City of Ontario

Final Report

Urban Water Management Plan

December 2005

CITY OF ONTARIO

Urban Water Management Plan

FINAL REPORT

December 2005

MWH

Table of Contents

SECTION 1 – INTRODUCTION

1.1 Project Authorization 1-1
1.2 Report Overview 1-1
1.3 Urban Water Management Planning Act 1-1
1.4 Ontario's 2005 UWMP 1-3
1.5 Inter-Agency Coordination 1-3
1.6 Ontario's Service Area 1-5
1.6.1 Land Use 1-7
1.6.2 Climate 1-7
1.6.3 Topography 1-7

SECTION 2 – POPULATION AND WATER USE

2.1 Population 2-1
2.1.1 Historical Population 2-1
2.1.2 Future Population 2-2
2.2 Historical Water Use 2-4
2.3 Future Water Use 2-5
2.3.1 Projected Potable Water Demand 2-5
2.3.2 Projected Recycled Water Demand 2-7
2.3.3 Sales to Other Agencies 2-11
2.3.4 Water Losses 2-12
2.3.5 Total Water Use 2-13

SECTION 3 – WATER CONSERVATION

3.1 Introduction 3-1
3.2 Water Conservation Strategy of IEUA 3-2
3.2.1 2000-2005 Water Conservation 3-2
3.2.2 2005-2010 Water Conservation 3-3
3.2.3 2010 and Beyond 3-4
3.3 Water Conservation Strategy of Ontario 3-5
3.3.2 2006-2010 3-8
3.3.3 2010 and Beyond 3-11

SECTION 4 – WATER SUPPLIES

4.1 Introduction 4-1
4.2 Historical Water Supply 4-1
4.3 Existing and Future Water Supply Sources 4-2
4.3.1 Chino Basin Groundwater from City Wells 4-3
4.3.2 Chino Basin Groundwater from SAWC 4-6

4.3.3 Imported Water from WFA 4-6
4.3.4 Recycled Water from IEUA 4-7
4.3.5 Chino Basin Groundwater from CDA 4-7
4.3.6 Dry Year Yield Program 4-8
4.4 Summary of Water Supplies 4-9

SECTION 5 – WATER SUPPLY RELIABILTY

5.1 Water Service Reliability 5-1
5.2 Projected Demand and Supplies – Normal WAter Year 5-2
5.3 Projected Demand and Supplies – Single Dry Year 5-4
5.4 Projected Demand and Supplies – Multiple Dry Year 5-7
5.5 Inter-Agency Connections 5-19

SECTION 6 – WATER SHORTAGE CONTINGENCY PLAN

6.1 Urban WaTer Management Plan Act 6-1
6.2 Minimum Supply and Demands during Water Shortages 6-1
6.3 Water Shortage Stages 6-2
6.3.1 Water Use Restrictions 6-3
6.4 Catastrophe 6-4
6.5 Revenues and Expenditures 6-7
6.6 Water Use Monitoring Mechanisms 6-8

SECTION 7 – IMPLEMENTATION PLAN

7.1 Adoption Process 7-1
7.2 Implementation Plan 7-2
7.2.1 Water Conservation Plan 7-2
7.2.2 Recycled Water Plan 7-3
7.2.3 Water Supply Strategy 7-4
7.2.4 Water Shortage Contingency Plan 7-5
7.3 Conclusion 7-6

LIST OF TABLES

Table 1-1 Coordination with Appropriate Agencies 1-3
Table 1-2 Description of Coordination Agencies 1-4
Table 1-3 Agencies Indirectly Related to the City through IEUA 1-5
Table 1-4 Climate Summary 1-7
Table 2-1 Estimated and Projected Population 2-2
Table 2-2 Per Capita Water Use – City of Ontario 2-5
Table 2-3 Per Capita Water Use – MWD Service Area 2-5
Table 2-4 Past, Current, and Projected Water Deliveries 2-6
Table 2-5 Comparison of 2000 Recycled Water Projection and Actual Usage 2-7
Table 2-6 Recycled Water Demand Projection 2-8

Table 2-7 *Potential* Recycled Water Demand by User Type 2-8
Table 2-8 *Projected* Recycled Water Demand by User Type..... 2-10
Table 2-9 Existing Recycled Water Customers 2-10
Table 2-10 Sales to Other Agencies..... 2-11
Table 2-11 Historical and Projected Water Loss 2-13
Table 2-12 Total Water Use – Without Water Conservation 2-13
Table 2-13 Total Water Use – With Water Conservation..... 2-14
Table 3-1 Best Management Practices..... 3-1
Table 3-2 IEUA's Water Conservation Goals (Active and Passive) 3-3
Table 3-3 IEUA's Water Conservation Goals (Active and Passive) 3-4
Table 3-4 BMP Implementation Status - City of Ontario..... 3-5
Table 3-5 Water Conservation Estimate by the End of FY 2004/2005 (Active Programs) 3-7
Table 3-6 Ontario's Active Water Conservation Implementation Plan..... 3-9
Table 3-7 Comparison of Water Conservation Estimates and Goals for 2006-2010 3-10
Table 4-1 Historical Water Supply Mix 4-2
Table 4-2 Groundwater Pumping Rights 4-5
Table 4-3 Historical Amount of Groundwater Pumped..... 4-5
Table 4-4 Projected Amount of Groundwater Pumped 4-5
Table 4-5 City's Share of Groundwater Recharge..... 4-6
Table 4-6 Current and Planned Water Supplies – Normal Year Scenario..... 4-9
Table 4-7 Current and Planned Water Supplies – Dry Year Scenario..... 4-10
Table 5-1 Supply Reliability per Source..... 5-2
Table 5-2 Projected Normal Water Supply..... 5-3
Table 5-3 Projected Normal Year Water Demand..... 5-3
Table 5-4 Normal Year Supply and Demand Comparison 5-4
Table 5-5 Groundwater Pumping Surplus in Normal Year Conditions..... 5-4
Table 5-6 Projected Single Dry Year Water Supply..... 5-5
Table 5-7 Projected Single Dry Year Water Demand 5-6
Table 5-8 Single Dry Year Supply and Demand Comparison..... 5-6
Table 5-9 Groundwater Pumping Surplus in Single Dry Year Conditions 5-6
Table 5-10 Projected Supply for a Multiple Dry Year Period ending in 2010 5-7
Table 5-11 Projected Demand for a Multiple Dry Year Period ending in 2010..... 5-8
Table 5-12 Supply and Demand Comparison for a Multiple Dry Year Period ending in 2010 .. 5-8
Table 5-13 Groundwater Pumping Surplus in Multiple Dry Year Conditions ending in 2010... 5-9
Table 5-14 Projected Supply for a Multiple Dry Year Period ending in 2015 5-10
Table 5-15 Projected Demand for a Multiple Dry Year Period ending in 2015..... 5-11
Table 5-16 Supply and Demand Comparison for a Multiple Dry Year Period ending in 2015 5-11
Table 5-17 Groundwater Pumping Surplus in Multiple Dry Year Conditions ending in 2015. 5-11
Table 5-18 Projected Supply for a Multiple Dry Year Period ending in 2020 5-15
Table 5-19 Projected Demand for a Multiple Dry Year Period ending in 2020..... 5-15
Table 5-20 Supply and Demand Comparison for a Multiple Dry Year Period ending in 2020 5-16
Table 5-21 Groundwater Pumping Surplus in Multiple Dry Year Conditions ending in 2020. 5-16
Table 5-22 Projected Supply for a Multiple Dry Year Period ending in 2025 5-16
Table 5-23 Projected Demand for a Multiple Dry Year Period ending in 2025..... 5-17
Table 5-24 Supply and Demand Comparison for a Multiple Dry Year Period ending in 2025 5-17
Table 5-25 Groundwater Pumping Surplus in Multiple Dry Year Conditions ending in 2025. 5-18

Table 5-26 Projected Supply for a Multiple Dry Year Period ending in 2030 5-18
Table 5-27 Projected Demand for a Multiple Dry Year Period ending in 2030 5-19
Table 5-28 Supply and Demand Comparison for a Multiple Dry Year Period ending in 2030 5-19
Table 5-29 Groundwater Pumping Surplus in Multiple Dry Year Conditions ending in 2030. 5-19
Table 5-30 Existing and Proposed Inter-Agency Connections 5-20
Table 6-1 Three-Year Minimum Water Supply 6-2
Table 6-2 Water Supply Shortage Stages and Conditions 6-3
Table 6-3 Mandatory Prohibitions and Stage 6-3
Table 6-4 Penalties and Charges 6-4
Table 6-5 Other Consumption Reduction Methods 6-5
Table 6-6 Preparation Actions for a Catastrophe 6-6
Table 6-7 Estimated Revenue Impacts at Various Demand Reduction Levels 6-7
Table 6-8 Proposed Measures to Overcome Revenue and Expenditure Impacts 6-8
Table 6-9 Water Use Monitoring Mechanisms 6-8
Table 7-1 Projected Water Use through 2030 7-2

LIST OF FIGURES

Figure 1-1 City of Ontario Service Area 1-6
Figure 2-1 Historical Population of the City 2-1
Figure 2-2 Historical and Projected Population Trend 2-3
Figure 2-3 Historical Water Consumption 2-4
Figure 2-4 Water Use Distribution by Land Use Category 2-7
Figure 2-5 Historical Water Consumption and Production 2-12
Figure 3-1 Comparison of Water Conservation Estimates and Goals for 2006-2010 3-11
Figure 3-2 Comparison of Water Conservation Estimates and Goals for 2005-2030 3-12
Figure 4-1 Historical Water Supply Mix 4-3
Figure 7-1 Projected Water Use through 2030 7-3

APPENDICES

Appendix A: References A-1
Appendix B: Urban Water Management Plan Act B-1
Appendix C: BMP Activity Reports 2003 and 2004 ..... C-1
Appendix D: Water Conservation Details D-1
Appendix E: Water Demand Projections by Year E-1
Appendix F: Adoption Resolution F-1

LOOKUP TABLE FOR THE DWR

DWR Table	Report Table
Table 1	Table 1-1 Coordination with Appropriate Agencies
Table 2	Table 2-1 Estimated and Projected Population
Table 3	Table 1-4 Climate Summary
Table 4	Table 4-5 Current and Planned Water Supplies – Normal Year Scenario
	Table 4-6 Current and Planned Water Supplies – Dry Year Scenario
Table 5	Table 4-2 Groundwater Pumping Rights
Table 6	Table 4-3 Historical Amount of Groundwater Pumped
Table 7	Table 4-4 Projected Amount of Groundwater Pumped
Table 8	Table 5-1 Supply Reliability per Source
Table 9	Not included in this UWMP
Table 10	Not included in this UWMP
Table 11	Not included in this UWMP
Table 12	Table 2-4 Past, Current, and Projected Water Deliveries
Table 13	Table 2-10 Sales to Other Agencies
Table 14	Table 2-6 Recycled Water Demand Projection
	Table 2-11 Historical and Projected Water Loss
	Table 2-12 Total Water Use – Without Water Conservation
Table 15	Table 2-13 Total Water Use – With Water Conservation
Table 16	Not included in this UWMP
Table 17	Not included in this UWMP
Table 18	Not included in this UWMP
Table 19	Not included in this UWMP
Table 20	Not included in this UWMP
Table 21	Not included in this UWMP
Table 22	Not included in this UWMP
Table 23	Table 6-2 Water Supply Shortage Stages and Conditions
Table 24	Table 6-1 Three-Year Minimum Water Supply
Table 25	Table 6-6 Preparation Actions for a Catastrophe
Table 26	Table 6-3 Mandatory Prohibitions and Stage
Table 27	Table 6-5 Other Consumption Reduction Methods
Table 28	Table 6-4 Penalties and Charges
Table 29	Table 6-7 Proposed Measures to Overcome Revenue Impacts
Table 30	Table 6-8 Proposed Measures to Overcome Expenditure Impacts
Table 31	Table 6-9 Water Use Monitoring Mechanisms
Table 32	Table 1-1 Coordination with Appropriate Agencies
Table 33	Not included in this UWMP
Table 34	Not included in this UWMP
Table 35	Table 2-7 Potential Recycled Water Demand by User Type
Table 36	Table 2-8 Projected Recycled Water Demand by User Type

LOOKUP TABLE FOR THE DWR (Continued)

DWR Table	Report Table
Table 37	Table 2-5 Comparison of 2000 Recycled Water Projection and Actual Usage
Table 38	Not included in this UWMP
Table 39	Not included in this UWMP
Table 40	Table 5-2 Projected Normal Water Supply
Table 41	Table 5-3 Projected Normal Year Water Demand
Table 42	Table 5-4 Normal Year Supply and Demand Comparison
Table 43	Table 5-6 Projected Single Dry Year Water Supply
Table 44	Table 5-7 Projected Single Dry Year Water Demand
Table 45	Table 5-8 Single Dry Year Supply and Demand Comparison
Table 46	Table 5-10 Projected Supply for a Multiple Dry Year Period ending in 2010
Table 47	Table 5-11 Projected Demand for a Multiple Dry Year Period ending in 2010
Table 48	Table 5-12 Supply and Demand Comparison for a Multiple Dry Year Period ending in 2010
Table 49	Table 5-14 Projected Supply for a Multiple Dry Year Period ending in 2015
Table 50	Table 5-15 Projected Demand for a Multiple Dry Year Period ending in 2015
Table 51	Table 5-16 Supply and Demand Comparison for a Multiple Dry Year Period ending in 2015
Table 52	Table 5-18 Projected Supply for a Multiple Dry Year Period ending in 2020
Table 53	Table 5-19 Projected Demand for a Multiple Dry Year Period ending in 2020
Table 54	Table 5-20 Supply and Demand Comparison for a Multiple Dry Year Period ending in 2020
Table 55	Table 5-22 Projected Supply for a Multiple Dry Year Period ending in 2025
Table 56	Table 5-23 Projected Demand for a Multiple Dry Year Period ending in 2025
Table 57	Table 5-24 Supply and Demand Comparison for a Multiple Dry Year Period ending in 2025

List of Abbreviations

To conserve space and improve readability, abbreviations have been used in this report. Each abbreviation has been spelled out in the text the first time it is used. Subsequent usage of the term is usually identified by its abbreviation. The abbreviations used are as follows:

List of Abbreviations

Abbreviation	Description
acre-ft/yr	acre-feet per year
AFY	acre-feet per year
Act	Urban Water Management Planning Act (Water Code Section 10610-10656)
ADD	Average Day Demand
BMP's	Best Management Practices
CBWM	Chino Basin Watermaster
CCI	Construction Cost Index
CDA	Chino Basin Desalter Authority
CDA-I	Chino Desalter No. 1 (located in the City of Chino)
CDA-II	Chino Desalter No. 2 (located in JCSD)
CDA-III	Chino Desalter No. 3 (no location)
City	City of Ontario
CII	Commercial-Industrial-Institutional
CIP	Capital Improvement Program
CUWCC	California Urban Water Conservation Council
CVWD	Cucamonga Valley Water District
DMM	Demand Management Measures
du	dwelling unit
DWR	California State Department of Water Resources
DYY	Dry Year Yield
ENR	Engineering News Record
ERP	Emergency Response Plan
ft/s	feet per second
FWC	Fontana Water Company
FY	Fiscal Year
GP	General Plan
gpd	gallons per day
gpd/cap	gallons per day per capita
FY	Fiscal Year
HDR	High Density Residential
HECW	High Efficiency Clothes Washers
HGL	Hydraulic Grade Line
IEUA	Inland Empire Utilities Agency
INF	Infrastructure
IRP	Integrated Resources Plan
JCSD	Jurupa Community Services District
LDR	Low Density Residential
MDD	Maximum Day Demand
MDR	Medium Density Residential

List of Abbreviations (Continued)

MFR	Multi Family Residential
MOU	Memorandum of Understanding regarding water conservation in California
MWD	Metropolitan Water District of Southern California
MVWD	Monte Vista Water District
NMC	New Model Colony
NC	Neighborhood Commercial
OBMP	Optimum Basin Management Plan
OMC	Old Model Colony
OSY	Operating Safe Yield
RO	Reverse Osmosis
SAWC	San Antonio Water Company
SAWRC	Santa Ana River Water Company
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SFR	Single Family Residential
SR	State Route
SWP	State Water Project
TDS	Total Dissolved Solids
TVMWD	Three Valleys Municipal Water District
ULF	Ultra Low Flow (toilets)
UWMP	Urban Water Management Plan
WEWAC	Water Education Water Awareness Committee
WDF	Water demand factor
WFA	Water Facilities Authority
WMP	Water Master Plan

Section 1
Introduction

1.1 PROJECT AUTHORIZATION

This Urban Water Management Plan (UWMP) has been prepared in accordance with the agreement for water master planning consulting services between the City of Ontario (City) and MWH Americas, Inc. (MWH) dated July 20, 2004. This report refers to the scope of services of Task 5 of this contract only. The work related to the remaining tasks are presented in separate reports.

1.2 REPORT OVERVIEW

This UWMP is divided into seven sections. This section provides an brief description of the Urban Water Management Planning Act, the relation of this UWMP with the regional UWMP prepared by the Inland Empire Utilities Agency (IEUA) and other water agencies. This section also included a description of the City's service area, land use, climate, and topography.

Section 2 describes the City's historical and projected population through year 2030, which is the planning horizon of this report. The historical and projected potable and recycled water demands associated with the population are also discussed in this section. **Section 3** describes the water conservation efforts of the City to date and through year 2030, including a more detailed water conservation plan for the period 2006-2010. **Section 4** provides an overview of the City's water supplies, the historical usage of various supply sources and the projected water supply mix through year 2030 as presented in the *2005 Water and Recycled Water Master Plan Update* (MWH, 2005a). **Section 5** discusses the water supply reliability by comparing the projected water demands presented in Section 2 with the available supplies presented in Section 4. Normal Year, Single Dry Year, and Multiple Dry Year scenarios are evaluated through year 2030. The Water Shortage Contingency Plan is discussed in **Section 6**, and the UWMP Implementation Plan is provided in **Section 7**. A list of references used for the preparation of this UWMP is provided in **Appendix A**.

The majority tables presented in this report correspond with the sample table formats included in the *Guidebook to assist water suppliers in the preparation of a 2005 UWMP* prepared by the California Department of Water Resources (DWR, 2005). To facilitate DWR's review of this report, a lookup table is included in the Table of Contents which lists all the sample tables presented in DWR's Guidebook that are included in this report with the corresponding table numbering in this UWMP.

1.3 URBAN WATER MANAGEMENT PLANNING ACT

This is the UWMP for the City for the period of 2006 through 2010. This report has been prepared in compliance with California Water Code, Division 6, Part 2.6. The Urban Water Management Planning Act (Act; Water Code Section 10610 et. Seq.) became effective on

January 1, 1984. Multiple amendments have been added to the Act, the most recent occurring in 2004.

