus cap on construction meters and permits for unmetered service, institute penalty pricing structure for construction water use and require 15% cutback.</p>	<p>Same as Stage III but with 20% cutback.</p>	<p>All construction water must be reclaimed or non-potable.</p>	<p>Same as Stage V.</p>	<p>Same as Stage V.</p>	
	<p>Reduce the number of new connections allowed by 10%.</p>	<p>Reduce the number of new connections allowed by 15%.</p>	<p>Reduce the number of new connections allowed by 20%.</p>	<p>Reduce the number of new connections allowed by 30%.</p>	<p>Reduce the number of new connections allowed by 40%.</p>	<p>No new connections allowed.</p>	

3. Summary of CWA Conservation Activities

The Authority has underway programs which will effect reduced water use during the coming year. Most of these programs are efforts designed to improve the efficiency of water use in the long run. These efforts focus on physical system changes such as retrofiting older plumbing fixtures with water efficient fixtures and services which educate certain water users about efficient water management e.g., large turf irrigators and growers. These programs are oriented toward achieving long term reliable water savings. Additionally, the Authority will be implementing additional water saving programs which are intended strictly for short-term drought response. These two types of programs are summarized below.

a. Long Term Demand Management Programs Which Will Have an Effect Upon the Drought

(1) Agricultural and Turf Audit - In cooperation with MWD, the Authority and its member agencies are involved in funding four ongoing teams of irrigation experts who provide audits for large users of irrigation water. Two of these teams provide assistance solely to urban irrigators: primarily parks, cemeteries, golf courses and large multi-family residential users. Another team serves agricultural irrigators in the north county area. A final team evenly divides its efforts between both types of users. Authority cost: \$98,000.

(2) Toll free CIMIS information - Information valuable to irrigators in determining optimal irrigation schedules is provided through the California Irrigation Management System (CIMIS). The Authority is funding a toll free number to provide that information, which is updated every twenty-four hours, to local irrigators. The ongoing toll free number complements the irrigation audit programs mentioned above. Authority cost: \$5,000.

(3) Multi-family Plumbing Replacement - A project co-funded by the Authority, MWD and the City of Escondido will target multi-family residential users in the City of Escondido for plumbing replacement. The project will result in the replacement of 500 non-conserving toilets and showerheads with new water saving fixtures. It is anticipated that the projects will be implemented in February 1991. Authority cost: \$25,000.

(4) SDG&E Showerhead Project - Phase II of the SDG&E/Authority showerhead replacement project is scheduled for implementation in the spring of 1991. The project will involve funding from the Authority, participating member agencies, SDG&E and MWD. Pending final approval from SDG&E, the project would result in 40,000 non-conserving residential showerheads being replaced with conserving heads. Authority cost: \$58,000.

(5) Toilet Rebates - With funding assistance from the member agencies and MWD, the Authority will implement an ultra low flush toilet rebate program in May 1991. Through the program users will be eligible for up to a \$100 rebate toward the cost of a new toilet using no more than 1.6 gallons per flush. The over 13,000 rebates will be offered during two fiscal years to customers of the fifteen participating member agencies. Authority cost: \$125,000. The fifteen participating member agencies are listed below.

Carlsbad MWD	City of Escondido
Helix WD	City of Oceanside
Olivenhain MWD	Otay WD
Padre Dam MWD	Rainbow MWD
Ramona MWD	Rincon Del Diablo MWD
City of San Diego	San Dieguito WD
Santa Fe ID	Sweetwater Authority
Valley Center MWD	Vista ID

(6) Single Family Surveys - A project to offer single family home surveys will be developed by May 91. The home survey includes showerhead replacement, examination of toilets for leaks, distribution of faucet aerators and analysis of outdoor water use. It is anticipated that the cost of the program will be divided among the Authority, participating member agencies and MWD. Authority cost: \$70,000.

(7) Industrial Audits - The industrial audits program will target approximately 100 industrial users for water efficiency surveys. The Authority will contract with a consultant to review process water uses, then assist them in developing methods to increase water use efficiency. It is anticipated that the Authority will fund the project and implement it in cooperation with its member agencies. Authority cost: \$140,000.

b. Drought Related Programs

(1) Showerheads for Member Agencies - Last year the Authority supplied showerheads kits to its member agencies for distribution within their service areas. Approximately 10,000 additional kits will be purchased for a similar distribution program this year. Authority cost: \$30,000.

(2) Enforcement Training - As member agencies prepare to implement more stringent water use restrictions, the need for adequate enforcement is obvious. The Authority can assist member agencies by assisting in providing training for personnel charged with those enforcement responsibilities. That training could start in April 1991 and address: communication skills, the agencies' legal authority and other relevant topics. Authority cost: \$15,000.

(3) Assistance to Public Institutions - Many public institutions, school and community college districts, park

departments, and government buildings are visible consumers of large amounts water, while at the same time often faced with limited water management resources, a special project to assist them could be implemented. The project would include assistance in repairing and increasing the efficiency of irrigations systems, installing devices to shut off irrigation systems during rains, manpower to repair minor plumbing leaks and low flow showerheads for use in the schools. A plumbing and irrigation contractor would be hired on an contract basis at a basic hourly rate. Letters would be sent to candidate institutions publicizing the program and offering assistance. Respondents would fill out a form stating their problems in not being able to effect the conservation repairs and detailing the services needed. Upon evaluation by Authority staff, the plumbing contractor would be dispatched to perform authorized services. Respondents would be required to verify that the services were performed. Spot check audits by the Authority staff would be performed periodically. It is estimated that this project could be implemented by July 1991. Authority cost: \$100,000.

4. CWA Public Information Programs

The Public Information Program for the Authority is intended to educate people on the source of supply, local, regional, and statewide water supply problems and to change behavioral patterns of water use by conveying messages that motivate people into positive actions. The program must be flexible in design to allow for change in focus as new information is received. The program is two-fold in nature. The first emphasis is on the current drought situation and the need for immediate cutbacks in water usage. The drought is a catalyst to draw attention to the need for both short-term and long-term conservation habits. The second emphasis of the program is to develop continuing methods of assisting the member agencies and educating the public on all aspects of the water supply.

Program Components

The Public Information Program is divided into five basic components:

1. News coordination
2. Community relations
3. Public education
4. School program
5. Advertising

News Coordination

This section deals with educating and interacting with newspaper, television, and radio reporters and their editorial boards. Developing a two-way exchange of information and a willingness to cooperate is the major emphasis.

Community Relations and Promotions

The community relations component is focused on member agency assistance and training. The programs center around:

- Survey of programs and needs assessment of member agencies to develop a list of areas where the Authority can be of assistance.
- Co-op advertising programs with their local newspapers.
- Issue papers that explain single issues and the Authority's position.

- Direct mailing of all news releases and additional items of interest to each member agency.
- Development of "canned" audio/visual presentations with slides and prepared script for specific areas of interest and need.
- Speakers for presentations to specific Boards, City Councils, or interest groups.

The promotions are specific actions that create interest and enthusiasm and provide information.

- San Diego Home/Garden and Water Authority Water(Less!) Garden Contest held each year
- Drought seminars
- CIMIS 1-800 Number
- Nursery promotions on Xeriscape materials, landscaping ideas, and brochures

Additional projects are being discussed, such as:

- Del Mar Fair specific Xeriscape Category
- Natural History Museum Exhibit
- Historical Society section addressing California's water supply
- Dancing Waters Exhibit at Balboa Park
- Del Mar Schools Xeriscape Garden

Public Education

Public education is a broad category of specific programs designed for specific audiences supported by the broader and more general information arenas.

An example of the programs are:

- CWA Drought Hotline

- Speakers at specific functions
- Hotel/Motel Guest Information
- Restaurant Table Tents
- "Waterhog Haven" film
- Literature distribution
- Public service announcements
- Grocery bag messages
- Bus public service cards
- Condo/Apartment Owners Association

School Program

The current school program consists of:

- Classroom presentations
- Repertory Theater General Assemblies
- In-Service Teacher Training
- Special school projects
- "Waterhog Haven" film distribution
- Administrative Liaison

Advertising

When MWD announced a Stage III, effective February 1, 1991, staff requested ADC Stoorza to design a program of advertising that would, in their estimation, reach the largest number of people in the county. The central theme for the campaign is the current drought situation and what response is needed from all residents.

The current budget for advertising has approximately \$75,000 that is unallocated and \$100,000 contingency fund for the fifth year drought. Thirteen (13) weeks of Metro Traffic Radio announcements have been reserved beginning in February at a cost of \$45,500. This is included in the ADC Stoorza proposed advertising program.

Drought-Related Objectives

The Water Authority's Public Information Program during the drought emergency is designed to:

1. Use a wide variety of free and paid programs to reach the greatest number of people with specific messages.
2. Raise awareness among identified publics of the need for and methods of water conservation. A partial list of important publics includes homeowners, renters, property managers, business and political leaders, mass media representatives, educators, students, restaurant operators, hotel/motel operators, business people, mass media representatives, water suppliers, agriculturalists, and green industry people.
3. Convey specific conservation methods that can be used to achieve identified levels of conservation.
4. Motivate people to take immediate action to conserve.
5. Supplement the continuing long range conservation education effort that is designed to create and maintain a conservation ethic among all people in San Diego County.
6. Provide CWA member agencies with assistance in meeting their conservation and public information programs.

Drought-Related Messages

The following is a partial list of the type of messages that would be used during the drought activities:

1. San Diego County is more dependent on imported water than ever before. In 1990, 95% of our water was imported and our dependence on imported water will increase through the years.
2. Our imported sources of supply are less reliable than ever before. Environmental, legal, storage,

and other issues are limiting our ability to increase the quantity of imported water delivered to San Diego County.

3. This is the fifth consecutive year of drought and one of the driest in recorded history.
4. In 1991, water use should be reduced by (a stated percentage) among all categories of water users: residential, commercial, industrial, and agricultural.
5. Individuals can and do make a difference and everyone must participate. People must take individual responsibility for their water use, regardless of their circumstances, and regardless of whether they are at home, work, or play

As a result of the Joint Water Policy and Public Information Committee Meeting held on January 14, 1991, Directors Krauel and Thompson were asked to meet with Stoorza, Zeigaus, & Metzger to review the current drought situation, the overall Public Information program, and the proposal developed by ADC Stoorza. This meeting was held on January 22, 1991.

The advertising proposal, as designed by ADC Stoorza, is included in the appendix to this report.

5. Member Agency Coordination and Assistance

The Drought Response Plan programs are designed to provide member agencies and the public with clearly stated conservation objectives (i.e. reduction targets) and water management techniques designed to help achieve the targets (Response Stage Activities). The Authority is providing additional assistance to member agencies in managing drought responses in addition to those programs in Sections 3 and 4 of the Plan which include member agency participation. These activities are as follows.

- a. White paper summarizing research on retail penalty pricing methods.
- b. Member agency workshop on penalty pricing methods featuring representatives of California retail agencies with penalty pricing experience.
- c. A Personal Computer based water-waster database tracking system which allows member agencies to keep track of water waste complaints/violations.
- d. General Manager's and Operating Heads meetings.
- e. Joint Public Information Council meetings.

