Carlsbad Municipal Water District

2005 URBAN WATER MANAGEMENT PLAN

December 2005

November 10, 2005 Draft

Table Of Contents

INTRODUCTION **3**

CALIFORNIA URBAN WATER MANAGEMENT PLANNING ACT 3
SENATE BILLS 610 AND 221 4
Plan Adoption 5
Agency Coordination 5

CHAPTER 2 - CMWD SERVICE AREA **6**

Climate 6
Other Demographic Factors 6
Carlsbad's Water Supply History 6
Past Drought, Water Demand, and Conservation Information 7

CHAPTER 3 - WATER SUPPLY SOURCES **11**

Water Supply Sources 11
Imported Water from SDCWA 12
Seawater Desalination 14
Recycled Water 18

CHAPTER 4 - RELIABILITY PLANNING **21**

Reliability 21
Near Term Reliability *22*
Long-Term Reliability *23*
Frequency and Magnitude of Supply Deficiencies 23
Plans to Assure a Reliable Water Supply 23
Three Year Minimum Water Supply 24

Water Transfers 24
SDCWA-IID Water Conservation and Transfer Agreement *25*
SDCWA-Metropolitan Water Exchange Agreement *25*
Other Sources Of Imported Water *27*
Other Transfers *27*

CHAPTER 5 - WATER USE PROVISIONS **29**

Past, Current and Projected Water Use 29
Residential Sector *30*
Commercial/Industrial/Institutional Sectors *31*
Irrigation Sector *31*
Agricultural Sector *32*
Recycled Water Sector *32*

CHAPTER 6 - SUPPLY AND DEMAND COMPARISON PROVISIONS **33**

Supply and Demand Comparison 33

33CHAPTER 7 - WATER DEMAND MANAGEMENT MEASURES 35

Best Management Practices 35
BMP 1 – Residential Surveys 36
BMP 2 – Residential Plumbing Retrofit 36
BMP 3 -- Distribution System Water Audits, Leak Detection and Repair 37
BMP 4 -- Metering with Commodity Rates 37
BMP 5 -- Large Landscape Programs and Incentives 37
BMP 6 – High-Efficiency Clothes Washer (HEW) Rebates/Vouchers 37
BMP 7 -- Public Information Programs 37
BMP 8 -- School Education Programs 37
BMP 9 – Commercial, Industrial and Institutional (CII) Water Conservation 38
BMP 10 – Wholesale Agency Assistance Programs 38
BMP 11 -- Conservation Pricing 38
BMP 12 – Conservation Coordinator 38
BMP 13 -- Water Waste Prohibition 38
BMP 14 – Residential Ultra-Low Flush Toilet Replacement 39

CHAPTER 8 - WATER SHORTAGE CONTINGENCY PLAN 40

Water Shortage Contingency Plan 41
Revenue and Expenditure Impacts/Measures to Overcome Impacts 42

CHAPTER 9 - WATER RECYCLING 43

Wastewater System Description 43
Recycled Water Uses 45
Recycled Water Currently Being Used 45
Potential Uses of Recycled Water/Technical and Economic Feasibility Analysis 47
Encouraging Recycled Water Use 52
Financial Incentives 52
City Policies 52
Staff Assistance 52
Training 53

APPENDIX A 54

APPENDIX B 55

An Ordinance of the Carlsbad Municipal Water District Finding the 55
Necessity For and Adopting A Water Conservation Program 55

APPENDIX C 62

An Ordinance of the Carlsbad Municipal Water District Mandating Use of Reclaimed Water 62

APPENDIX D 70

DWR 2000 Urban Water Management Plan Checklist 70

APPENDIX E 72

California Urban Water Management Planning Act 73

List of Tables

TABLE 2-1 POPULATION PROJECTIONS FOR THE CMWD SERVICE AREA 7
TABLE 2-2 HISTORIC WATER USE IN THE CMWD SERVICE AREA 8
TABLE 3-1 CURRENT AND PROJECTED WATER SUPPLIES 12
TABLE 4-1 DRY WATER YEAR SUPPLY RELIABILITY 24
TABLE 4-2 STATUS OF CONTINGENCIES ASSOCIATED WITH SDCWA-IID AGREEMENT 25
TABLE 5-1 PAST, CURRENT AND PROJECTED WATER USE 30
TABLE 5-2 NUMBER OF CONNECTIONS BY CUSTOMER CLASSIFICATION 30
TABLE 6-1 PROJECTED DEMAND AND SUPPLY COMPARISON 33
TABLE 6-2 SINGLE DRY YEAR AND MULTIPLE DRY WATER YEARS 33
TABLE 7-1 BEST MANAGEMENT PRACTICES FOR WATER CONSERVATION IN CALIFORNIA 36
TABLE 7-2 POTENTIAL WATER CONSERVATION SAVINGS THROUGH 2030 WITHIN CMWD SERVICE AREA 38
TABLE 8-1 CMWD WATER CONSERVATION STAGES 42
TABLE 9-1 CMWD WASTEWATER GENERATION PROJECTIONS 43
TABLE 9-2 CMWD PROJECTED RECYCLED WATER CAPACITY 47
TABLE 9-3 PHASE II SUMMARY OF LARGE POTABLE WATER IRRIGATION CUSTOMERS 51

List of Maps

SERVICE AREA BOUNDARIES 10
SEWER SERVICE AREA 44
EXISTING RECYCLED WATER DISTRIBUTION SYSTEM 46

List of Photos

ENCINA POWER PLANT SITE OF PROPOSED SEAWATER DESALINATION PLANT 14
PHASE II RECYCLED WATER TREATMENT FACILITIES AND CONTROL BUILDING 19
CANAL LINING PROJECTS 25

Key to Abbreviations

AF .....acre feet

AFY .....acre feet per year

CFS .....cubic feet per second

CMWD.....Carlsbad Municipal Water District

CRA .....Colorado River Aqueduct

DWR .....Department of Water Resources

EIR/EIS.....Environmental Impact Review/Environmental Impact Statement

EWA .....Encina Wastewater Authority

EWPCF .....Encina Water Pollution Control Facility

GPM.....gallons per minute

IID.....Imperial Irrigation District

LRP .....Local Resources Program

MAF.....million acre feet

MG.....million gallons

MGD .....million gallons per day

MG/L .....milligrams per liter

MWD .....Metropolitan Water District of Southern California

SDCWA.....San Diego County Water Authority

SWRCB .....State Water Resources Control Board

TDS.....total dissolved solids

USBR.....U.S. Bureau of Reclamation

Carlsbad Municipal Water District
2005 Urban Water Management Plan
Contact Sheet

Date plan submitted to the Department of Water Resources: December 16, 2005

Name of person(s) preparing this plan:

Robert Greaney, Deputy PW Director

Phone: 760.438.2722

Fax: 760.431.1601

Email: bgrea@ci.carlsbad.ca.us

William E. Plummer, Deputy City Engineer

Phone: 760.602.2768

Fax: 760.602.8562

Email: bplum@ci.carlsbad.ca.us

Clint Phillips, Senior Management Analyst

Phone: 760.438.2722

Fax: 760.431.1601

Email: cphil@ci.carlsbad.ca.us

The Water supplier is a: **Municipality**

The Water supplier is a: **Retailer**

Utility services provided by the water supplier include: **Water, Recycled Water, Sewer**

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

Is This Agency a State Water Project Contractor? **No**

Introduction

CALIFORNIA URBAN WATER MANAGEMENT PLANNING ACT

The California Water Code requires all urban water suppliers within the state to prepare urban water management plans and update them every five years. These plans satisfy the requirements of the Urban Water Management Planning Act of 1983 including amendments that have been made to the Act. Sections 10610 through 10656 of the Water Code detail the information that must be included in these plans, as well as who must file them. Appendix E contains the text of the Act. This report constitutes the 2005 update to the District's 2000 Urban Water Management Plan.

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, 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, 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 Carlsbad Municipal Water District is required to update and adopt its plan for submittal to the California Department of Water Resources (DWR) by December 31, 2005.

DWR has prepared a checklist that lists items to be addressed in each agency's plan, based on the Act. The checklist allows agencies to identify where in their plan they have addressed each item. The District has completed this checklist, cross-referencing the Act's sections and this report's page numbers. The completed checklist is included in Appendix D.

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.

Chapter 4 of the CMWD 2005 Plan contains documentation on the existing and planned water supplies being developed by the San Diego County Water Authority and the City of Carlsbad.

Chapter 1 - Public Participation

Law

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

Plan Adoption

In accordance with the Act, the Carlsbad Municipal Water District's Board of Directors held a public hearing and adopted the 2005 Plan on December 13, 2005. A copy of the adopting resolution is included in Appendix A on page 53. Ten days prior to adoption, a notice of the public hearing was published in a local newspaper, notifying interested parties that the draft Plan was available at various City facilities and on the City's web page for review.

Agency Coordination

Law

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

While preparing the 2005 Plan, the District coordinated its efforts with a number of agencies to ensure that data and issues are presented accurately. The District attended workshops conducted by DWR to discuss the requirements of the Act and ensure coordination with other agencies, including the San Diego County Water Authority (SDCWA) and its member agencies and the Metropolitan Water District (MWD), on regional elements of the Plan. In addition, SDCWA submitted information for and reviewed elements of the District's Plan. The District also worked closely with the City of Carlsbad in the preparation and review of Plan elements.

In addition, in preparing the recycled water elements of this plan, the District consulted with the agencies responsible for the existing and potential sources of recycled water, including the Vallecitos Water District, the Leucadia Wastewater District, and the Encina Wastewater

Authority.

Chapter 2 - CMWD Service Area

Law

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

Climate

Carlsbad's climate is characteristically Mediterranean with mild temperatures year round. This mild climate is derived equally from the warm ocean water being pulled north from Mexico and from its subtropical, semi-desert locale. The result is temperatures averaging 58 degrees in January and 73 degrees in July, with an average annual rainfall of about 10 inches.

Other Demographic Factors

Carlsbad is located in the north coastal region of San Diego County. Its western boundary is the Pacific Ocean. Contiguous cities include Oceanside to the north, Encinitas to the south, and San Marcos and Vista to the east. The Carlsbad Municipal Water District's service area is entirely within the City of Carlsbad's boundaries and covers approximately 32 square miles (85 percent of the city). A map of the District's boundaries is located on page 10.

The median age of Carlsbad residents is 39 years. The average household is 2.46 persons per dwelling unit. The median family income is estimated at $77,151 per year. More than 50% of Carlsbad residents are employed in professional, managerial, and administrative occupations. Over 90% of residents have completed high school and 45% are college graduates.

In 2004, employment in service industries in Carlsbad ranked as the highest employment sector, followed closely by manufacturing and retail trade.

Carlsbad's Water Supply History

The City of Carlsbad was incorporated in 1952. Water demands for the area were initially provided by the privately held Carlsbad Mutual Water Company through the utilization of

local supplies. Subsequently purchased by the City, the Mutual Water Company constructed a series of wells, pumping stations and transmission facilities to quench the thirst of residential, commercial and agricultural users.

The Mutual Water Company obtained rights to 2,382 acre feet of water from the “Mission Basin” of the San Luis Rey River Valley in western Oceanside, and held a license by the State Division of Water Rights for another 1,000 acre feet annually. Additionally, water rights for 150 acre-feet annually were held from Calavera Creek and a lesser amount from Agua Hedionda Creek. The original license was for irrigation purposes and was later changed to recreational and fire protection purposes.

As demands for water increased, another problem was being realized with the existing water system. In times of high demand, seawater intrusion occurred when water levels within the San Luis Rey River basin dropped. The gradual degradation of water quality prompted the Mutual Water Company to abandon all attempts to utilize this water. This created the need for imported sources.

CMWD was formed as a vehicle to bring imported water to the unincorporated areas of Carlsbad and to wholesale water to the newly formed City of Carlsbad. Its first meeting was held on March 22, 1954. CMWD became a member of the San Diego County Water Authority that same year.

In January 1990, CMWD became a subsidiary district of the City of Carlsbad. The Carlsbad City Council acting as the Water District Board of Directors governs the District.

Table 2-1 shows the population total for the Carlsbad Municipal Water District in 2005, with projections to 2030.

TABLE 2-1
Population Projections for the CMWD Service Area

	2005	***2010***	***2015***	***2020***	***2030***
Service Area Population	80,874	91,210	100,542	102,536	109,456

Past Drought, Water Demand, and Conservation Information

Water use in Carlsbad 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. However, fluctuating economic and weather conditions in the 1990s and lingering effects from the 1987-1992 drought resulted

in deviations from historic demand patterns. By 1999, a new combination of natural population increases and job creation surfaced as the primary drivers of water consumption increases.

Historically, the District's peak year water demand occurred in 1989, when a record amount of nearly 18,000 acre-feet was purchased serving a population of 52,133 and 22,726 residential dwelling units. In calendar year 1999, demands exceeded the 1989 historical peak and reached a total water demand of over 19,000 acre-feet. In 2005 the projected water demand is estimated at 22,000 acre-feet. Following the 1987-1992 drought, the CMWD service area experienced significant reductions in water use. This reduction in potable water use was attributable to several factors, including the economic recession, water conservation measures taken by the District as a result of the drought, the introduction of recycled water, and relatively plentiful rainfall.

The years following the drought showed a steady growth in population, and water demand grew to match this population growth. In 1997 water demand jumped almost 14 percent over 1996 demands, evidence of the great economic growth and construction boom in Carlsbad. Water demand peaked again in 1999, as Carlsbad's population continued to grow. Carlsbad's population continues to grow and the resultant water demand for fiscal year 2004-2005 was 20,904 acre-feet. Table 2-2 shows the historic water demand each year within the CMWD service area.