The Act requires that every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually (AFY) prepare and adopt an UWMP. The Act requires urban water suppliers to prepare an UWMP that describes and evaluates sources of supply, reasonable and practical efficient water uses, recycling and water demand management activities. The amendments require additional actions addressing urban water management plan preparation and considerations of such issues as metering, drought contingency planning, and water recycling. The Act requires that each water supplier prepare or update its UWMP every five years before December 31, in years ending in five and zero. A copy of the Act is included in **Appendix B**.

The requirements for the preparation of an UWMP set forth in the California Water Code Sections 10610 through 10656 are 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. The need for the planning and management of urban water supplies are based on the following declaration of the State of California Legislature (Water Code 10610):

- The waters of the state are a limited and renewable resource subject to ever-increasing demands.
- 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.
- A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.
- 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.
- Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.
- 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.
- 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.
- Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.
- The quality of source supplies can have a significant impact on water management strategies and supply reliability.

According to the Act, this UWMP will be submitted to the DWR within 30 days of adoption by the City Council of the City of Ontario.

1.4 ONTARIO'S 2005 UWMP

The IEUA prepared an UWMP in year 2000 in compliance with the Act, which was adopted by the City on November 20, 2001 (Ontario, 2001). This Ontario UWMP updates the Ontario information as presented in the IEUA's 2000 UWMP. It provides a greater level of detail on Ontario specific water demands, water supplies, and water conservation activities and it incorporates a number of significant changes in the region's water planning and management activities that have taken place in the last five years. These changes include, but are not limited to, the Dry Year Yield (DYY) program of Metropolitan Water District of Southern California (MWD), the Chino Basin Recharge Master Plan, IEUA's Recycled Water Implementation Plan, and the City's Water and Recycled Water Master Plan (WMP) Update.

1.5 INTER-AGENCY COORDINATION

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 (Water Code 10620.d.2). The City is a member agency of the IEUA, Water Facilities Authority (WFA), Chino Basin Desalter Authority (CDA), and the Chino Basin Watermaster (CBWM). The City coordinated the preparation of this UWMP with these four regional agencies. In addition, the City has seven neighboring water retail agencies, City of Chino, City of Upland, Fontana Water Company (FWC), Jurupa Community Services District (JCSD), Monte Vista Water District (MVWD), Cucamonga Valley Water District (CVWD) and San Antonio Water Company (SAWC). The actions the City has taken to coordinate the preparation of this UWMP with these agencies is summarized in **Table 1-1**. A brief description of these agencies is summarized in **Table 1-2.**

Table 1-1
Coordination with Appropriate Agencies

Water Agency Category	Participated in developing the plan	Was contacted for assistance?	Was sent a copy of the draft plan?(1)	Commented on the draft?	Attended public meetings?	Was sent a notice of intention to adopt?	Not Involved or no Information
Wholesale Water Suppliers	WFA	Yes	Yes	No	No	No	No
	MWD	Yes	Yes	No	No	No	No
	CDA	Yes	Yes	No	No	No	No
	IEUA	Yes	Yes	Yes	No	No	No
Water Mgmt Agencies	CBWM	Yes	Yes	No	No	No	No
Neighboring Water Agencies	City of Chino	No	Yes	No	No	No	No
	City of Upland	No	Yes	No	No	No	No
	MVWD	No	Yes	No	No	No	No
	FWC	No	Yes	No	No	No	No
	JCSD	No	Yes	No	No	No	No
	SAWC	No	Yes	No	No	No	No
	CVWD	No	Yes	No	No	No	No

This table corresponds to DWR Table 1 and 32. (1) Includes electronic copies available through the City's website.

Table 1-2
Description of Coordination Agencies

Agency	Description
IEUA	The Inland Empire Utilities Agency collects and treats wastewater and distributes recycled water to its member agencies and groundwater recharge basins in a 242 square mile service area. Its member agencies are the cities of Chino, Chino Hills, Ontario, Upland, Fontana, Cucamonga Valley Water District, Fontana Water Company, Monte Vista Water District, and San Antonio Water Company. IEUA is a member agency of MWD and a member of the Chino Basin Watermaster Board of Directors.
WFA	The Water Facilities Authority is a joint powers authority responsible for the operation and maintenance of the Aqua de Lejos Water Treatment Plant that treats imported State Water Project water from MWD through IEUA. Member of WFA are the cities of Chino, Chino Hills, Ontario, Upland, Monte Vista Water District, and Cucamonga Valley Water District.
CDA	The Chino Basin Desalter Authority is a joint powers authority responsible for the operation and maintenance of the CDA-I and the design, construction, and operation of the Chino I Desalter Expansion and the CDA-II.
CBWM	The Chino Basin Watermaster is responsible for the administrating adjudicated water rights and managing groundwater resources within the watershed of the Chino Basin.
City of Chino	The City of Chino serves water to approximately 66,000 residents in the city and some unincorporated areas in San Bernardino County and encompasses approximately 25 square miles.
City of Upland	The City of Upland serves water to approximately 70,000 residents in the city and encompasses approximately 15 square miles.
MVWD	Monte Vista Water District is an independent special district that serves a population of about 42,000 in the City of Montclair, portions of the City of Chino and some unincorporated areas in San Bernardino County. MWVD encompasses approximately 30 square miles.
FWC	Fontana Water Company is a retail investor-owned utility company that provides water to about 130,000 residents in the City of Fontana and some portions of the cities of Rancho Cucamonga and Rialto. FWC encompasses approximately 51 square miles.
JCSD	The Jurupa Community Services District provides water to approximately 60,000 residents and encompasses approximately 48 square miles (JSCD, 2005).
SAWD	The San Antonio Water Company serves water to approximately 1,200 residents in San Antonio Heights which is an unincorporated areas in San Bernardino County (SAWC, 2005).
CVWD	The Cucamonga Valley Water District provides water to approximately 140,000 residents and encompasses approximately 49 square miles (MWH, 2005a).

In addition to the agencies listed in **Table 1-1**, the City is indirectly related to other water retail agencies through its membership with IEUA and the CBWM. These agencies are not included in the inter-agency coordination, as this coordination is part of the preparation of IEUA's UWMP Update. These agencies are listed in **Table 1-3.**

Table 1-3
Agencies Indirectly Related to the City through IEUA

Other Regional Water Agencies	Other Retail Water Agencies
Metropolitan Water District of Southern California	City of Chino Hills
Santa Ana Watershed Project Authority	City of Fontana
	City of Montclair
	City of Norco
	City of Pomona
	Fontana Union Water Company
	Los Serranos Country Club
	Maygold Mutual Water Company
	Monte Vista Irrigation Company
	Santa Ana River Water Company
	San Bernardino County (Prado Shooting Park)
	Southern California Water Company
	West End Consolidated Water Company
	West Valley Water District

1.6 ONTARIO'S SERVICE AREA

The City is located in the western portion of San Bernardino County, California, and is surrounded by the City of Montclair to the west, the City of Upland and the City of Rancho Cucamonga to the north, the City of Chino to the southwest, the City of Fontana to the northeast, and some unincorporated areas of Riverside County to the southeast. The location of the City is shown on **Figure 1-1**. Also shown on this figure is that the City is traversed by four major freeways, Interstate 10, Interstate 15, and State Route (SR) 60, and the City is also the home of the Ontario International Airport.

The study area of this UWMP is the water service area of the City. With over 32,000 water meters, the City currently serves a population of approximately 169,000 people. As shown on **Figure 1-1**, the study area coincides with the City boundaries, with the exception of two small areas in the north and the northeast corner that are served by CVWD.

The City is divided into two distinct areas, the Old Model Colony (OMC) in the north and the New Model Colony (NMC) in the south, with Riverside Drive delineating the majority of the boundary between the two areas. The OMC is the existing City and consists mainly of residential, industrial, and commercial developments. The OMC comprises about 23,000 acres or 36 square miles. The NMC is an 8,200-acre agricultural area that was annexed in 1999. With the addition of the NMC, the City's service area is expanded from 36 square miles to about 49 square miles, which equates to a 26 percent increase. The NMC is currently dominated with extensive agricultural activity. Rapid development of the eastern part of the NMC is about to start. Completion of the first homes is anticipated in late 2006 and occupancies in early 2007. The development of the NMC will significantly increase the City's population in the coming decades. The historical and projected population of the City are discussed in **Section 2**.

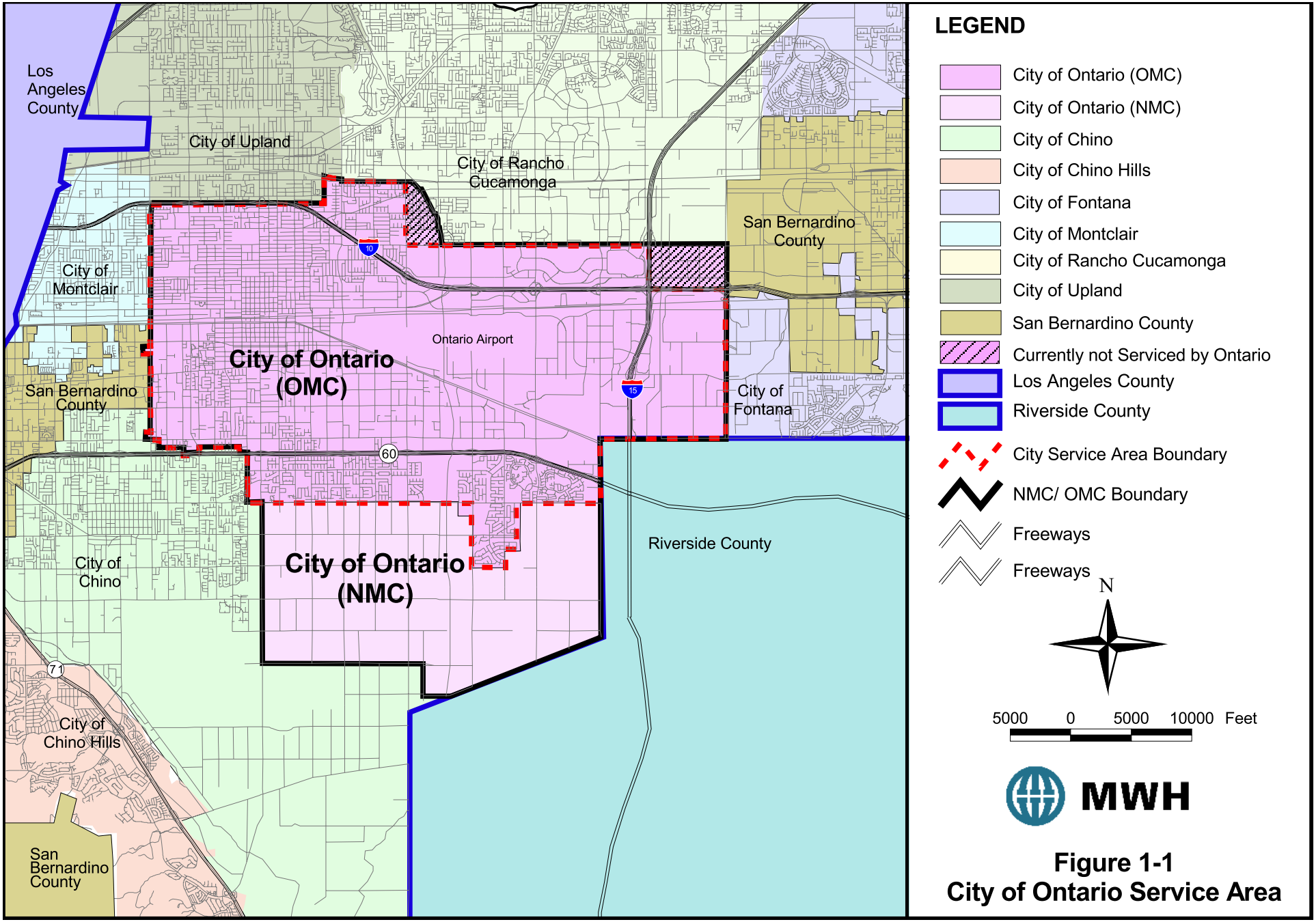


Figure 1-1
City of Ontario Service Area

1.6.1 Land Use

The primary land use categories in the OMC are Single Family Residential (SFR) and industrial. Additionally, the OMC has Multi Family Residential (MFR), commercial, infrastructure, parks, schools, and institutional land uses. The City is also home of the Ontario International Airport and its airport-related businesses. The NMC is primarily characterized by agricultural land use, mostly of dairy and poultry farms along with cultivated crops, fallow fields, and plant nurseries. The NMC is planned to be converted to predominantly residential area with some schools, parks, and commercial land uses over the next 25 years.

1.6.2 Climate

The City is located within the desert climate zone of Southern California. The region receives an average annual rainfall of about 15 inches. Monthly average temperatures range from a low of 66 degrees in December and January to a summer high average of 92 degrees. Records show daily summer temperatures as high as 114 degrees. The monthly average rainfall, temperature, and evapotranspiration rate in the City's service area are listed in **Table 1-4**.

Table 1-4
Climate Summary

Month	Standard Average Eto(1) (in)	Average Rainfall (2) (in)	Average Max Temperature(2) (F)	Average Min Temperature(2) (F)
January	2.17	3.65	66.8	44.0
February	2.80	2.85	69.4	45.0
March	4.03	2.80	70.1	46.3
April	5.10	1.13	74.5	48.4
May	5.89	0.26	79.9	52.6
June	6.60	0.04	86.7	56.6
July	7.44	0.01	95.0	62.2
August	6.82	0.11	94.4	62.9
September	5.70	0.34	91.3	61.3
October	4.03	0.34	83.0	55.4
November	2.70	1.72	73.6	48.5
December	1.86	2.07	68.3	44.4
Annual	**55.10**	**15.32**	**79.4**	**52.3**

This table corresponds to DWR Table 3.
(1) California Irrigation Management Information System Dept. of Water Resources Office of Water Use Efficiency (CIMIS, 2005)
(2) Western Regional Climate Center, Fontana Kaiser, CA (WRCC, 2005)

1.6.3 Topography

The City is located on relatively flat terrain with a general rise in elevation as one moves from the southern boundary to the northeastern corner of the City. Elevations range from a low of approximately 550 feet above mean sea level to a high of approximately 1,200 feet. The City overlays a portion of the Chino Groundwater Basin, which is located in the northern part of the Santa Ana Watershed. The principal drainage direction is north to south from the San Bernardino Mountains and foothills to Prado Lake and the Prado Flood Control Basin located south of the City of Chino. The primary creeks and washes within the City that convey storm

water are the West Cucamonga Creek, Cucamonga Creek, and Deer Lower Creek. Once the water reaches Prado Lake, it is discharged through the outlet of Prado Dam into the Santa Ana River which ultimately discharges into the Pacific Ocean.

Section 2
Population and Water Use

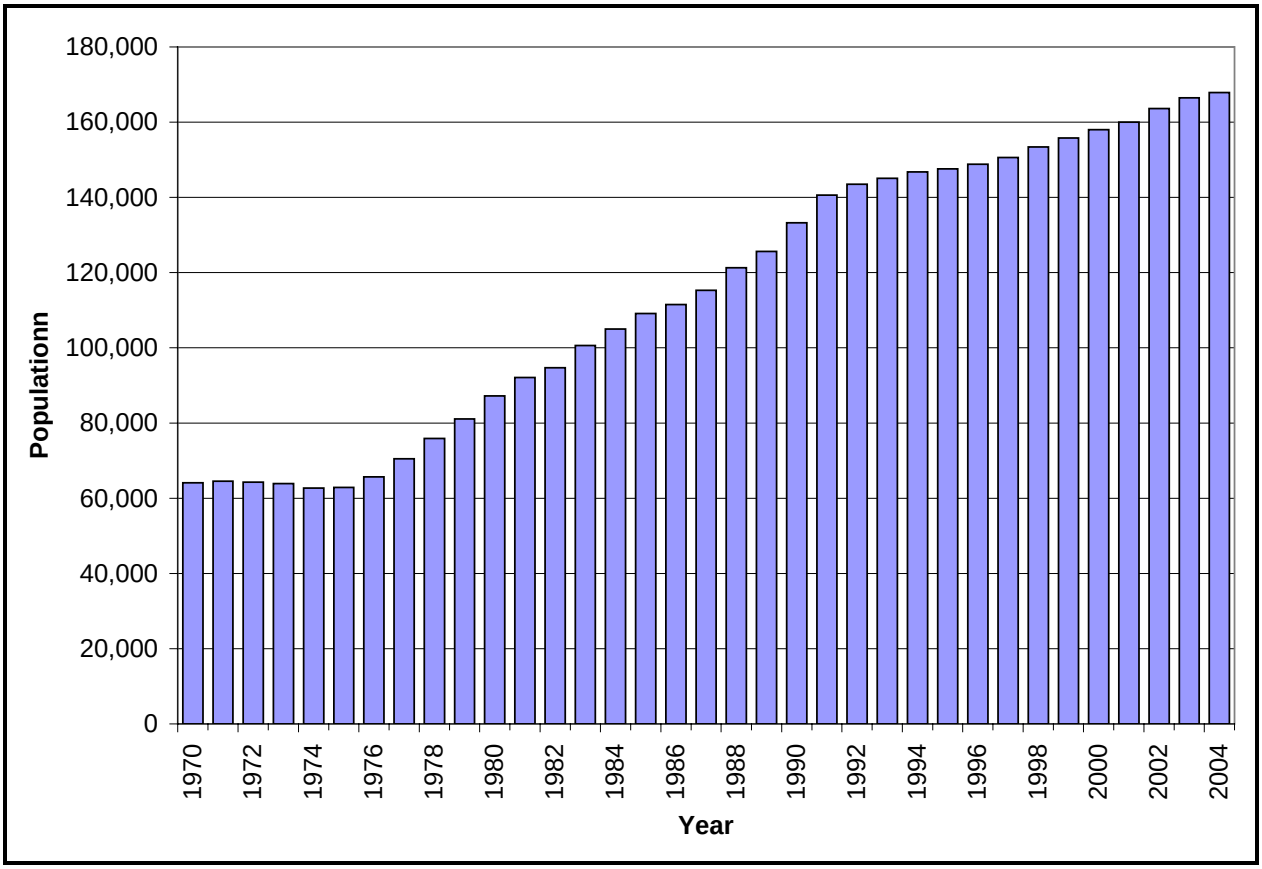
This section describes the historical and projected population for the City of Ontario (City) followed by a discussion of the historical and projected water use. The potable water and recycled water demands are discussed as well as the estimated water losses and water conservation. The information presented here is based on the 2005 Water and Recycled Water Master Plan (MWH,2005).