Appendices

RESOLUTION NO. 90- 59

RESOLUTION OF THE BOARD OF DIRECTORS OF THE SAN DIEGO COUNTY WATER AUTHORITY PROVIDING FOR THE IMPLEMENTATION OF THE INCREMENTAL INTERRUPTION AND CONSERVATION PLAN

WHEREAS, four consecutive years of drought conditions throughout the State of California and the Colorado River Basin have created an unprecedented threat to the sufficiency of the imported water supply of the Authority; and

WHEREAS, the Metropolitan Water District of Southern California has evaluated the groundwater and surface storage reserves of its member agencies and has found them to have been substantially depleted by the drought; and

WHEREAS, the San Diego County Water Authority has determined that the local storage reserves of its member agencies have also been substantially depleted by the drought; and

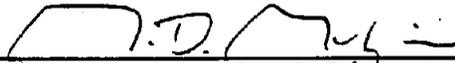
WHEREAS, the Metropolitan Water District of Southern California has implemented a plan of interruption and conservation of its limited water supply in a manner that will protect to the extent possible an adequate supply not only for 1991 but also thereafter if the drought conditions should continue; and

WHEREAS, the Authority, as a member agency of the Metropolitan Water District of Southern California, shall be subject to the terms and conditions of the District's plan of interruption and conservation.

NOW, THEREFORE, The Board of Directors of the San Diego County Water Authority does hereby authorize and direct the General Manager to implement the guidelines for the Incremental Interruption and Conservation Plan

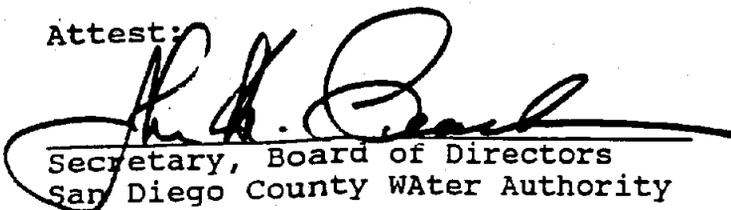
as defined in the General Manager's letter dated November 29, 1990, in order to effectively provide assurance of an adequate water supply for 1991 and subsequent years.

PASSED, APPROVED and ADOPTED this 13th day of December 1990.



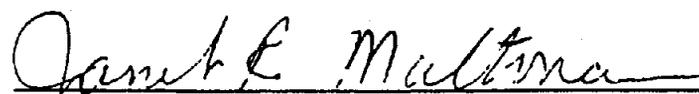
Chairman, Board of Directors
San Diego County Water Authority

Attest:



Secretary, Board of Directors
San Diego County Water Authority

I, Janet Maltman, Executive Secretary of the Board of Directors of San Diego County Water Authority do hereby certify that the above and foregoing is a full, and correct copy of said Resolution of said Board and that the same has not been amended or repealed.



Executive Secretary, Board of Directors
San Diego County Water Authority



San Diego County Water Authority

3211 Fifth Avenue • San Diego, California 92103-5718
(619) 297-3218 FAX 297-0511

November 29, 1990

TO: Board of Directors
VIA: Water Policy Committee
FROM: Lester A. Snow, General Manager
SUBJECT: MWD's Incremental Interruption and Conservation Plan (Action)

SUMMARY

On November 20, 1990, the Metropolitan Board of Directors adopted the Incremental Interruption and Conservation Plan, as well as declaring the first phase in effect on December 1, 1990. Please refer to attached MWD Board Letter dated November 20, 1990. The Water Authority needs to establish guidelines for the operation and administration of this program.

FISCAL IMPACT

The fiscal impact of this program will depend upon the mix of incentives and disincentives passed through to member agencies. Any gains from this program will be credited to the Authority's account for storage and conservation.

RECOMMENDATION

It is recommended that the Board adopt the attached resolution.

DETAILED REPORT

The Incremental Interruption and Conservation Plan is designed to begin using water in the interruptible program in concert with conservation, to meet needs during the remainder of the drought. The plan establishes five phases or levels of reduction depending on drought and water supply conditions.

The first phase is voluntary and provides for incentives to be credited to agencies that conserve more than 95% of their 1989-90 water use after adjusting for growth. Phase I will be administered by MWD on the subagency level and will pay incentives to our member

MEMBER AGENCIES

- CITIES**
- Del Mar • Escondido • National City
 - Poway • San Diego • San Marcos
- COUNTY**
- San Diego
 - Imperial

- IRRIGATION DISTRICTS**
- Santa Fe • South Bay
- WATER DISTRICTS**
- Mesa • Utopia
 - San Geronimo

- COUNTY WATER DISTRICT**
- Vallecitos
- PUBLIC UTILITY DISTRICT**
- Fairbrook
- FEDERAL AGENCY**
- Fendleton Military Reservation

- MUNICIPAL WATER DISTRICTS**
- Buena Colorado
 - Chino
 - Chino Valley
 - Pedra Dam
 - Rainbow
 - Ramona
 - Rincon del Diablo
 - Valley Center
 - Yuma

agencies who can demonstrate actual water conservation in any month that Phase I is in effect.

Phases II through V of the Plan will be administered by MWD on the member agency level and monthly targets for imported water use will be established for each phase, depending on the level of reduction required. The Water Authority will pass through a uniform reduction to all member agencies. Agencies that use less than their target will receive an incentive payment while agencies that use more than their target will receive a disincentive charge. The incentive payment will be one-half of MWD's untreated, noninterruptible rate rounded to the nearest dollar (currently \$99 per acre foot). The disincentive charge will be twice MWD's untreated, noninterruptible rate (currently \$394 per acre-foot).

In setting the targets, this plan will use 1989-90 as the base year for the Authority and its member agencies. MWD will approve adjustments to the base year for reductions in local water, previous conservation efforts and growth. The target set for the Water Authority will be used to compute a uniform reduction for all of the Authority's member agencies. The following table shows the MWD reductions by class of service and the estimated uniform reduction that would be applied to CWA's member agencies.

	<u>MWD Reductions</u>		<u>Estimated CWA Reductions</u>
	<u>In Non-Firm Deliveries</u>	<u>In Firm Deliveries</u>	
Phase I (Voluntary)	5%	5%	5.0%
Phase II	20%	5%	7.8%
Phase III	30%	10%	14.7%
Phase IV	40%	15%	21.6%
Phase V	50%	20%	28.5%

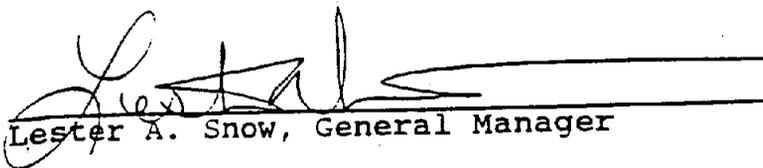
The Water Authority will use the following guidelines in administering the Plan.

**Water Authority Guidelines
Incremental Interruption and Conservation Plan**

1. During Phase I, all incentive payments will be passed through to CWA member agencies.
2. For the base year, actual imported water deliveries for 1989-90 for CWA member agencies will be used.
3. Adjustments to base year water use will be made according to MWD guidelines.

4. The impact of an MWD phased reduction will be calculated regionwide and imposed uniformly on all CWA member agencies.
5. MWD's incentives and disincentives will be applied to CWA member agencies relative to their success or failure to achieve their monthly targets.
6. An end of period reconciliation will be made whenever MWD makes its reconciliation.
7. Any revenues gained from this plan will be dedicated to the Authority's account for storage and conservation as established by Board Resolution 90-23 on May 17, 1990 and defined in Administrative Code Section 15.7.

Prepared by: 
Charles N. Rhodes, Asst. General Manager, Resources

Approved: 
Lester A. Snow, General Manager

Attachments

LAS:CNR:aa

Alameda County

East Bay Municipal Utility District

Population: 1.2 Million

Irrigated

Acres: 0

Demand: 210,000 AF

Supply: Local Reservoir and Mokelumne Project - 210,000 AF

✓ The District does not presently anticipate any shortage, however, it is encouraging conservation with a goal of 15 percent demand reduction.

✓ If conditions change, rationing may be used.

✓ District has an ongoing public information and education program.

August 1990 Update

✓ Voluntary conservation is exceeding the 15 percent goal.

✓ If 1991 is dry, the District will continue with its present procedure.

Monterey County

California Water Service Company - Salinas

Population: 70,000

Irrigated

Acres: 0

Demand: 12,000 AF/Year

Supply: Ground Water -- 12,000 AF

✓ The Company will implement a combination of Stages 1 and 2, as suggested in the Department of Water Resources' Model Drought Management Plan, if water conditions continue to degrade.

✓ The Company participated in school and community awareness programs.

✓ Sea water intrusion is increasing. Also, iron and manganese were found in two new wells.

August 1990 Update

Not Available

Monterey County Flood Control & Water Conservation District.

Population: 175,000

Irrigated

Acres: 210,000

Demand: 550,000 AF

Supply: Ground Water -- 550,000 AF

✓ The District does not supply water; overlying land owners pump from ground water.

✓ Water quality problems include increasing salinity intrusion, nitrates, and high TDS.

✓ The District operates Nacimiento and San Antonio Reservoir to regulate runoff to recharge Salinas Valley ground water. The current drought has severely limited recharge amounts.

✓ The District is initiating a Mobile Irrigation Laboratory.

✓ The District coordinated a water awareness committee and conducted AIMS workshops.

August 1990 Update

✓ The District estimates "normal overdraft" of Salinas Basin at 50,000 AF/year. Overdraft for 1990 is estimated at 300,000 AF.

✓ If 1991 is dry, the District will work to implement a rationing plan, currently under development.

Monterey Peninsula Water Management District

Population: 105,000

Irrigated

Acres: 300

Demand: 16,500 AF

Supply: Ground Water 13,600 AF

Carmel River 2,900

15,500 AF

- ✓ Iron and manganese effect water quality on the lower Carmel River.
- ✓ The mandatory conservation target is 20 percent below 1987-88 use.
- ✓ The District is sponsoring drought survival conferences.
- ✓ The District use press and radio advertisements promoting conservation with specific hints.
- ✓ The District is working toward golf course irrigation with reclaimed water.

August 1990 Update

- ✓ The District is exceeding conservation goals reducing demand 30 percent.
- ✓ If 1991 is dry, the District will continue with mandatory 20 percent conservation.

Santa Barbara, City of

Population: 83,000

Irrigated

Acres: 0

Demand: 8,927 AF

Supply: Ground Water -- 2800 AF

Lake Cachuma -- 7,609 AF

Lake Gibraltar -- 500 AF

- ✓ The City is reducing demand 45 percent with mandatory conservation including no outdoor water use except from a pail or bucket.
- ✓ 2,200 AF from Lake Gibraltar was received in 1989 City water year.

August 1990 Update

- ✓ The City continues to make a 45 percent reduction in demand.
- ✓ City has increased ground water use to about 2,800 AF to 3,000 AF. Lake Gibraltar's contribution was reduced to about 500 AF.
- ✓ Ionics, Inc. has been selected to develop a desalter for the City. A contract is expected in September.
- ✓ If 1991 is dry, the City will continue conservation, and depend on SWP emergency supply to augment its local sources to meet its reduced demand.