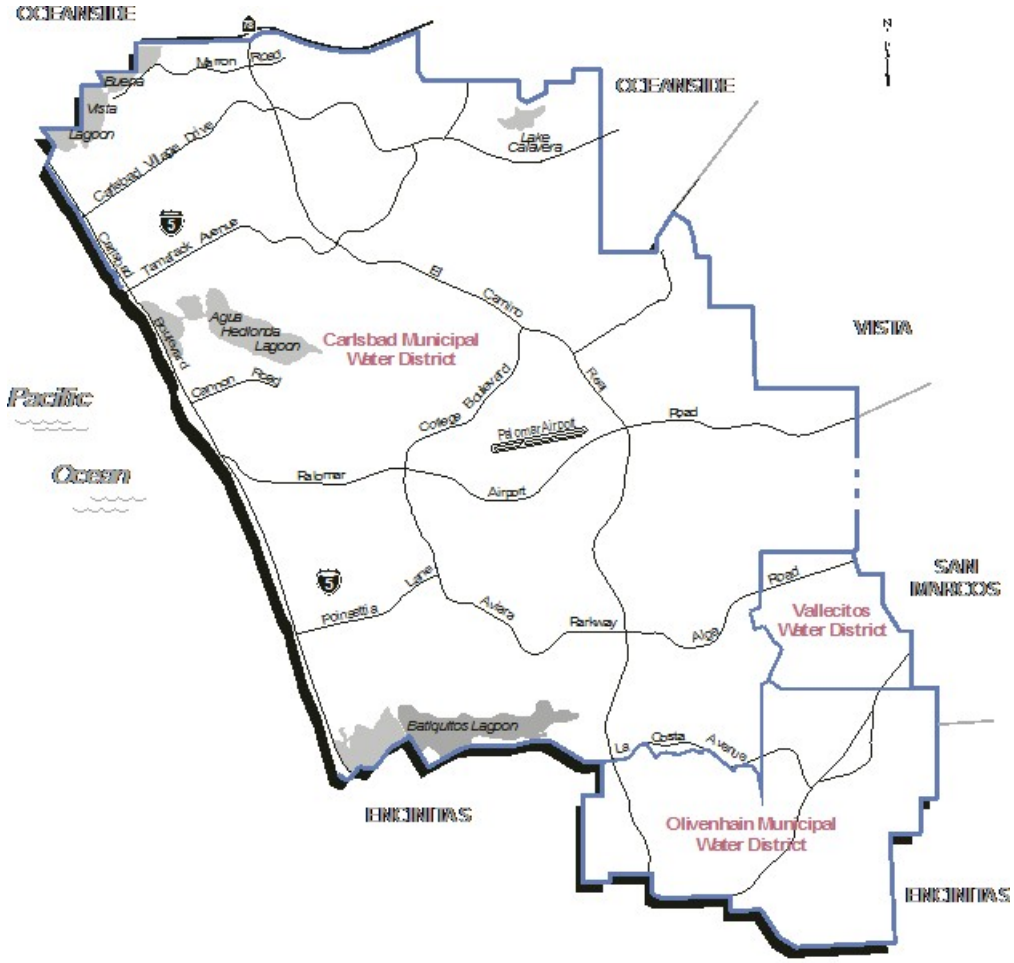
TABLE 2-2
Historic Water Use in the CMWD Service Area (1995-2004)

	1995	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*
Demand (AF)	**14,311**	**15,365**	**17,501**	**16,677**	**19,014**	**21,016**	**19,756**	**21,767**	**20,542**	**21,950**
% Change	**-7.7**	**+7.4**	**+13.9**	**-4.7**	**+17.6**	**-5.1**	**-3.8**	**+9.2**	**-3.1**	**+3.5**

As stated earlier, historic water demand peaked in 1989 with nearly 18,000 acre feet purchased. Since then, water conservation practices and higher water rates have resulted in a reduction in the demand for water. Increases in water usage beginning in 1992 reflect the growing use of recycled water for irrigation.

The necessity for reduced water consumption by CMWD customers was the result of a reduction in the available imported water supply from the drought. Although water was not rationed, the Metropolitan Water District of Southern California placed financial penalties on its member agencies if they exceeded their water demand of FY 1988-89. MWD enacted this penalty to discourage any increases in the imported water demand.

To avoid paying the financial penalty, CMWD adopted an increasing block rate structure to discourage high water use. In 1993, this structure was changed to a flat rate. In addition, water conservation programs were expanded to discourage the use of excessive amounts of water for irrigation purposes during the drought. CMWD continues to encourage water conservation for irrigation, particularly the use of recycled water when available.



CMWD Service Area Boundaries

Chapter 3 - Water Supply Sources

Law

> 10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
>
> 10631 (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments [to 20 years or as far as data is available.]

Water Supply Sources

Carlsbad is located in a semi-arid coastal desert environment averaging less than 10 inches of rain annually. Prolonged rainstorms are rare. The Carlsbad Municipal Water District has been 100% reliant on imported water purchased from the San Diego County Water Authority.

Until 1960, the District's historical water supply included groundwater, surface water and imported water. Groundwater was obtained from wells in the San Luis Rey River Basin, located in Oceanside, and wells located along Agua Hedionda Creek in Carlsbad. Surface water was obtained from Calavera Lake, an earthen dam reservoir designed to capture and treat surface runoff flowing into Calavera Lake.

Calavera Lake included a water treatment plant and stored groundwater pumped from wells in the San Luis Rey River basin during the winter months. This groundwater was used later during peak water demand periods. The Metropolitan Water District conveyed imported water through aqueducts from the Colorado River. At that time, imported water was not processed through a water treatment plant, but rather screened and chlorinated prior to use.

Local groundwater and surface water supplies were abandoned in the 1960s due to poor water quality and the ability to directly supply lower-cost imported water to customers. Overall, groundwater quality degraded to the point where the levels of total dissolved solids (TDS) in the wells exceeded 1500 mg/L. The water treatment plant that existed at Calavera Lake was subsequently abandoned and dismantled. In addition, in 2005, the groundwater wells in the San Luis Rey well field, a total of 8 wells were removed and abandoned in accordance with California State Department of Health Services standards.

CMWD began receiving imported water deliveries in 1955 through existing aqueduct connections located in the City of Escondido. A pipeline was constructed in 1956 by CMWD to convey imported water directly to Carlsbad and unincorporated areas. From 1962 to 1992,

CMWD's water demand was met exclusively by imported water sources.

In 1991, CMWD began delivering recycled water to supplement its imported water supply. Through agreements with two other agencies, CMWD obtained 2.0 mgd of recycled water from the Meadowlark Water Reclamation Facility, and 0.75 mgd from the Gafner Water Reclamation Plant. These plants are owned and operated by the Vallecitos Water District and the Leucadia Wastewater District, respectively. Since 1992, recycled water demand has increased due to new land development projects. These projects connect into a recycled water system consisting of distribution pipelines, a 2 mgd pump station and two reservoirs with a combined storage capacity of 2.5 million gallons. Carlsbad began expanding its recycled water system in 2000. Carlsbad has now completed its own 4.0 mgd Recycled Water Treatment Facility as part of its Phase 2 program. This is further detailed later in this chapter under Recycled Water.

Imported Water from SDCWA

As with many communities in southern California, CMWD has relied on both local and imported water sources. However, the District realized early on that not only were they reaching the limit of local resources in terms of quantity, but also the water quality (high in TDS) was becoming detrimental to agriculture, which represented a significant portion of the delivered water supply. So, in 1951, CMWD applied to join the San Diego County Water Authority. SDCWA had previously joined the Metropolitan Water District of Southern California (MWD) in order to obtain supplemental water from the Colorado River.

Currently, CMWD relies on imported water exclusively to meet potable water demands for residential, commercial, and industrial uses. The water is imported from MWD and treated at MWD's Skinner Filtration Plant in Riverside County. The treated water is conveyed to CMWD through SDCWA aqueducts. Table 3-1 shows current and projected imported water purchases through 2020.

TABLE 3-1
Current and Projected Water Supplies (AFY)

Water Supply Sources	***2000***	***2005***	***2010***	***2015***	***2020***
Purchased from SDCWA	19,144	20,200	13,475	14,891	17,607
Desalinated Seawater (a)	0	0	5,000	5,000	5,000
Recycled Water	1,883	2,000	5,000	6,300	6,300
Total	21,027	22,200 (b)	23,475	26,191	28,907 (c)

(a) Denotes Carlsbad's option to purchase up to 25,000 acre-feet per year from Poseidon Resources or 5,000 acre-feet from CWA as per the Carlsbad/CWA MOU. (See discussion on Seawater Desalination).
(b) For calendar year 2005, the estimated demand is projected to be approximately the same as 2004 at 22,000 AFY. Significant rainfall during the months of January through April in 2005 reduced the landscape irrigation water demand.

(c) Ultimate demand is projected at 28,907 AFY including recycled water.

GROUNDWATER

Until the 1950s, local groundwater was the only source of water for the City of Carlsbad. The major sources were wells drawing from the Mission Basin of the San Luis Rey River. Wells were initially developed in 1913. CMWD has rights to 5 cubic feet per second (cfs) of pre-1914 appropriative rights and an additional 750 acre feet per year, up to 5 cfs, that was permitted in 1938. Over the years, the total dissolved solids (TDS) content of the groundwater in the Mission Basin increased to the point where the use was discontinued. The condition of the wells and piping system were beyond repair and were subsequently removed in 2005.

CMWD also owns wells originally developed by the Terramar Water Company in the early 1950s. These wells, referred to as the Cannon Well Field, were purchased from Terramar in 1958 and used from 1958 to 1962. The largest extraction was only 238 AFY. These wells are located in the Agua Hedionda Creek near Rancho Carlsbad Golf Course. The golf course irrigation water is obtained from these wells today.

Other potential groundwater basins include Buena Vista Creek Basin, Encinas Creek Basin, and the Batiquitos Hydrologic Subarea. These resources have low potential yields, poor quality, or no available data to substantiate their use in the public water supply. Generally speaking, these basins do not have geological characteristics or size comparable to Mission Basin. Collectively, none of these groundwater alternatives would supply even 3 percent of CMWD's ultimate need of 28,907 acre-feet per year.

Of the groundwater basins available to CMWD, only the Mission Basin of the San Luis Rey River has the potential for a viable water resource. This basin has a large drainage area of 565 square miles and consists of alluvium and river channel deposits averaging 150 feet in depth. The quality is mildly brackish with TDS concentrations ranging from 1,000 to 1,500 milligrams per liter (mg/L). For Carlsbad's use, the water would need to be treated by a low pressure membrane, reverse osmosis process to achieve treated water quality in the range of 500 mg/L. The City of Oceanside is currently doing this at their Mission Basin Desalting Facility.

In 2005 Carlsbad completed a study on the cost effectiveness of utilizing the groundwater from the Mission Basin. This study showed that while the treatment and delivery of groundwater is feasible, it showed that it is not cost effective. As a result, the CMWD Board approved staff's recommendation to abandon the well sites and discontinue efforts to utilize this groundwater source as an alternate local supply at this time.

There were 9 wells total in the Mission Basin. In 2004, two wells were destroyed on the District's "Foussat Property" south of Mission Avenue. Seven wells were located north of Mission Avenue. Six of the remaining 7 wells were located. These 6 wells had all of the equipment removed, and were inspected and were subsequently removed in 2005. The last

well was not

located because it was buried as a result of the Army Corps Of Engineers improvements to San Luis Rey River.

Seawater Desalination

In 1999, Poseidon Resources Corporation (Poseidon) approached the District with a proposal to perform a feasibility study on seawater desalination in Carlsbad. In March 2000, the District's Board of Directors instructed staff to prepare a report on this proposal, including the benefits and impediments to such a project. In short, numerous beneficial aspects to developing a seawater desalination project were identified, but the report also identified many serious and critical issues that needed to be addressed and resolved before Carlsbad could obtain a cost effective, reliable, drought- proof water supply from this source.

The purpose of the staff report was not to attempt to answer the many questions presented or solve any of the issues presented. The purpose was to identify most of the issues known at the time in order to put the potential for seawater desalination into perspective.

Poseidon completed its feasibility study in July of 2001. This study showed that construction of a 50 Million Gallons per Day (MGD) Seawater Desalination Facility was feasible and recommended construction of this facility on the Encina Power Plant site (owned by Cabrillo Power). This site offers advantages of an existing seawater intake, a method of brine discharge and an existing Regional Board discharge permit.

ENCINA POWER PLANT - SITE OF PROPOSED SEAWATER DESALINATION FACILITY

As a result of their feasibility study, Poseidon offered a proposal to construct a 50 MGD seawater desalination facility and to sell, to the District, 10 MGD (or more) of desalinated seawater. The proposal stated that Poseidon would be responsible for marketing any of the water not purchased by the District. Poseidon offered to sell the remaining water to the Vallecitos Water District, the Vista Irrigation District, the City of Oceanside, the San Dieguito Water District and the Olivenhain Municipal Water District. Poseidon also offered to sell the remaining water to the San Diego County Water Authority (SDCWA).

The District Board recognized early on that there were two paths that could lead to the development of a desalination plant in Carlsbad. One would be a public project owned and operated by SDCWA, developed through the normal public works process of design, bidding, government oversight, distribution, and pricing. The other would be a private project developed by Poseidon, using private procurement methods and operating practices, and selling water to public agencies through both public and private water lines at prices negotiated as part of a water purchase agreement.

Since June of 2000, Carlsbad staff worked with both SDCWA and Poseidon to develop agreements for each of these two possible futures. Although negotiations with SDCWA were on hold between January and September of 2004, staff continued negotiating with Poseidon. In

September of 2004, these negotiations culminated in the execution, by Poseidon and CMWD, of a Water Purchase Agreement (WPA) for a private seawater desalination project.

The WPA and the Private Project

The WPA provides CMWD the right to purchase up to 25 MGD of water from the private seawater desalination project. This water would meet the District's water quality standards and be provided to the CMWD at specified delivery points. With regard to *Reliability,* the WPA provides that if the plant delivers less than a specified amount of water each year, CMWD will receive a payment of liquidated damages from Poseidon. In addition, the WPA is conditioned on CMWD receiving a backup supply of water from SDCWA to assure that local residents' water needs are covered at all times.

The guiding principal in negotiating the WPA was the CMWD Board's direction that Carlsbad residents should pay no more for desalinated water than they would otherwise pay for water delivered from SDCWA. The pricing plan that is currently reflected in the WPA achieves CMWD's goals with regard to the cost of water. Further, since the WPA is based on a take-If-delivered concept where CMWD only pays for water that is actually delivered by Poseidon, there are no payments to Poseidon that are not directly tied to the delivery of water.

The WPA includes a number of conditions that must be satisfied prior to CMWD having an obligation to purchase water from the private seawater desalination project. These include the following:

1. *CEQA*
    a. CWMD cannot commit to purchase any water until all California Environmental Quality Act (CEQA) processes are completed.
    b. If the CEQA process has not been completed by September of 2006, either party may terminate the WPA.
2. *Water Rates* - If Poseidon determines that the water rates set under the pricing section of the WPA are insufficient to implement the private seawater desalination project; Poseidon may terminate the WPA.
3. *Applicable Laws and Permits* - The WPA requires Poseidon and its subcontractors to comply with all applicable laws and receive all necessary approvals and permits.
4. *Sale of Remaining Output* - If Poseidon has not entered into agreements to sell the remaining output of the private seawater desalination project by September of 2006, either party may terminate the WPA.
5. *Delivery Points* - If the parties have not agreed on delivery points by September of 2006, either party may terminate the WPA.
6. *Delivery Regime* - If the parties have not determined an acceptable delivery regime by

September of 2006, either party may terminate the WPA.

7. *Delivery Charge* - The parties must agree on a mutually acceptable delivery charge.
8. *Monitoring and Testing* - The parties must develop a mutually acceptable system testing and monitoring protocol.
9. *Subsidy* - If CMWD has not received the $250 per acre-foot MWD subsidy (or an equivalent subsidy, from other sources) the WPA may be terminated.
10. *Development Agreement* - The WPA is conditioned on Poseidon and the City of Carlsbad entering into a Development Agreement.
11. *Backup Water Supply* - The WPA is conditioned on Carlsbad receiving an acknowledgement from SDCWA that CMWD is eligible to receive backup water when needed.
12. *Cabrillo Consent* - By September of 2006, Cabrillo Power must have provided the necessary consent allowing CMWD to exercise its rights under the WPA.

The long-term fiscal impact of the WPA is difficult to project. If the private seawater desalination project is successful, CMWD will be purchasing high-quality water from Poseidon at a price that is competitive with present SDCWA supplies. Extensive testing protocols also have been designed into the WPA to identify any potential problems before water reaches CMWD's system and to assure that adjustments are made to the water quality to eliminate any potential for system damage.