2.1 POPULATION

2.1.1 Historical Population

The historical population from the year 1970 to 2004 for the City is shown on **Figure 2-1**. The City had a fairly steady population throughout the early 1970s, and began to steadily increase after 1975. This population growth will continue with the development of the New Model Colony (NMC) in the coming decades.

Figure 2-1
Historical Population of the City



The existing (year 2004) population of the City is estimated at approximately 167,900 people. The overwhelming majority of the City's population (98.5 percent) resides in the OMC. It is estimated that the existing (2004) population of the NMC is not more than about 2,500 people (1.5 percent).

2.1.2 Future Population

Once the City is fully developed and has reached build out conditions, the population is expected to rise to nearly 305,500 residents (SCAG, 2004). This corresponds to a population increase of about 81 percent or 3 percent per year.

This population projection was verified in the draft 2005 Water and Recycled Water Master Plan (2005 WMP) Update (MWH, 2005a) using land use information from the City's General Plan, Specific Plans, and aerial photography. The population projections presented in the 2005 WMP show a population increase from 169,125 people to 297,670 people. Hence, the population projection of SCAG is about 7,839 people higher. This difference of 3 percent could be due to different land use, phasing, or population density assumptions.

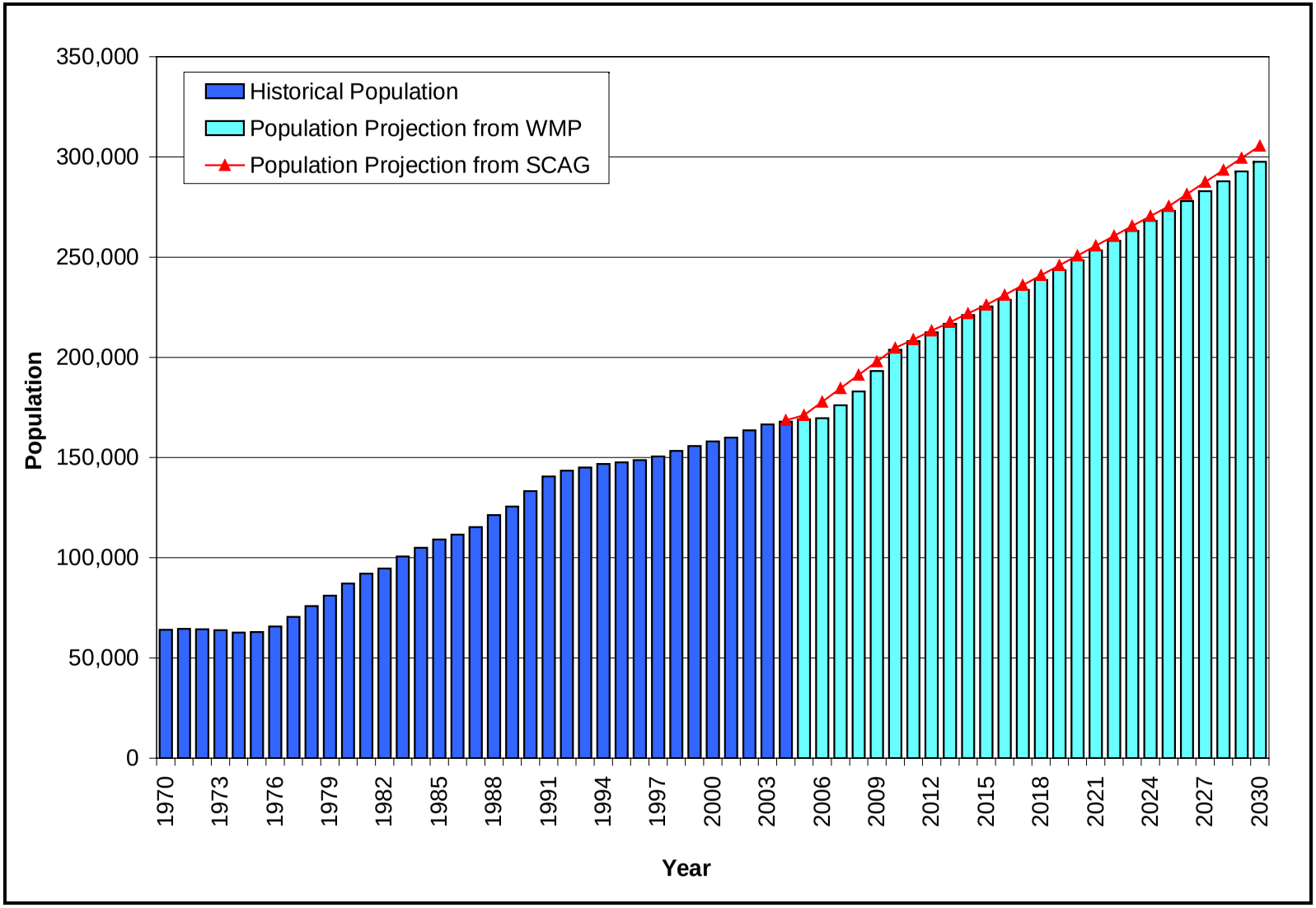
The population projections used in this UWMP are based on SCAG data, which is consistent with the population projections presented in IEUA's 2005 UWMP Update. The projections are presented in 5-year increments in **Table 2-1**, while the historical and projected population is shown on **Figure 2-2**. This figure also shows the projected by SCAG for the period 2004 through 2030.

Table 2-1
Estimated and Projected Population

Population Projection Source	2005	2010	2015	2020	2025	2030
WMP Projections (1)	169,125	203,811	225,412	248,424	273,047	297,670
SCAG Projections (2,3)	171,154	204,645	226,182	250,811	275,440	305,509
Difference	(2,029)	(834)	(770)	(2,387)	(2,393)	(7,839)

This table corresponds to DWR Table 2.
(1) 2005 Water and Recycled Water Master Plan Update (MWH, 2005a).
(2) Southern California Association of Governments 2004 population projections (SCAG,2004).
(3) 2005 Urban Water Management Plan (IEUA, 2005d).

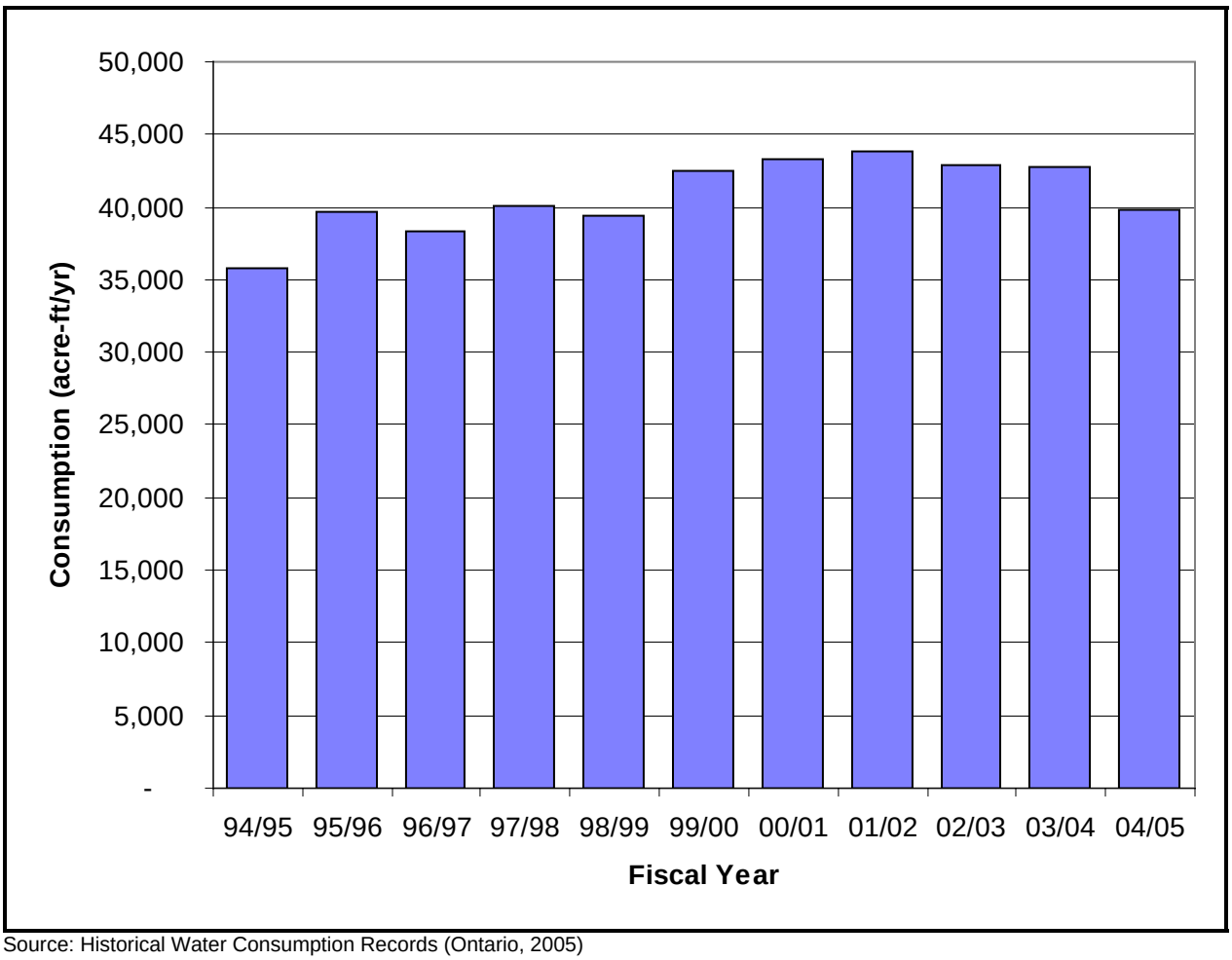
Figure 2-2
Historical and Projected Population Trend



2.2 HISTORICAL WATER USE

The historical water use of the City is shown on **Figure 2-3**. As shown in this figure, the City's water demand has increased from approximately 37,500 acre-feet per year (AFY) in fiscal year (FY)1994/1995 to approximately 39,800 AFY in FY 2004/2005.

Figure 2-3
Historical Water Consumption



Source: Historical Water Consumption Records (Ontario, 2005)

Based on the historical population records and the metered consumption, the water usage trend per capita is calculated for the years 2000 through 2004. It should be noted that this usage does not express the water consumption per person in gallons per day per capita (gpd/cap) as the total water usage also includes non-residential demands such as industrial, commercial, schools, parks, fire fighting, etc. The per capita water usage of residential accounts only is listed separately in **Table 2-2**.

As shown in **Table 2-2**, the total per capita water use ranges from 224 to 243 gpd/cap. This is similar to the average per capita water usage of the entire Inland Empire Region, which ranges from 241 gpcd to 279 gpcd (IEUA, 2005).

Table 2-2
Per Capita Water Use – City of Ontario

Calendar Year	2000	2001	2002	2003	2004
Population	158,007	160,000	163,600	166,500	167,900
Total Water Usage (AFY)(1)	43,028	43,109	44,194	41,772	42,087
Residential Water Usage (AFY) (1)	24,644	24,393	25,050	23,830	23,715
Capita Water Use (gpd/cap)	243	241	241	224	224
Residential Capita Water Use (gpd/cap)	139	136	137	128	126

(1) Source: Public Water System Statistics (Ontario, 2000), (Ontario, 2001a), (Ontario, 2002a), (Ontario, 2003), (Ontario, 2004)

Typically, areas that are located in dry and hot climate zones are expected to have higher water use rates than areas that are located in wet and cooler climate zones. The City is also characterized by industrial land use, which results in a higher water usage per capita. For comparison purposes, the per capita water use in MWD's service areas are presented in **Table 2-3**.

Table 2-3
Per Capita Water Use – MWD Service Area

County	1980(1) (gpcd)	1985(1) (gpcd)	1990(1) (gpcd)	1995(1) (gpcd)	2000(1) (gpcd)	2005(2) (gpcd)
Los Angeles County	191	197	188	164	175	171
Orange County	224	229	233	197	205	192
Riverside County	275	262	304	226	258	258
San Bernardino County	325	318	281	221	n/a	255
San Diego County	186	213	209	164	185	179
Ventura County	206	211	228	179	198	205
Weighted Average of MWD	**203**	**212**	**210**	**176**	**n/a**	**187**

(1) Source: Table I-4 of the MWD UWMP (MWD, 2005)
(2) Source: Table 2-5 of the IEUA UWMP (IEUA, 2005)

2.3 FUTURE WATER USE

2.3.1 Projected Potable Water Demand

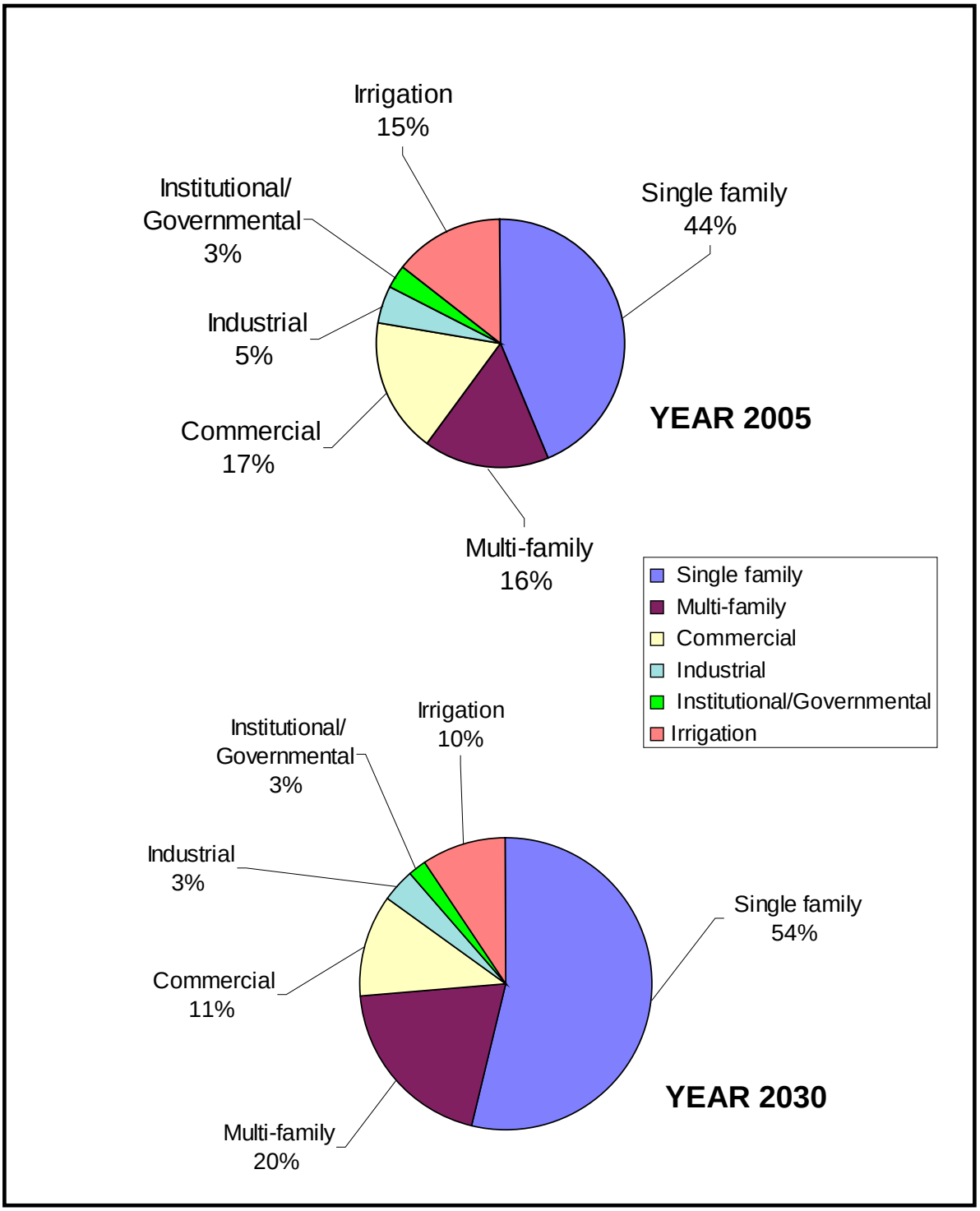
As presented in section 2.1, the population of the City is projected to increase from 167,900 (year 2004) to about 305,500 residents in year 2030. This population increase, which will primarily occur in the NMC, will result in a substantial increase in water deliveries. The projected water demands for the period 2005 through 2030 in five year increments in listed in **Table 2-4** and shown on
Figure 2-4.

Table 2-4
Past, Current, and Projected Water Deliveries

Year		Water Use	Single Family	Multi-Family	Commercial	Industrial	Institutional Governmental	Irrigation	Other[4]	Total[5]
2000[1]	metered	# of accounts[1]	25,600	1,988	2,089	342	258	1,011	340	31,628
		Deliveries (AFY) [1]	17,785	6,859	5,010	3,873	619	5,979	2,902	43,028
2005	metered	# of accounts[2]	26,050	2,099	2,840	349	341	1,033		32,712
		Deliveries (AFY) [3]	17,222	6,454	6,836	2,040	1,132	5,743		39,428
2010	metered	# of accounts[2]	34,903	2,812	2,951	363	354	1,073		42,457
		Deliveries (AFY) [3]	23,074	8,648	7,104	2,119	1,177	5,968		48,091
2015	metered	# of accounts[2]	38,557	3,107	3,080	379	370	1,120		46,612
		Deliveries (AFY) [3]	25,490	9,553	7,414	2,212	1,228	6,229		52,127
2020	metered	# of accounts[2]	45,176	3,640	3,174	390	381	1,154		53,915
		Deliveries (AFY) [3]	29,866	11,193	7,639	2,279	1,265	6,418		58,661
2025	metered	# of accounts[2]	51,687	4,165	3,285	404	394	1,195		61,129
		Deliveries (AFY) [3]	34,170	12,807	7,907	2,359	1,310	6,643		65,195
2030	metered	# of accounts[2]	58,198	4,689	3,396	417	408	1,235		68,344
		Deliveries (AFY) [3]	38,475	14,420	8,174	2,439	1,354	6,868		71,730

This table corresponds to DWR Table 12.
Note: All accounts are metered.
(1) From the Public Water System Statistic Reports submitted to the DWR by the City of Ontario.
(2) Calculated by dividing the projected water deliveries by the average water delivery per account in year 2005 (projected 2005 demand/number of accounts as of August 2004).
(3) Projected water demands obtained from hydraulic model prepared for the Water and Recycled Water master Plan. SFR and MFR demands are distributed based on the ratio SFR/MFR in year 2004. Commercial, Industrial, Institutional and Irrigation demands are distributed based on the ratio COM/IND/INS/IRR in year 2004.
(4) Per Water Statistics submitted to the DWR: specified as Re. Code 7/9
(5) Total consumption; excludes 8% water loss. Demand = Consumption + Water loss.