Santa Clara Valley Water District

Population: 1.4 Million

Irrigated

Acres: 32,000

Demand: 330,000 AF

Supply: Local Supply Including Surface
and Ground Water 78,000 AF
CVP-San Felipe 76,000 AF
Hetch Hetchy Reservoir 50,000 AF
SWP Entitlement 92,000 AF
Yuba County Water Agency 29,000 AF

- ✓ CVP-San Felipe supply reflects a 50 percent deficiency.
- ✓ Hetch Hetchy supply reflects a 25 percent deficiency.
- ✓ Local reservoirs are at 15 percent of capacity compared to a normal of 50 to 80 percent.
- ✓ Current restrictions on use are 20 percent in North County and 25 percent in South County between April 1, 1990 and October 1, 1990.
- ✓ Financial incentives through rate structure vary from city to city.
- ✓ A ground water extraction charge imposed by the District has been increased.

August 1990 Update

- ✓ In June 1990, conservation achieved 30 percent demand reduction and in July 1990 achieved 25 percent.
- ✓ The systemwide conservation goal from April 1 to July 1 was 20 percent, and 21 percent was achieved.
- ✓ District has hired a media consultant and the Smothers Brothers to do a commercial, buying large amounts of radio and television time. The District attributes use reduction to people knowing there is a real problem.

San Francisco County

San Francisco Water Department

Population: 2.3 Million

Irrigated

Acres: 0

Demand: 325,000 AF

Supply: Current Storage (May 1990): Local -- 120,000 AF
Hetch Hetchy -- 375,000 AF

- ✓ SFWD supplies water to San Francisco and 33 other cities in San Mateo, Alameda and Santa Clara Counties.
- ✓ SFWD has adopted a 25 percent systemwide reduction goal based on 1988 use and an excess use charges would be imposed to motivate compliance.
- ✓ SFWD is contracting to develop a comprehensive conservation program for all schools in the service area.
- ✓ If current efforts prove inadequate, SFWD may try to purchase water.

August 1990 Update

Not Available

San Diego County Water Authority

Advertising Proposal

February – June 1991



Presented by

ADC Stoorza and Stoorza, Ziegau & Metzger, Inc.
225 Broadway, Suite 1600, San Diego, California 92101

San Diego County Water Authority
 Budget Recap
 February - June 1991

I. Media

General Market Radio	\$	63,500	
Hispanic Radio		11,575	
Metro Traffic*		45,500	
General Market Newspaper		23,100	(Net)
Hispanic Newspaper		<u>3,600</u>	(Net)
Total Media	\$	147,275	

II. Creative Development/Production

Newspaper Ad	\$	7,960	
Hispanic Newspaper Ad		2,500	
Radio Commercial		6,560	
Hispanic Radio Commercial		1,800	
Revise Waterhog Radio Spots			
Announcer Copy		2,000	
Creative Campaign/ Strategy Development		<u>6,900</u>	

Total Creative/Production		<u>27,720</u>	
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Total

Total Cost		\$174,995
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*Already purchased

San Diego County Water Authority
Creative Strategy

Message Strategies

- o Describe the immediate specific issues and challenges that currently face all San Diego County residents.
- o Address the problem itself in order to further develop an appreciation by the public, but emphasize the solution to the problem.
- o Communicate that relatively minor changes in water conservation now can prevent major lifestyle inconveniences in the future.
- o Convince the public that they can (and have in the past) made a significant difference.
- o Encourage individuals to participate in water conservation. Make it easy and inviting.
- o Position the San Diego County Water Authority as a well managed, responsible agency.
- o Maintain the ability to adapt and revise the message quickly to accommodate future issues and specific situations.

Tone and Manner

- o Clear
- o Direct
- o Authoritative
- o Believable
- o Convincing
- o Compelling

San Diego County Water Authority

Media Strategy

- o Utilize broad reach mediums that create immediate high levels of awareness among the general population
- o Channel a percentage (approximately 15%) of the total media budget towards reaching the County's Hispanic population who are not adequately impacted by general market media
- o Utilize mediums that allow for a lengthy creative message
- o Concentrate in media that allows for flexibility to effectively and efficiently revise creative as conditions change

Media Recommendations

A. MEDIUMS

- 1) Radio-- :60 commercials
 - o General Market
 - o Hispanic
 - o Metro Traffic Sponsorships

- 2) Newspaper-- :75" ads
 - o Union-Tribune
 - o La Prensa

B. MEDIA PLAN

<u>Medium</u>	<u>Vehicle</u>	<u># weeks</u>	<u>Approx. # of spots/ insertions</u>	<u>Total Impressions</u>
General Market Radio	5-7 major San Diego stations (e.g., KFMB, KSDO, KYXY, KJQY, etc.)	7	450	13,950,000
Hispanic Radio	2-3 Spanish Language Stations	6	90	1,124,500
Metro Traffic* Sponsorship	Major sponsorship on 20 stations	13**	1,250	19,375,000
General market Newspaper	Union-Tribune	4	5-Union 5-Tribune	1,600,000
Hispanic Newspaper	<u>La Prensa</u>	4	4	<u>40,000</u>
Totals	n/a	n/a	1,825-radio 14-newspaper	36,089,500

*30% of Metro Traffic stations are Spanish language
 **Already purchased

ORDINANCE NO. 94-3

ORDINANCE OF THE SAN DIEGO COUNTY WATER AUTHORITY
("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

WHEREAS, the water year ending September 30, 1994 produced the fourth driest year on record for runoff into the Sacramento-San Joaquin Delta and produced less runoff than any single year of the most recent California drought ending in 1992; and

WHEREAS the Metropolitan Water District of Southern California (MWD) depends upon water supplies from the State Water Project, which receives its supplies from the Delta, to meet water demands of its member agencies; and

WHEREAS, the San Diego County Water Authority (Authority) is a member agency of MWD, from which the Authority receives all of its water supplies; and

WHEREAS, MWD expects to have sufficient supplies to meet forecasted demands in 1995, but has adopted a 1995 Drought Management Plan (DMP) to manage any supply shortages which may be more extreme than currently forecast; and

WHEREAS, the final phase of the DMP would be the allocation of available supplies to its member agencies, including the Authority, through implementation of a 1995 Incremental Interruption and Conservation Plan (IICP); and

WHEREAS, in the event that MWD implements its 1995 IICP, it is considered necessary that future available supplies to the

Authority be allocated among the Authority's member agencies for the greatest public interest and benefit as provided by Section 45-5(11) of the County Water Authority Act (Chapter 45, Water Code Appendix); and

WHEREAS, the Authority has determined that it is necessary to establish methods and procedures for managing and securing available water supplies and for the allocation of these supplies to its member agencies;

NOW, THEREFORE, the Board of Directors of the San Diego County Water Authority hereby Determines, Declares, Resolves, and Orders, as follows:

SECTION I. MANAGING AND SECURING AVAILABLE WATER SUPPLIES

If MWD implements its IICP, the Authority shall act to minimize shortages to the San Diego region by managing available Authority owned storage and securing additional available water supplies. As a first priority, the Authority, in coordination with the City of San Diego, shall make available up to 25 percent of Authority owned storage for allocation to its member agencies. Second, the Authority may seek to increase deliveries from MWD through the target marketing provisions of the IICP. Third, the Authority shall consider negotiating with member agencies with local storage to use that storage to reduce demand on the Authority.

SECTION II. DELIVERIES TO MEMBER AGENCIES.

The General Manager shall provide for all reasonable deliveries to member agencies, unless the Board of Directors

determines that it is necessary to encourage further conservation and/or establish monthly allocations to member agencies under Section III A. Any allocation of supplies to member agencies shall be administered by the General Manager according to the provisions set forth in Sections III to V.

SECTION III. MONTHLY ALLOCATIONS TO MEMBER AGENCIES.

A. Amounts.

The IICP was adopted by MWD on November 8, 1994 as part of the DMP. Implementation of the IICP is the final phase of the DMP, and is a means of allocating water to MWD member agencies during drought conditions. The IICP establishes monthly targets for firm and agricultural deliveries for each of MWD's member agencies. The monthly target for firm deliveries is to be based on an average of total water delivered by MWD, less long term seasonal storage and agricultural deliveries, in the same month of fiscal years 1989-90, 1990-91, and 1991-92. Adjustments may be made to reflect growth, changes in local supplies, reclamation, and significant conservation programs. The monthly target for Authority agricultural deliveries from MWD (deliveries certified under MWD's Interim Agricultural Water Program or IAWP) shall be in accordance with the IICP option which allows agricultural deliveries to be based upon IAWP deliveries certified during the previous 12 months prior to a implementation of delivery reductions.

If the Board of Directors determines that it is necessary to establish monthly allocations to member agencies, then the

General Manager shall allocate available MWD supplies, except those supplies received through target marketing efforts, to member agencies by applying the same IICP methodology and reduction percentages. Separate allocations for firm supplies and agricultural water supplies, based upon the definitions used by MWD for firm and interim agricultural water supplies, shall be made for each member agency. The total allocation to each member agency shall be the sum of all firm and agricultural supply allocations.

The General Manager shall notify each member agency of its monthly allocation and the basis for its calculation, notify each member agency when changes in MWD's IICP stage are proposed and acted upon, and provide monthly status reports and a formal accounting to each member agency as part of the regular billing process.

B. Adjustments and Modifications to Monthly Allocations.

Member agencies may apply to the Authority for adjustments to allocations, using the criteria provided in the IICP. The General Manager shall review each application for adjustment, and forward them to Metropolitan for consideration and make such adjustments and modifications in member agency allocations as may be necessary and appropriate to pass through any adjustments received by the Authority from Metropolitan on behalf of a member agency.

C. Additional Available Water Supplies.

Authority owned storage, supplies received from the MWD

target marketing program, and other supply sources described in Section I shall be made available to member agencies. Member agencies must submit a request in writing to the General Manager for such supplies. Allocation of such supplies shall be made by the Board upon review of all member agency requests and recommendation from the General Manager. All cost associated with securing such supplies shall be passed through to the member agencies requesting such supplies.

D. Conservation Programs.

In order to achieve the reductions necessary for continued conservation under pre-IICP conditions, or to comply with monthly allocations imposed under Section III A and III B, the Authority may recommend that each member agency implement programs substantially equivalent to those set forth in the Response Stage Actions of the Drought Response Plan, which is attached as Exhibit A hereto.

SECTION IV. SURCHARGES FOR EXCESS MONTHLY WATER ALLOCATIONS.

A. Sharing MWD Disincentive Surcharges.

If MWD levies any disincentive surcharges against the Authority, the amount of such surcharges shall be shared prorata among member agencies that received more deliveries than their allocations under Section III A and III B hereof. The respective shares shall be a fraction of the total surcharge. The numerator shall be the amount each such member agency received more than its delivery allocation. The denominator shall be the sum of the numerators as determined for all such member agencies. No

surcharges shall be assessed unless the Authority receives a surcharge from Metropolitan and member agencies exceed their allocation. In no case shall the surcharge assessed by the Authority exceed the maximum unit surcharge rate assessed by Metropolitan.