It is unlikely that CMWD will reduce its capital improvement program or other water system investments due to the WPA. Since CMWD must rely on SDCWA for backup water should desalinated seawater be unavailable from the private seawater desalination project, CMWD must continue to develop its ability to receive traditional water supplies as well as desalinated water.

There is currently no plan to invest CMWD money in the development of the private seawater desalination project. The WPA anticipates a totally private project constructed using private financing. If grant funds become available to fund portions of the private seawater desalination project, then CMWD may reconsider this position.

CMWD may elect to construct and own certain portions of the water distribution system. Any decision to change the water system Capital improvement Program will be based on a future analysis of the effect of desalinated water deliveries on existing system design, and will be subject to Board approval.

The potential for desalinated seawater use in the CMWD service area is shown in Table 3-1.

The Framework Agreement and the Public Project

As indicated above, the CMWD Board recognized SDCWA's potential interest in developing a regional, public seawater desalination project at the Encina Power Plant site. This regional, public seawater desalination project would be owned and operated by SDCWA, and developed through the normal public works process of design, bidding, government oversight, distribution, and pricing.

As a result, after the execution of the WPA, SDCWA and CMWD resumed negotiations on an inter-agency agreement covering certain intergovernmental, financial and other matters relating to a regional, public seawater desalination project, if SDCWA determines to proceed with that project. In April of 2005, these negotiations culminated in the execution, by SDCWA, CMWD, the City of Carlsbad and the Carlsbad Housing and Redevelopment Commission, of that certain Agreement Memorializing Certain Understandings And Establishing A Framework For Cooperation (Framework Agreement).

As part of the Framework Agreement, SDCWA has agreed to sell CMWD up to 5,000 acre-feet of desalinated seawater annually. This desalinated seawater purchased by CMWD would be deemed and designated as the "District's Local Water" and would be additional to any water CMWD may receive as a member agency of SDCWA. It is anticipated that this designation would increase CMWD's reliability of water supplies in the event of a drought. It is further anticipated that the desalinated seawater that CMWD would purchase from the public, regional seawater desalination project would meet the same water quality standards and be provided to CMWD at the same delivery points as the water CMWD currently purchases from SDCWA.

Increased Reliability

If either Poseidon develops a private seawater desalination project or SDCWA develops a public, regional seawater desalination project, CMWD will increase its water supply reliability substantially for the reasons more particularly described above. Accordingly, either the WPA or the Framework Agreement should assist Carlsbad in obtaining a cost effective, reliable, drought- proof water supply from a seawater desalination project constructed at the Encina Power Plant site.

Recycled Water

The Carlsbad Municipal Water District began serving recycled water in 1993. The Meadowlark Water Reclamation Facility (owned and operated by the Vallecitos Water District) and the Gafner Wastewater Treatment Plant (owned and operated by the Leucadia County Water District) currently provide recycled water at a rate of 2.0 million gallons per day (mgd) and

1.00 mgd, respectively. In 2005, CMWD's existing recycled water distribution system provided approximately 2,000 acre-feet per year of irrigation water to 206 meter accounts. Major users include the Aviara Development and Golf Course, the La Costa Resort and Golf Course, and CalTrans. Recycled water demands currently exceed available supply.

The District's 1997 *Reclaimed Water Master Plan Update* identified a recommended expansion of the recycled water system that will increase peak supply from 2.75 mgd to 8.0 mgd. This expansion is referred to as Phase II and, as described in the plan update, includes: constructing a new 4 mgd water recycling facility near the existing Encina Water Pollution Control Facility and expanding the Meadowlark facility by 1 mgd; constructing 24 miles of 12 to 24-inch distribution and transmission pipelines; and constructing new recycled water pumping stations. Improvements to an existing earthen dam storage reservoir, referred to as the Mahr Reservoir, for recycled water storage were also recommended.

Since 1993, the CMWD has been constructing pipelines and requiring developers to install recycled water facilities in anticipation of the Phase II program. Thus, many existing potable water irrigation systems are accepting recycled water with little or no modification. Many of the Phase II users are located adjacent to existing recycled water pipelines.

In order to fully implement Phase II expansion, CMWD has:

Completed all applicable regulatory requirements that affect recycled water production, storage, distribution and end use.

Addressed all institutional requirements that could have constrained the phased expansion of the system.

Completed all internal requirements imposed by the expansion, including adequate staffing for design and construction review and coordination, customer connection and coordination, and regulatory/institutional coordination; and adequate system monitoring to ensure ongoing refinement of preliminary design assumptions.

Completed construction for most critical and/or longest-lead facilities such as the 4.0 mgd Carlsbad Water Recycling Facility in compliance with Bureau of Reclamation and State Water Resources Control Board funding requirements.

Completed constructing the pipelines

Completed three of the four pumping stations

Began constructing the improvements to Mahr Reservoir and the Supervisory

Control And Data Acquisition system. Most of the Phase II system expansion will be completed and operational in 2005, the remaining elements will be in operation in 2006.

The District is presently working on connecting new customers such as developers and retrofitting existing irrigation sites to use recycled water. Most of these new and retrofit connection sites will be using recycled water by 2010.

PHASE II RECYCLED WATER TREATMENT FACILITIES AND CONTROL BUILDING

Chapter 4 - Reliability Planning

Law

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

10631 (c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable.

10631 (c) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to replace that source with alternative sources or water demand management measures, to the extent practicable.

10631 (c) Provide data for each of the following: (1) An average water year, (2) A single dry water year, (3) Multiple dry water years.

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

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

Reliability

Currently, 10 percent of CMWD's demand is met with recycled water. The remaining 90 percent is met with imported water purchased from the San Diego County Water Authority, which it purchases from the Metropolitan Water District. The 1987-1992 drought raised concerns throughout Southern California as to the reliability of imported water in the event of another extended drought.

There are two aspects of water supply reliability to be considered. The first relates to immediate service needs and is primarily a function of the availability and adequacy of facilities. This aspect can be classified as emergency reliability. The second aspect is driven by the availability of water, which is climate-driven and can be classified as resource or supply reliability. Both SDCWA and MWD are in the process of implementing facilities to enhance emergency reliability. In addition, certain institutional programs are either being developed or

are being implemented which will address resource reliability in both the near-term (present to 2010) and the long-term (beyond 2010).

Near Term Reliability

For the near term, the relative reliability of imported water from SDCWA and MWD are identical. For many years, MWD has been the sole provider of imported water to SDCWA; however, circumstances have changed dramatically since SDCWA joined MWD in 1944. Today, both agencies are in the process of negotiations to determine the nature and extent of their future relationship. Among the key issues to be addressed are:

1. *Cost of service:* SDCWA believes that there must be a nexus between benefits and burdens at Metropolitan and that SDCWA and all of Metropolitan's member agencies should get what they pay for and pay for what they get. SDCWA believes that Metropolitan must levy a charge for unused capacity and water held ready to serve member agencies on a standby basis; currently, Metropolitan shifts those costs to the member agencies who are buying water.
2. *Future investments:* SDCWA has proposed that Metropolitan should only make investments that its member agencies are willing to pay for; SDCWA believes that Metropolitan must change its current rate structure, which allows member agencies to "roll off" its system, thus shifting the burdens of its investments to those who remain.
3. *Establishment of rights and liabilities:* SDCWA believes that Metropolitan's member agencies must, by contract or otherwise, be able to ascertain and fix their rights and liabilities in the Metropolitan system.
4. *Governance and voting*: The current voting structure at Metropolitan, like the preferential rights formula, is based on assessed valuation. While the system may have made sense when Metropolitan revenues were collected from taxes, it no longer makes sense when the majority of revenues are collected from water rates. SDCWA believes that Metropolitan's governance and voting structure should be changed to reflect the interests of those member agencies who are paying the bills.
6. *Water quality:* SDCWA pays for but is not served water from the State Water Project that could bring its water quality up to the standards required by Section 136 of the Metropolitan Act. It is unfair for SDCWA to be charged by Metropolitan for water it refuses to serve to SDCWA; at a minimum, a price adjustment should be implemented.

SDCWA is committed to taking all steps necessary to resolve these critical issues with Metropolitan. However, until current policies are changed, short-term reliability is low.

Long-Term Reliability

Regional long-term reliability have been beneficially impacted by the implementation of major storage facilities by both MWD and SDCWA. These facilities provide emergency storage sufficient to handle their respective service area needs with major aqueduct outages for as long as six months. In addition, other facilities planned by each agency will add to the overall system reliability through redundancy and system enhancements.

With regard to resource reliability, which is the primary issue during an extended drought, continued implementation of recycled water, groundwater recovery, conservation, groundwater storage and conjunctive use programs by both MWD and SDCWA will enhance the region's ability to reduce dependency on imported supplies during extended drought periods. However, these sources alone are not sufficient to meet imported water needs. Other sources of imported water, such as the SDCWA-Imperial Irrigation District water transfer and seawater desalination, are necessary to meet our long-term water needs.

Frequency and Magnitude of Supply Deficiencies

The San Diego County Water Authority does not anticipate any water shortages in any average rainfall years through 2020. According to SDCWA, if projected imported and local supplies are developed as indicated, no shortages are anticipated within the Authority's service area in the dry-year scenarios analyzed. No extraordinary conservation measures, beyond the implementation water conservation best management practices, are reflected in the dry-year scenarios.

Plans to Assure a Reliable Water Supply

SDCWA does recognize the uncertainties regarding imported water supplies from MWD and is taking steps to reduce this dependency through water transfers and the development of local projects (including demand management).

In addition, CMWD is continuing to study local water resource programs such as recycling and seawater desalination to improve supply reliability during droughts (see *Water Sources (Supply)*).

Three-Year Minimum Water Supply

The data in Table 4-1 shows the minimum water supply available to CMWD in the next three water years. The anticipated dry-year supply in 2010 was used for the single dry-year analysis

in order to show the results of local and imported water supply development over the next ten years. If projected imported and local supplies are developed as indicated, no shortages are anticipated within the CMWD service area in the dry-year scenarios analyzed.

TABLE 4-1
Dry Water Year Supply Reliability (AFY)

Average/ Normal Water Year *2005*	Single Dry Water Year *2010*	Multiple Dry Water Years		
		Year 1 *2006*	Year 2 *2007*	Year 3 *2008*
20,720	23,475	20,910	21,110	21,302

Transfer or Exchange Opportunities

Law

> 10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
>
> 10631 (d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

Water Transfers

As discussed earlier, CMWD relies entirely on imported water from the San Diego County Water Authority. SDCWA has found that water transfers provide great potential for meeting future regional demands. Water transfers are typically defined as the purchase of water during a specified period from an agency or district that then reduces its water use by that amount. In 1998, the SDCWA signed a historic agreement with the Imperial Irrigation District (IID) for the long-term transfer of conserved Colorado River water to San Diego County. The SDCWA-IID Water Conservation and Transfer Agreement will increase the reliability of the Authority's future imported water supplies.

On Oct. 16, 2003, officials from the San Diego County Water Authority, Imperial Irrigation District, Coachella Valley Water District and the Metropolitan Water District of Southern California joined the governor of California and the U.S. Secretary of the Interior for the QSA signing ceremony at Hoover Dam.

This historic agreement provides California with a transition period to implement water transfers and supply programs that will reduce California's overdependence upon the Colorado River and reduce the state's draw to its 4.4 million acre-foot basic annual apportionment. The QSA commits the state to a restoration path for the environmentally sensitive Salton Sea and

provides full mitigation for these water supply programs. The QSA assures California up to 75 years of stability in its Colorado River water supplies.

SDCWA-IID Water Conservation and Transfer Agreement

Two water transfer agreements, finalized in October 2003, will provide an additional 277,700 acre-feet of water annually to the San Diego region. The San Diego County Water Authority-Imperial Irrigation District water transfer will provide 200,000 acre-feet of water a year through water conservation measures in Imperial Valley. The transfer is the cornerstone of the Colorado River Quantification Settlement Agreement, a broader plan that reduces California's use of Colorado River water to its basic annual apportionment of 4.4 million acre-feet.

The SDCWA, IID, Metropolitan Water District of Southern California and Coachella Valley Water District signed the QSA on Oct. 10, 2003. The transfer is in its third year of implementation with 30,000 acre-feet of water transferred to San Diego in 2005.

Also included in the QSA is a project to conserve water from lining portions of the earthen All-American and Coachella canals. The SDCWA has taken the lead on these canal-lining projects that will yield 77,700 acre-feet of water annually for 110 years for San Diego County.

SDCWA-Metropolitan Water Exchange Agreement

A contingency of the transfer agreement was securing transportation of the water from the Colorado River to San Diego County. To satisfy this contingency, SDCWA entered into a water exchange agreement with Metropolitan on November 1998. Under the exchange agreement, Metropolitan will take delivery of the transfer water through its Colorado River Aqueduct. SDCWA will pay Metropolitan a delivery fee. In exchange, Metropolitan will deliver to SDCWA a like quantity and quality of water. The duration of the agreement is 30 years.

The exchange agreement calls for SDCWA to pay Metropolitan a per-acre-foot delivery fee of $90 in the first 20 years, and $80/AF from years 21 through 30. Both figures would escalate each year based upon an agreed-to rate of 1.55 percent for the first 20 years and 1.44 percent for the final 10 years of the agreement. The financial terms of the agreement could be adjusted in the 10th and 20th years to address impacts of potential catastrophes and changes in regulatory requirements. In addition to the contingencies of the SDCWA-IID agreement, there are conditions associated with SDCWA-Metropolitan agreement that will need to be satisfied before deliveries can be made. Table 4-2 shows the conditions along with status and estimated completion date.

TABLE 4-2
Status Of Conditions Associated With SDCWA-MWD Agreement

Conditions	Status	Date Complete
Quantification of the agricultural agencies' entitlements within their 3.85 million AF apportionment of Colorado River Water.	In October 1999, the State of California, IID, Coachella Valley WD, and Metropolitan reached agreement on the terms of a quantification settlement. This settlement sets limits to the amounts of water that each agricultural agency may take from the 3.85 MAF 1st priority. The settlement also provides for the allocation of future water supplies and transfers among California's river water users. A series of agreements and contracts must be developed and executed before the quantification settlement takes effect.	March 2003.
Development by the federal government of surplus criteria on the Colorado River to help assure a full Colorado River Aqueduct for Metropolitan at least through 2015.	The Department of Interior released a draft EIS in July 2000 comparing several surplus operating criteria alternatives. The seven basin states have since reached agreement on surplus criteria guidelines and the DOI has accepted the proposal as public comment on the draft EIS.	January 2001
State funding must be allocated for the lining of the All-American Canal and its Coachella branch and for construction of conjunctive use storage facilities along the CRA.	A California law passed, providing $235 million in state funding for the canal lining and storage projects.	September 1998

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). (See Figure 4-1) 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.

CANAL LINING PROJECTS

Other Sources Of Imported Water

Supplies from the IID water transfer and SDCWA's preferential rights from Metropolitan are not sufficient to meet the imported water needs of the region. Therefore, SDCWA must pursue additional supplies, either local and/or imported. Potential imported sources include various types of water transfers and/or Metropolitan non-firm supplies that may be available to SDCWA.