Figure 2-4
Water Use Distribution by Land Use Category



The projected demand data for year 2005 and the actual number of account as of August 2004 is used to calculate the average water delivery per account for each billing classification as listed in **Table 2-4**. These averages were used to estimate the number of future accounts for the years 2005 through 2030.

As shown in **Table 2-4**, the total water deliveries are projected to increase from about 43,000 AFY to approximately 72,000 AFY in 2030. This equates to a water demand increase of 67 percent. This increase in demand is lower than the population increase of 81 percent considering a lower per capita use for the added population as the NMC does not include water usage associated with industrial land use and minimal commercial water demands. The number of accounts is estimated to increase from about 32,000 in year 2000 to 68,000 in year 2030.

It should be noted that the listed demands and account numbers per billing classification are based on the potable water demand projections presented in the WMP Update (MWH, 2005a), which are based on 2003 billing data and land use types. Because the billing classifications do not exactly match the land use type categories, the projected demands had to be re-distributed amongst the billing classifications as described in footnote 3 of **Table 2-4**. Due to the lower demand of the 2003 billing data compared to 2000 and the re-distribution process, certain billing classifications show an initial decrease in demand.

2.3.2 Projected Recycled Water Demand

The existing recycled water demand within the City is about 2,129 AFY, which includes 500 AFY of recycled water that is currently used for groundwater recharge at the Ely Basins by IEUA. It should be noted that Ely Basin is not an Ontario customer, but a customer of IEUA. All existing recycled water customers that are located in the City are currently served by IEUA, rather than by the City. The comparison of the projected and actual recycled water demand projected for 2005 in the 2000 UWMP (IEUA, 2000) is presented in **Table 2-5**. This table shows that recycled water usage in Ontario has not expanded as rapidly as projected in 2000.

Table 2-5
Comparison of 2000 Recycled Water Projection and Actual Usage

Projection for 2005[1] (AFY)	Actual Use 2005[2] (AFY)
6,000	1,829

This table corresponds to DWR Table 37.
(1) Table 5-6 from IEUA 2000 UWMP (IEUA, 2000)
(2) Water and Recycled Water Master Plan (MWH,2005)

The City has taken measures to encourage the use of recycled water including 1) reduced recycled water rates that provide recycled water at lower cost than potable water to customers, 2) developer's agreements for new OMC and NMC developments that mandate the installation of recycled water mains to all common irrigation areas, parks, and schools, or 3) the development and approval of a mandatory ordinance.

The existing and projected recycled water demand in the City is summarized in **Table 2-6** in AFY. As shown in this table, the recycled water demand in the City is projected to increase from 1,829 AFY to 14,492 AFY, which equates to an increase of almost 700 percent. It should be noted that these projections are contingent upon the development of the NMC.

Table 2-6
Recycled Water Demand Projection

Year	2005 (AFY)	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)
Old Model Colony	1,229	2,198	2,903	5,471	5,512	5,554
New Model Colony	600	5,728	5,913	6,290	6,923	8,938
Total	**1,829**	**7,926**	**8,816**	**11,761**	**12,435**	**14,492**

This table corresponds to DWR Table 14.

The potential recycled water demands by user type and category are summarized in **Table 2-7**, while the projected recycled water demands are summarized in **Table 2-8**. The only difference between the potential and projected demand is the projected demand of the future landscape users in the OMC. A feasibility study was conducted for this user category as part of the latest WMP Update (MWH, 2005a). This study eliminated some of the potential recycled water users based on the cost, resulting in a lower projected than potential demand for this category. The recycled water demand projection for the NMC is based on assumptions that reflect extensive use of recycled water. Hence, the potential and projected recycled water demands for the NMC listed in **Table 2-7** and **Table 2-8** are the same. A detailed breakdown of the various categories listed in these tables are discussed below.

Table 2-7
***Potential* Recycled Water Demand by User Type**

User type	2005 (AFY)	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)
Landscape in the OMC (existing users)	1,229	1,229	1,229	1,229	1,229	1,229
Agriculture use in NMC (temporary)	600	3,295	3,019	1,381	0	0
Landscape in the OMC (future users)	0	356	1,719	3,080	4,442	5,803
Industrial in the OMC (future user)	0	1,005	1,005	1,005	1,005	1,005
Landscape in NMC	0	2,433	2,894	4,909	6,923	8,938
Wildlife Habitat	n/a	n/a	n/a	n/a	n/a	n/a
Wetlands	n/a	n/a	n/a	n/a	n/a	n/a
Groundwater Recharge	0	0	0	0	0	0
Total	**1,829**	**8,318**	**9,866**	**11,604**	**13,599**	**16,975**

This table corresponds to DWR Table 35.
Note: IEUA wholesales disinfected tertiary recycled water to the City

Table 2-8
***Projected* Recycled Water Demand by User Type**

User Type	2005 (AFY)	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)
Landscape in the OMC (existing users)	1,229	1,229	1,229	1,229	1,229	1,229
Agriculture use in NMC (temporary)	600	3,295	3,019	1,381	0	0
Landscape in the OMC (future users)	0	0	669	3,237	3,278	3,320
Industrial in the OMC (future user)	0	969	1,005	1,005	1,005	1,005
Landscape in NMC	0	2,433	2,894	4,909	6,923	8,938
Wildlife Habitat	n/a	n/a	n/a	n/a	n/a	n/a
Wetlands	n/a	n/a	n/a	n/a	n/a	n/a
Groundwater Recharge	n/a	n/a	n/a	n/a	n/a	n/a
Total	**1,829**	**7,926**	**8,816**	**11,761**	**12,435**	**14,492**

This table corresponds to DWR Table 36.

Major Existing Recycled Water Customers

Some of the existing recycled water customers located in the City are currently served directly by IEUA. The existing recycled water customers are listed in **Table 2-8**.

Table 2-9
Existing Recycled Water Customers

User Type	Existing Demand (AFY)	Ultimate Demand (AFY)
Whispering Lakes Golf Course	1,036	1,036
Murai Farms	600	0
Westwind Park	80	80
Two Caltrans connections	100	100
Median on Archibald Avenue	13	13
Total	**1,829**	**1,229**

This table corresponds to DWR Table 36.

These customers are currently served by IEUA directly, rather than through the City. With the expansion of the regional recycled water system, it is assumed that all recycled water demands within the City will be served by the City directly in the future. The recycled demand of these existing users that will be served by the City under ultimate conditions is about 1,229 AFY (1,829 AFY minus 600 AFY for Murai Farms as discussed below).

Temporary Agricultural Users

In the near-term, the City could serve recycled water to (non-dairy) agricultural customers with irrigation in the NMC by accelerating the construction of some of the recycled water pipelines that are planned for the NMC under build out conditions. One example is Murai Farms, which is

currently served with recycled water directly by IEUA with a demand of about 600 AFY. In addition to Murai Farms, the total area identified with agricultural users that can be temporarily served with recycled water is 802 acres. The estimated recycled water demand of this area is 2,695 AFY, resulting in a total recycled water demand for temporary agricultural users of 3,295 AFY or 2.9 mgd. Due to the development of the NMC, this demand is reduced to zero by year 2025, but is replaced by a combination of potable and recycled water demand.

Future Customers in the OMC

The projected recycled water demands in the OMC are based on the conversion of existing potable water users and the use of recycled water on newly developed parcels (infill) where possible. The potential recycled water demand is estimated to be about 6,627 AFY including one large industrial user with a potential demand of 1,005 AFY. As part of the WMP Update (MWH, 2005a), a feasibility study was conducted to select those user groups that are most feasible based on the relative unit cost ($/acre-ft). The projected recycled water demand in the OMC based on this feasibility study is 4,230 AFY or 3.8 mgd.

Future Customers in the NMC

The projected recycled water demand for the entire NMC at build out conditions is about 8,938 AFY or 8.0 mgd under average day demand (ADD) conditions. As shown in this table, the recycled water demand of temporary agricultural users is assumed to be zero in year 2025, when the NMC is anticipated to get close to being build out.

Future Customers in the entire City

The projected recycled water demands are summarized in **Table 2-6**. As shown in this table, the recycled water demand in the City is projected to increase from 1,816 AFY to 14,384 AFY, which equates to almost 700 percent increase. The NMC contributes approximately 500 percent to this increase.

2.3.3 Sales to Other Agencies

The City also serves water to Sunkist as part of the Chino Basin overlying (non-agricultural) assessment adjustment. In exchange for water delivery, the City obtains the groundwater pumping rights in the amount equal to the amount of water served. The historical and projected water deliveries to Sunkist are shown in **Table 2-10**.

Table 2-10
Sales to Other Agencies

Water Distributed	2005 (AFY)	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)
Sunkist(1)	1,449	1,470	1,470	1,470	1,470	1,470

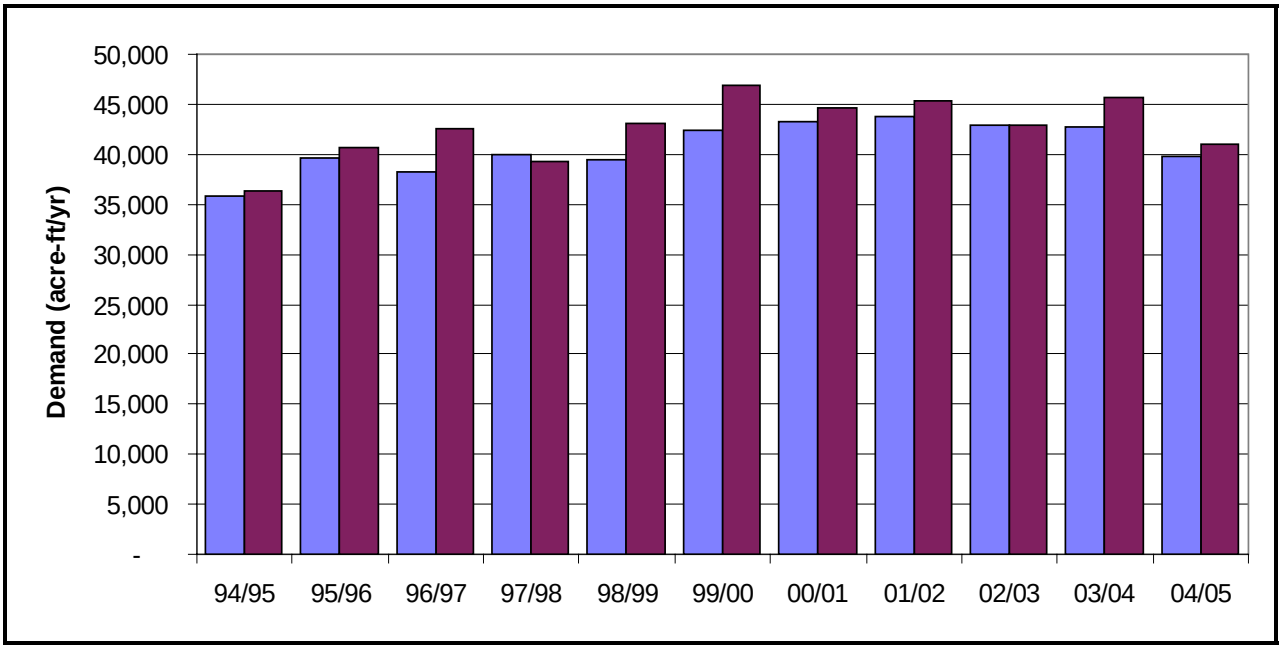
This table corresponds to DWR Table 13.
(1) It should be noted that Sunkist is not a water agency, but a customer located within the City boundaries.

The projected water delivery for years 2005 through 2030 is assumed to be constant and is based on the average water delivery of the last six years (1998 through 2003). No other adjustments to water rights assessment or special deliveries are identified.

2.3.4 Water Losses

The difference between the volume of water delivered to the distribution system (water production) and the metered sales (water consumption) is often referred to as "unaccounted-for water" or water loss. The historical water production and consumption is presented on **Figure 2-5**.

Figure 2-5
Historical Water Consumption and Production



As shown on this figure, the water loss varies from year to year. The average water loss in the period 1994 through 2004 was 4 percent. As some years have shown water loss as high as 10 percent, the water loss used for system planning purposes in the WMP Update is 8 percent. To be consistent with the WMP Update, the projected water loss as shown in **Table 2-11** is calculated as 8 percent of the projected water demand listed in **Table 2-4**. The value listed for year 2000 is the actual recorded water loss.

Table 2-11
Historical and Projected Water Loss

Water Loss	2000 (AFY)	2005 (AFY)	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)
Production (AFY)	46,100	42,583	51,938	56,297	63,354	70,411	77,468
Consumption (AFY)	43,028	39,428	48,091	52,127	58,661	65,195	71,730
Water Loss (AFY)	3,072	3,155	3,847	4,170	4,693	5,215	5,738
Water Loss (%)	7%	8%	8%	8%	8%	8%	8%

This table corresponds to DWR Table 14.
The water loss of year 2000 is based on historical records (7%), while the projected water loss for years 2005 through 2030 is estimated using 8% of the projected water consumption as defined in the 2005 WMP Update (MWH, 2005a).

2.3.5 Total Water Use

The total historical and projected water use through year 2030 is presented in **Table 2-12**. The total water use is the summation of the potable water used by user categories (Table 2-4), projected recycled water demands, sales to other agencies (Table 2-10), and water loss (Table 2-11). It should be noted that the City does not have any additional water uses such as saline barriers protection, groundwater recharge, conjunctive use, or demands associated with raw water projects.

Table 2-12
Total Water Use – Without Water Conservation

Water Use	2000 (AFY)	2005 (AFY)	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)
Consumption(1)	43,028	39,428	48,091	52,127	58,661	65,195	71,730
Recycled Water	0	1,829	7,926	8,816	11,761	12,435	14,492
Sunkist	1,449	1,470	1,470	1,470	1,470	1,470	1,470
Water Loss	3,072	3,154	3,847	4,170	4,693	5,216	5,738
Saline barriers	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Groundwater Recharge	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Conjunctive Use	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Raw Water	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Total	**47,549**	**45,881**	**61,334**	**66,583**	**76,585**	**84,316**	**93,430**

This table corresponds to DWR Table 14.
(1) Consumption plus 8% water loss is equal to the production numbers listed in **Table 2-11**.

The total water use projected through year 2030 that incorporates water conservation is summarized in **Table 2-13**. As shown, the total water use is estimated to be 7,747 AFY lower than presented in **Table 2-12**, which equates to a demand reduction of 8percent. Details regarding water conservation are discussed in **Section 3**.

Table 2-13
Total Water Use – With Water Conservation

Water Use	2000 (AFY)	2005 (AFY)	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)
Total Water Use	47,549	45,881	61,334	66,583	76,585	84,316	93,430
Water Conservation	0	-840	-2,635	-3,994	-4,900	-6,149	-7,747
Water Use with Conservation	**47,549**	**45,041**	**58,699**	**62,589**	**71,685**	**78,167**	**85,683**

This table corresponds to DWR Table 15.

Section 3
Water Conservation

3.1 INTRODUCTION

Water conservation is an important component of water resource management, not only for the City of Ontario (City) but also for the entire Inland Empire Region and Southern California. For a variety of reasons, the Inland Empire Region remains one of the top growth areas in the country, with the City being a major contributor to the projected growth. This growth in population and industry puts pressure on the local retail agencies to meet the anticipated water demand over the next 25 years and beyond. Implementation of conservation programs helps reduce the expected increase in water demand.

The City's water conservation policies are primarily driven by two factors, the water conservation goals defined in IEUA's *Review Draft Urban Water Management Plan* (IEUA, 2005d) and the California Urban Water Conservation Council (CUWCC) *Memorandum of Understanding regarding urban water conservation in California* (MOU) of September 1991 and last amended in March 2004 (CUWCC, 2004). As a signatory to the MOU, the City has pledged to implement a prescribed set of urban water conservation Best Management Practices (BMPs). In the California Water Code Section 10631, the BMPs are referred to as Demand Management Measures (DMMs). BMPs and DMMs are functionally equivalent. In this report the term BMP is used. The 14 BMPs are listed in **Table 3-1**.

Table 3-1
Best Management Practices

BMP No.	Best Management Practices
1	Water Survey Programs for Single-Family and Multi-Family Residential Customers
2	Residential Plumbing Retrofit
3	System Water Audits, Leak Detection and Repair
4	Metering with Commodity Rates for all New Connections and Retrofit of Existing
5	Large Landscape Conservation Programs and Incentives
6	High-Efficiency Washing Machine Rebate Programs
7	Public Information Programs
8	School Education Programs
9	Conservation Programs for Commercial, Industrial and Institutional (CII) Accounts
10	Wholesale agency programs
11	Conservation Pricing
12	Water Conservation Coordinator
13	Water Waste Prohibition
14	Residential Ultra-Low-Flush Toilet Replacement Program

As a signatory to the MOU, the City is a member of the CUWCC and is required to provide BMP Activity Reports every two years. These reports provide specific details of the agency's efforts to implement each BMP. The Act requires that agencies describe the implementation

status and cost-effectiveness of each BMPs in their UWMP unless the agency is signatory to the MOU and provides the annual BMP Activity Reports. California Water Code Section 10613 (i) allows an agency to provide the BMP Activity Reports in-lieu of describing each of the BMPs. The City has submitted the Activity Reports for 2003 and 2004 to the CUWCC since the City signed the MOU in 2002. These reports are included in **Appendix C**.

3.2 WATER CONSERVATION STRATEGY OF IEUA

Over the past five years, IEUA and their member agencies have developed a strong partnership and an aggressive approach to BMPs that reduce water at the source. Water conservation is an important component of water resource management. Conservation has multiple benefits such as a reduction on the dependence of imported water supplies. Water conservation helps solve the water quality issues in the California Bay Delta and improves water supply reliability. Water conservation is also beneficial for the region's water rate payers, as water conservation is one of the least expensive new sources of water. IEUA projects regional savings of more than $200 million over the next 20 years by utilizing water conservation measures to reduce imported water purchases (IEUA, 2005e).

IEUA and the local retail agencies have been implementing water conservation programs for the region since 1991. Through year 2000, the source of the majority of water savings has been the distribution of ultra low flush (ULF) toilets. Beginning in 2001, the conservation programs have become much more diversified with the introduction of high efficiency clothes washer (HECW) rebates, commercial and industrial rebates, landscape water efficiency programs, public education, school programs, hiring of water conservation coordinators and water waste prohibition ordinances.