B. Cumulating - Reconciliation.

Any sums due to Authority from member agencies hereunder shall be invoiced on the monthly billing statement by Authority to the affected member agencies, after Authority is billed by MWD. A reconciliation for each class of delivery shall occur concurrent with any reconciliation date established by Metropolitan as part of its implementation of the IICP, unless a different reconciliation date becomes effective by subsequent Board action.

SECTION V. DELIVERY RESTRICTIONS.

A. Notices.

The General Manager shall, at his discretion in a timely and appropriate manner, notify each member agency about the differences between monthly allocations and actual deliveries. If the differences indicate that a member agency is unlikely to be able to meet its monthly allocations, a warning notice may be given.

B. Reductions.

Following implementation of the IICP, the establishment of monthly allocations by the General Manager, notice, and an opportunity to be heard, member agencies which have not reduced

deliveries to within 5% of monthly allocations may have their daily deliveries reduced by the General Manager in a manner estimated to result in attainment of monthly allocations.

C. Adjustments.

The General Manager may make adjustments in deliveries to a member agency because of special circumstances or to protect domestic use, sanitation, and fire protection. Also, consideration will be given to pertinent matters designed to avoid discrimination between consumers using water for the same purpose and to promote uniformity in the beneficial uses made of water within the boundaries of the San Diego County Water Authority.

SECTION VI. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA).

The San Diego County Water Authority finds that this ordinance and actions taken hereafter pursuant to this ordinance are exempt for the California Environmental Quality Act as specific actions necessary to prevent or mitigate an emergency pursuant to Public Resources Code Section 21080(b)(4) and the California Environmental Quality Act Guidelines Section 15269(c). The General Manager is hereby authorized and directed to file a Notice of Exemption as soon as possible following adoption of this ordinance.

SECTION VII. APPEALS.

A. Appeals Board.

There is hereby created an Appeals Board consisting of five directors, to be appointed by the Chairman. The Chairman shall

also appoint five directors to serve as alternate members. There is delegated to the Appeals Board the full authority of the Board of Directors to consider and resolve all appeals lodged by member agencies with the Executive Secretary.

B. Appeals by Member Agencies.

Each member agency may file with the Executive Secretary a request to have the Appeals Board review any action taken by the General Manager hereunder. Representatives of the member agency may appear before the Appeals Board and present such testimony and documentation considered appropriate for a proper understanding and evaluation for the claims and basis for the appeal.

The General Manager shall arrange for such counter presentation considered appropriate for the Appeals Board to fully comprehend all aspects relative to the decision which is the subject of the appeal.

C. Procedure - Decisions.

The Appeals Board shall meet as soon as practical but not later than ten business days after a request is made by a member agency. The Chairman of the Board shall designate a person to be the presiding member of the Appeals Board. No member of the Appeals Board shall participate in or act upon any appeal by the member agency he or she represents. The Appeals Board, with the advice of General Counsel, shall establish fair and reasonable procedures for hearing the appeal and reviewing determinations by the General Manager.

The Chairman shall appoint alternates to serve in the case of any appeal which a member is disqualified or unable to attend. Consistent with circumstances relative to the nature of the appeal, the Appeals Board shall conduct the appeal and render its decisions as expeditiously as practical. The decision shall be in writing briefly describing the pertinent circumstances for the appeal, and the basis for the decision. General Counsel may prepare a draft, pursuant to oral instructions from the Appeals Board, but each member of the Appeals Board must either approve or dissent in writing. The decision of a majority of the Appeals Board shall be the final decision on the subject of the appeal.

SECTION VIII. RESERVED DISCRETION.

The Board of Directors hereby reserves its legislative discretion to modify any of the provisions hereof as changed circumstances may warrant. Modifications to increase or decrease restrictions or water allocations will be made as deemed necessary and appropriate. The General Manager shall keep the Board advised about matters pertinent to drought conditions, MWD deliveries, Authority deliveries to member agencies, appeals, and the nature and extent of other emergency conditions.

SECTION IX. SUPERSEDURE.

If any provisions of this Ordinance are inconsistent with previous actions of the Board pertaining to plans to respond to drought conditions, the provisions hereof shall supersede such inconsistent provisions.

SECTION X. EFFECTIVE DATE.

This ordinance shall become effective on January 1, 1995.

SECTION XI. SUNSET PROVISION.

This ordinance shall remain in effect until December 31, 1995.

SECTION XII. LEGAL BASIS FOR ACTIONS.

The foregoing rules, regulations are taken pursuant to Article X, Section 2 of the California Constitution and the legislative powers delegated to the Authority by Section 45-5(11) of the County Water Authority Act (West's Water Code, Appendix, Section 45).

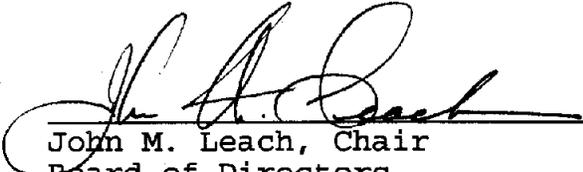
PASSED, APPROVED, and ADOPTED this 8th day of
December, 1994.

AYES: Unless noted below, all Directors voted aye.

NOES:

ABSTAIN:

ABSENT: Broomell, Buckner, Griffen and Turner

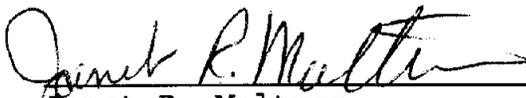


John M. Leach, Chair
Board of Directors



Joseph Parker, Secretary
Board of Directors

I, Janet R. Maltman, Executive Secretary of the Board of
Directors of San Diego County Water Authority, do hereby certify
that the above and foregoing is a full, true and correct copy of
said Ordinance 94-3 of said Board and that the same has not been
amended or repealed.



Janet R. Maltman
Executive Secretary

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APPENDIX D

Summary of Metropolitan Water District's Historic Drought Plans

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Appendix D

Summary of Metropolitan Water District Historical Drought Plans

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 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.”

Table 1 below shows a history of Metropolitan’s noninterruptible and interruptible rates under the Program.

Table 1					
Water Rates					
Period		NONINTERRUPTIBLE		INTERRUPTIBLE	
		Untreated	Treated	Untreated	Treated
		Domestic, Replenishment and Reservoir		Domestic, Replenishment Agricultural and Reservoir	
07/01/81	06/30/82	\$ 96.00	\$ 121.00	\$ 61.00	\$ 86.00
07/01/82	06/30/83	\$ 114.00	\$ 140.00	\$ 79.00	\$ 105.00
07/01/83	12/31/83	\$ 144.00	\$ 172.00	\$ 100.00	\$ 128.00
01/01/84	06/30/84	\$ 197.00	\$ 229.00	\$ 153.00	\$ 185.00
07/01/84	06/30/85	\$ 197.00	\$ 229.00	\$ 153.00	\$ 185.00
07/01/85	06/30/86	\$ 192.00	\$ 224.00	\$ 148.00	\$ 180.00
07/01/86	06/30/87	\$ 197.00	\$ 230.00	\$ 153.00	\$ 186.00
07/01/87	06/30/88	\$ 197.00	\$ 230.00	\$ 153.00	\$ 186.00
07/01/88	06/30/89	\$ 197.00	\$ 230.00	\$ 153.00	\$ 186.00
07/01/89	06/30/90	\$ 197.00	\$ 230.00	\$ 153.00	\$ 186.00
07/01/90	06/30/91	\$ 197.00	\$ 230.00	\$ 153.00	\$ 186.00
07/01/91	06/30/92	\$ 222.00	\$ 261.00	\$ 172.00	\$ 211.00

The discount in water rates in exchange for the right to interrupt ranged from 19% to 36% from 1981 to 1992. Interruptible water deliveries included the following categories:

1. Groundwater replenishment by spreading or injecting,
2. In lieu groundwater replenishment,
3. Reservoir storage,

4. Agricultural purposes limited to the growing of field and nursery crops and row crops,
5. Agricultural purposes limited to the growing of trees and vines,
6. Agricultural purposes limited to the feeding of fowl or livestock, and
7. Seawater barrier groundwater replenishment.

With the exception of deliveries to agriculture, a reduction or interruption in deliveries was to occur in the order listed above. Reductions or interruptions in deliveries to agriculture were to occur after the lapse of one year from the date of notice of discontinuance of surplus deliveries as provided in Metropolitan's Act, Section 132.

An agency had an obligation to take a reduction or interruption in deliveries for three years after taking interruptible water deliveries. An agency that took interruptible water for groundwater replenishment by spreading or injecting or for seawater barrier groundwater replenishment was required to take either:

1. A total interruption in delivery of that type of water for any one year, or
2. An aggregate reduction for three consecutive years of that type of water based on a five year average of deliveries of that type of water preceding the first year of reduction.

An agency that took interruptible water and used it for in-lieu groundwater replenishment or for reservoir storage was required to take either:

1. An interruption in delivery in any one year for the three years following delivery, not to exceed the amount of water delivered in the year prior to the interruption, or
2. An aggregate reduction over the three year period following any year of delivery not to exceed the amount of water delivered for such use prior to the year of interruption.¹

Metropolitan's member agencies that had participated in the Interruptible Program were to produce water from local storage to be able to manage an interruption.

When the 1987-1992 drought occurred, many member agencies who 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 the 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 and livestock would be permanently destroyed by interrupting their water service.³

¹ Metropolitan's Administrative Code, Chapter 6 (repealed December 8, 1992)

² Memorandums dated June 4, 1990, and July 19, 1990, to Chief of Operations and September 10, 1990, Water Problems Committee Public Hearing minutes pages 1-6 and attachments.

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.*

As the drought deepened, Metropolitan’s Board adopted the Incremental Interruption and Conservation Plan (IICP).

1990 Incremental Interruption and Conservation Plan

In response to the deepening drought and Metropolitan’s member agencies’ inability to cease taking deliveries of interruptible water, the IICP was devised to reduce deliveries of both noninterruptible and interruptible deliveries. “The IICP was designed to encourage member agencies to utilize water held in local groundwater and surface water storage reserves and promote consumer water conservation to reduce demands on imported sources during droughts, as well as minimize the impact of reductions to agricultural users.”⁴ Metropolitan’s Board 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.

Table 2 shows the various stages of the IICP and reductions in deliveries for “firm” and “nonfirm” water deliveries. The overall reduction category uses total deliveries and expected reductions to those deliveries. Firm deliveries were noninterruptible and shift seasonal storage service. Nonfirm deliveries included agriculture, interruptible groundwater replenishment and reservoir storage deliveries, seasonal groundwater replenishment, reservoir storage deliveries, and seawater barrier deliveries.

Table 2 IICP Stages			
Stages	Reduction in Nonfirm Deliveries	Conservation of Firm Deliveries	Percentage Overall Savings
I	Voluntary	Goal 10%	---
II	20%	5%	10%
III	30%	10%	17%
IV	40%	15%	24%
V	50%	20%	31%
VI *	90%	30%	50%

* Added in March 1991

The IICP used a base year of fiscal year 1989-90 sales by Metropolitan. 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. Agencies that took less water than their IICP target received an incentive of \$99 per acre-foot. 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 although incentives and disincentives were billed monthly.