Other Transfers

There is the potential to obtain additional transfer supplies, beyond the IID transfer, to meet the future demands of the San Diego region. There are various types of transfers available that are typically categorized into the following types:

- Core Transfers - Core transfers make water available through multi-year contracts that convey a specific amount of water to the purchaser each year. The IID water transfer is defined as a core transfer.
- Spot Transfers - 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.
- Option Transfers - Option transfers are multi-year contracts that allow the purchaser to obtain a specified quantity of water at some future date. They usually require a minimum payment for water even if the water is not needed. For example, an agreement may require water to be purchased one out of every five years.
- Storage Transfers - Storage transfers allow the purchaser to place water into storage for delivery at some time in the future.
- Water Exchanges - Water exchanges are agreements between the purchasing agency and selling agency that allow for the exchange of water from one source for water from a different source.

The IID transfer supply is conserved water from the Colorado River. The other two geographic regions where transfer water is currently available are central and northern California. Transfers from northern and central California would utilize State Water Project conveyance capacity. One example for how such transfers could be made available is the State Water Bank created during the end of the recent drought. In 1991, as a drought emergency measure, DWR created the bank to enable water-short districts and agencies to purchase supplies from willing water sellers. DWR purchased the water supplies primarily from northern California agricultural entities and sold these supplies to entities experiencing drought shortages. DWR purchased the water for $125/AF and sold it for $175/AF (1991 costs).

Metropolitan

purchased 215,000 AF in 1991; SDCWA, due to cutbacks in supply from Metropolitan, had to separately purchase 21,600 AF through Metropolitan.

Under the recently adopted CALFED Bay-Delta Framework, a Water Transfers Program will be initiated whose goal is to "…encourage the development of a more effective water transfer market that facilitates water transfers and streamlines the approval process while protecting water rights, environmental conditions, and local economic interests." This effort will assist agencies, such as SDCWA, in implementing water transfers from northern and central California.

Additional transfer supplies for the San Diego region would not only help meet demands but could also provide lower salinity water for purposes of blending with IID transfer water. Water lower in TDS is required to blend with the higher TDS Colorado River water that will be supplied by IID in order to achieve a lower overall TDS in SDCWA's supplies.

In 1998, SDCWA's Board of Directors authorized staff to prepare and distribute a request for proposal (RFP) for additional transfers. SDCWA has explored and will continue to explore transfer and water storage opportunities throughout California that have the potential to provide a reliable imported water supply to help meet the region's supplemental water needs. However, all such programs are dependent on obtaining access to the water conveyance facilities operated by Metropolitan. SDCWA is taking all steps necessary to obtain access to those facilities on a fair and equitable basis.

Chapter 5 - Water Use Provisions

Law

> 10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
>
> 10631 (e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:
>
> (A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; and (I) Agricultural.
>
> (2) The water use projections shall be in the same 5-year increments to 20 years or as far as data is available.

Past, Current and Projected Water Use

Water use in the CMWD service 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. However, fluctuating economic and weather conditions in the 1990s and lingering effects from the 1987-1992 drought resulted in deviations from historic demand patterns. By 1999 a new combination of natural population increase and job creation surfaced as the primary drivers of long-term water consumption increases.

Past, current and projected water use in the CMWD service area as well as the number of service connections are divided into seven categories: single-family residential, multi-family residential, commercial/industrial, institutional, irrigation, agriculture and recycled water (see Tables 5-1 and 5-2).

TABLE 5-1
Past, Current and Projected Water Use (AFY)

Customer Classification	*1980*	*1985*	*1990*	*1995*	*2000*	*2005*	*2010*	*2015*	*2020*
Single family residential			5,627	5,017	7,661	8,265	8,944	9,964	11,013
Multi-family residential			1,848	1,714	1,859	1,996	2,160	2,406	2,659
Commercial/Industrial			5,058	2,722	3,472	3,558	3,850	4,289	4,741
Institutional					157	152	164	183	202
Irrigation			2,148	2,352	4,502	4,577	4,953	5,518	6,099
Agriculture			2,233	1,422	1,266	1,171	1,268	1,412	1,561
Recycled			0	1,086	1,803	1,974	2,136	2,380	2,630
Total	**13,384**	**13,750**	**16,914**	**14,313**	**20,720**	**21,694**	**23,475**	**26,151**	**28,907**

*Shaded cells indicate data is not available

TABLE 5-2
Number of Connections by Customer Classification

Customer Classification	*1979*	*1984*	*1990*	*1995*	*2000*	*2005*	*2010*	*2015*	*2020*
Single family residential			13,133	14,137	18,035	19,460	21,055	23,456	25,919
Multi-family residential			844	883	901	968	1,047	1,166	1,289
Commercial/Industrial			1,297	1,466	1,788	1,833	1,983	2,209	2,441
Institutional			19	19	56	54	59	65	72
Irrigation			460	751	954	970	1,050	1,169	1,292
Agriculture			79	79	56	52	56	63	69
Recycled Water			0	56	142	206	168	187	207
Total	**8,754**	**11,080**	**15,832**	**17,391**	**21,932**	**23,492**	**25,418**	**28,316**	**31,289**

*Shaded cells indicate data is not available

Residential Sector

Residential water consumption is composed of both indoor and outdoor uses. Indoor water use includes sanitation, bathing, laundry, cooking and drinking. Most outdoor water use is to meet landscaping irrigation requirements. Other minor outdoor uses include car washing, surface cleaning, and similar activities. For single-family residences in Carlsbad, outdoor demands are as high as 60 percent of total water use.

Carlsbad's housing stock composition in 2004 was 68 percent single-family homes, 29percent multi-family homes, and 3 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.

Commercial/Industrial/Institutional Sectors

Commercial water demands consists of generally 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 a restaurants, car washes, laundries and hotels. Statistics indicate that almost 60 percent of Carlsbad's employment base is in the commercial sector.

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 Carlsbad, such as electronics manufacturing and biotech research, typically require smaller amounts of water when compared to other water-intensive industries found elsewhere in Southern California, such as petroleum refineries, chemical processors, and canneries.

Institutional water use consists primarily of schools and churches within the service area. Water use characteristics tend to be similar to commercial uses but based on average daily attendance. Outdoor use also tends to be somewhat higher for landscaped areas and ball fields. However, many of these areas tend to be metered separately and categorized as irrigation.

The tourism industry in Carlsbad affects water usage by not only the number of visitors, but also through the 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 demand and peaking. Population forecasts do not specifically account for tourism, but tourism is reflected in the economic forecasts and causes per capita use to increase.

Irrigation Sector

The effects of seasonal differences will have an obvious influence on irrigation demands. Just ahead of commercial water use, irrigation is the second largest water use in the CMWD service area. Carlsbad's development over the last decade and a half has brought about the creation of large amount of irrigated areas with various uses, including medians, slopes, parkways and parkways. In 2005, seasonal fluctuations range from 16 percent of total demand in February to over 25 percent in the month of August.

The City of Carlsbad adopted a Landscape Manual in 1990 to assist development applicants and landscape architects in understanding the City's policies toward landscaping. Specifically, the manual requires that irrigation systems be designed to provide the optimum amount of water for plant growth without causing soil erosion or runoff. At the same time, the document requires that landscape design will include water conservation and alternative (non-potable) water sources as primary criteria.

Agricultural Sector

Agricultural water use has been decreasing in Carlsbad for the last two decades. In 1982, this sector accounted for over 32 percent of total water demands. In 2005, this figure averaged only 5.5 percent.

This sector experiences wide seasonal fluctuations due to weather conditions and timing of the growing seasons. In March, agriculture accounts for 2.8 percent of total consumption in comparison to 6 percent in August.

Recycled Water Sector

In 2004, CMWD sold 1,761 acre-feet of recycled water. This water was used by irrigation customers to water golf courses, median strips and other landscaped areas. Overall, recycled water use represents almost 10 percent of total water use in the CMWD service area. As in other sectors, wide seasonal fluctuations occur with recycled water use. In March 2004, recycled water represented only 2 percent of total water use, while the following June, it represented almost 13 percent. Recycled water use tends to be lower in the winter months to avoid potential runoff into lagoons and the ocean during rainy weather.

The Carlsbad Municipal Water District adopted a Recycled Water Master Plan in 1990, which was updated in 1997. This Master Plan identifies CMWD service area to be served in several phases. The District is currently concluding development of Phase II. The Master Plan covers the development of recycled water systems throughout Carlsbad until buildout.

Chapter 6 - Supply and Demand Comparison Provisions

Law

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

Supply and Demand Comparison

Table 6-1 compares current, and projected water supply and demand. It indicates that in average precipitation years, the Carlsbad Municipal Water District has sufficient water to meet its customers' needs, through 2020. This is based on continued commitment to conservation programs, additional recycled water becoming available, development of either desalinated groundwater or seawater, and SDCWA's efforts to reduce our dependence on imported water supplies from MWD. A breakdown of historic and projected demands is shown in Table 5-1 on page 29

TABLE 6-1
Projected Supply and Demand Comparison (AFY)

	2000	*2005*	*2010*	*2015*	*2020*
Supply Sources:					
Purchased from SDCWA	16,721	14,806	15,377	18,054	20,809
Seawater	0	3,618	3,618	3,618	3,618
Recycled Water	2,061	3,270	4,480	4,480	4,480
Supply totals	**20,720**	**21,694**	**23,475**	**26,152**	**28,907**
Demand totals	**20,720**	**21,694**	**23,475**	**26,152**	**28,907**
Difference	0	0	0	0	0

Dry-Year Water Assessment

The dry-year assessment is shown in Table 6-2 and includes demands and supplies during a single dry year (2010) and multiple dry water years (2001, 2002 and 2003). Since CMWD's entire potable water demand is met with imported water supplies, the District is highly

dependent on SDCWA and MWD to meet its needs during dry years. Fortunately, SDCWA does not anticipate any water shortages in the dry-year scenarios analyzed.

Studies have shown that hot, dry weather may generate urban water demands that are about 7 percent greater than normal and agricultural demands that are about 9 percent greater than normal. These percentages were used to generate the dry year demands shown in Table 6-2. No extraordinary conservation measures, beyond BMP implementation, are reflected in the demand projections. The additional supplies necessary to meet future demands in dry years will be obtained by SDCWA through the development of transfers and the purchase of other supplies from MWD, as discussed in Chapter 3, and by CMWD through local water resource programs, such as recycling and seawater desalination.

TABLE 6-2
Dry Water Year Supply Reliability (AFY)

Average/ Normal Water Year *2005*	Single Dry Water Year *2010*	Multiple Dry Water Years		
		Year 1 *2006*	Year 2 *2007*	Year 3 *2008*
20,720	23,475	20,910	21,110	21,302

Chapter 7 - Water Demand Management Measures

Law

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

Demand management, or water conservation, is frequently the lowest-cost resource available to a water agency, and is a critical part of CMWD's long-term strategy for meeting its water supply needs. The goals of our water conservation program are to reduce demand for more expensive, imported water, demonstrate continued commitment to the Best Management Practices (BMP's) and to ensure a reliable future water supply.

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 water conservation practices, or BMP's, included in this MOU are intended to reduce California's long-term urban water demands.

CMWD is not yet a signatory to the MOU and is therefore not a member of CUWCC. The District's Board of Directors will vote on the issue of becoming a member of the CUWCC and a signatory to the MOU in 2005,as a part of this UWMP update. However, as a retail agency, CMWD is committed to the implementation of the BMP's. Table 7-1 provides an overview of CMWD's progress in the implementation of the recently updated BMP's as outlined by the CUWCC.

TABLE 7-1
Best Management Practices for Water Conservation in California

BMP#	*Description*	*Conservation programs by CMWD*	*CMWD Compliance*
1	Residential Surveys	▪ Residential Survey Program	Yes
2	Residential Plumbing Retrofit	▪ Showerhead distribution	Yes
3	Distribution System Water Audits		Yes
4	Metering with Commodity Rates		Yes
5	Large Landscape Programs and Incentives	▪ Professional Assistance for Landscape Management (PALM) Program ▪ Protector Del Agua ▪ Large Turf Program	Yes
6	High-Efficiency Clothes Washer Rebates	▪ Residential High-Efficiency Clothes Washer (HEW) Program	Yes
7	Public Information Programs	▪ Quarterly newsletter ▪ Web page: www.ci.carlsbad.ca.us/cserv/water.html ▪ Recycled Water Site Supervisor Training ▪ Water Conservation Literature ▪ Water Awareness Month Celebration	Yes
8	School Education Programs	▪ Classroom Presentations ▪ Water Wabbit Puppet Show ▪ Water Conservation Poster Contest ▪ Water Quality Testing Kit ▪ SDCWA/MWD Programs	Yes
9	Commercial, Industrial & Institutional (CII) Water Conservation	▪ CII Voucher Program	Yes
10	Wholesale Agency Assistance Programs		Not applicable
11	Conservation Pricing	▪ Conservation rates available to all customers based on usage	Yes
12	Water Conservation Coordinator	▪ One and one-half positions	Yes
13	Water Waste Prohibition	▪ Carlsbad Water Ethic adopted in 1991	Yes
14	Residential ULFT Replacement Programs	▪ Residential ULFT Voucher Program ▪ Community Based ULFT Distribution Program	Yes

BMP 1 – Residential Surveys

CMWD has offered water audits to all residential customers since 1991. These audits are free of charge and funded entirely by the District. Audit components include: reviewing water usage history with the customer; checking for leaks inside and outside; checking for low water use plumbing devices; inspecting irrigation systems; recommending improvements; and providing conservation literature.

BMP 2 – Residential Plumbing Retrofit

A City ordinance was adopted in August 1991, which requires ULFTs in new construction and retrofits. State legislation effective January 1, 1992 requires the installation of efficient plumbing in new construction (1.6 gpf toilets; 2.5 gpm showerheads; 1.0 gpf urinals; and 2.2 gpm kitchen/bathroom faucets). State legislation effective January 1, 1994 requires that only ULFTs be sold in California.

BMP 3 -- Distribution System Water Audits, Leak Detection and Repair

CMWD reviews monthly water production records and compares the amount of water produced against the monthly-billed consumption records to determine the amount of unaccounted for water. District employees routinely drive water transmission line routes to visually look for water leaks. In addition, CMWD has an aggressive meter exchange program where older, less accurate water meters are exchanged for new, accurate ones. As a result, CMWD's annual water loss percentage has averaged about 5 percent for the past five years.

BMP 4 -- Metering with Commodity Rates

Metering of all water use and billing by volume has long been the standard practice of the District.

BMP 5 -- Large Landscape Programs and Incentives

CMWD's Water Conservation Specialist has been trained to conduct landscape water audits with in-house equipment and software and has been doing so since 1991. In addition, since 1990, the District has participated in SDCWA's contractor-operated large landscape program for landscapes greater than 1 acre. This program provides a thorough survey of the irrigation system, soils and plant materials, and calculates an irrigation schedule based upon technology developed by Cal Poly San Luis Obispo.

BMP 6 – High-Efficiency Clothes Washer (HEW) Rebates/Vouchers

CMWD began participating in SDCWA's HEW rebate (now voucher) program in 1998. This program offers a financial incentive to customers who replace their conventional clothes washing machine with a water and energy efficient washing machine.