3.2.1 2000-2005 Water Conservation

The IEUA regional water conservation goal for year 2005 as defined in the 2000 UWMP (IEUA, 2000) was 11,600 acre-feet per year (AFY). The actual amount of water conservation achieved is estimated as 5,100 AFY. Over the past five years, IEUA has introduced a variety of new and innovative incentive programs to help achieve this goal. The water conservation programs that IEUA has implemented in the 5-year period from 2000 to 2005 to encourage participation by its retail agencies are:

- Large Landscape: As part of BMP No. 5, IEUA has participated in a number of initiatives to reduce the amount of water used for irrigation. These programs include regional and local classes for businesses on landscaping efficiencies, the "California Friendly Model Program", and the weather sensitive irrigation controller program.
- Residential HECW Rebates: As part of BMP No. 6, about 4,800 HECW have been installed, contributing to about 220 AFY of water savings.
- School Education: As part of BMP No. 8, IEUA and local agencies expanded water conservation education programs by conducting three presentations: (1) a magic show entitled "Think Earth; It's Magic" that reached 22,000 elementary school students, (2) a stage show entitled "The Water Pirates of Neverland" that was seen by 21,000 students, and (3) the thematic school garden demonstration projects entitled "A Garden in Every School".

- Commercial, Industrial, and Institutional (CII) rebate program. As part of BMP No. 9, rebates were provided for ULF toilets, waterless urinals, HECW, cooling tower conductivity controllers, x-ray film processor re-circulation units, pressurized water brooms, pre-rinse spray nozzles, and weather sensitive irrigation controllers.
- Agency Support: As part of BMP No. 10, IEUA provided annual grants of $2,000 per agency for BMP related programs or projects. The City of Ontario prefers to participate in programs sponsored by IEUA, which provide greater benefits for the City than small-scale water conservation programs.
- Residential ULF Active Programs: As part of BMP No. 14, about 35,000 ULF toilets have been installed since 1991, contributing to about 1,800 AFY of water savings.
- Residential ULF Passive Programs: As part of BMP No. 14, about 153,000 ULF toilets have been installed since 1993, contributing to about 6,000 AFY of water savings.

The combined active and passive water conservation achieved from these programs for the region between 1993 and 2000 is about 5,110 AFY. Additional water savings from 2001 through 2004 are expected to bring the total water saved to over 8,600 AFY, which is IEUA's water conservation goal for year 2005 as listed in the 2005 UWMP (IEUA, 2005d). It should be noted that the water conservation goal for year 2005 was set at 11,600 AFY in the 2000 IEUA UWMP. To achieve new water conservation savings each year, IEUA and the retail agencies will have to invest more into existing conservation programs.

3.2.2 2005-2010 Water Conservation

The water conservation goals established in IEUA's Review Draft UWMP (IEUA, 2005d) are summarized in **Table 3-2**. Although all agencies participate in water conservation programs, each agency has a different service area size, population, land use, and water use mix. The water conservation goals for the period 2010 though 2030 are set 10 percent of the projected water demands, while the water conservation goal for 2005 is about 3.6 percent of the combined projected water demand of all member agencies.

Table 3-2
IEUA's Water Conservation Goals (Active and Passive)

Water Purveyor	2005(1) (AFY)	2010(2) (AFY)	2015(2) (AFY)	2020(2) (AFY)	2025(2) (AFY)
City of Chino	745	2,459	2,750	2,983	3,183
City of Chino Hills	690	2,019	2,080	2,142	2,206
City of Ontario	***1,825***	***5,695***	***6,315***	***6,925***	***7,596***
City of Upland	699	2,164	2,194	2,194	2,194
Cucamonga Valley Water District	2,047	7,283	8,133	8,733	9,514
Fontana Water Company	2,024	7,000	7,180	7,240	7,320
Monte Vista Water District	447	1,310	1,373	1,437	1,500
San Antonio Water Company	123	351	331	339	348
Total	**8,600**	**28,281**	**30,356**	**31,993**	**33,861**
Total (rounded)(3)	8,600	28,500	30,000	32,000	34,000

(1) Calculated by multiplying the projected demands from Table2-8 of the 2005 UWMP (IEUA, 2005d) with 3.6%
(2) Calculated by multiplying the projected demands from Table2-8 of the 2005 UWMP (IEUA, 2005d) with 10%
(3) Water conservation goal as listed in Table2-8 of the 2005 UWMP (IEUA, 2005d)

It should be noted that the water conservation goals presented in **Table 3-2** include both active and passive water conservation, resulting in higher water conservation goals than presented in IEUA's Draft UWMP (IEUA, 2005), which include active water conservation measures only.

Passive water conservation refers can be defined as the water conservation resulting from changes in the (plumbing) code and will happen automatically due to changes in the available appliances. Passive conservation is also referred to as "Code Based water conservation". Active water conservation can be defined as water conservation resulting from special activities and (financial) incentives that encourage reduction in water usage.

The active and passive water conservation goals for the City are listed in **Table 3-3**.

Table 3-3
IEUA's Water Conservation Goals (Active and Passive)

Water Conservation Goal	2005(1) (AFY)	2010(2) (AFY)	2015(2) (AFY)	2020(2) (AFY)	2025(2) (AFY)	2030(3) (AFY)
Active Water Conservation(1)	840	1,800	2,630	2,980	3,640	3,712
Passive Water Conservation(2)	985	3,895	3,685	3,945	3,956	4,035
Total	**1,825**	**5,695**	**6,315**	**6,925**	**7,596**	**7,747**

(1) Water conservation goal as listed in Table2-10 of the 2005 UWMP (IEUA, 2005)
(2) Water conservation goal as listed in Table2-8 of the 2005 UWMP (IEUA, 2005d)
(3) Total calculated as 10 percent of the projected demands; 2025-2030 increase distributed evenly between active and passive water conservation.

To achieve the water conservation goals listed in **Table 3-2**, IEUA has included an annual BMP implementation schedule in its UWMP for the years 2005 through 2010. The estimated cost of implementing these BMPs is $1,536,500. These programs are estimated to generate 1,020 acre-ft of new water savings per year for the period 2005-2010. This corresponds to a unit cost of approximately $300 per acre-ft (1,020 AFY x $1,536,500/5 years) (IEUA, 2005).

3.2.3 2010 and Beyond

Water conservation is a constantly evolving process due to changes and improvements in technologies, saturation of water saving devices, and consumer trends. By the year 2010, many programs are expected to be fully implemented, and some of the incentive programs may not be needed anymore due to market transformations.

For the period 2010 and beyond, IEUA and the retail agencies will modify the water conservation program and focus on those areas where the greatest water conservation potential will exist. Programs that may be part of the water conservation strategy in this period are:

- Replacement of water inefficient toilets, clothes washers, dishwashers, showerheads, and irrigation systems in existing homes
- Aggressive water conservation measures in new homes, similar to a large scale implementation of the pilot program "California Friendly Model Home"
- Incentives such as "Turf Buyback program" where homeowners receive a rebate (e.g. $1.00 per square foot) of turf removed.

- Expansion of the CII rebate program "Save Water, Save A Buck"
- Implementation of an extensive recycled water system throughout IEUA's service area.
- Legislative approaches such as the "Retrofit upon Resale" ordinance that requires plumbing upgrades prior to selling a property.
- Adjustment of rate structures that reward conservation minded customers with lower rates.
- Continuation of education programs for teachers and students.

3.3 WATER CONSERVATION STRATEGY OF ONTARIO

The City signed the MOU on December 11, 2002 (Ontario, 2002). The MOU sets goals for implementing each of the BMPs. Since 2003, the City has submitted the annual BMP Activity Report to the CUWCC. The BMP reports for 2003 and 2004 are included in **Appendix C**, and the status of the City's water conservation efforts are summarized in **Table 3-4**.

Table 3-4
BMP Implementation Status - City of Ontario

Best Management Practices		Status Details[(1)]
1	Water Survey Programs for Single-Family and Multi-Family Residential Customers	Surveys began in 2005. Several hundreds of surveys completed.
2	Residential Plumbing Retrofit	City distributed over 1,000 low-flow showerheads along with other conservation items to customers that completed surveys
3	System Water Audits, Leak Detection and Repair	Pre-Screening Completed
4	Metering with Commodity Rates for all New Connections and Retrofit of Existing	All accounts are metered
5	Large Landscape Conservation Programs and Incentives	Ontario, in conjunction with IEUA, conducted 3 audits in 2005
6	High-Efficiency Washing Machine Rebate Programs (HECW)	51 rebates awarded in 2004. Funded by IEUA (through MWD)
7	Public Information Programs	32 activities reported to date in BMP reports
8	School Education Programs	70 presentations to 1595 students to date in the BMP reports
9	Conservation Programs for CII Accounts	18 CII Surveys, 211 rebates, 6 AFY of Performance Savings, and 20.5 AFY of Conservation Program Savings. This BMP is also covered by IEUA's "*Save Water Save a Buck*" program
10	Wholesale agency programs	N/A (Ontario is a retail agency)
11	Conservation Pricing	Increasing block pricing structure
12	Water Conservation Coordinator	Position staffed in 2001
13	Water Waste Prohibition	A general water waste prohibition is incorporated into the Emergency Water Conservation section of the City Ordinances (OMC, Section 6, Chapter 8A.)
14	Residential ULFT Replacement Program	1,756 rebates reported in BMP reports

(1) Reflect cumulative totals to date (September 2005)

Examples of the existing water conservation programs implemented by the City (Ontario, 2005a) are:

- ULF Toilet Exchange Program: The City promotes water conservation through distribution of ULF toilets that have a flushing volume of 1.6 gallons, compared to 3.5 gallons/flush of older models. Single family home customers that reside in homes built prior to 1992 are eligible to participate in this program. . The City hosts at least two large-scale toilet distribution events each year.
- ULF Toilet Rebate Program: Customers that are not able to participate in the exchange program may purchase toilets from a local retailer and apply for a $50.00 rebate per toilet.
- HECW Rebates: Customers may purchase a HECW and apply for a rebate up to $100.00.
- Water Education Water Awareness Committee (WEWAC): The City is an active member of WEWAC, a committee that is comprised of local agencies. WEWAC co-sponsors several education programs for teachers and students regarding conservation and the environment. WEWAC also provides public education grants.
- Home and Garden Show: The annual home and garden show held at the Ontario Convention Center provides water resource information and conservation materials through WEWAC.
- Low Flow Shower Heads: Customers can obtain new low flow showerheads free of charge in exchange for their less water efficient showerheads from the City's Utilities Department. The City also provides faucet aerators and low-flow hose nozzles.
- Cooling Tower Rebate: Commercial customers can receive a $500.00 rebate by installing a Cooling Tower Conductivity Controller, which can save up to 800,000 gallons annually.

Based on the 2004 Activity Reports submitted to CUWCC, the active water conservation amount achieved by the end of the fiscal year (FY) 2005 is estimated to be around 177 AFY. It should be noted that this does not include passive or "code based" water conservation. Hence, the total amount of water conservation is higher. The estimate breakdown is presented in **Table 3-5.** Details of calculations to estimate the water conservation savings are included in **Appendix D**. The estimated (active) water conservation (177 AFY) is significantly less than the IEUA's water conservation goal for 2005 as defined in the 2000 UWMP (3,000 AFY). It should be noted that the goal for 2005 was lowered from 3,000 AFY to 840 AFY in the 2005 UWMP (IEUA, 2005). Based on the estimate of 177 AFY it is evident that the City needs to ramp up the implementation of the BMPs. The strategy to increase water conservation and meet the goal set for year 2010 is discussed in Section 3.3.1.

It should be noted that the water conservation estimates only include active water conservation measures, and do not account for passive water conservation such as the direct purchase of ULF toilets, showerheads, or high-efficiency washers by residents in the City that do not apply for a rebate. The estimates also excludes the water conservation achieved by behavioral changes as a result of education programs and increased awareness of the limited water resources in California.

Table 3-5
Water Conservation Estimate by the End of FY 2004/2005 (Active Programs)

Best Management Practices (BMP's)	Total Number of BMP's	Estimated Savings[1] (AFY)
(1) Water Survey Programs for Single-Family and Multi-Family Residential Customers	0	0.0
(2) Residential Plumbing Retrofit - single family dwelling units	1,500	14.4
(2) Residential Plumbing Retrofit - multi family dwelling units	500	4.8
(3) System Water Audits	on-going	0.0
(4) Metering with Commodity Rates	on-going	0.0
(5) Large Landscape Programs	on-going	0.0
(6) HECW machine Rebate Programs (washers)	689	31.4
Pool Cover Rebates[2]	87	4.5
(7) Public Information Programs	32	0.0
(8) School Education Programs	1,595	0.0
(9) Conservation Programs for CII accounts	211	-
CII ULF Toilet rebates	187	11.2
unknown CII Rebates	3	0.0
CII Surveys	18	0.0
HECW rebates	69	8.3
Cooling Tower Conductivity Controllers (CTCC)	9	20.2
Waterbrooms[3]	17	2.6
Performance Target savings	0	6.0
Conservation Program Targets	0	19.5
(10) Wholesale pricing	N/A	N/A
(11) Conservation Pricing	complete	0.0
(12) Conservation Coordinator	complete	0.0
(13) Water Waste Prohibition	complete	0.0
(14) Residential ULFT rebates	1,756	54.4
Total Estimated Savings	**n/a**	**177.0**

Note: Details of calculations to estimate the water conservation savings are included in **Appendix D.**

(1) Includes active water conservation estimates only, does not include passive (or Code Based) water conservation.

(2) This program has been discontinued by IEUA.

(3) This program has been discontinued by the City.

In addition, the water conservation estimates are highly dependent upon the assumptions made to calculate the actual water conservation achieved by certain BMPs. The assumptions used for the water conservation estimates presented in this section are listed below.

- Showerhead Savings (BMP 2): The MOU states that pre-retrofit showerheads correspond with an estimated water use of 7.2 gpd/cap, while low flow showerheads have an average water usage of 2.9 gpd/cap. Therefore, the water savings are about 4.3 gpd/cap. With an average density of 4 people per household and 2 showerheads per homes, this equates to 8.6 gpd/showerhead or 0.010 AFY per showerhead.

- Large Landscape Meters (BMP 5): The MOU states that landscaping retrofits result in 15 percent water savings. With 1,000 large landscaping meters (2004 BMP report) and a total irrigation demand of 6,402 AFY, the average landscaping water usage in the City is 6.4 AFY. Hence, 15 percent savings equates to about 0.96 AFY per meter.
- Residential HECW Rebate Program (BMP 6): The potential water savings of a residential HECW machine is estimated to be up to 14,720 gallons per year or 0.046 AFY (IEUA, 2005a). These savings can be achieved when a 40 gallon per load washer is replaced with a 20 gallon per load washer and the clothes washer is used 400 times a year. Pool Cover rebates , grouped with residential HECW for this report, have a savings of 0.052 AFY (IEUA, 2005b).
- CII Rebates (BMP 9): The MWD CII Annual Report (MWD, 2004) lists the water savings of various CII water devices. The devices that are part of the City's rebate program under this BMP and the associated water savings are: 0.06 AFY for ULFT, 0.12 AFY for commercial HECW, 2.24 AFY for CTCC, and 0.15 AFY for water brooms. It should be noted that these unit savings in the CII sector are higher for residential BMP's due to more intensive use.
- ULF Toilets (BMP 14): The water conservation estimate of residential ULFT's is based on the savings reported in the IEUA Regional ULF Toilet Rebate Program Status Report (IEUA, 2005c). This report states that 308 active toilet replacements resulted in an average saving of 9.7 AFY, or 0.03 AFY/toilet.

The water conservation as a result of other BMP's are not included in **Table 3-5** as water savings for many BMPs are difficult to quantify. In addition, measurable water savings from ULFT distribution occurring prior to 2003 is not included in the table. Therefore, it is expected that the actual water savings are higher than 177 AFY.

3.3.2 2006-2010

As listed in **Table 3-2**, the water conservation goal for the City in year 2010 is 1,800 AFY (IEUA, 2005). This goal reflects active water conservation measures only, and does not include passive water conservation as a result of plumbing retrofits etc. To achieve this goal and to be in compliance with the goals defined in the MOU, a water conservation implementation plan has been developed as part of this UWMP. This plan defines the number of BMP's that need to be implemented each year to achieve the 2010 water conservation goal. **Table 3-6** presents the number of BMPs that needs to be realized on an annual basis from FY 2005-2006 through FY 2009-2010 to achieve the water conservation goals. **Appendix D** contains BMP activity reports for 2003 and 2004 and additional details regarding existing and project water conservation projections.

Table 3-6
Ontario's Active Water Conservation Implementation Plan

Best Management Practice	Hist.	Future BMP Activities (MOU and Add'l)					Estimated Savings (AFY)						Unit
	Pre FY 04-05	FY 05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10	Pre FY 04-05	FY 05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10	
(1) Water Survey Programs	0	0	0	0	0	0	0	0	0	0	0	0	
SFR Surveys	0	408	489.5	571	647.5	724	0	0	0	0	0	0	Surveys
MFR Surveys	0	31	37	43	49	55	0	0	0	0	0	0	Surveys
(2) Residential Plumbing Retrofit	0	-	-	-	-	-	0	0	0	0	0	0	-
SFR Rebates	1,500	2,386	2,386	2,386	2,386	2,386	14	37	60	83	106	129	Showerheads
MFR Rebates	500	1,108	1,108	1,108	1,108	1,108	5	15	26	37	47	58	Showerheads
(3) System Water Audits	0	0	0	0	0	0	0	0	0	0	0	0	Audits
(4) Metering with Commodity Rates	0	0	0	0	0	0	0	0	0	0	0	0	Unmetered Accounts
(5) Large Landscape Programs	0	225	225	450	50	50	0	216	432	864	912	960	Accounts
(6) HECW Rebates	689	200	200	200	200	200	31	41	50	59	68	77	Rebates
Pool Cover Rebates(2)	87	0	0	0	0	0	5	5	5	5	5	5	Rebates
(7) Public Information Programs	32	0	0	0	0	0	0	0	0	0	0	0	Events
(8) School Education Programs	1,595	0	0	0	0	0	0	0	0	0	0	0	Students
(9) CII Conservation Programs	-	-	-	-	-	-	-	-	-	-	-	-	
Commercial surveys	11	28	47	67	92	117	0	0	0	0	0	0	Surveys
Industrial surveys	3	4	7	10	14	17	0	0	0	0	0	0	Surveys
Institutional surveys	4	3	6	8	11	14	0	0	0	0	0	0	Surveys
Number of CII ULFT rebates	187	450	500	550	600	650	11	38	68	101	137	176	Rebates
Unknown rebates	3	0	0	0	0	0	0	0	0	0	0	0	Rebates
HECW	69	10	10	10	15	20	8	9	11	12	14	16	Rebates
CCTC	9	5	5	5	5	5	20	31	43	54	65	76	Rebates
Waterbrooms(2)	17	0	0	0	0	0	3	3	3	3	3	3	Rebates
Performance Target savings	6	0	0	0	0	0	6	6	6	6	6	6	AFY
Conservation Program Targets	20	0	0	0	0	0	20	20	20	20	20	20	AFY
(11) Conservation Pricing	0	0	0	0	0	0	0	0	0	0	0	0	-
(12) Conservation Coordinator	0	0	0	0	0	0	0	0	0	0	0	0	Coordinator
(13) Water Waste Prohibition	0	0	0	0	0	0	0	0	0	0	0	0	-
(14) Res. ULFT Replacements	1,756	500	1,000	1,500	2,000	2,500	54	70	101	147	209	287	Rebates
Total(1)	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**177**	**491**	**823**	**1,390**	**1,592**	**1,813**	

(1) Totals may not add up due to rounding.
(2) Program is discontinued (no increase).