⁴ 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

Effective October 1, 1991, incentive payments were eliminated. Additionally, the base year nonfirm category was further divided into nonfirm and a discretionary pool. The firm category remained unchanged. The nonfirm service category became only agriculture and seawater barrier sales from fiscal year 1989-90; the remainder of the interruptible and seasonal base year sales were placed into a discretionary pool which was delivered at the discretion of Metropolitan’s General Manager. Water from the discretionary pool was delivered to replenish storage for use by the agencies during periods when discretionary pool water was not available. A delivery goal was set by the nonfirm stage of IICP in effect at that time.

Invoicing of disincentives was changed from a monthly basis to a quarterly basis in December 1991 to help save on the administrative burden placed on Metropolitan and its member agencies. In February, 1992, a time limit was placed on applying for adjustments under the IICP again to help save on the administrative burden placed on Metropolitan and its member agencies.

In summary, Metropolitan was in rationing for 14 months of the drought. Table 3 below shows the implementation of the IICP stages including adoption of the different stages by Metropolitan’s Board.

Table 3			
IICP Stage Implementation			
Stage	Adoption Date	Implementation Date	Percentage Firm/Nonfirm Reduction
I	11/20/90	12/01/90	Voluntary
II	12/11/90	02/01/91	5/20
III	01/08/91	02/01/91	10/30
V	02/19/91	03/01/91	20/50
VI	03/04/91	04/01/91	30/90
V	04/09/91	04/01/91	20/50
III	03/09/92	03/01/92	10/30
I	04/13/92	04/01/92	Voluntary

During the beginning of the IICP stages, Metropolitan changed stages several times, reacting to changes in supply, demands, and hydrology. “The State granted 85% of Metropolitan’s request for water in January, 1991. It then dropped deliveries to 50% of requests in the beginning of February and then only 10% at the end of February. Once the March miracle occurred, the State increased the allocation to 20% of requests in April, 1991. In September, 1991, the State increased Metropolitan’s allocation by 171,000 AF with the stipulation that the water be delivered for storage within Metropolitan’s service area. This water was delivered through contracts to several member agencies.”⁵

⁵ 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

According to a 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, there were several issues that arose while implementing the IICP.

1. The rapid changing of stages made it difficult to communicate with member and submember agencies where water deliveries targets were.
2. Metropolitan had seasonal storage water available when rationing first began. Seasonal storage was then discontinued for 15 days. Because of the March miracles and changing supplies and demands, seasonal storage was made available again.
3. Interpreting the percentage reductions was difficult for the public. They did not know how to reduce from 10% to 20% usage.
4. Some agencies had local supplies and their retail customers did not need to conserve. However, because of the publicity, everyone was conserving.
5. The incentive payments and disincentive calculations were confusing since Metropolitan was delivering water at a discount for storage that did not get charged a disincentive while at the same time it was paying an incentive for agencies to produce from storage or conserve. Additionally, once an agency had produced from storage and its water levels were too low to produce further, it received an adjustment for loss of local supply to avoid disincentive payments.
6. The discretionary pool added an unnecessary administrative burden and providing allocations to the discretionary pool did not provide the needed flexibility to store water when available.
7. Adjustments were also an administrative burden. Once the incentive payments were eliminated, fewer adjustments were processed.
8. The adjustment for reclamation was complex and needed to be simplified.

1995 Drought Management Plan

The 1995 Drought Management Plan (1995 DMP) was the first time that Metropolitan formalized a Plan which addressed 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. Table 4 reflects the 1995 DMP action plan assuming a low initial State Water Project allocation.⁶

⁶ Recreated from 1995 Drought Management Plan, Figure 1.

**Table 4: Metropolitan's 1995 Drought Management Plan Implementation
BOARD AND**

DMP STEPS		GENERAL MANAGER ACTIONS
August	Initiate Drought Bank Discussions	
September	Evaluate SSS/COOP Deliveries	G.M. Notice to Start SSS 10/1
October		Board Authorization to Purchase Water Bank Options
November		Board Adoption of DMP
December	Assess SWP <30%	
	Re-evaluate SSS/COOP Deliveries	GM Notice to Partially Suspend SSS
	Public Education	Media Advisory on Supply/Demand
January	Suspend Spreading & COOP Deliveries	
February		
March	Reassess SWP <30%	
	Notice to cut In-Lieu SSS	GM Notice to Suspend In-Lieu SSS
	Initiate the Call of Storage Program waters	
	Participate in Water Transfer Options	Board Report on Water Transfers and Semitropic
April	Reassess SWP <30%	Board Report on Supply and Recommended Actions
	Additional Call on Storage Programs	
	Participate in Water Bank	Board Approval of Water Bank Purchase
	Call Semitropic Storage	
	Notice to Cut Ag	
May	Increase Public Education	Media Advisory on Supply/Demand
	Evaluate the Need for IICP	Board Letter on Required Actions
June-August		
September	Evaluate SSS/COOP Deliveries	G.M. Notice on SSS Status
October		
November	Assess Financial Impacts	Board Adoption of Resource Management Plan

The 1995 DMP addressed management of supplies in the event of a water shortage in calendar year 1995. Another plan was to be developed as part of the Integrated Resources Plan to address shortages as well as surplus conditions for the long-term.

The 1995 DMP included a modified IICP. The modifications to the IICP included the following:

1. The base year was the average of fiscal years 1989-90, 1990-91, and 1991-92. The firm deliveries in the base year were noninterruptible water, seawater barrier service, all interruptible in-lieu groundwater replenishment, reservoir storage deliveries, and shift seasonal storage service.

2. The nonfirm category was only agricultural deliveries. The agricultural allocation was based on either the agricultural certifications submitted during the twelve months prior to an agricultural water reduction or the average of agricultural certifications in fiscal years 1989-90, 1990-91, and 1991-92.
3. There was no discretionary pool. Any water available in addition to the targeted amounts would be delivered at the General Manager's discretion.
4. There were separate reconciliation periods for firm targets and agricultural targets based on when reductions in each category began.
5. An Interagency Advisory Committee would be established to recommend stages and develop methods to accomplish adjustments to the base year.
6. Rather than changes in stages going to the full Board, the changes would be authorized by the Executive Committee so that quicker response to changing conditions could be accomplished.
7. The Executive Committee would be authorized to cut agricultural deliveries up to 30% prior to entering stages of the IICP.
8. Interagency target transfers were allowed.
9. The stages were changed to only include mandatory cutbacks and a tiered disincentive rate as shown in the Table 5 below.

Table 5				
1995 DMP IICP Stages and Disincentive Rates				
IICP Stage	Reduction in Firm Deliveries (%)	Reduction in Agricultural Deliveries (%)	Disincentive Rate	Disincentive Rate FY 1994-95 (\$/AF)
I	5	30	40% of Nonint. Rate	134.00
II	10	30	50% of Nonint. Rate	168.00
III	15	40	90% of Nonint. Rate	302.00
IV	20	50	125% of Nonint. Rate	419.00
V	25	75	165% of Nonint. Rate	553.00
VI	30	90	200% of Nonint. Rate	670.00

Several principles were adopted as part of the 1995 DMP as listed below.

- Avoid mandatory stages of the IICP to the extent practicable.
- Use Metropolitan's water management programs in a coordinated and efficient manner.

- Operate Metropolitan's system in a manner that captures and stores excess Metropolitan water in groundwater and surface reservoirs.
- Encourage regional storage during periods of excess water supply and use of storage during periods of drought.
- Use equitable means to conserve and use alternative supplies.
- Adopt measures that will have a balance of minimum cost and minimum inconvenience to consumers.
- Avoid to the extent practicable financial hardship on Metropolitan and its member agencies.
- Utilize cost efficient water transfer programs.
- Use public information to encourage efficient water use and to educate the public on water supply and reliability issues.
- Recognize the need for minimizing the impacts of water shortages on the region's economy.
- Reward conservation efforts through the water allocation methodology and penalize inefficient water practices.
- Base allocations (base year) should be an equitable allocation of available supplies reflecting payments for reliable deliveries.
- The base allocations should be adjusted to distribute regional benefits in proportion to the regional dollars spent in the development of local resources such as reclamation. The base allocations should also reward the agencies that have implemented conservation through Best Management Practices (BMPs) and/or penalize those that have not through reduced drought allocations or financial penalties. Adjustments for growth would be considered if it can be demonstrated that circumstances since the establishment of base allocations have significantly altered an agency's water demands. Adjustments for growth should reflect BMPs. Adjustments will not be utilized in target marketing.
- The agricultural allocation will be based on a rolling average of historic certified agricultural usage, up to a maximum of 155,034 acre-feet. The allocation would be adjusted upwards to reflect any rationing that occurs during that base period.⁷

It was also recommended that the following principles be incorporated into a longer-term plan.

⁷ 1995 Drought Management Plan, pages 6-8.

- Base Allocation - Base allocations should reflect the appropriate share of available supplies based on good water management practices, including implementation of Best Management Practices. In addition, the relationship between payments for reliability and allocations of water during shortages should be established and maintained.
- Adjustments - The base allocations should be adjusted to distribute regional benefits in proportion to the regional dollars spent in the development of local resources such as reclamation. The base allocations should also reward the agencies that have implemented conservation through Best Management Practices (BMPs) and/or penalize those that have not. Adjustments for growth would be considered if it can be demonstrated that circumstances since the establishment of base allocation have significantly altered an agency's water demands. Adjustments would not be available for target marketing.⁸

The 1995 DMP was adopted for one year only. In 1994, Metropolitan had begun an integrated water resources planning process. As part of that process, a more permanent drought management plan which also incorporated surplus conditions was envisioned that created a general policy direction on the basic sequence of water resource management steps that would be taken under surplus or shortage conditions. This plan, adopted in 1999, became known as the Water Surplus and Drought Management Plan.

Water Surplus and Drought Management Plan

The Water Surplus and Drought Management Plan (WSDM) is the drought management plan that Metropolitan currently operates under. The WSDM Plan addresses both drought actions and water surplus actions. However, a water allocation methodology in the event “rationing” becomes necessary is not included in the WSDM Plan.

The following are the guiding principle, supporting principles and implementation goals of the WSDM Plan:

Guiding Principle

- Metropolitan will encourage storage of water during periods of surplus and work jointly with its Member Agencies to minimize the impacts of water shortages on the region’s retail consumers and economy during periods of shortage.

Supporting Principles

- Maintain an ongoing coordinated effort among Metropolitan and its Member Agencies to encourage efficient water use and cost-effective local resource programs and to inform the public on water supply and reliability issues.

⁸ Board Letter dated October 18, 1994.

- Encourage local and regional storage during periods of surplus and use of storage during periods of shortage.
- Manage and operate Metropolitan’s regional storage and delivery system in coordination with local facilities to capture and store surplus water in local groundwater and surface reservoirs.
- Arrange for secure sources of additional water from outside the region for use during periods of shortage.
- Call upon sources of additional water from outside the region and water stored locally to meet the needs of consumers and protect the economy during periods of shortage.