BMP 7 -- Public Information Programs

CMWD has an extensive public information program, including: a quarterly newsletter mailed to all customers, a web site at www.ci.carlsbad.ca.us/water/index.html, computerized landscape advice, water awareness calendars, bill inserts, information on the water bill regarding previous usage, an annual promotional event at the local mall, various promotional campaigns, and membership in NCWA, a consortium of 11 water agencies.

BMP 8 -- School Education Programs

CMWD has education programs available for all elementary grade levels, such as: annual poster contest (4th); watershed awareness program (2nd & 5th); water quality education (grade and high school); Admiral Splash (4th); and California Smith, W.I. (6th).

BMP 9 – Commercial, Industrial and Institutional (CII) Water Conservation

CMWD participates in SDCWA-operated CII program, which provides point-of-purchase vouchers to CII customers for ultra-low-flush toilets, low-flow and waterless urinals, high efficiency, coin-operated clothes washers and cooling tower conductivity controllers. Point-of-purchase vouchers encourage implementation of water saving devices as the voucher reduces the up-front cost to businesses as well as reducing water, sewer and energy costs for ten or more years. Reduced utility costs help to create a business-friendly environment and a strong economy.

BMP 10 – Wholesale Agency Assistance Programs

This BMP applies to wholesale agencies only.

BMP 11 -- Conservation Pricing

CMWD currently has a conservation rate of $1.44 per unit available to all customer classifications based on their monthly usage relative to meter size.

BMP 12 – Conservation Coordinator

CMWD has one full-time Water Conservation Specialist and one management assistant devoting half time to conservation coordination.

BMP 13 -- Water Waste Prohibition

In 1991, CMWD adopted the Carlsbad Water Ethic, which specifies responsible water use and is designed to promote the most reasonable, wise and efficient use of water Carlsbad. Practices include:

- New landscaping shall incorporate drought-tolerant plant materials and drip irrigation systems, wherever possible.
- Water can never leave the user's property due to over-irrigation of landscape.
- Watering must be done during the early morning or evening hours to minimize evaporation (between 4:00 p.m. and 9:00 a.m. the following morning).
- All leaks must be investigated and repaired.
- Water cannot be used to clean paved surfaces, such as sidewalks, driveways, parking areas, etc., except to alleviate immediate safety or sanitation hazards.

- Reclaimed or recycled water shall be used wherever and whenever available.

The District also has an ordinance for water cutbacks that addresses water softeners, cooling systems, car washes, commercial laundries, and decorative fountains.

BMP 14 – Residential Ultra-Low Flush Toilet Replacement

CMWD began offering rebates worth up to $75 for the replacement of older toilets with ultra-low-flush toilets in 1990. Since 1991, the District has been participating in SDCWA's rebate and voucher programs. Through 2005, almost 12,000 rebates or vouchers have been issued to Carlsbad customers, representing an estimated 3,456-acre feet in water savings.

Future Water Conservation Savings

Projected water savings and effectiveness provided in the 2005 UWMP are based on industry standard methodologies for calculating savings, as defined by the CUWCC. Projections show that implementing existing urban BMP's would produce water savings of approximately 2,095 AF/YR by the year 2030 within the CMWD's service area (Table 7-2).

TABLE 7-2
Potential Water Conservation Savings Through 2030
Within CMWD Service Area (AF)

Existing BMP's	2005	2010	2015	2020	2025	2030
Residential Surveys	4	4	4	4	4	4
Clothes Washer Incentives	582	728	728	728	728	728
Commercial/Industrial/Institutional	137	171	214	268	334	418
Toilet Incentives	700	945	945	945	945	945
TOTAL	**1,423**	**1,848**	**1,891**	**1,945**	**2,011**	**2,095**

Chapter 8 - Water Shortage Contingency Plan

Law

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

The effective management of water supply shortages is an important responsibility of water agencies in Southern California. Shortages may be caused by droughts, failures of major water transmission facilities during earthquakes, an acute contamination of supplies due to chemical spills, or other adverse conditions.

The need for an effective management program to mitigate water supply shortages arises from CMWD's experiences during the drought in the early 1990's. The current approach to managing water shortages has evolved from these drought experiences.

In February 1992 the CMWD Board of Directors adopted the Urban Water Shortage Contingency Plan in accordance with State law. CMWD refers to this plan as an operational guideline in the event of a severe water shortage. As part of the Shortage Contingency Plan, CMWD adopted Ordinance No. 35, *An Ordinance of the Carlsbad Municipal Water District Finding the Necessity For and Adopting a Water Conservation Program*. This ordinance outlines water conservation stages during normal periods and periods of water shortages.

As a member agency, CMWD is included as part of the San Diego County Water Authority's Emergency Response Plan and Emergency Storage Project, both developed in order to protect public health and safety and to limit economic damage that could occur from a severe shortage of water supplies. See the San Diego County Water Authority's Urban Water Management Plan 2005 for more information on these topics.

Water Shortage Contingency Plan

Law

> 10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:
>
> 10632 (a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply and an outline of specific water supply conditions which are applicable to each stage.
>
> 10632 (d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.
>
> 10632 (e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.
>
> 10632 (f) Penalties or charges for excessive use, where applicable.
>
> 10632 (h) A draft water shortage contingency resolution or ordinance.
>
> 10632 (i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

The District's Board of Directors adopted an ordinance adopting a water conservation program in 1991 (see Appendix B for complete text of the ordinance). This ordinance outlines six stages of water alerts that describe different required conservation savings, as shown in Table 8-1. These conservation savings range from voluntary compliance with reasonable conservation efforts in Stage 1 to a mandatory 40 percent reduction in Stage 6. For a water emergency requiring 50 percent reduction in water use, the CMWD falls under SDCWA policy. Enforcement and penalties for violations of the mandated restrictions are noted in Section 7 of the ordinance.

Emergency response stage actions become effective when SDCWA declares that it is unable to provide sufficient water supplies to meet the ordinary demands and requirements of its member agencies without depleting available water supplies, to the extent that insufficient water would be available for human consumption, sanitation and fire protection. When SDCWA announces its stage declaration, CMWD concurrently would declare its corresponding stage.

TABLE 8-1
CMWD Water Conservation Stages

Stage	Shortage Condition	Customer Reduction	Compliance Level
1	Normal	Reasonable use	Voluntary
2	Water Alert	10%	Mandatory
3	Water Warning	15%	Mandatory
4	Water Warning	20%	Mandatory
5	Water Warning	30%	Mandatory
6	Water Warning	40%	Mandatory

* For a water emergency requiring 50 percent reduction in water use, the District falls under SDCWA policy

Revenue and Expenditure Impacts/Measures to Overcome Impacts

Law

> 10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:
>
> 10632 (g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier…
>
> 10632 (g) [An analysis of the impacts of each of the] proposed measures to overcome those [revenue and expenditure] impacts, such as the development of reserves and rate adjustments.

Prior to the implementation of the CMWD's new rate structure in July, 1996, CMWD derived 83 percent of its revenue from commodity charges. This heavy reliance on variable revenue left the CMWD vulnerable to fluctuations in water sales. The new rate structure lessened our reliance on variable charges and shifted revenues to fixed sources such as the monthly delivery charge.

In the event that revenues are less than required to meet the District's financial obligations, a reserve fund has been established. Prudent fiscal management requires that reserve funds be established and maintained at adequate levels to provide short-term capital in case of emergencies. The CMWD's operating reserves represent approximately 40 percent of annual operating expenses. This balance is necessary because of our dependence on SDCWA and MWD for our water supply.

In the event of a water emergency, Ordinance No. 35 would be activated to respond to the level of shortage. At that time, drought response stage actions would go into effect and the CMWD would be operating with reduced water sales. The amount of decreased revenue would depend upon the response stage under which the CMWD would operate.

Chapter 9 - Water Recycling

Law

> 10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. To the extent practicable, the preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies and shall include all of the following:
>
> 10633 (a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

Wastewater System Description

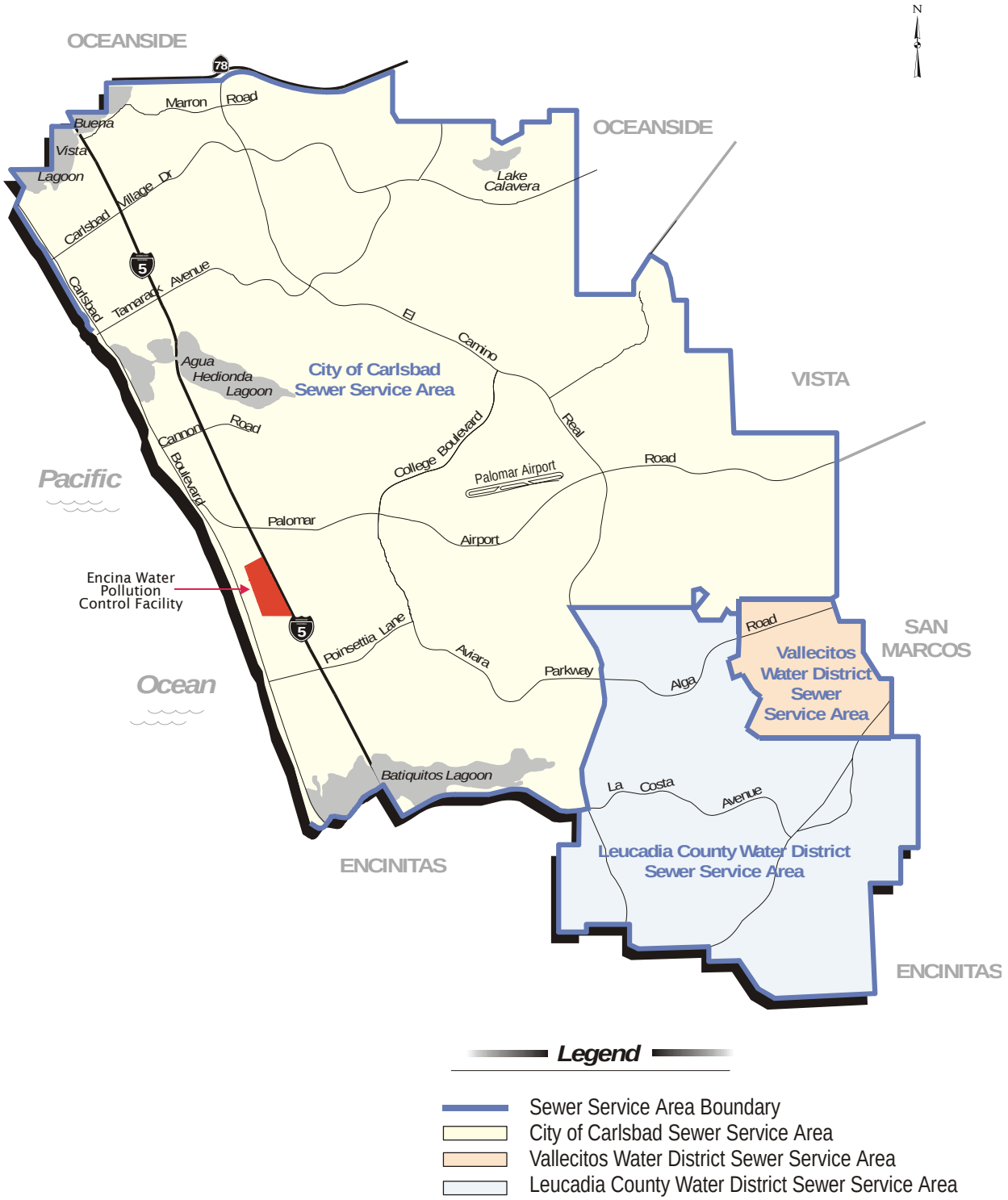
The sewer service area covered by the Carlsbad Municipal Water District includes the majority of the City of Carlsbad's boundary, with the exception of the southeast corner of the city (see map on page 43). The estimated year 2005 sewer service population is 61,850 versus a total City population estimated at 95,146.

Within its service area, CMWD is responsible for wastewater collection and conveyance to the Encina Water Pollution Control Facility (EWPCF), located in Carlsbad. EWPCF also treats wastewater from other municipalities, including San Marcos, Vista and parts of Encinitas. The facility provides for full secondary treatment, sludge handling and disposal through a deep ocean outfall that extends along the ocean floor to a point 1.5 miles off shore, at a depth of over 150 feet. The treatment levels meet all current State and Federal requirements.

The present capacity of EWPCF is approximately 36 mgd. This capacity is owned by six member agencies that make up the Encina Wastewater Authority (EWA). The City of Carlsbad owns capacity rights for 9.24 mgd. Currently, CMWD collects and transports an average of 6.05 mgd (see Table 9-1 for wastewater generation projections to 2020).

TABLE 9-1
CMWD Wastewater Generation Projections (mgd)

Treatment Plant	*Year 2005*	*Year 2010*	*Year 2015*	*Year 2020*	*Year 2025*
Encina	6.05	7.29	8.22	8.91	10.26



CMWD Sewer Service Area

Recycled Water Uses

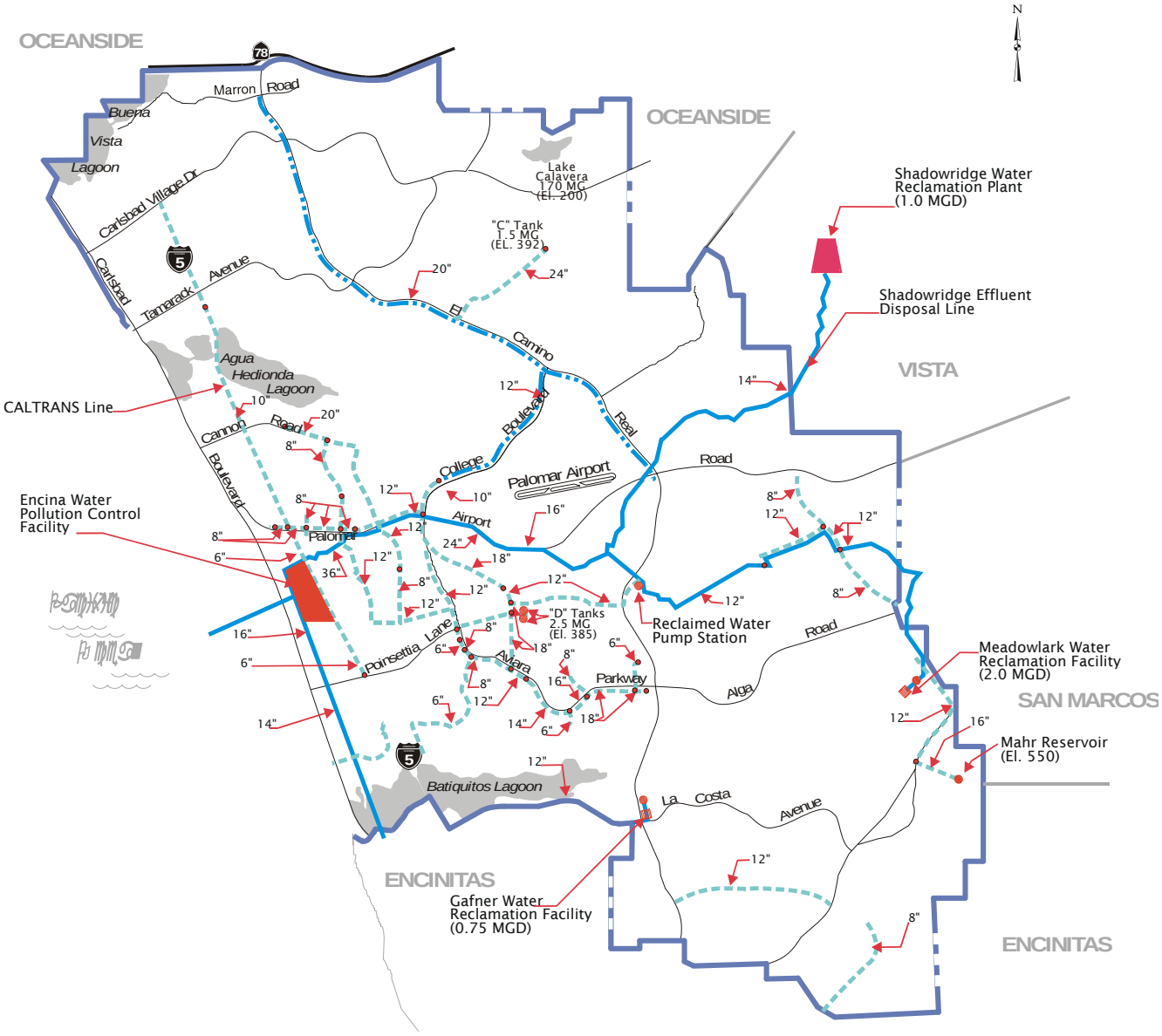
Law

> 10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. To the extent practicable, the preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies and shall include all of the following:
>
> 10633 (b) A description of the recycled water currently being used in the supplier's service area, including but not limited to, the type, place and quantity of use.
>
> 10633 (c) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.
>
> 10633 (d) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years.