As shown in **Appendix D**, the BMPs are divided into three categories; 1) Pre- FY 04-05, 2) MOU Requirements, and 3) Additional BMP Activities. The measures currently in place are referred to as "Pre-FY 04-05", and are estimated to conserve about 177 AFY (see **Table 3-5**). The BMPs listed in the MOU requirements would result in an additional 936 AFY, increasing the water conservation amount to 1,113 AFY. Hence, additional BMP activities have been identified to meet the goal of 1,800 AFY. These additional activities are:

- Increasing the number of distributed showerheads give-aways (BMP 2) by 1,000 for SFR customers and 1,000 for MFR customers for the next five years.
- Implementing water conservation measures at 50 large landscaping customers in FY 2008-2009 and FY 2009-2010.
- Providing rebates for 200 residential HECW's per year (BMP 6) for each year in 2006 through 2010.
- Distributing ULF toilets in the CII sector (BMP 9), starting with 450 units in FY 2006-2007 and increase by 50 toilets per year to 650 toilets in 2010.
- Providing rebates for 10 commercial HECW for the next 3 FY's, then increase by 5 each FY until FY 2009-2010 for a total of 20 HECW per year.
- Distributing 5 CTCC per year.
- ULF toilets in the residential sector (BMP 14), starting with 1,000 units in FY 2006-07 and increase by 500 toilets per year to 2,500 toilets in FY 2009 -2010.

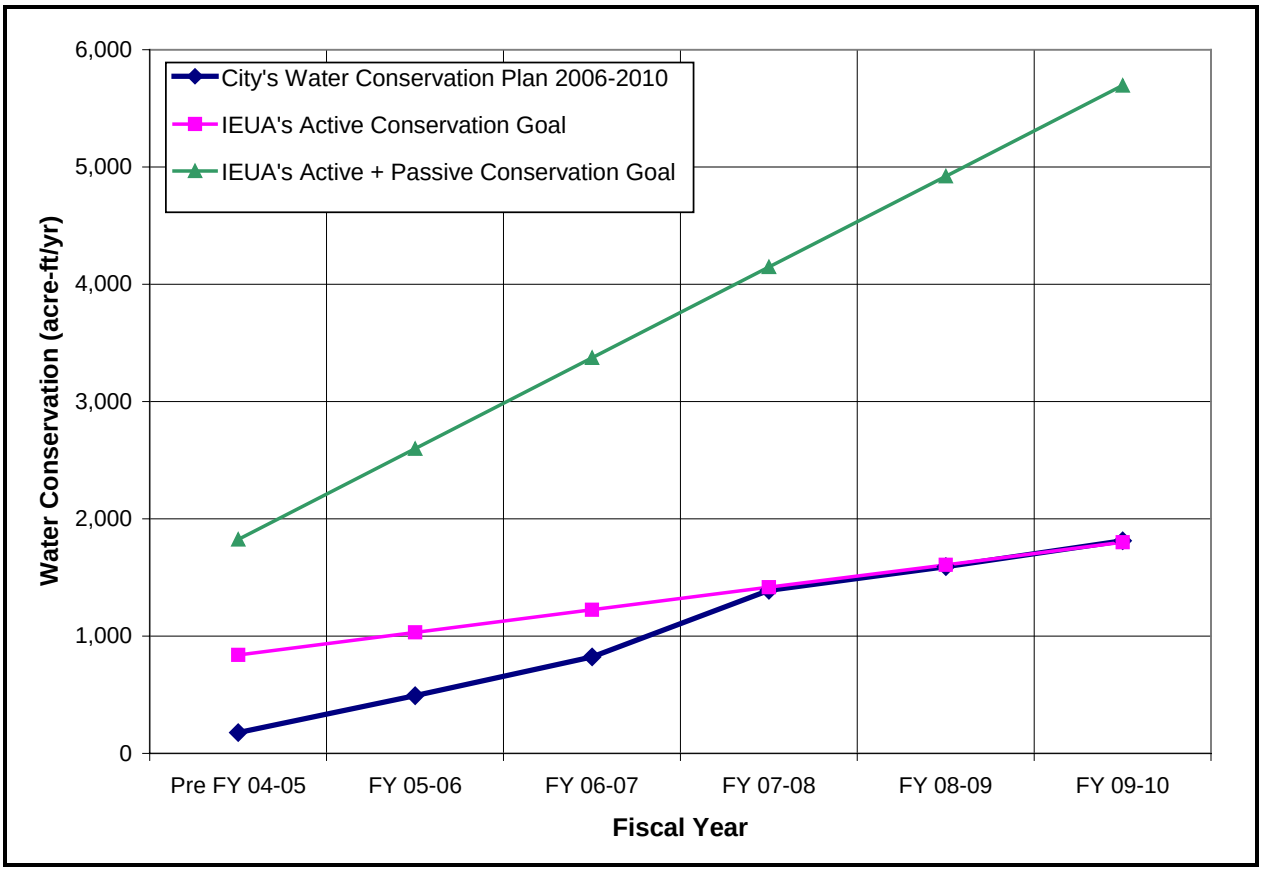
These activities and the MOU requirements will bring the water conservation in line with the IEUA goal. The comparison of the active water conservation goals and estimated water conservation is listed in **Table 3-7** and is graphically shown on **Figure 3-1**. This figure also presents the combined active and passive water conservation goal as presented in the Review Draft UMWP (IEUA, 2005d). As shown in the figure, passive water conservation is expected to contribute significantly to the total water conservation, ranging from about 55-70 percent of the total water conservation.

Table 3-7
Comparison of Water Conservation Estimates and Goals for 2006-2010

Water Conservation Plan	Pre FY 04-05 (AFY)	FY 05-06 (AFY)	FY 06-07 (AFY)	FY 07-08 (AFY)	FY 08-09 (AFY)	FY 09-10 (AFY)
City's Water Conservation Plan(1)	177	491	823	1,390	1,592	1,813
IEUA's Active Water Conservation Goal(2)	840	1,032	1,224	1,416	1,608	1,800
Difference (AFY)	-663	-541	-401	-26	-16	13
Difference (%)	-79%	-52%	-33%	-2%	-1%	1%
City's Water Conservation Plan(1)	177	491	823	1,390	1,592	1,813
IEUA's Active and Passive Water Conservation Goal(3)	1,825	2,599	3,373	4,147	4,921	5,695
Difference (AFY)	-1,648	-2,108	-2,550	-2,757	-3,329	-3,882
Difference (%)	-90%	-81%	-76%	-66%	-68%	-68%

(1) The estimated savings of the City's water conservation plan reflect active conservation measures only.
(2) Active water conservation goals per IEUA's Draft UWMP Table 2-10 (IEUA, 2005).
(3) Active and passive water conservation goals per IEUA's Review Draft UWMP Table 2-8 (IEUA, 2005d) and **Table 3-2**.

Figure 3-1
Comparison of Water Conservation Estimates and Goals for 2006-2010



As shown in **Figure 3-1**, the proposed implementation plan will result in a rapid increase of water conservation in the period FY 06/07 to FY 07/08, primarily as a result of the large landscaping metering program. In the following years, the MOU requirements and additional BMP activities will increase the water conservation at the same rate as the linear increase in water conservation goals set by IEUA.

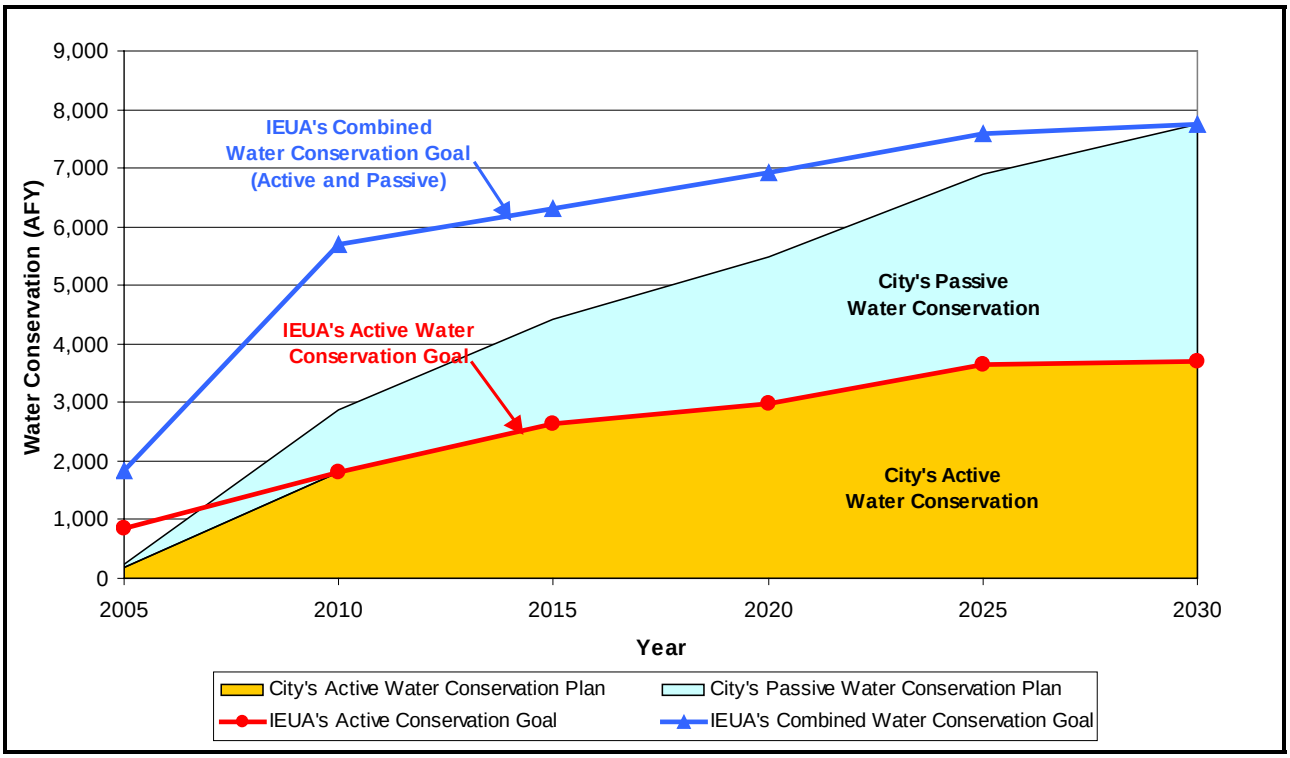
3.3.3 2010 and Beyond

In addition to the active water conservation measures defined in **Table 3-6**, passive water conservation will take place as new homes in the NMC will be constructed according to current plumbing codes and toilet and fixtures will be replaced in homes in the OMC. It is the City's goal to reach IEUA's combined (passive and active) water conservation goal in year 2030 when the NMC is anticipated to reach build out conditions. The estimated water conservation increase compared to the goals of IEUA defined in the Draft and Review Draft Urban Water Management Plan Reports is presented in **Figure 3-2**. This estimate is based the following assumptions:

- 100 percent of the homes in the NMC will be in compliance with the current plumbing code by installation of water conserving toilets, showerheads and fixtures;

- 25 percent of the homes in the OMC will be in compliance with the current plumbing code in year 2030 through passive replacement of toilets, showerheads and fixtures;
- Implementation of passive water conservation measures would save approximately 15 gallons of water per person per day.

Figure 3-2
Comparison of Water Conservation Estimates and Goals for 2005-2030



Water conservation measures that need to be taken beyond year 2010 should be defined in detail in the 2010 UWMP Update. The actual water conservation achieved by year 2009 should be estimated and compared with the goals set by IEUA. Additional water conservation measures should be considered in the future because market saturation of certain BMPs, such as ULF toilets, is anticipated to occur in the future. A number of water conservation alternatives are discussed under the water conservation strategy of IEUA for the period 2010 and beyond.

Section 4
Water Supplies

4.1 INTRODUCTION

About one third of the water used in Southern California comes from local sources such as groundwater and treated runoff water, while two thirds of the water supplies are imported into the region from the Colorado River (via the Colorado River Aqueduct), the Sacramento-San Joaquin River Delta (via the State Water Project (SWP) aqueduct and the Owens Valley and Mono Basin (via the Los Angeles Aqueducts).

Increased environmental regulations and competition for water from outside the region have resulted in projected decreases in reliability of imported water supplies. At the same time, the Colorado River basin is experiencing a drought that is unprecedented in recorded history, while water demands continue to rise within the region because of population and economic growth.

To address the regional water supply challenges, Metropolitan Water District of Southern California (MWD) completed a landmark evaluation of the future water supplies in Southern California in 1996. This evaluation is known as the Integrated Resources Plan (IRP). The purposed of this plan was to provide a realistic means of achieving a reliable and affordable water supply to meet Southern California's water needs until year 2020. This plan developed a Preferred Resource Mix which consisted of a diverse mix of resources to meet a goal of 100 percent reliability for full-service demands through 2020 through the attainment of regional targets set for conservation, local supplies, SWP supplies, Colorado River supplies, groundwater banking, and water transfers.

The IRP was updated in May 2004 to incorporate achievements to date, identify changed conditions, and to extend the planning horizon to year 2025. The results of the IRP Update show that the most significant change was the increased participation of local agencies in developing local water supplies and promoting water conservation. The contribution of the City of Ontario (City) to develop new local water supplies are discussed in this section. The existing and projected water supplies presented herein are based on the water supply plan presented in the Water Master Plan (WMP) Update (MWH, 2005).

4.2 HISTORICAL WATER SUPPLY

Currently, the City obtains potable water from the following four principal sources:

- Chino Basin groundwater wells owned and operated by the City
- Chino Basin Groundwater from San Antonio Water Company (SAWC)
- Imported water from the Water Facilities Authority (WFA)
- Imported recycled water from the Inland Empire Utilities Agency (IEUA)

The historical water supply mix for the period 1990-2003 is listed in acre-feet per year (AFY) in **Table 4-1** and is graphically presented in **Figure 4-1**.

Table 4-1
Historical Water Supply Mix

Year	WFA (AFY)	SAWC(1) (AFY)	Wells (AFY)	IEUA(2) (AFY)	Total (AFY)
1990	16,637	574	20,639	0	37,850
1991	8,607	1,632	24,900	0	35,140
1992	8,825	1,084	24,935	0	34,844
1993	14,645	1,040	19,474	0	35,159
1994	7,695	476	28,555	0	36,725
1995	6,810	0	30,994	0	37,804
1996	8,759	0	32,006	0	40,765
1997	7,590	0	35,526	0	43,115
1998	4,582	0	35,489	0	40,071
1999	8,116	0	37,029	0	45,144
2000	9,258	0	36,842	0	46,100
2001	8,907	0	35,105	0	44,011
2002	9,325	0	35,444	0	44,769
2003	13,207	0	30,240	630	43,447
2004	15,143	0	27,824	1,058	42,967
Average	**9,874**	**320**	**30,333**	**113**	**40,527**

(1) Per the agreement between City and SAWC, the City pumps SAWC's entitlement from its own wells to avoiding the water quality problems associated with SAWC's well.
(2) Historical recycled water sales to customers within the City of Ontario.

As shown in **Table 4-1** and **Figure 4-1**, the City has not imported Chino Basin groundwater from SAWC since 1994 due to high nitrate in their well water. In the past, the City took at a maximum 1,632 AFY of water and an average of 961 AFY of water over the years 1990 to 1994. Since 2001, the City has pumped water from its own wells on behalf of SAWC to obtain its entitlement. As discussed in Section 2.3.3, the City obtains water rights from SAWC in exchange for water deliveries through the City's distribution system.

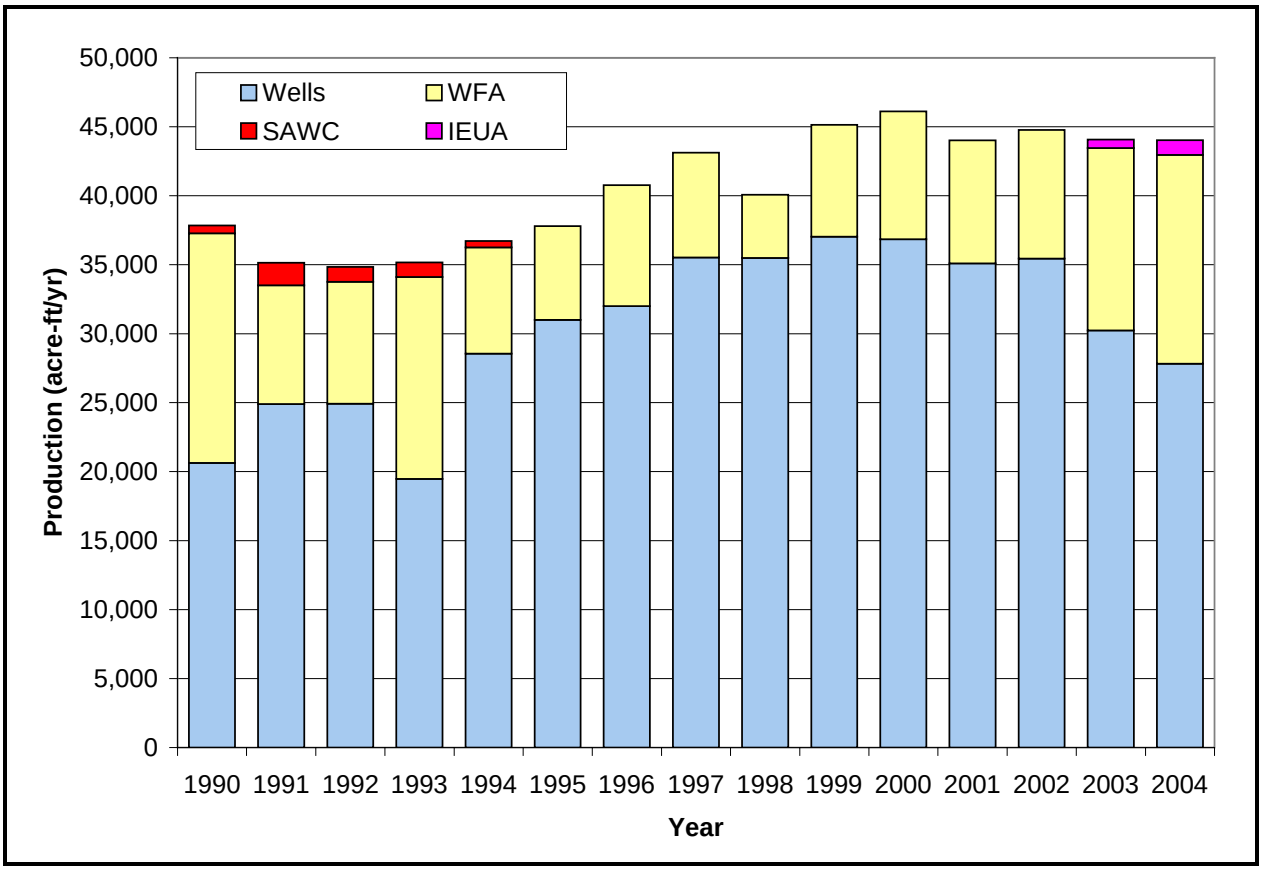
Recycled water recharge of the Chino Basin is not shown as a separate supply source, as this supply is represented in the historical amount of groundwater pumped with City wells. However, the amount groundwater recharged with recycled water is important as it reduces the amount of groundwater overpumping, which is subject to a replenishment fee. The amount of overpumping is calculated as the difference of the total amount of groundwater pumped minus the groundwater rights minus the City's share (24.34 percent) of the total groundwater recharged with recycled water by IEUA.