WSDM Plan Implementation Goals

- Avoid mandatory import water allocations to the extent practicable.
- Equitably allocate imported water on the basis of agencies’ needs. Considerations to create an equitable allocation of imported water may include:
 - Impact on retail consumers and economy
 - Reclamation/Recycling
 - Conservation
 - Population and economic growth
 - Investment in local resources
 - Change and/or loss of local supply
 - Participation in Metropolitan’s Non-firm (interruptible) Programs
 - Investment in Metropolitan’s facilities.
- Encourage storage of surplus supplies to mitigate shortages and improve water quality.⁹

Although an allocation method was not adopted, a draft plan was devised and specific concepts of an allocation are laid out in the WSDM Plan. These concepts include an overall policy objective of the allocation method as follows: “...to minimize the impacts to any one agency and the region as a whole. To meet that objective, the method of allocating firm imported supply will account for:

- Each agency’s demands on Metropolitan,
- Each agency’s local resources,
- Each agency’s total retail demands.”¹⁰

⁹ Water Surplus and Drought Management Plan, pages 1-2.

¹⁰ Water Surplus and Drought Management Plan, page 3.

Water sales to an agency up to the amount allocated will be at the prevailing full service rate. Deliveries for water use from 100 to 102% of the allocation would be charged the prevailing full service rate plus \$175 per acre-foot (this cost is similar to the cost of Governors Water Bank water offered for sale in the 1987-92 drought). Water deliveries in excess of 102% of the target amount would be charged three times the full service rate.

The WSDM Plan has four resource stages in which actions fall. These resource stages are:

Surplus: Supplies are sufficient to allow Metropolitan to meet Full Service demands, make deliveries to all interruptible programs (replenishment, long term seasonal storage, and agricultural deliveries), and deliver water to regional and local facilities for storage.

Shortage: Supplies are sufficient to allow Metropolitan to meet Full Service demands and make partial or full deliveries to interruptible programs, sometimes using stored water and voluntary water transfers.

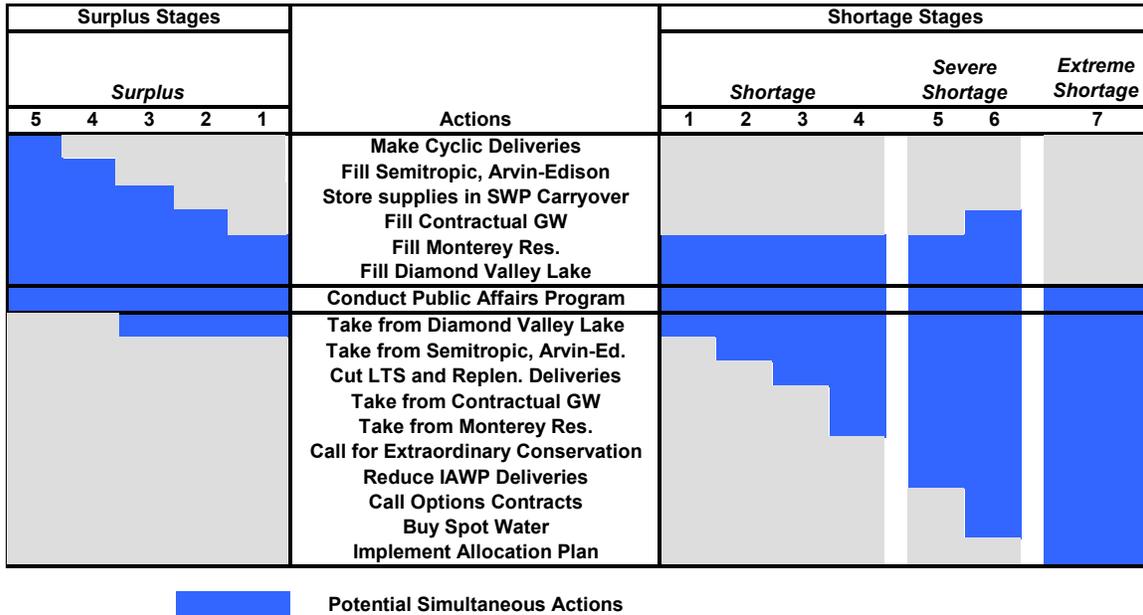
Severe Shortage: Supplies are insufficient and Metropolitan is required to make withdrawals from storage, call on its water transfers, and possibly call for extraordinary drought conservation and reduce deliveries under the IAWP.

Extreme Shortage: Supplies are insufficient and Metropolitan is required to allocate available imported supplies.¹¹

Based on the resource stage that Metropolitan is in, varying actions may occur. These actions are shown in Figure 1 below as developed by Metropolitan. The matrix acts as a “framework”. Actual response would be based on conditions at the time of need.

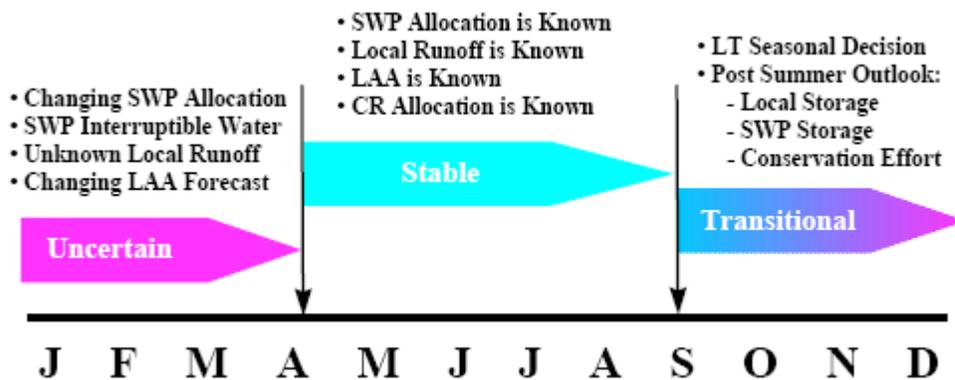
¹¹ Water Surplus and Drought Management Plan, page 7.

Figure 1: Sequence of WSDM Plan Water Resource Management Steps



The matrix is read from the center of the “Actions” column to the right or left. If Metropolitan is in a surplus stage, it would be read from the center up and to the left. If Metropolitan is in shortage stages, it would be read from the center down and to the right. Metropolitan’s General Manager has authority to act on all surplus actions and shortage actions 1 through 4. Metropolitan’s Board must approve actions 5 through 7.

The timeline below from the WSDM Plan shows a hypothetical shortage year.¹²



From January through April, supplies are uncertain. The State Water Project (SWP) allocation is changing based on hydrology as well as the Los Angeles Aqueduct (LAA). From May through the end of September, supplies are known and actions have been taken in response to those known

¹² Water Surplus and Drought Management Plan, page 30.

supplies. From October through December, a transitional period develops where there is uncertainty on the availability of supplies for the following period, and a decision is made on whether to offer long-term storage deliveries to member agencies as well as assess local storage, SWP storage and conservation efforts that have occurred.

A Drought Program Officer will administer the public outreach programs. The DPO will be responsible for coordinating the various activities during a drought.

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APPENDIX E

Metropolitan Water District's Draft Interim Agricultural Water Program Reduction Guidelines

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Appendix E
Metropolitan's DRAFT Interim Agricultural
Water Program Reduction Guidelines
May 2005

Summary

Over the past several years, the Southwest experienced continued dry conditions and demands for imported water were near all-time records. In addition, Metropolitan's Colorado River supply is at about half of recent historical supply as agricultural to urban Colorado River water transfers are being ramped-up. Metropolitan has exercised a number of additional actions within its broad portfolio of resources, such as withdrawals from Central Valley storage programs and reductions in replenishment deliveries, to maintain reliable deliveries of "firm" supply. As the 2004/05 water year also began as a dry year, Metropolitan and its member agencies began preparing a plan to reduce Interim Agricultural Water Program (IAWP) deliveries in the coming year, in the event that a reduction became necessary. Even with the recent record rainfall in Southern California and apparently ample supply on the State Water Project, it is prudent to complete the plan and procedures for such a curtailment.

This paper provides an outline of how a reduction in IAWP deliveries could be developed, initiated, implemented, and validated. It is based on experiences from the last reduction in agricultural water deliveries in 1991, informal discussions with member agency and retail agency staff, and discussion with agricultural water users and their representatives. The goal is to use this information as the framework for detailed guidelines and implementation procedures.

Background on the Interim Agricultural Water Program

The potential water management benefits of interrupting agricultural water deliveries prior to urban deliveries was recognized in the "Interruptible Program" established by Metropolitan in 1981. On the heels of the 1992 drought, Metropolitan converted the "Interruptible Program" into a more rigorous IAWP in May 1994. The IAWP provides for the delivery of surplus water for agricultural purposes at a discounted rate. Under the IAWP, water is delivered at a discounted rate in exchange for up to a 30% reduction in demand by participating agricultural water users at Metropolitan's call during dry periods. This reduction enables Metropolitan to better conserve limited supplies during such shortages.

The IAWP was initially set up as a demonstration program with a sunset/renewal period of three years. In exchange for the IAWP water discount, Metropolitan can reduce IAWP water deliveries up to 30% prior to implementing any mandatory allocations under its drought management plan. The three-year demonstration period ended June 1997, after which time Metropolitan continued the IAWP for an additional five years. A bundled rate for treated and untreated agricultural water was incorporated into Metropolitan's rate structure in January 2003. IAWP parameters set forth in Section 4106 and Chapter 9 of Metropolitan's Administrative Code, and administrative procedures developed under the program's demonstration period and refined under the five-year extension, now continue.

Program Features

Metropolitan's Administrative Code generally defines agricultural purposes, under the IAWP, as water used for growing or raising agricultural, horticultural or floricultural products for the purposes of commerce, trade, or industry, or for use by educational or correctional institutions, on parcels where greater than one acre is used exclusively for the aforementioned purposes. It applies to both the growing of crops and raising of livestock and fowl for human consumption or market. It also applies to the feeding of fowl or livestock for the purpose of obtaining their products for human consumption or market.

The IAWP limits the maximum amount of discounted agricultural water available to a member agency on an annual basis each fiscal year. These limits, based on the agency's average annual agricultural water use for the four-year period preceding the program's 1994 implementation, are still in place, and are as follows:

Agency	Maximum Annual IAWP (AF)
Anaheim	115
Calleguas MWD	7,164
Inland Empire Utilities Agency	122
Eastern MWD	6,761
Fullerton	60
Las Virgenes MWD	207
MWDOC	7,657
SDCWA	100,459
Three Valleys MWD	106
Torrance	22
West Basin MWD	170
Western MWD	32,347
Total	155,190

In order to receive the IAWP discount, member agencies must certify to Metropolitan the amount of agricultural water used within their service area on a monthly basis. Such use is actually determined through certifications provided by the retail agency supplying agricultural water to the end user. Metropolitan, in turn, issues a discount for that amount of water to the member agency. Member agencies are required to pass the discount on to the retail agency, which then transfers the discount to the end user.

Metropolitan reviews IAWP performance on an annual basis. This review includes verifying water usage on a retail agency basis to ensure that IAWP certifications submitted during the year preceding the review are accurate, verifying that the IAWP discount is being transferred to end-users, and spot-checking agricultural parcels to ensure participation according to

Metropolitan's agricultural purposes definition. Based on this review, Metropolitan may adjust IAWP credits issued to an agency during the previous year.