Recycled Water Currently Being Used

The City of Carlsbad has approximately 80 miles of recycled distribution pipeline (see map on page 46). This distribution system currently supplies 206 recycled use sites. The major sites served by recycled water include La Costa Resort and Spa, Four Seasons Resort at Aviara, Legoland of California, Grand Pacific Palisades Hotel, Karl Strauss Brewery and the world renowned Flower Fields. While these are the most recognized sites being supplied with recycled water, it is also supplied to parks, median strips, shopping areas, freeway landscaping and the common areas of numerous homeowners associations.

Recycled water is presently supplied to Carlsbad from two sources: the Meadowlark Treatment Plant, owned and operated by the Vallecitos Water District, and the Gafner Treatment Plant, owned and operated by the Leucadia County Water District. These two plants produce approximately 3.00 million gallons per day of tertiary treated, disinfected recycled water. As more recycled water projects come on-line, more recycled water will be available. Within the next three to five years, the amount of recycled water available to the public will increase by approximately 6 million gallons per day. Table 9-2 projects recycled water capacity to 2020 for the Phase II and Ultimate systems.



Existing Recycled Water Distribution System

Legend

- Sewer Drainage Basin Boundary
- Failsafe Lines
- Existing Reclaimed Water Lines
- Water Lines Available for Reclaimed Use

TABLE 9-2
CMWD Projected Recycled Water Capacity (AFY)

Recycled System Phase	*Year 2000*	*Year 2005*	*Year 2010*	*Year 2015*	*Year 2020*
Phase II	2,800	5,600	8,960	8,960	8,960
Ultimate	2,800	8,960	13,440	17,920	22,400

Potential Uses of Recycled Water/Technical and Economic Feasibility Analysis

Potential recycled water markets are locations where recycled water could replace potable water use. These potential markets are typically landscape or agricultural irrigation systems, or possibly industrial water users. This section discusses previous market assessments and current customer assessment including the results of an irrigation meter survey within the District, and recommended service areas for Phase II of the recycled water distribution system, as well as the ultimate system.

Previous Assessments

In 1990, the *Carlsbad Reclaimed Water Master Plan* identified market types and then researched potential recycled water markets using past studies, water meter records, irrigation meter records, and assistance from the City's planning department. Market types included the following: agricultural, golf course, freeway, land development and park irrigation; industrial and commercial uses; groundwater recharge and lagoon and stream enhancement. Specific potential customers were listed, along with an estimate of recycled water use at that site.

Potential markets identified in the 1990 Master Plan were primarily sites requiring landscape irrigation. Approximately 6,000 AFY was projected for potential recycled water irrigation in 1995, and approximately 10,700 AFY was projected for 2015. Stream and lagoon enhancement and groundwater recharge were not considered to be viable projects in the 1990 Master Plan.

The 1997 Master Plan Update reviewed the previous assessment of potential recycled water markets. Planned land development had changed in some areas of Carlsbad; some markets identified in the 1990 Master Plan had been changed to designated open space for habitat management, and some potential markets no longer existed. However, the updated list of potential recycled water markets included 208 sites throughout the City, including markets outside of the District's service area, and projected an ultimate irrigation use of approximately 11,000 AFY, within 2.8 percent of the 1990 Master Plan projection. No use of groundwater recharge or stream/lagoon enhancement was addressed in the update, except for storage at

Lake Calavera.

Current Customer Assessment

To define the Phase II and Ultimate distribution systems, an updated look at potential recycled water customers was required. Using the 1997 Master Plan Update list of potential and existing markets as a basis for the current assessment; the information was evaluated for accuracy. The District also provided current recycled irrigation meter records for existing Phase I customers for evaluating average and peak month recycled water demands.

The District's preliminary financial analyses are based on recycled water sales of 5,000 AFY by the year 2008. Based on further financial analysis, it was determined that a recycled water sale of 5,400 AFY is a more favorable goal and comfortably satisfies the SWRCB funding criteria. In addition, the District is participating in MWD's Local Resources Program (LRP), which requires reliable and achievable demand projections. Furthermore, overestimating potential demands, including peak usages, could result in oversized facilities and excessive capital cost. Therefore, an irrigation meter record survey was conducted to better assess the recycled water market and potential demand.

Irrigation Meter Record Survey.

The District had previously maintained an AutoCAD drawing of each potable water meter location in its water system, which does not include the City area not served by CMWD. The District updated this drawing and provided it in order to facilitate a detailed irrigation meter record survey. These data were converted into Geographic Information System (GIS) coverages where each irrigation meter was graphically linked to its unique account number. The District then provided one year of potable irrigation records that was converted to an average annual demand for every irrigation meter.

Approximately 850 irrigation meter accounts were surveyed from the GIS coverage and linked database. The irrigation meters were then grouped into subareas throughout the District's service area to determine where the largest potential demand areas were located. The software program "ArcCAD" was utilized to intersect the subareas with the meter accounts to provide an average annual demand for each subarea and a total District-wide demand.

In summary, the District currently serves approximately 3 mgd (3,300 AFY) of irrigation demand using potable water. Thus, if sufficient recycled water supply is available, the District could actually meet its Phase II goal by converting current irrigation services to the recycled system. However, in many cases these demands are located a long distance from the existing recycled system such that it is not cost effective to connect.

In reviewing the database, many irrigation meters serve a low annual demand that may

not be economical to convert from potable to recycled water. It is also possible that some existing landscape areas may not wish to use recycled water due to stringent water quality requirements. For example, despite recycled water being currently available at these developments, irrigation meters at both Aviara and La Costa developments were connected to the potable system, due possibly to water quality or other onsite requirements. Some flower growers also require very high quality water that may only be achievable through further onsite treatment of recycled water. For these reasons, it is recommended that the District design its Phase II recycled water system to serve a potential demand of at least 10 to 15 percent over the revenue goal of 5,400 AFY.

Comparison to Previous Assessments.

In reviewing the previous market assessments, several customers appeared to have overestimated demands when compared to actual irrigation usage. For example, the potential recycled water demand at the Olympic Resort and Hotel was previously estimated based on an irrigated area of 130 acres. Based on existing potable irrigation records and site reconnaissance (the irrigation is used for a driving range, not a golf course), the actual irrigated area appears to be less than 10 acres, which correlates to the actual demand of approximately 15 AFY. (Previous estimates were about 400 AFY.)

The Rancho Carlsbad Golf Course showed a low potable irrigation use for the approximate 35-acre site. District staff confirmed that groundwater is used for onsite irrigation, resulting in the current low potable demand. This user may be reluctant to convert to recycled water use due to economics, presuming the cost to pump groundwater is much less than recycled water costs. Because of the high potential demand (over 100 AFY), the District should ultimately consider this site for recycled water. For study purposes, the market assessment included this site, as an ultimate customer, with a demand of 100 AFY.

Summary of Key Findings.

It became apparent, based on the potable irrigation meter survey, that the following subareas within the District provided significant potential recycled water demand:

- Calavera Hills (100 AFY)
- Carlsbad Research Center (125 AFY)
- Homeowner Associations just east of Interstate 5 (100 AFY)
- Carrillo Ranch (Continental Homes) (200 AFY)
- District Office Area (150 AFY)

These areas were generally in close proximity to existing recycled pipelines or have already been dual plumbed to accept recycled water. Thus, these areas became primary target

service areas for the Phase II distribution system. Those customers (typically residential developments) that were constructed after 1993 have been dual plumbed, as required by the District. These potential recycled water customers are expected to be served as soon as recycled water becomes available and should be a priority for designing the Phase II distribution system. No significant retrofitting of these proposed customers is expected to be required.

Proposed Phase II Customers

To satisfy conditions of financial assistance from MWD's LRP, the District is required to sell approximately 5,400 acre feet per year of recycled water by 2008. The existing recycled water system serves approximately 2,000 AFY (including La Costa Golf Course South, which receives recycled water directly from Gafner); therefore, the Phase II distribution system must reach enough customers to satisfy an additional recycled water demand of approximately 3,400 AFY. This equates to approximately 1,400 acres of irrigated landscape area assuming an application rate of 2.5 AFY per acre.

To begin the Phase II market evaluation, the list of all potential recycled water customers from the 1997 Master Plan Update was reviewed and updated. Projected demands were revised for existing customers on the list that are now being served with potable water based on recent irrigation meter data. A few additional customers were also added based on a review of recent development plans.

Initially, a distribution system was proposed that would expand the existing recycled water pipeline network and serve all potential recycled customers. This distribution system was then optimized; creating a Phase II system that would meet the re-use goal with a minimum number of new recycled water facilities. Investigating several different pipeline alternatives, hydraulic computer simulations, and incorporating comments from City, District staff then refined the proposed Phase II Recycled Water System.

The largest potential customers for the Phase II system are identified as follows:

- Carlsbad Municipal Golf Course (385 AFY)
- Kelly Ranch (216 AFY)
- La Costa Residential Areas (170 AFY and 177 AFY, the Ridge and Oaks)
- Green Valley (155 AFY).
- Calavera Hills (additional 100 AFY)

These customers represent major land development projects under construction or anticipated to be under construction over the next two years. These five largest users within the Phase II system represent over 40 percent of the potential demand on the expanded distribution system. Therefore, the financial success of the Phase II program will greatly depend on the full

development of these larger customers. In reviewing the potential Phase II customers, the District also should focus on developing recycled water customer demands in excess of 50 AFY in the early years of the Phase II program because they represent more than 75 percent of the estimated potential demand.

Potential demand of approximately 900 AFY was included from the potable irrigation meter survey. This demand represents irrigation meter locations along existing or proposed Phase II recycled pipelines. It becomes apparent that multiple irrigation meters exist for the same customer or site. By grouping those meters, Table 9-3 presents a summary of the larger irrigation users currently being served by the potable system. Through grouping, these customers become a high priority for conversion to recycled water.

TABLE 9-3
Phase II Summary of Large Potable Water Irrigation Customers

Customer	***Average Annual Irrigation Demand (AFY)***
Carrillo Ranch (Continental Ranch)	213
Carlsbad Municipal Water District	153
Carlsbad Research Center	125
Calavera Hills	100
San Diego Specialty	60
Carlsbad Crest HOA	35
Alta Mira HOA	30
Upland Industries Corporation	30
OVLC Management Company DBA	20
Callaway Golf	20
Las Playas HOA	14
Western Pacific Homes	11

Ultimate Customers

The Ultimate System will serve over 22,000 AFY of recycled water in the year 2020. The largest customers within the Ultimate System include the future Carlsbad Ranch Golf Course (400 AFY), La Costa Residential areas (372 AFY), and the Carlsbad Oaks Industrial Park (228 AFY). Approximately 1,000 AFY of potable irrigation meters were identified as potential recycled water customers.

Many of these water customers are ready to be connected to the recycled water system now. However, due to Phase II pipeline routing economics, some of these customers are better served in the Ultimate System. A few potential customers were also eliminated from the distribution system due to their remote location, and associated high incremental cost of connecting pipelines.

Encouraging Recycled Water Use

Law

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

Encouraging and optimizing recycled water use in the CMWD service area involves a combination of financial incentives, city policies, staff assistance and training opportunities.

Financial Incentives

CMWD currently subsidizes the use of recycled water by giving recycled users a 5 percent discount off potable water rates. The current rate for recycled users is $1.52 per unit (one unit = 748 gallons).

City Policies

It is the policy of the District that recycled water shall be used within the jurisdiction wherever its use is economically justified, financially and technically feasible, and consistent with legal requirements, preservation of public health, safety and welfare, and the environment. This policy requires the District to prepare and adopt a Recycled Water Master Plan to define, encourage and develop the use of recycled water, and to update this plan no less than every five years.

City policy, as established in 1990 and recently revised and approved by the CMWD Board (see Appendix C), requires that recycled water be used on all new land use developments proposed in Carlsbad for all State-approved non-potable uses, if and when available. The installation of dual irrigation systems and connections to recycled water sources is also required and subject to the conditions of the District’s Recycled Water Master Plan.

Staff Assistance

CMWD has Cross Control Connection Technicians who review on-site irrigation systems to verify no cross connections have occurred between the potable and recycled water systems.

In addition, reviews are made to eliminate overspray and nuisance problems. To date, no major problems have occurred. A quarterly report is submitted to the San Diego Regional Water Quality Control Board on any field tests and observations. For businesses, cross connection tests are often performed at night to reduce impacts on their operations and customers.

User guidelines have been established by CMWD in conjunction with the San Diego County Health Department, which are intended to provide the basic parameters for the use of recycled water in landscape irrigation. These guidelines include:

1. Irrigation between the hours of 10:00 p.m. and 6:00 a.m. only.
2. Irrigation in a manner that will minimize run-off, pooling and ponding.
3. Adjustment of spray heads to eliminate overspray onto areas not under the control of the user.
4. Monitoring and maintenance of the system to minimize equipment and material failure.
5. Education of all maintenance personnel on a continuous basis as to the presence of recycled water and for what purposes it is allowed to be used.
6. Prior approval by the District of all proposed changes and modifications to any private facilities.
7. An annual cross connection inspection.
8. Designation of an on-site supervisor, in writing, who is familiar with the plumbing system, basic concepts of backflow/cross connection protection and the specific requirements of a recycled water system.