4.3 EXISTING AND FUTURE WATER SUPPLY SOURCES

In addition to the existing water supplies from the City's groundwater wells, the SAWC groundwater wells, imported water from WFA, recycled water recharge and recycled water from IEUA, the City will have additional potable water supply source in the near future. In January 2006, the City will receive treated Chino Basin groundwater from the Chino Basin Desalter Authority (CDA).

The existing and future supply sources shown in **Figure 4-1** are discussed below.

Figure 4-1
Historical Water Supply Mix



4.3.1 Chino Basin Groundwater from City Wells

The Chino Basin covers an area of about 235 square miles. The basin contains about 5 million acre-ft of water in storage and has an unused storage capacity of about 1 million acre-ft. The Chino Basin is the largest groundwater basin in the Upper Santa Ana River watershed. The basin is bounded on the north by the Red Hill fault and Cucamonga fault zone, on the northwest by the San Jose fault, on the southwest by the Chino Hills, on the northeast by the Rialto-Colton fault, on the east by the Jurupa and Pedley Hills and on the south by the Santa Ana River. The basin is an alluvial valley that was formed when eroded sediments from the surrounding San Gabriel Mountains, the Chino Hills, the Puente Hills and the San Bernardino Mountains filled a geological depression

The groundwater quality in Chino Basin is of better quality in the north than in the south, as that is the direction of water flow through the basin. With recharge in the northern portion, salinity measured as total dissolved solids (TDS) and nitrate concentrations increase in the southern portion of Chino Basin. Generally, the TDS exceeds 500 mg/L and nitrate exceeds 50 mg/L south of Riverside Drive. TDS and nitrate generally originate from non-point sources such as land application of wastes and fertilizer from previous and current agricultural activities. In

addition, several point sources of contamination exist in the basin that affects groundwater quality in localized areas.

Water Rights

Groundwater rights are defined by the 1978 judgment in the case *Chino Basin MWD v. City of Chino, et al.* The judgment is administered by a watermaster and is subject to the on-going court jurisdiction. The original watermaster, the Chino Basin Municipal Water District (now known as IEUA), was replaced in 1998 by a nine-member board made up of representatives of the basin pumpers, designated the Chino Basin Watermaster (CBWM). The judgment defined the safe yield of the basin to be 140,000 AFY.

The water rights of the Chino Basin are allotted to three pools: the Overlying (Agricultural) Pool, the Overlying (Non-agricultural) Pool, and the Appropriative Pool. The Overlying (Agricultural) Pool consists of private property owners with land being used for agricultural activities and the State of California detention centers. The Overlying (Non-Agricultural) Pool consists of businesses and industries, and the Appropriative Pool consists of cities and water agencies that supply water to their customers. Water rights are divided for the City between the three pools as follows:

Overlying (Agricultural) Pool:	82,800 AFY
Overlying (Non-Agricultural) Pool:	7,366 AFY
Appropriative Pool:	49,834 AFY
Total Water Rights:	140,000 AFY

The City has water rights based on 20.742 percent of the Initial Operating Safe Yield (OSY), permanent conversion of agricultural land, temporary transfers of unpumped water from the Overlying (Agricultural) Pool, and the safe yield reallocation of the Agricultural Pool. The cities groundwater rights are summarized in **Table 4-2**.

For Fiscal Year (FY) 2003-2004, the City had a total right to pump 28,539 AFY. This amount consists of 11,374 AFY of the Initial OSY, 11,110 AFY of Appropriative Pool transactions and new yield, 5,827 acre-ft from Agricultural Pool transfers and a one-time storage adjustment of 229 AFY. The Appropriative Pool transactions included 8,600 acre-ft of water rights that were leased from the City of Chino and Jurupa Community Services District (JCSD).

The historical and projected amount of groundwater pumped by City wells are listed in **Table 4-3** and **Table 4-4**, respectively. Historical records show that groundwater has contributed to approximately 70-80 percent of the City's water supply mix. Although the City is planning to drill more groundwater wells to serve new customers, the projected amount of groundwater decreases to about 41-48 percent of the City's water supply, which means that the City will become more reliant on imported water from WFA. These tables also show that the actual amount of groundwater pumped and projected to be pumped exceeds the City's water rights as listed in **Table 4-2**. The City needs to pay IEUA a replenishment fee of $213/acre-ft pumped in excess of its water rights to cover IEUA's cost to replenishment the groundwater basin with recycled water. As mentioned in paragraph 4.2, the amount of overpumping that is subject to the replenishment fee is reduced by the City's share of the amount of groundwater recharged with

recycled water, which is calculated as 24.34 percent of the total amount of groundwater recharged with recycled water by IEUA. The projected recycled water recharge and the City's share are presented in **Table 4-5**.

Table 4-2
Groundwater Pumping Rights

Chino Basin	2005 (AFY)	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)
Initial Safe Yield	11,374	11,374	11,374	10,337	10,337	10,337
New Yield	2,489	2,489	2,489	2,489	2,489	2,489
NMC Ag and Land Use Conversions	0	3,625	5,712	8,813	11,917	15,021
OMC Ag Conversions	97	207	317	426	536	646
Prior Land Use Conversions	895	895	895	895	895	895
Annual Early Transfers	6,803	6,803	6,803	6,803	6,803	6,803
Adjustment to Total Available(1)	(708)	(910)	(1,111)	(1,313)	(1,514)	(1,716)
Total Share of Initial OSY	**20,950**	**24,483**	**26,478**	**28,451**	**31,463**	**34,475**
SAWC Shares	765	765	765	765	765	765
Sunkist (service agreement)	1,470	1,470	1,470	1,470	1,470	1,470
Total Groundwater Rights	**23,185**	**26,718**	**28,713**	**30,686**	**33,698**	**36,710**

This table corresponds to DWR Table 5.
(1) Adjustment is based on the City's share of the projected early transfers and land use conversions. The adjustments of 708 AFY (year 2005) and the 1,716 AFY (year 2030) are obtained from the Chino Basin Water Master (Post land use conversions – 2025). As the NMC is projected to reach build out conditions in year 2030 (2005 Water Master Plan Update), the year 2025 numbers are used for 2030. Intermediate years are calculated with linear interpolation.

Table 4-3
Historical Amount of Groundwater Pumped

Chino Basin	2000	2001	2002	2003	2004
City Wells in Chino Basin (AFY)	36,842	35,105	35,444	30,240	27,824
Percent of Total Water Supply to City	80%	80%	79%	70%	65%

This table corresponds to DWR Table 6.

Table 4-4
Projected Amount of Groundwater Pumped

Chino Basin	2010	2015	2020	2025	2030
City Wells in Chino Basin (AFY)	25,248	27,453	33,554	39,312	44,721
Percent of Total Water Supply to City	41%	41%	44%	47%	48%

This table corresponds to DWR Table 7.

Table 4-5
City's Share of Groundwater Recharge

Recycled Water Recharge	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY
Total Recharge by IEUA(1)	22,000	25,000	28,000	35,000	35,000
City's Share of Total Recharge(2)	5,355	6,085	6,815	8,519	8,519

(1) Source: IEUA's Review Draft UWMP (IEUA, 2005d)
(2) Calculated as 24.34% of total groundwater recharge by IEUA.

4.3.2 Chino Basin Groundwater from SAWC

The City is a shareholder of the SAWC. Currently, the City owns 295 shares, which currently entitles the City to approximately 765 AFY. This value was recently reduced from 2.9 to about 2.59 AFY per share. Historically, the water from SAWC is delivered through a Chino Basin well that is owned and operated by SAWC. However, this well is currently closed due to nitrates over 100 mg/L, which is above the State Primary Maximum Contaminant Level of 45 mg/L.

In October 2001, the City and SAWC executed a license agreement whereby the City pumps its SAWC entitlement from its own Wells 31, 37 and 38. This agreement allows the City to access its SAWC entitlement while avoiding the water quality problems associated with SAWC's well.

In the past, the City took at a maximum 1,630 AFY of water and an average of 961 AFY of water over the years 1990 to 1994. Since 2001, the City has pumped water from its own wells on behalf of SAWC to obtain its entitlement.

4.3.3 Imported Water from WFA

The WFA operates the Aqua de Lejos Water Treatment Plant located in the City of Upland. The plant obtains raw imported SWP water from MWD through the Rialto Reach of the Foothill Feeder. At the time of its construction in 1988, the plant had an initial capacity of 68 million gallons per day (mgd). The plant is a conventional water treatment plant featuring coagulation, flocculation, sedimentation, filtration and chloramine disinfection. The plant has been re-rated several times and has a current capacity of 81 mgd. The City owns 31.4 percent of the plant capacity or 25 mgd. The City of Ontario purchases imported water from the WFA. There are two connections designated Ontario #1 (15 mgd capacity), and Ontario #2 (10 mgd capacity) serving the City's water system.

Based on historical records for 1990 through 2003, the average annual WFA supply has been 8,947 AFY, while the maximum annual purchase was 16,637 AFY in 1990. The peak monthly flow averaged 20.2 mgd. For the period 1999-2002, the City obtained about 20 percent of its annual supply from the WFA. In 2003, this amount was increased to about 30 percent.

The quality of water from the WFA has low TDS and nitrate levels at 280 and 4 mg/L, respectively. Data from MWD (1979-2005) indicates the TDS of water from the East Branch of the SWP has ranged from 84 to 455 mg/L with an average of 266 mg/L (MWD, 2005).

4.3.4 Recycled Water from IEUA

Recycled water is provided by the IEUA, which treats its collected wastewater at four regional wastewater reclamation plants; Carbon Canyon Wastewater Reclamation Facility (CCWRF), Regional Plant No. 1 (RP-1), RP-4, and RP-5. The City of Ontario can currently obtain recycled water from RP-1 and RP-4 through the existing recycled water distribution system of IEUA. As described in the IEUA's *Recycled Water Implementation Plan* (MWH, 2005b), IEUA has planned to expand the existing recycled water distribution system significantly to serve its entire service area. With the expansion, more regional recycled water pipelines will be constructed within the City that allow substantial increase of recycled water use in the future. It is anticipated that the current recycled water supply of 1,829 AFY will increase to 14,492 AFY by year 2030.

4.3.5 Chino Basin Groundwater from CDA

The City of Ontario is a member of the CDA, a joint powers agency created on September 25, 2001, between JCSD, Santa Ana River Water Company (SAWRC), IEUA and the cities of Chino, Chino Hills, Norco, and Ontario. The CDA currently operates and maintains a treatment facility, Chino Desalter I (CDA-I), and is currently in the construction phase of the Chino Desalter I Expansion and Chino Desalter II (CDA-II).

CDA-I

CDA-I treats brackish groundwater high in nitrates and TDS from the southern portion of Chino Basin and treats the water using a reverse osmosis (RO) system for domestic purposes. The CDA-I has a treated water quality goal of 350 mg/L for TDS and 25 mg/L for nitrate with a target of 20 mg/l (Chino, 2002). This quality reflects the blended product water from the plant. The existing capacity of CDA-I is 9.2 mgd, while the expansion of the CDA-I from 9.2 mgd (10,3200 AFY) to 14.2 mgd (15,900 AFY) is scheduled to be completed by January 2006. The City will take 1,500 AFY into the 1,010 Zone from a connection near the intersection of Archibald and Schaeffer Avenues after the plant is expanded.

CDA-II

In addition to the expansion of CDA-I, a second facility, CDA-II, is under construction and is expected to be completed in January 2006. The CDA-II was initiated by the CDA to provide 10,400 acre-ft/ yr of water deliveries to JCSD, the cities of Ontario, Norco and the SARWC. The City will receive 3,500 AFY of water from the CDA-II facility. This plant will deliver water to the City at two connections, one near the intersection of Philadelphia Street and Milliken Avenue and one near the intersection of Galena Street and Milliken Avenue.

CDA-III

As part of the Optimum Basin Management Plan (OBMP) investigations, the CBWM has conducted groundwater modeling studies to determine how best to establish hydraulic control of groundwater, salts and nitrates in the southern Chino Basin. Hydraulic control is necessary to ensure that groundwater, heavily contaminated with nitrate, TDS and other constituents of

concern, does not discharge to the Santa Ana River and impact water users in Orange County. Hydraulic control is also needed for maintaining the safe yield of the Chino Basin. As the agricultural preserve area develops, it will be important that production be continued to prevent increased losses of water to the Santa Ana River. Groundwater production by the Agricultural Pool is currently about 40,000 AFY and is projected to decline to about 10,000 AFY. Production by the CDA desalters will be about 24,600 AFY. CBWM studies indicate that an additional 20,000 AFY of extraction will be needed to achieve hydraulic control of the basin.

CDA-III (or further expansion of CDA-I or CDA-II) is a possible facility that could be located in the southern portion of the Chino Basin, to collect and reduce the loss of water to Orange County. At this time, no capacities or locations have been identified for such a facility.

4.3.6 Dry Year Yield Program

The Dry Year Yield (DYY) Storage Program is a cooperative conjunctive use program involving MWD, IEUA, CBWM, Three Valleys Municipal Water District (TVMWD) and the Chino Basin groundwater producers. The DYY Program allows MWD to store up to 100,000 acre-ft of water in the Chino Basin when surplus water is available during wet years and produce 33,000 AFY in dry, drought or emergency periods. The DYY Program is partially funded by a State grant from Proposition 13 Bond funds. A combination of grant and MWD funding will be provided to local agencies to build water production and treatment facilities in support of the DYY. The funds received by each participating local water agency are consistent with each agency's commitment to use delivered MWD water during normal years and use groundwater from the MWD's storage account during dry years.

On April 15, 2003, the City authorized execution of an agreement with IEUA to participate in the DYY program. To participate in the DYY program, an agency agrees to reduce its use of imported water compared to the prior year by a fixed amount, known as the agency's "shift obligation". Thus, water that the City would normally import from WFA in a dry year would be offset by groundwater. The City's shift obligation is 8,076 AFY, and its share of the funding is $5,674,168. During years when MWD calls for extraction, the City's WFA production would be reduced by 8,076 AFY compared to the previous year and it would extract this amount of water from the designated DYY wells.

The funds will be used to build three new groundwater wells (designated and a wellhead treatment facility to remove nitrates from one existing well and one future well. Each well has an estimated yield of 2,500 gpm (about 3,000 AFY when operated 75 percent of the year). Upon call by MWD for stored water delivery, the City will operate these facilities, combined with the existing infrastructure to meet its shift obligation. MWD would pay for the cost of operations and the City would pay MWD (through IEUA) the full service water rate. The City can use the DYY facilities to meet its normal water demands during other periods but is responsible for the O&M costs when they use the facilities. Because of this program, the City is less reliant on imported water supply in dry years and improves its groundwater capacity during wet weather cycles.

4.4 SUMMARY OF WATER SUPPLIES

The existing and projected water supplies under normal year and dry year conditions are summarized in **Table 4-6** and **Table 4-7**, respectively. Under the Dry Year Scenario, the amount of imported water from WFA is reduced by the shift obligation amount of 8,076 AFY. This amount is pumped from the DYY wells.

The projected imported water supplies from WFA are based on the assumption that 30 percent of the water demands are met with water from WFA up to a total supply of 20,000 AFY, which is 8,000 AFY less than the City's allotment in the treatment plant capacity. The maximum capacity is not reached by year 2030. This shift obligation amount is subtracted under the Dry Year Scenario.

Table 4-6
Current and Planned Water Supplies – Normal Year Scenario

Water Supply Sources	2005 (AFY)	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)
Wholesale Water Provider						
WFA Connection I & II (1)	19,750	19,800	19,850	19,900	19,950	20,000
Groundwater Produced						
Operating Safe Yield(2)	20,950	24,483	26,478	28,451	31,460	34,475
SAWC (3)	765	765	765	765	765	765
Recycled Water Recharge(4)	243	1,890	4,203	6,815	8,519	8,519
Leases and Transfers (5)	874	0	0	2,423	4,716	8,709
DYY(6)	0	0	0	0	0	0
Sunkist(7)	1,470	1,470	1,470	1,470	1,470	1,470
Local Surface Water Supplies	n/a	n/a	n/a	n/a	n/a	n/a
Recycled Water(9)	1,829	7,926	8,816	11,761	12,435	14,492
Desalinated Water	0	5,000	5,000	5,000	5,000	5,000
Total without Water Conservation	**45,881**	**61,334**	**66,583**	**76,585**	**84,316**	**93,430**
Water Conservation	-840	-2,635	-3,994	-4,900	-6,149	-7,747
Total with Water Conservation	**45,041**	**58,699**	**62,589**	**71,685**	**78,167**	**85,683**

This table corresponds to DWR Table 4
(1) The max capacity that WFA can deliver is 25 mgd (28,000 AFY). WFA is set at 30% of demand except for years where this would results in a supply surplus.
(2) Obtained from Table 4-2.
(3) SAWC well is closed due to high nitrates. The water rights are transferred to the City which pumps the water from its own wells (Wells 31, 37, and 38). Assessment package from the years 2003 - 2004 for the years 2004 - 2005 budget.(CBWM, 2004).
(4) The first amount of overpumping (if applicable) is assigned to recycled water recharge up to the amount listed in Table 4-5.
(5) The remaining amount of overpumping (if applicable) is assigned to leases and transfers that are subject to a replenishment fee.
(6) Shift Obligation per the "Local Agency Agreement" between IEUA and the City of Ontario (IEUA,2003).
(7) Supply from Sunkist is set equal to the projected demand, thus it does not impact the available water supply for growth.
(8) Combined Water Conservation (active + passive) is counted as a supply source. Values obtained from Table 3-3.
(9) Obtained from Table 2-6 (supply is equal to demand).