The Metropolitan Water District Act allows Metropolitan to deliver or sell water for any beneficial use that is not needed for domestic or municipal uses. Metropolitan has the right to discontinue surplus water service, in whole or in part, upon one year's written notice to the purchasers or users of the water. Following such notification, Metropolitan's CEO has the discretion to reduce IAWP deliveries up to 30% prior to imposing any mandatory urban water allocation under the Water Surplus and Drought Management (WSDM) Plan during the year for which notification is given. Metropolitan's Administrative Code requires the CEO to give written notice of Metropolitan's intent to reduce or interrupt IAWP delivery as soon as practicable after such determination is made.

As part of the demonstration program, member agencies were required to submit a plan indicating how a 30% reduction would be met. This was a one-time requirement and Metropolitan was to have received such plans by November 1994. Since that time, Metropolitan has not required that plans be revised or updated. Moreover, methodologies and procedures for initiating, implementing and validating reduction have not been developed.

Draft Guidelines for Program Implementation

Notification and Timing of the Reduction

One of the most important aspects of the reduction in IAWP deliveries is the timing of the reduction. Colorado River and State Water Project (SWP) supplies are determined on a calendar year basis. The SWP allocation is typically not final until early May, and is often very uncertain until that point. Because of the supply uncertainty early in the year, an implementation timeline that considers the changing SWP supply outlook is appropriate. Additionally, a lead-time between the time that Metropolitan issues a notice of a reduction in agricultural deliveries under the IAWP and when the reductions begin is necessary for the member agencies to communicate and implement plans with their sub-agencies and/or IAWP participants. As a result, Metropolitan's notification protocol includes a 60-day period between the time when Metropolitan notifies agencies of the reduction and when the reduction actually occurs.

These factors are shown in the 2004/05 timeline on the following page.

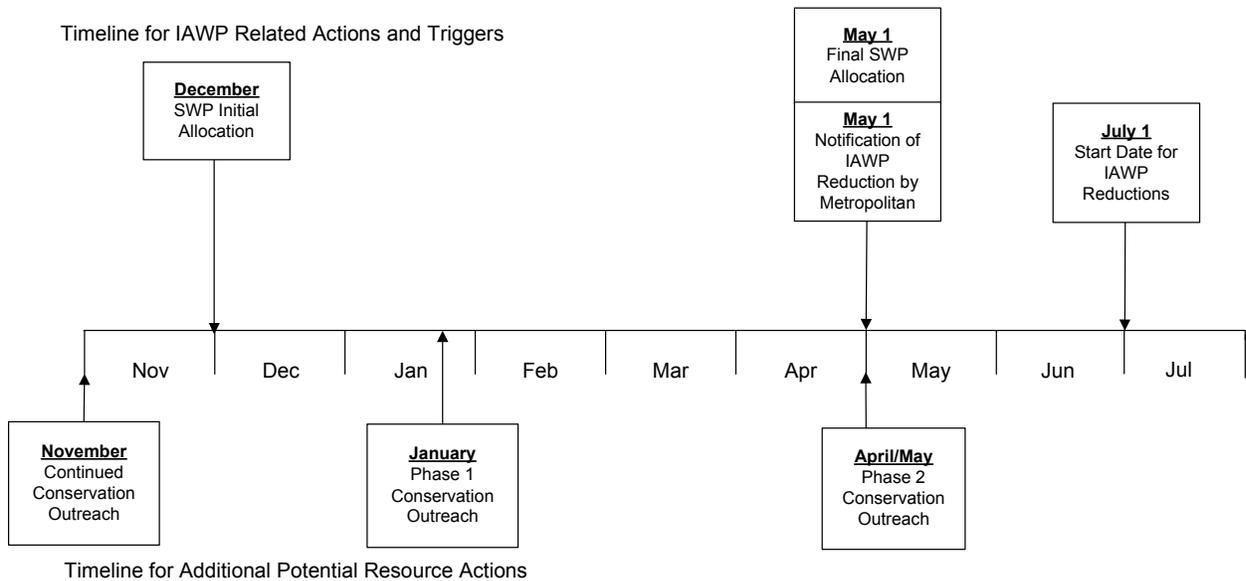


Figure 1: Timeline for IAWP Reduction Implementation

In addition to the timeline shown above, staff provides monthly water supply reports to Metropolitan’s Board of Directors between January and May. These reports inform the Board on changes in the outlook for imported supplies and provide timely updates on the water supply outlook to Metropolitan’s member agencies.

A fiscal year schedule for measurement of IAWP reductions takes into account a more certain supply outlook, reducing the potential that IAWP supplies will be unnecessarily reduced. The monthly water supply outlook updates, with the assessment of the SWP allocation, serve as a useful means of communicating the possibility of a reduction in IAWP deliveries in the following fiscal year. This is helpful for preparing IAWP participants that may have to make decisions to stress or stump trees, reduce plantings or dismantle irrigation to comply with the reduction.

Establishing a Baseline

A baseline for determining monthly IAWP usage targets for the upcoming fiscal year would be based on IAWP water usage in the last complete fiscal year prior to when Metropolitan issues the notification of reduction. For example, the baseline for a fiscal year 2005/06 reduction would be based on monthly use in fiscal year 2003/04. Since a reduction in IAWP deliveries would typically be called during an extended dry period, such prior year IAWP deliveries would provide the best prediction of agricultural usage patterns in the coming fiscal year. Once established, this baseline would remain in place for the remainder of the period in which the IAWP reduction is in effect, and for droughts continuing into successive fiscal years. For planning purposes, the use of 2004/05 data would not be adequate for determining a baseline because the fiscal year would not be complete by the time the reduction is called

and the certification process for 2004/05 agricultural use is not complete with end-of-year review results until December 2005.

Monthly IAWP usage targets will be set at 70% of the monthly baseline IAWP deliveries projected for the reduction period; however, performance will be measured semi-annually beginning July 1. Within each six-month period, agencies carry forward “credits” and “debits” from month to month. Any credit balance remaining at the end of the six-month period could be carried forward to the next six-month period. However, credits cannot be carried for more than one six-month period. Any credits remaining at the end of a six-month period that were carried forward from a previous six-month period will be lost. If the carryover balance is negative (meaning the agency used more than it was allocated), at the end of either the first six-month period, or the end of the fiscal year, the member agency would then pay Metropolitan’s “Penalty Rate” (see Penalties for Non-compliance) for the cumulative “debits” accrued during the six-month period.

The following graphs illustrate the baseline and the 70% monthly limit, as well as 70% of the usage pattern for a representative year (fiscal year 2001/02) compared to the baseline year, as an example of monthly hydrologic variation demonstrating where carryover credits may be accrued and used in subsequent months that are over 70% of the monthly baseline. San Diego County Water Authority and Western Municipal Water District are shown as examples, since they are the largest IAWP participants.

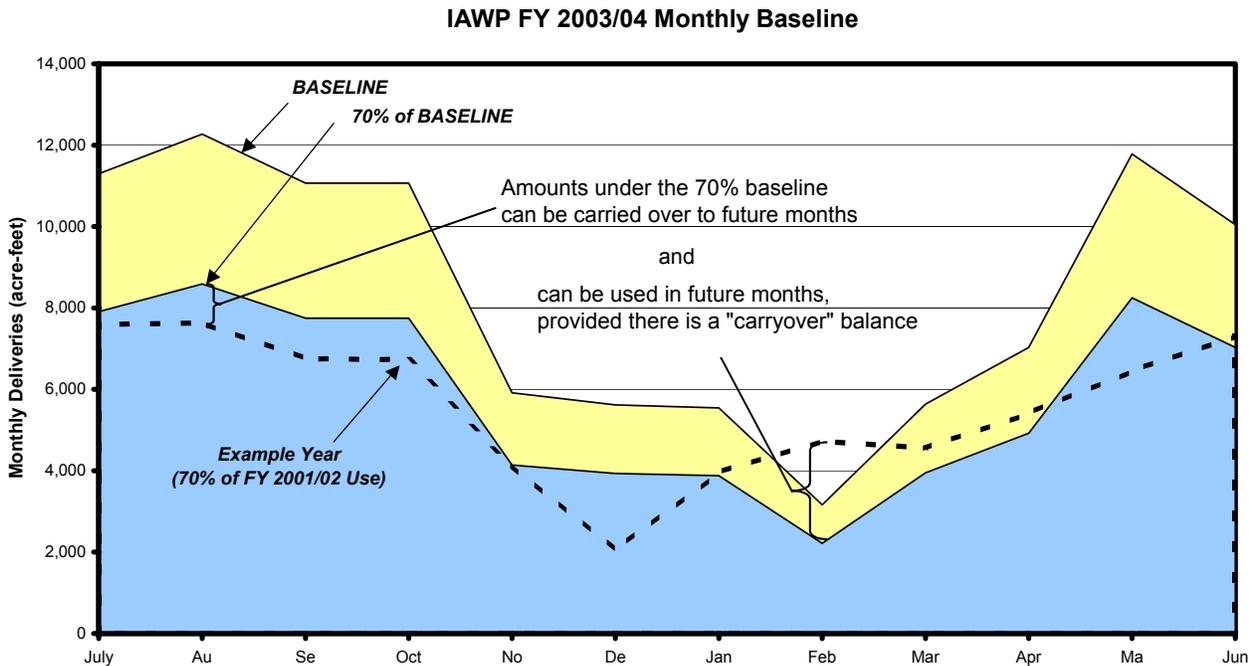


Figure 2: SDCWA Monthly Ag Usage Baseline,
With 70% of FY 2001/02 Use Pattern Shown for Example

IAWP FY 2003/04 Monthly Baseline

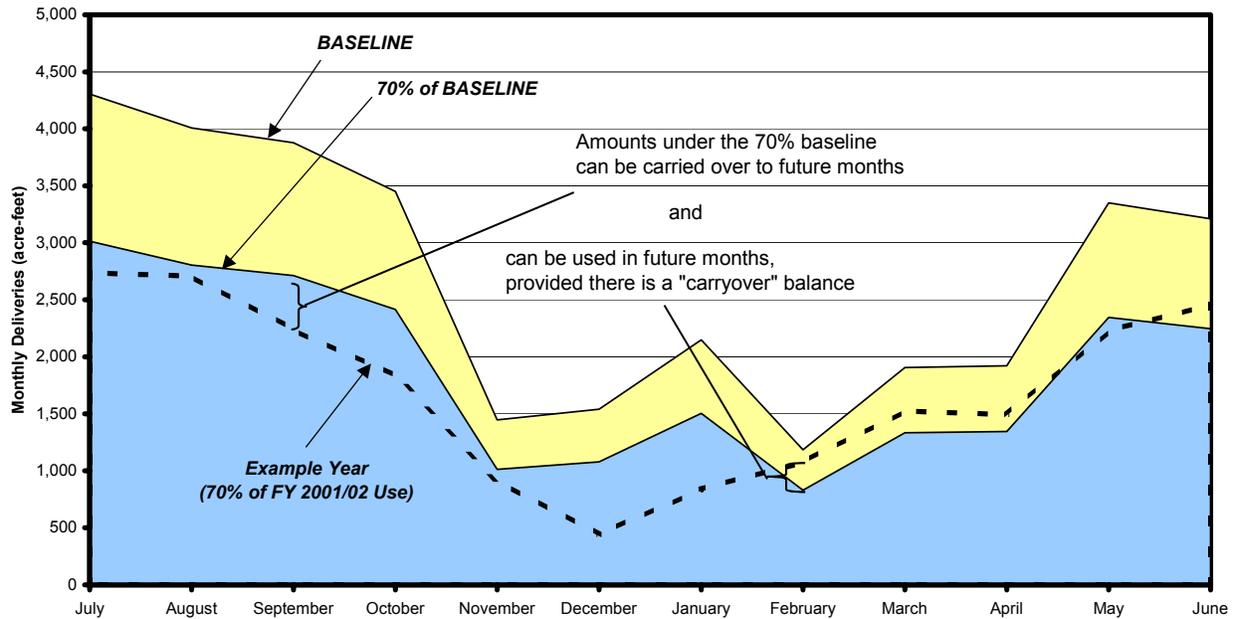


Figure 3: Western MWD Monthly Ag Usage Baseline, With 70% of FY 2001/02 Use Pattern Shown for Example

Implementing the Program

The reduction guidelines would be exercised when it is evident that the SWP allocation and other supply programs could be insufficient to meet the range of forecast demands. Since SWP supply has the highest variability early in the year, the following rough guidelines will be used to communicate the likelihood of implementing a reduction in IAWP deliveries in FY 2005/06:

SWP Allocation	IAWP Action
40 % or less	IAWP reduction is highly likely
Between 40% and 60%	IAWP reduction is possible
Over 60%	IAWP reduction is unlikely

Please note that these ranges are preliminary and are subject to change as supply, demand and storage conditions, as well as their outlooks, change.