Training

Each year, CMWD hosts a one-day certified course designed to provide irrigation supervisors with a basic understanding of recycled water. The San Diego County Water Authority sponsors this class. 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.

APPENDIX A

Exhibit _____

RESOLUTION NO. _____

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE CARLSBAD MUNICIPAL WATER DISTRICT APPROVING THE 2005 URBAN WATER MANAGEMENT PLAN

WHEREAS, the 2005 Urban Water Management Plan has been prepared by the Carlsbad Municipal Water District in conformance with the Urban Water Management Planning Act contained in the California Water Code Sections 10610 et. Seq.; and

WHEREAS, a public hearing was held on this day to receive public comment regarding the Plan and the Plan amended as directed;

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Carlsbad Municipal Water District, as follows:

1. That the above recitations are true and correct.
2. That the 2005 Urban Water Management Plan is hereby adopted.

PASSED, APPROVED AND ADOPTED at a regular meeting of the Board of Directors of the Carlsbad Municipal Water District held on the _____ day of _____, 2005 by the following vote, to wit:

AYES:

NOES:

ABSENT:

_____

CLAUDE A. LEWIS, President

ATTEST:

_____

LORRAINE WOOD, Secretary

(SEAL)

APPENDIX B

Ordinance No. 35

An Ordinance of the Carlsbad Municipal Water District Finding the Necessity For and Adopting A Water Conservation Program

Section 1. Declaration of Policy. California Water Code Sections 375 et. seq. permit public entities which supply water at retail to adopt and enforce a water conservation program to reduce the quantity of water used by the people therein for the purpose of conserving the water supplies of such public entity. The Board hereby establishes a comprehensive water conservation program pursuant to California Water Code Sections 375 et seq., based upon the need to conserve water supplies and to avoid or minimize the effects of any future shortage.

Section 2. Findings. The Board finds and determines that a water shortage could exist based upon the occurrence of one or more of the following conditions:

(a) A general water supply shortage due to increased demand or limited supplies.

(b) Distribution or storage facilities of the Metropolitan Water District of Southern California, the San Diego County Water Authority, the District, or other agencies become temporarily or permanently inadequate.

The Board also finds and determines that the conditions prevailing in the San Diego County area require that the water sources available be put to maximum beneficial use to the extent to which they are capable, and that the waste or unreasonable use, or unreasonable method of use, of water be prevented and that the conservation of such water be encouraged with a view to the maximum reasonable and beneficial use thereof in the interest of the people of the District and for the public welfare.

Section 3. Application. The provisions of this ordinance shall apply to all water served to persons, customers, and property by the District.

Section 4. Authorization. The District General Manager, or a designated representative, is hereby authorized and directed to implement the provisions of this ordinance. Additionally, the General Manager, or designated representative is hereby authorized to make minor and limited exceptions to prevent undue hardship or unreasonable restrictions, provided that water shall not

be wasted or used unreasonably and the purpose of this ordinance can be accomplished.

Section 5. Water Conservation Stages. No person shall knowingly use water or permit the use of water supplied by the District for commercial, industrial, agricultural, governmental, or any other purpose in a manner contrary to any provision of this ordinance, in an amount in excess of the amounts authorized by this ordinance or during any period of time other than the periods of time specified in this ordinance. At no time shall water be wasted or used unreasonably.

Unreasonable uses of water are those that violate the Carlsbad Water Ethic, a policy adopted by the Board to establish a list of prudent water uses to be followed regardless of the availability of local or imported water supplies.

The following stages shall take effect upon declaration as herein provided:

(a) Stage 1 - Voluntary Compliance - Water Watch.

Stage 1 applies during normal periods to encourage conservation by the reasonable use of water in accordance with the Carlsbad Water Ethic.

(b) Stage 2 - Enforcement Required - Water Alert.

Stage 2 applies during periods that the District determines that water usage should be reduced approximately 10% in order to meet all of the water demands of its customers, either now or in the foreseeable future. Implementation of Stage 2 should result in an average of 10% reduction in water use from a base period to be determined at the time of declaration. Specific mandated restrictions in water use for Stage 2 are as follows:

1) ***Construction Usage*** - All construction water must be reclaimed water or non-potable water, if available.

2) ***Development Construction*** -

   a) After declaration of Stage 2 and prior to issuance of any building permit, the developer will be required to certify that a 10% reduction of the projected average water usage for that development shall be achieved.

   b) In addition to the requirements in paragraph 2a), developer shall be requited to present a Plan to identify how 10% of the projected average water usage generated by the development will be offset by reduction in water use by existing customers. The Plan must be approved by the General Manager and its implementation guaranteed before a building permit will be issued. The Plan implementation may be guaranteed by installation or construction of the required improvements, or through payments of fees as determined by the General Manager.

(c) Stage 3 - Enforcement Required - Water Warning.

Stage 3 applies during periods when the District determines that water usage should be reduced approximately 15% in order to meet all of the water demands of its customers now or in the foreseeable future. Implementation of Stage 3 should result in a minimum of 15% reduction in water use from a base period to be determined at the time of declaration. Specific mandated restrictions in water use for Stage 3 are as follows:

1) ***Construction Usage*** - All construction water must be reclaimed water or non-potable water, if available.
2) ***Development Construction*** -
   a) After declaration of Stage 3 and prior to issuance of any building permit, the developer will be required to certify that a 15% reduction of the projected average water usage for that development shall be achieved.
   b) In addition to the requirements in paragraph 2a), developer shall be required to present a Plan to identify how 15% of the projected average water usage generated by the development will be offset by reductions in water use by existing customers. The Plan must be approved by the General Manager and its implementation guaranteed before a building permit will be issued. The Plan implementation may be guaranteed by installation or construction of the required improvements, or through payments of fees as determined by the General Manager.

(d) Stage 4 - Enforcement Required - Water Warning.

Stage 4 applies during periods when the District determines that water usage should be reduced approximately 20% in order to meet all of the water demands of its customers now or in the foreseeable future. Implementation of Stage 4 should result in a minimum of 20% reduction in water use from a base period to be determined at the time of declaration. Specific mandated restrictions in water use for Stage 4 are as follows:

1) ***Construction Usage*** - All construction water must be reclaimed water or non-potable water, if available.
2) ***Development Construction*** -
   a) After declaration of Stage 4 and prior to issuance of any building permit, the developer will be required to certify that a 20% reduction of the projected average water usage for that development shall be achieved.
   b) In addition to the requirements in paragraph 2a), developer shall be required to present a Plan to identify how 20% of the projected average water usage generated by the development will be offset by reductions in water use by existing customers. The Plan must be approved by the General Manager and its implementation guaranteed before a building permit will be issued. The Plan implementation may be guaranteed

by installation or construction of the required improvements, or through payments of fees as determined by the General Manager.

(e) Stage 5 - Enforcement Required - Water Warning.

Stage 5 applies during periods when the District determines that water usage should be reduced approximately 30% in order to meet all of the water demands of its customers now or in the foreseeable future. Implementation of Stage 5 should result in a minimum of 30% reduction in water use from a base period to be determined at the time of declaration. Specific restrictions in water use for Stage 5 are as follows:

1) ***Landscape (except residential)*** - Eliminate watering of ornamental turf areas. Water only actively used turf areas no more than twice per week. Trees and shrubs may be watered only twice per week using a hand held hose with a positive shutoff nozzle or drip irrigation. Use of reclaimed water, however, is exempt.

2) ***Household and Household Members (Residential landscapes)*** - Water no more than twice per week using only hand held hose with positive shutoff nozzle or drip irrigation systems. Eliminate sprinkler use.

3) ***Construction Usage*** - All construction water must be reclaimed or non-potable. Issuance of construction meters will be only for testing and disinfection of potable waterlines.

4) ***Development Construction*** -

   a) After declaration of Stage 5 and prior to the issuance of any building permit, the developer will be required to certify that a 30% reduction of the projected average water usage for that development shall be achieved.

   b) In addition to the requirements in paragraph 4a), developer shall be required to present a Plan to identify how 30% of the projected average water usage generated by the development will be offset by reductions in water use by existing customers. The Plan must be approved by the General Manager and its implementation guaranteed before a building permit will be issued. The Plan implementation may be guaranteed by installation or construction of the required improvements, or through payments of fees as determined by the General Manager.

(f) Stage 6 - Enforcement Required - Water Warning.

Stage 6 applies during periods when the District determines that water usage should be reduced approximately 40% in order to meet all of the water demands of its customers now or in the foreseeable future. Implementation of Stage 6 should result in a minimum of 40% reduction in water use from a base period to be determined at the time of declaration. Specific mandated restrictions in water use for Stage 6 are as follows:

1) ***Landscape (except residential)*** - Same requirements as Stage 5 plus irrigate playing fields only.

2) ***Household and Household Members (Residential landscapes)*** - Same as Stage 5 and no outside irrigation except with water reclaimed from indoor use with hand held bucket to effect a 40% cutback.

3) ***Construction Usage*** - Same as Stage 5.

4) ***Development Construction*** –

   a) After declaration of Stage 5 and prior to issuance of any building permit, the developer will be required to certify that a 40% reduction of the projected average water usage for that development shall be achieved.

   b) In addition to the requirements in paragraph 4a), developer shall be required to present a Plan to identify how 40% of the projected average water usage generated by the development will be offset by reductions in water use by existing customers. The Plan must be approved by the General Manager and its implementation guaranteed before a building permit will be issued. The Plan implementation may be guaranteed by installation or construction of the required improvements, or through payments of fees as determined by the General Manager.

Section 6. Implementation of Conservation Stages. The District shall monitor the projected supply and demand for water by its customers on a daily basis. The Manager shall determine the extent of the conservation required through the implementation and/or termination of particular conservation stages in order for the District to prudently plan for and supply water to its customers. Thereafter the Manager may order that the appropriate stage of water conservation be implemented or terminated in accordance with the applicable provision of this Ordinance. The declaration of any stage beyond Stage 1 shall be made by a mass mailing and public announcement and notice shall be published a minimum of three (3) consecutive times in a newspaper of general circulation. The stage designated shall become effective immediately upon announcement. The declaration of any stage beyond Stage 1 shall be reported to the Board at its next meeting. The Board shall thereupon ratify the declaration, rescind the declaration, or direct the declaration of a different stage.

Section 7. Penalty.

(a) Penalties. It shall be unlawful for any customer of the District to fail to comply with any of the provisions of this ordinance and of the Carlsbad Water Ethic. Failure to comply with any of the provisions of this Ordinance and of the Carlsbad Water Ethic shall be as follows:

1) For the first violation by any customer of any of the provisions of this Ordinance or the Carlsbad Water Ethic, the District shall verbally notice the fact of such violation to the customer.

2) For a second violation by any customer of any of the provisions of this Ordinance or the Carlsbad Water Ethic, the District shall issue a personal notice of the fact of such violation to the customer.

3) For a third violation by a customer of any provision of this ordinance or the Carlsbad Water Ethic, the District may install a flow restricting device of one gallon per minute (1 GPM) capacity for services of up to one and one-half inch size and comparatively sized restrictors for larger services upon a prior determination that the customer has repeatedly violated the provisions of this Ordinance or the Carlsbad Water Ethic regarding the conservation of water and that such action is reasonably necessary to assure compliance with this ordinance or the Carlsbad Water Ethic regarding the conservation of water. Such action shall be taken only after a hearing held by the District Manager or designee, where the customer has an opportunity to respond to the District's information or evidence that the customer has repeatedly violated the provisions of this Ordinance or the Carlsbad water Ethic regarding the conservation of water and that such action is reasonably necessary to assure compliance with this ordinance and the Carlsbad Water Ethic regarding the conservation of water.

   As determined by the General Manager any such restricted service may be restored upon application of the customer made not less than forty-eight (48) hours after the implementation of the action restricting service and only upon a showing by the customer that the customer is ready, willing and able to comply with the provisions of this Ordinance or the Carlsbad Water Ethic regarding the conservation of water. Prior to any restoration of service, the customer shall pay all District charges for any restriction of service and its restoration as provided for in the District's rules governing water service.

   Any willful tampering with or removal of any flow restriction device shall result in termination of service for a period to be determined by the General Manager.

(b) Notice. The District shall give notice of each violation to the customer committing such violation as follows:

1) For any violation of the provisions of this Ordinance or the Carlsbad Water Ethic, the District may give written notice of the fact of such violation to the customer personally or by U. S. mail, first class, registered postage paid.

2) If the penalty assessed is, or includes, the installation of a flow restrictor to the customer, notice of the violation shall be given in the following manner:

a. By giving written notice thereof to the customer personally; or

b. If the customer be absent from or unavailable at either his place of residence or his assumed place of business, by leaving a copy with some person of suitable age and discretion at either place, and sending a copy through the U.S. mail, first class, registered postage prepaid, addressed to the customer at his place of business, residence, or such other address provided by the customer for bills for water or electric service if such can be ascertained; or

c. If such place or residence, business or other address cannot be ascertained, or a person of suitable age or discretion at any such place cannot be found, then by affixing a copy in a conspicuous place on the property where the failure to comply is occurring and also be delivering a copy to a person of suitable age and discretion there residing, or employed, if such person can be found, and also sending a copy through the U.S. mail, first class, registered postage prepaid, addressed to the customer at the place where the property is situated as well as such other address provided by the customer for bills for water or electric service if such can be ascertained.

Said notice shall contain, in addition to the facts of the violation, a statement of the possible penalties for each violation and statement informing the customer of his right to a hearing on the violation.

(c) Appeals. Any customer against whom a penalty is levied pursuant to this section shall have a right to an appeal, in the first instance to the District General Manager or designee with the right of appeal to the District's Water Commissioners, on the merits of the alleged violation, upon written request of that customer to the District within fifteen days of the date of notification of the violation.

APPENDIX C

Ordinance No. 31

An Ordinance of the Carlsbad Municipal Water District Mandating Use of Reclaimed Water

WHEREAS, the people of the state of California have a primary interest in the development of facilities to reclaim water containing waste to supplement existing surface and underground water supplies and to assist in meeting the future water requirements of the state; and (California Water Code Section 13510); and

WHEREAS, conservation of all available water resources requires the maximum reuse of wastewater for beneficial uses of water; and (Water Code Section 461); and

WHEREAS, continued use of potable water for irrigation of greenbelt areas may be an unreasonable use of such water where reclaimed water is available;

NOW, THEREFORE, the District does hereby ordain:

Section 1: Findings

The state policies described above are in the best interest of the District. The majority of jurisdictions in San Diego County have adopted measures to promote water reclamation. This ordinance is necessary to protect the common water supply of the region which is vital to public health and safety, and to prevent endangerment of public and private property. San Diego County is highly dependent on limited imported water for domestic agricultural and industrial uses. The reliability of the supply of imported water is uncertain. By developing and utilizing reclaimed water, the need for additional imported water can be reduced. In light of these circumstances, certain uses of potable water may be considered unreasonable or to constitute a nuisance where reclaimed water is available or production of reclaimed water is unduly impaired. Reclaimed water would be more readily available in seasons of drought when the supply of potable water for nonessential uses may be uncertain.

Section 2: Water Reclamation Policy

It is the policy of the District that reclaimed water shall be used within the jurisdiction wherever its use is economically justified, financially and technically feasible, and consistent with legal requirements, preservation of public health, safety and welfare, and the environment.