The expected yield of the IAWP reduction, using fiscal year 2003/04 as a baseline, is about 45 thousand acre-feet (TAF), which is 30% of the 150 TAF that was certified for that fiscal year.

Verification of Usage

The IAWP provides a discount to participants to maintain the ability for Metropolitan to reduce usage as a water management action, if necessary. The goal of water use savings will be compromised if “firm” water is used to offset the reduction in discounted IAWP water. The need for verifying reductions in usage must be balanced by a verification strategy that is not administratively complex and provides for development of methodologies by each member agency and its participants. With this in mind, proposed methods to verify the reduction of usage by IAWP water users are listed as follows:

1. Monitor a reduction in usage through limits placed on the amount of water that can be certified at a discount under the IAWP.
2. Review proposals by participating member agencies that outline how reductions in use by IAWP participants will be implemented, monitored and verified. A committee of Metropolitan staff and member agency representatives will review proposals.
3. Conduct spot checks to verify that proposed actions are actually being implemented.

Based on past discussions regarding the IAWP, participants have an interest in proving that actual reductions in usage have occurred, because a financial benefit has been derived over the years due to this program. By demonstrating their ability to reduce usage, participants in the program can demonstrate the value of the IAWP as a water management program that provides regional benefit.

Penalties for Non-Compliance

In order to help ensure performance and participation by IAWP participants, Metropolitan would impose financial penalties and restrict usage for member agencies that do not reduce their use of water under the IAWP. If a member agency did not reduce its use of IAWP water when requested, all water delivered to IAWP participants above 70% of the established baseline for the six-month period would be priced at a rate equal to the System Access Rate, plus the Water Stewardship Rate, plus the System Power Rate, plus twice the Tier 2 Supply Rate (see Penalty Rate in the following table of water rates for rates in CY 2005).

Furthermore, the member agency’s annual IAWP limit would be reduced by the extent to which the target usage levels were not met. Such a reduction would remain in place for at least one year.

Financial Impact

The following water rates are applicable for the calendar year beginning January 1, 2005.

Water Rate	Untreated	Treated
IAWP	\$ 241/AF	\$ 329/AF
Tier 2 Full Service	\$ 412/AF	\$ 524/AF
Penalty Rate (bundled rate)	\$ 566/AF	\$ 678/AF

As shown above, an agency that used more water than 70% of the established baseline for the six-month period would pay an additional \$325/AF for every additional acre-foot of untreated water, and an additional \$349/AF for every additional acre-foot of treated water.

Conclusion and Recommendation

While curtailments on IAWP deliveries appear unlikely this year, it is appropriate to have procedures in place should such a reduction become necessary in the future. The current framework includes notification of an IAWP reduction in May if necessary, based on the allocation of State Water Project supplies and the latest forecast of water supply/demand balance. The next step in the process is to expand the proposed framework and develop the detailed procedures for such reductions. These procedures will be developed with member agencies, retail agencies and growers to ensure that the objectives of the program can be achieved.

APPENDIX F

Member Agency DMP TAC Memorandum to Board of Directors

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TO: Water Authority Board of Directors

VIA: Water Planning Committee

FROM: Member Agency Drought Management Plan Technical Advisory Committee

SUBJECT: Draft Drought Management Plan

DATE: March 23, 2006

We are pleased to report that the Member Agency Drought Management Plan Technical Advisory Committee (TAC) has concluded its deliberations as a Committee and respectfully submits to the Water Authority Board through the Water Planning Committee a draft Drought Management Plan (DMP) for review and consideration. The DMP outlines specific recommended actions to be taken by the Water Authority when faced with a shortage of imported water supplies from Metropolitan due to drought conditions.

The TAC members wish to emphasize that 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. While the region intends 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 DMP was prepared in the event that the region ever faces supply shortages due to drought.

All the Water Authority member agencies were invited to participate on the TAC; 22 of 23 agencies did so. The TAC members met approximately every month since the first meeting was held on March 7, 2005. The role of the TAC was to provide input to Water Authority staff on preparation of a DMP. To help ensure that each TAC member's perspective was heard at the meetings, the Water Authority staff hired a consultant to facilitate each meeting and assist the member agencies in working through the many complex issues and to strive for consensus.

The DMP contains four major elements: 1) Principles developed with input from the TAC that provided guidance into preparation of the DMP; 2) Drought response matrix that provides guidance to the Water Authority in selecting potential regional actions that can be taken to lessen the severity of shortage conditions; 3) Supply allocation methodology that provides a means to allocate Water Authority supplies to its member agencies in a shortage situation; and 4) Communication strategy that provides actions for the Water Authority to take to ensure clear communication prior to and during shortage conditions.

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

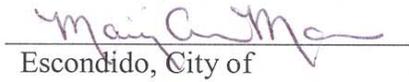
group is the Member Agency Advisory Team that will assist the Water Authority's General Manager with issues that arise during the implementation of the DMP. This will include actions related to implementation of the Drought Response Matrix and the Allocation Methodology. The second group is a Drought 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.

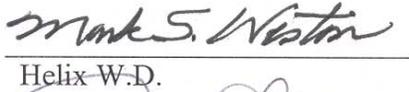
Of the four DMP elements, development of the supply allocation methodology required the most discussion and deliberation by TAC members. All of the members of the TAC recognize the difficulty inherent in rationing a supply that is less than the demand for that supply. The TAC members believe that it is important to develop a method in advance of a drought and not address such a challenging issue while in the midst of a crisis. The allocation methodology that is contained in the DMP reflects many hours of thoughtful deliberations and discussions among the member agencies and represents our best collective efforts to balance the diverse needs of the members in a fair and equitable manner. Specifically, to provide an incentive for the continued development of local water supplies by the Water Authority's member agencies while, in the most severe conditions, limiting the effect of drought at the retail level.

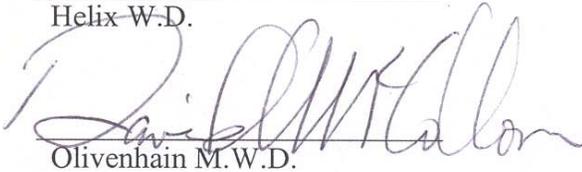
Even though the region has plans to be reliable for the next 25 years, with no anticipated shortages, it is prudent planning that we be prepared in the event that the region does ever face supply shortages due to drought conditions. The draft DMP being submitted for your review and consideration accomplishes this task.

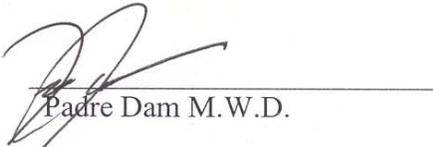
Respectfully Submitted,


Carlsbad M.W.D.


Escondido, City of

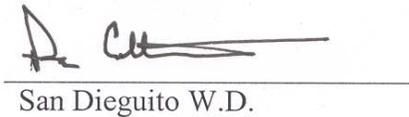

Helix W.D.


Olivenhain M.W.D.


Padre Dam M.W.D.


Rainbow M.W.D.

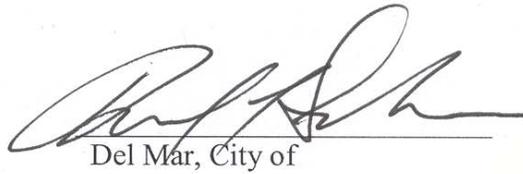

Rincon Del Diablo M.W.D.

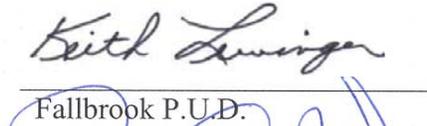

San Dieguito W.D.

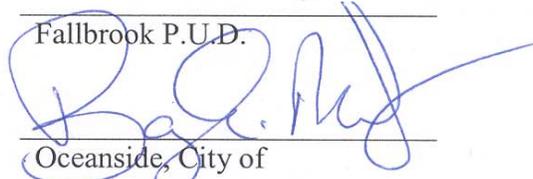

Sweetwater Authority

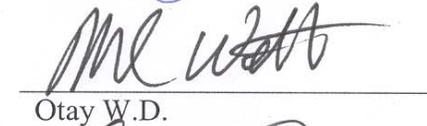

Valley Center M.W.D.

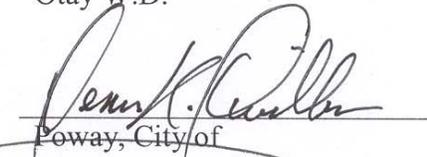

Luima M.W.D.

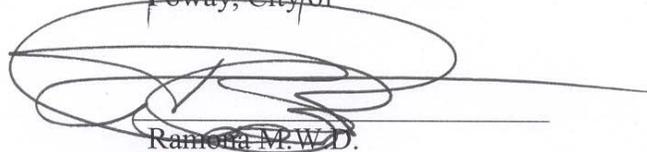

Del Mar, City of

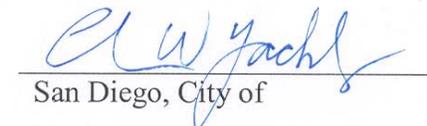

Fallbrook P.U.D.

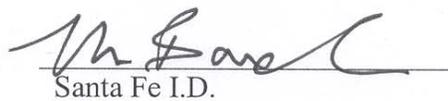

Oceanside, City of


Otay W.D.

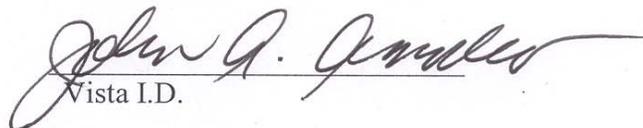

Poway, City of


Ramona M.W.D.


San Diego, City of


Santa Fe I.D.


Vallecitos W.D.


Vista I.D.