Section 3: Definitions

The following terms are defined for purposes of this ordinance:

3.1 Agricultural Purposes: agricultural purposes include the growing of field and nursery crops, row crops, trees, and vines and the feeding of fowl and livestock.

3.2 Artificial Lakes: A human-made lake, pond, lagoon, or other body of water that is used wholly or partly for landscape, scenic or non-contact recreational purposes.

3.3 Commercial Office Buildings: Any building for office or commercial uses with water requirements which include, but are not limited to, landscape irrigation, toilets, urinals and decorative fountains.

3.4 Reclaimed Water Distribution Systems: A piping system intended for the delivery of reclaimed water separate from and in addition to the potable water distribution system.

3.5 Greenbelt Areas: A greenbelt area includes, but is not limited to, golf courses, cemeteries, parks and landscaping.

3.6 Industrial Process Water: Water used by any industrial facility with process water requirements which include, but are not limited to, rinsing, washing, cooling and circulation, or construction, including any facility regulated by the Industrial Waste Discharge Ordinance regulated by Chapter 13.16 of the Carlsbad Municipal Code.

3.7 Off-Site Facilities: Water facilities from the source of supply to the point of connection with the on-site facilities, normally up to and including the water meter.

3.8 On-Site Facilities: Water facilities under the control of the owner, normally downstream from the water meter.

3.9 Potable Water: Water which conforms to the federal, state and local standards for human consumption.

3.10 Reclaimed Water: Reclaimed water means water which, as a result of treatment of wastewater, is suitable for a direct beneficial use or controlled use that would not otherwise occur. (See Water Code Section 13050(n).)

3.11 Waste Discharge: Waste discharge means water deposited, released or discharged into a sewer system from any commercial, industrial or residential source which contains levels of any substance or substances which may cause substantial harm to any water treatment or reclamation facility or which may prevent any use of reclaimed water authorized by law.

Section 4: Water Reclamation Master Plan

4.1 General: Upon adoption of this ordinance, the District shall prepare and adopt by resolution a Water Reclamation Master Plan to define, encourage, and develop the use of reclaimed water within its boundaries. The Master Plan shall be updated not less often than every five years.

4.2 Contents Of The Reclamation Master Plan: The Master Plan will include the following:

4.2.1 Plants and Facilities. Evaluation of the location and size of present and future reclamation treatment plants, distribution pipelines, pump stations, reservoirs, and other related facilities, including cost estimates and potential financing methods.

4.2.2 Reclaimed Water Service Areas. A designation of the lands within the District service area that can or may in the future use reclaimed water in lieu of potable water. Reclaimed water uses may include, but are not limited to, the irrigation of greenbelt and agricultural areas, filling of artificial lakes, and appropriate industrial and commercial uses.

4.2.3 Quality Of Water To Be Reclaimed. For each water reclamation treatment facility, an evaluation of water quality with respect to the effect on anticipated uses of reclaimed water to be served by each treatment facility.

4.2.4 Water Quality Protection Measures. Recommended control measures and management practices to maintain or improve the quality of reclaimed water.

4.2.5 Mandatory Reclaimed Water Use. Within the reclaimed water service area, a description of where greenbelt irrigation, agricultural irrigation, commercial office buildings, filling of artificial lakes, or industrial processes can be limited to the use of reclaimed water. This information can be used by District officials to mandate construction of reclaimed water distribution systems or other facilities in new and existing developments for current or future reclaimed water use as a condition of any development approval or continued water service if future reclamation facilities are proposed in the Master Plan that could adequately serve the development.

4.2.6 Rules and Regulations. Establish by resolution, general rules and regulations governing the use and distribution of reclaimed water.

4.2.7 Coordination Among Agencies. An examination of the potential for initiating a coordinated effort between the Carlsbad Municipal Water District and other regional agencies to share in the production and utilization of reclaimed water.

Section 5. Procedures

5.1 Existing Potable Water Service:

5.1.1 Preliminary Determination. Based upon the Master Plan, upon the designation of each reclaimed water service area or the commencement of the design of new reclaimed water facilities, the District shall make preliminary determinations as to which existing potable water customers shall be converted to the use of reclaimed water. Each water customer shall be notified of the basis for a determination that conversion to reclaimed water service will be required, as well as the proposed conditions and of the need for a plan of implementation for such conversion.

5.1.2 Notice. The notice of the preliminary determination, including the proposed conditions and time schedule for compliance, and a reclaimed water permit application shall be sent to the water customer by certified mail.

5.1.3 Implementation. The water customer shall be required to submit a plan of implementation to the Carlsbad Municipal Water District's General Manager within ninety (90) days after receipt of the notice of preliminary determination. The plan of implementation shall describe in detail how the water customer intends to retrofit his water facilities to use reclaimed water in accordance with all Federal, State and local laws and public health guidelines. Staff shall provide the water customer upon request a copy of its "Rules and Regulations for Reclaimed Water Service" for use in preparing the required plan of implementation. Carlsbad Municipal Water District's General Manager shall have the authority to approve the water customer's plan of implementation within thirty (30) days after it is submitted to the District. Once approved, the plan of implementation must be implemented within one (1) year by the water customer. If more than one (1) year is required by the water customer to implement the required plan of implementation, an appeal may be made to the Carlsbad Municipal Water District's Water Commission for their recommendations to the Board of Directors by submitting such appeal in writing to the General Manager of the District.

5.1.4 Objections; Appeals. The water customer may file a notice of objection with the District within thirty (30) days after any notice of determination to comply is delivered or mailed to the customer, and may request reconsideration of the determination or modification of the proposed conditions or schedule for conversion. The objection must be in writing and specify the reasons for the objection. The preliminary determination shall be final if the customer does not file a timely objection. The General Manager or his

designee, shall review the objection with the objector, and shall confirm, modify or abandon the preliminary determination.

5.2 Development and Water Service Approvals:

5.2.1 Conditions. Upon application by a developer, owner or water customer (herein referred to as “applicant”) for a tentative map, subdivision map, land use permit, or other development project as defined by Government Code Section 65928, staff shall review the Master Plan and make a preliminary determination whether the current or proposed use of the subject property is required to be served with reclaimed water or to include facilities designed to accommodate the use of reclaimed water in the future. Based upon such determination, use of reclaimed water and provision of reclaimed water distribution systems or other facilities for the use of reclaimed water, and application for a permit for such use may be required as a condition of approval of any such application, in addition to any other conditions of approval.

5.2.2 Alterations and Remodeling. On a case by case basis, upon application for a permit for the alteration or remodeling of multi—family, commercial or industrial structures (including, for example, hotels), staff shall review the Master Plan and make a preliminary determination whether the subject property shall be required to be served with reclaimed water or to include facilities designed to accommodate the use of reclaimed water in the future. Based upon such determination, use of reclaimed water and provision of reclaimed water distribution systems or other facilities for the use of reclaimed water, and application for a permit for such use, may be required as a condition of approval of the application.

5.2.3 Notice Of Determination. A notice of the basis for the preliminary determination, proposed conditions of approval and schedule for compliance shall be provided to the applicant prior to approval of the development application.

5.2.4 Requested Service. On a case by case basis, upon application for a permit to use reclaimed water on a property not covered by Sections 5.1.1, 5.2.1, or 5.2.2 above, staff shall review the Master Plan and make a determination whether the subject property shall be served with reclaimed water. Based upon such determination, the application for the permit shall be accepted and processed subject to Section 5.3.

5.3 Reclaimed Water Permit Process: Upon a final determination by the General Manager that a property shall be served with reclaimed water, or adoption of a condition of development approval requiring use or accommodation of the use of reclaimed water, the water customer, owner or applicant shall obtain a reclaimed water permit.

5.3.1 Permit Conditions. The permit shall specify the design and operational requirements for the applicant's water distribution facilities and schedule for compliance, based on the rules and regulations adopted pursuant to Section 4.2.6 and shall require compliance with both the California Department of Health Services Wastewater Reclamation Criteria (see California Code of Administrative Regulations, Title 22), and requirements of the California Regional Water Quality Control Board.

5.3.2 Plan Approval. Plans for the reclaimed and non-reclaimed water distribution systems for the parcel shall be reviewed by the staff and a field inspection conducted before the permit is granted.

5.3.3 Permit Issuance. Upon approval of plans the permit shall be issued. Reclaimed water shall not be supplied to a property until inspection by staff determines that the applicant is in compliance with the permit conditions.

5.4 Temporary Use Of Potable Water: At the discretion of the General Manager, potable water may be made available on temporary basis until reclaimed water is available. Before the applicant receives temporary potable water, a water reclamation permit, as described in Section 5.3, must be obtained for new on-site distribution facilities. Prior to commencement of reclaimed water service, an inspection of the on-site facilities will be conducted to verify that the facilities have been maintained and are in compliance with the reclaimed water permit and current requirements for service. Upon verification of compliance, reclaimed water shall be served to the parcel for the intended use. If the facilities are not in compliance, the applicant shall be notified of the corrective actions necessary and shall have sixty (60) days to take such actions prior to initiation of enforcement proceedings.

5.5 Reclaimed Water Rate: The rate charged for reclaimed water shall be established by resolution of the Board of Directors.

Section 6. Regulation of Brine Discharge to Sewage Systems

6.1 Intent: The Carlsbad Municipal Water District recognizes that to maintain adequate wastewater quality for water reclamation treatment processes, and to protect public and private property, restrictions may be required on certain industrial, commercial, and residential waste discharges to a sewerage system that is located within a designated tributary area of an existing or planned reclamation facility.

6.2 Adopted Tributary Protection Measures: Waste discharges to the sewage system from any industrial, commercial, or residential source, may be restricted or prohibited upon a finding, following a noticed public hearing, that the type or class of discharge involved is capable of

causing or may cause substantial damage or harm to any sewage treatment or reclamation facility or to any significant user or users or potential user or users of reclaimed water within an area which has been planned for reclaimed water services.

Section 7. Sanctions

7.1 Public: Discharge by any person or entity of wastes or the use of reclaimed water in any manner in violation of this ordinance or of any permit issued hereunder is subject to prosecution for a misdemeanor.

7.2 Injunction: Whenever a discharge of wastes or use of reclaimed water is in violation or threatens to cause a violation of this ordinance, the District's attorney may seek injunctive relief as may be appropriate to enjoin such discharge or use.

7.3 Permit Revocation: In addition to any other statute or rule authorizing termination of water service, the District may revoke a permit issued hereunder if a violation of any provision of this ordinance is found to exist or if a discharge of wastes or use of reclaimed water causes or threatens to cause violation of this ordinance.

7.4 Penalty: Any owner and/or operator who violates this ordinance shall, for each day of violation, or portion thereof, be subject to a fine not exceeding $1,000. In addition, potable water service to the property may be discontinued.

Section 8. Validity

If any provision of this ordinance or the application thereof to any person or circumstance is held invalid, the remainder of the ordinance and the application of such provisions to other persons or circumstances shall not be affected thereby.

Section 9: The District finds that this Ordinance and actions taken hereafter pursuant to this Ordinance are exempt from the California Environmental Quality Act as actions taken to assure the preservation and enhancement of water resources in accordance with CEQA Guidelines Sections 15307 and 15308. The General Manager of the District is authorized and directed to file a Notice of Exemption as soon as possible following adoption of this Ordinance.

Section 10: This Ordinance shall become effective upon adoption. It shall be published one time in a newspaper of general circulation within the District within ten (10) days of its adoption. This Ordinance shall remain effective until repeal by the Board of Directors of the District.

PASSED, ADOPTED AND APPROVED by the Board of Directors of the Carlsbad Municipal Water District at a Regular Board Meeting held this 8th day of May, 1990, by the following roll call vote:

AYES: Board Members Lewis, Kulchin, Mamaux and Larson

NOES: None

ABSENT: Board Member Pettine

ATTEST:

ALETHA L. RAUTENKRANZ,
Secretary of the Board

APPENDIX D

DWR 2005 Urban Water Management Plan Checklist

Page # In Plan	Section of Law	Items to address
5	10642	Make plan available for public inspection before its adoption.
5		Adopt plan as prepared or as modified after the public hearing.
5	10620 (d) (2)	Coordinate the preparation of its plan with other appropriate agencies, including direct and indirect suppliers, wastewater, groundwater, and planning agencies (refer to Section 10633).
7	10631 (a)	Provide current and projected population in 5-year increments to 20 years.
6		Describe the climate and other demographic factors.
11	10631 (b)	Identify and quantify the existing and planned sources of water available in 5-year increments to 20 years.
24	10631 (d)	Describe opportunities for exchanges or transfers of water on short-term or long-term basis.
30	10631 (e) (1)	Quantify current and past water use in 5-year increments to 20 years.
30	10631 (e) (2)	Identify projected water uses among water use sectors in 5-year increments to 20 years.
23	10631 (c)	Describe average, single dry and multiple dry water year data.
23		Describe any plans to replace inconsistent water sources.
24	10632 (b)	Provide minimum water supply estimates based on driest three-year historic sequence.
21	10631 (c)	Describe the reliability of water supply.
23		Describe the vulnerability of water supply to seasonal or climatic shortage.
43	10633 (a)	Describe the wastewater collection and treatment systems in the supplier's service area.
43		Quantify the amount of wastewater collected and treated in the supplier's service area.
43		Describe the methods of wastewater disposal in the supplier's service area.
45	10633 (b)	Describe the type, place, and quantity of recycled water currently used in the supplier's service area.
47	10633 (c) (d)	Describe and quantify potential uses of recycled water in 5-year increments to 20 years.

Page # In Plan	Section of Law	Items to address
47		Describe the technical and economic feasibility of serving the potential users of recycled water.
52	10633 (e)	Describe the actions that may be taken to encourage recycled water use.
47	10633 (e)	Provide the projected acre-feet results of recycled water used per year.
52	10633 (f)	Provide a plan for optimizing the use of recycled water in the supplier's service area.
49		Provide actions to facilitate the installation of dual distribution systems and to promote recirculating uses.
33	10635 (a)	Provide an assessment of the reliability of the water supplier's water service to its customers during normal, single dry, and multiple dry water years.
33	10631 (c)	Compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in 5-year increments (refer to 10631 (c)).
33	10631 (c)	Compare normal, single dry, and multiple dry water year projected water supply sources available to the water supplier with the normal, single dry, multiple dry water year projected water uses (refer to 10631 (c)).
40	10632 (c)	Provide actions a water supplier will take to prepare for a catastrophe.
55	10632 (h)	Provide a copy of a draft water shortage contingency resolution or ordinance.
42	10632 (a)	Provide water shortage stages of action, including up to a 50 percent reduction outlining specific water supply conditions at each stage.
55	10632 (d)	Provide mandatory prohibitions.
55	10632 (f)	Provide penalties or charges.
55	10632 (e)	Provide consumption reduction methods.
42	10632 (g)	Provide an analysis of the impacts on the water supplier revenues and expenditures.
42		Provide measures to overcome revenue and expenditure impacts.
59	10632 (i)	Provide a mechanism for determining actual reductions in water use.

APPENDIX E

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 area wide, regional, watershed, or basin wide 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 quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

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

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

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

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

(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

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

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.