Table 4-7
Current and Planned Water Supplies – Dry Year Scenario

Water Supply Sources	2005 (AFY)	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)
Wholesale Water Provider						
WFA Connection I & II (1)	19,750	11,724	11,774	11,824	11,874	11,924
Groundwater Produced						
Operating Safe Yield(2)	20,950	24,483	26,478	28,451	31,460	34,475
SAWC (3)	765	765	765	765	765	765
Recycled Water Recharge(4)	243	5,355	6,085	6,815	8,519	8,519
Leases and Transfers (5)	874	742	2,678	7,554	10,420	14,984
DYY(6)	0	8,076	8,076	8,076	8,076	8,076
Sunkist(7)	1,470	1,470	1,470	1,470	1,470	1,470
Local Surface Water Supplies	n/a	n/a	n/a	n/a	n/a	n/a
Recycled Water(9)	1,829	7,926	8,816	11,761	12,435	14,492
Desalinated Water	0	5,000	5,000	5,000	5,000	5,000
Total without Water Conservation	**45,881**	**65,541**	**71,143**	**81,716**	**90,019**	**99,704**
Water Conservation(8)	-840	-2,635	-3,994	-4,900	-6,149	-7,747
Total with Water Conservation	**45,041**	**62,906**	**67,149**	**76,816**	**83,870**	**91,957**

This table corresponds to DWR Table 4
(1) The max capacity that WFA can deliver is 25 mgd (28,000 AFY). WFA is set at 30% of demand except for years where this would results in a supply surplus.
(2) Obtained from Table 4-2.
(3) SAWC well is closed due to high nitrates. The water rights are transferred to the City which pumps the water from its own wells (Wells 31, 37, and 38). Assessment package from the years 2003 - 2004 for the years 2004 - 2005 budget.(CBWM, 2004).
(4) The first amount of overpumping (if applicable) is assigned to recycled water recharge up to the amount listed in Table 4-5.
(5) The remaining amount of overpumping (if applicable) is assigned to leases and transfers that are subject to a replenishment fee.
(6) Shift Obligation per the "Local Agency Agreement" between IEUA and the City of Ontario (IEUA,2003).
(7) Supply from Sunkist is set equal to the projected demand, thus it does not impact the available water supply for growth.
(8) Combined Water Conservation (active + passive) is counted as a supply source. Values obtained from Table 3-3.
(9) Obtained from Table 2-6 (supply is equal to demand).

The OSY is calculated as the sum of:

- The City's share of the Initial OSY (20.742 percent of 54,834 or 11,373 AFY till 2017 and 10,337 AFY from 2018 and beyond due to a reduction of 5,000 AFY in OSY)
- The City's share of new yield (2,489 AFY from 2004 and beyond).
- The Ag Pool Reallocation varies over time due to increasing land use conversions and the variable conversion rates (1.3 AFY/acre prior to the Peace Agreement and 2.0 AFY/acre post Peace Agreement). The total re-allocation amount of 15,668 AFY that was estimated for year 2025 by the Chino Basin watermaster is used for year 2030, when the NMC is projected to reach build out conditions.
- The City's share of the early transfers (20.742 percent of 32,800 or 6,804 AFY)
- The City's share of overpumping (28.15 percent of 6,097 or 1,716 AFY). The percentage is based on the portion of the City's potential for reallocation (annual early transfers plus land use conversions) which is 23,366 AFY of 83,006 AFY total.

The amount of water obtained from SAWC is based on a water rights transfer as the SAWC well has high nitrates. The City will obtain water through pumping its own wells.
The amount of overpumping is calculated by subtracting all available potable water supplies (groundwater wells, WFA, SAWC, CDA-I, CDA-II, and water conservation) from the projected

average potable water demand. The first amount of overpumping is assigned to "Recycled Water Recharge" up to the amounts listed in **Table 4-5**. This amount is zero if the City has a supply surplus. For years where the City needs to overpump more than the City's share of recycled water recharge, the City would need to lease or transfer additional groundwater supplies.

The DYY amount is zero under normal conditions, and equal to the shift obligation under Dry Year Scenario.

The demand of Sunkist is assumed to remain constant.

The amount of recycled water supplies are based on the recycled water demand projections presented in **Section 3**. Although the actual available recycled water supplies from IEUA may be higher than the projected demands, the recycled water supply is set equal to the recycled water demand, to avoid counting recycled water supplies towards meeting potable water demands. Therefore, the remaining supplies listed in **Table 4-6** and **Table 4-7** should be sufficient to meet the projected potable water demands listed in **Table 2-8**.

Desalinated groundwater from CDA-I and CDA-II will become available in 2007 and is a constant supply delivery.

The Water Conservation amounts are based on the projections presented in IEUA's Review Draft UWMP (IEUA, 2005d). Details on how to achieve these water savings are presented in **Section 3**.

The comparison of supplies and demands and the supply reliability under various weather conditions are discussed in **Section 5**.

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Section 5
Supply Reliability

5.1 WATER SERVICE RELIABILITY

Water Code section 10635 (a) defines that every urban water supplier shall include an assessment of the reliability of its water service to its customers during normal, dry year, and multiple dry years in its Urban Water Management Plan (UWMP). This water supply and demand assessment shall compare the total water supply sources available to the water suppliers with the total projected water use over the next 20 years, in 5-year increments, for normal water year, a single dry water year, and multiple dry years.

This section provides the comparison of the available water supplies under various demand conditions through year 2030. The following assumptions are made to calculate the numbers presented in **Tables 5-2** through **5-29**. The projected demands per year from 2005 through 2030 under the evaluated demand scenarios are summarized in **Appendix E**.

- The projected water demand in a "Normal Water Year" are based on the average annual water demand projections presented in **Table 7-1** of the 2005 Water and Recycled Water Master Plan (MWH, 2005).
- The projected water demand in a "Single Dry Year" and "Multiple Dry Year" are based on the high annual water demand projections presented in **Table 7-1** of the 2005 Water and Recycled Water Master Plan (MWH, 2005) and adjusted for water conservation.
- The projected recycled water demands as presented in **Table 2-4** are added to all of the 2005 Water and Recycled Water Master Plan (MWH, 2005) demands under normal year, single dry year, and multiple dry years.
- The water conservation amount as presented in **Table 3-2** of this UWMP is deducted from the projected water demands. This is referred to as the "base water conservation amount"
- Multiple dry year periods consist of three consecutive years, rather than 4 years, as the City's only requires to meets its shift obligation for three years as defined in the Dry Year Yield (DYY) Program.
- For each multiple dry year period, the first and last year of each 5-year period (ending in 0 and 5) are considered normal years, while the second through fourth year are selected as the dry years. This rule does not apply to the period 2005-2010, as the DYY Program does not become effective until 2008. Years 2009 and 2010 are selected as the multiple dry years in this period. This approach is consistent with the IEUA UWMP (IEUA, 2005).
- In the second and third year of a multiple dry year period, additional water conservation equal to 10 percent of the projected high annual demand is deducted from the projected water demand minus the Active Conservation. Additional water conservation is not applied to the first year of a 3-year multiple dry year period as it is unknown in the first year if a drought sustains. It is assumed that when a drought sustains, public notifications will be used effectively to reduce water consumption.
- All years are considered normal years for the normal year evaluations.

- Every year of each 5-year period is considered as a dry years for the single dry year evaluations, because each year is evaluated separately. Additional water conservation as used for multiple dry years is not applied.
- In dry years and multiple dry years, the amount of imported water from WFA is reduced by the City's DYY shift obligation of 8,076 acre-ft/yr. This reduction in supply is compensated by increased groundwater production of 8,076 acre-ft/yr. This amount is added to the Chino Basin groundwater leases and replenishment, which is groundwater pumped in excess of the City's water rights.

With these assumptions, the contribution of each supply source to the total supply mix under the various demand conditions is determined. This contribution expressed in percentage of normal year conditions is also referred to as supply reliability. The supply reliability of groundwater leases and replenishment varies over time, as the amount of groundwater used will increase in the future to meet the increasing demands. The supply reliability of the City's supply sources are summarized in **Table 5-1**. The upper end of each range represents the first dry year in the period 2005-2030 when the shift obligation is relatively high, while the lower end of each range represents the last dry year in the period 2005-2030 when the shift obligation becomes a smaller percentage due to an increase in groundwater production.

Table 5-1
Supply Reliability per Source

Supply Source	Average / Normal Water Year	Single Dry Water Year	Multiple Dry Water Years (1)			
			Year 1	Year 2	Year 3	Year 4 (2)
Groundwater Rights	100%	100%	100%	100%	100%	100%
Recycled Water	100%	100%	100%	105%	110%	100%
CDA I & II	100%	100%	100%	100%	100%	100%
Imported Water	100%	62%	60%	59%	59%	100%

This table corresponds to DWR Table 8.
Source: (IEUA,2005) pg. 169
(1) Chino Basin Dry-Year Yield (DYY) Program facilities provide for 100,000 AF of storage and 33,000 AFY of additional groundwater production for use in-lieu of Imported Water during dry years. The DYY Program is in effect during dry years between 2008 and 2025. Percentages reflect decrease in imported water and associated increase in groundwater production. From Report on Metropolitan's Water Supplies " A Blueprint for Water Reliability" (MWD, 2003), Metropolitan has documented the capability to reliably meet 100 percent of projected supplemental water demands through 2030. Per the Fiscal Year 2004/2005 Chino Basin Watermaster Assessment Package, agencies have approximately 150,000 AF in storage.
(2) Metropolitan's Report on Metropolitan's Water Supplies, A Blueprint for Water Reliability, March 25, 2003, provides information for three consecutive dry years

5.2 PROJECTED DEMAND AND SUPPLIES – NORMAL WATER YEAR

The City's water supplies, which are separated into the following five categories, are summarized in **Table 5-2**:

- Groundwater – The City's water rights consistent with the operating safe yield (OSY) of the Chino Basin and City's water rights through the San Antonio Water Company (SAWC) shares. As discussed in detail in **Section 4**, the City's water rights will increase in time due to

land use conversions and other factors from 25,660 acre-ft/yr in 2005 to 33,063 acre-ft/yr in 2030.

- CDA – The City's 5,000 acre-ft/yr allotment of Chino Desalter I and II starting in 2006.
- Chino Basin Leases and Replenishment – The amount of groundwater pumped in excess of the City's water rights that are subject to replenishment fees. This amount increases over time to accommodate the growth in water demand.
- Imported Water – The projected amount of water purchased from WFA and increases to 20,000 acre-ft/yr in year 2030 under normal year conditions. This amount is adjusted with the shift obligation of 8,076 acre-ft/yr for single and multiple dry years.
- Recycled Water – The recycled water supply is set equal to the projected recycled water demand and increases from gradually to 14,492 acre-ft/yr in 2030.

Table 5-2
Projected Normal Water Supply

Supply Sources	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)
Groundwater Rights (1)	26,718	28,713	30,686	33,695	36,710
CDA-I and II	0	209	4,338	7,086	9,481
Additional Groundwater Pumping(2)	5,000	5,000	5,000	5,000	5,000
Imported Water(3)	19,055	19,850	19,900	19,950	20,000
Recycled Water	7,926	8,816	11,761	12,435	14,492
Base Conservation	2,635	3,994	4,900	6,149	7,747
Total Supply	**61,334**	**66,583**	**76,585**	**84,316**	**93,430**

This table corresponds to DWR Table 40.
(1) Groundwater rights includes the Total share of Initial OSY, the SAWC shares, and the water rights from Sunkist.
(2) Additional groundwater pumping includes recycled water recharge, leases and transfers.
(3) The City of Ontario owns a total capacity of 25 MGD (28,000 AF) in the WFA Plant.

The projected normal demand consist of the combination of potable and recycled water demands and is adjusted for the base water conservation as discussed in **Section 3**. The projected normal year demands are summarized in **Table 5-3**.

Table 5-3
Projected Normal Year Water Demand

Demand	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)
Potable Water	53,408	57,767	64,824	71,881	78,938
Recycled Water	7,926	8,816	11,761	12,435	14,492
Total Demand	**61,334**	**66,583**	**76,585**	**84,316**	**93,430**
% of year 2005	136%	148%	170%	187%	207%
Active Conservation	(2,635)	(3,994)	(4,900)	(6,149)	(7,747)
Total Demand with Conservation	**58,699**	**62,589**	**71,685**	**78,167**	**85,683**

This table corresponds to DWR Table 41

The comparison between the available water supplies and projected demands for normal year conditions is presented in **Table 5-4**. As shown in this table, the available supplies are equal to the projected demand.

Table 5-4
Normal Year Supply and Demand Comparison

Supply and Demand	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)
Supply totals	61,334	66,583	76,585	84,316	93,430
Demand totals	61,334	66,583	76,585	84,316	93,430
Difference	**0**	**0**	**0**	**0**	**0**
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%

This table corresponds to DWR Table 42

The supply strategy shown in **Table 5-4** is based on maximizing groundwater and CDA supplies as these are the cheapest sources of supply. The amount of imported water is such that the City maintains sufficient supplies when it needs to meet its shift obligation in dry years. The recycled water supplies are set equal to the recycled water demand. Hence, the only variable in the water supply mix is the amount of Chino Basins groundwater leases and replenishment. This amount is adjusted such that the total water supply equals the projected demands. Therefore, there is no supply surplus shown in **Table 5-4**. However, the City has the ability to pump more water if needed as the City's groundwater pumping capacity is greater than needed to meet the annual demands, as additional wells are used to meet the maximum day demand. The groundwater supply surplus based on continues groundwater pumping of all wells is shown in **Table 5-5**.

Table 5-5
Groundwater Pumping Surplus in Normal Year Conditions

Groundwater Supply	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)
Groundwater Rights	26,718	28,713	30,686	33,695	36,710
Additional Groundwater Pumping(1)	0	209	4,338	7,086	9,481
Total Projected GW Supply	**26,718**	**28,923**	**35,024**	**40,782**	**46,191**
Available GW Pumping Capacity	78,877	78,877	78,877	83,715	93,391
GW Pumping Surplus	**52,159**	**49,954**	**43,853**	**42,933**	**47,200**

(1) Additional groundwater pumping includes recycled water recharge, leases and transfers.

5.3 PROJECTED DEMAND AND SUPPLIES – SINGLE DRY YEAR

The City has the same water supply sources available in a single dry year as in a normal dry year, however the available amount of some of the sources are adjusted. As discussed in **Section 4**, the City will participate in a cooperative conjunctive use program with Metropolitan Water District of Southern California (MWD) and other agencies. This program will become effective in year 2008. Under this program, the City will receive less imported water from MWD through WFA in years designated as a dry year based on the regional water supply situation. To compensate the reduced imported water supply, also referred to as the City's shift obligation, the City will pump additional groundwater with wells that are drilled and financed through the DYY Program. The City's shift obligation is 8,076 acre-ft/yr. The water supply mix under dry year

conditions is presented in **Table 5-5**. As shown in this table, the imported supplies are reduced by 8,076 acre-ft/yr, while the chino basin replenishment supplies are increased by this amount.

Table 5-6
Projected Single Dry Year Water Supply

Supply Sources	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)
Groundwater Rights(1)	26,718	28,713	30,686	33,695	36,710
Additional GW Pumping(2)	5,000	5,000	5,000	5,000	5,000
CDA-I and II	11,538	12,845	17,546	20,866	23,832
Imported Water	11,724	11,774	11,824	11,874	11,924
Recycled Water	9,449	10,511	14,022	14,825	17,278
Base Conservation	2,635	3,994	4,900	6,149	7,747
Total Supply	**67,064**	**72,837**	**83,977**	**92,409**	**102,490**
Groundwater Rights	100%	100%	100%	100%	100%
Additional Groundwater(2)	100%	100%	100%	100%	100%
CDA	n/a	6135%	404%	294%	251%
Imported Water	62%	59%	59%	60%	60%
Recycled Water	119%	119%	119%	119%	119%
% of projected normal	**105%**	**104%**	**103%**	**102%**	**102%**

This table corresponds to DWR Table 43
(1) Groundwater rights includes the Total share of Initial OSY, the SAWC shares, and the water rights from Sunkist.
(2) Additional groundwater includes groundwater pumping for the DYY shift obligation, recycled water recharge, and Chino Basin Leases and Replenishment.

Based on historical production data for the period 1990-2003, the dry year demands are about 8.1 higher than the annual average demands. The dry year demands are also referred to as the High Year Demand in the 2005 Water Master Plan (MWH, 2005). The demands used for the single dry year are based on the high year demands. The demand of Sunkist is assumed to remain unchanged at 1,470 acre-ft/yr. The difference between the dry year demands shown in **Table 5-7**and the annual average demands listed in **Table 5-3** are not exactly 8.1 percent, because the potable demands include both the City's and Sunkist's demands.

The recycled water demands are increased with 19 percent under dry year conditions to compensate the decrease in rainfall. With an average ET of 55.1 inches and average rainfall of 15.3 inches, irrigation should be about 39.8 inches per year. Assuming that rainfall in a dry year is about 50 percent of normal rainfall, irrigation increases to about 47.5 inches, which is 19 percent higher than 39.8 inches.

The projected demands under single dry year conditions are shown in **Table 5-7**.

Table 5-7
Projected Single Dry Year Water Demand

Demand	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)
Potable High Demand 1	57,615	62,327	69,955	77,584	85,212
Recycled Water	9,449	10,511	14,022	14,825	17,278
Total Demand without Conservation	**67,064**	**72,837**	**83,977**	**92,409**	**102,490**
Base Conservation	(2,635)	(3,994)	(4,900)	(6,149)	(7,747)
Total Demand with Conservation	**64,429**	**68,843**	**79,077**	**86,260**	**94,743**
% of projected normal	108%	106%	105%	104%	103%

This table corresponds to DWR Table 44

The comparison between the available water supplies and projected demands for single dry year conditions is presented in **Table 5-8**. As shown in this table, the available supplies are equal to the projected demand, which means that the City has sufficient supply to meet the demands under single dry year conditions. Similarly to the supply strategy under normal year conditions, the City has the ability to pump more water if needed by using additional wells. The groundwater supply surplus under single dry year conditions based on continues groundwater pumping of all wells is shown in **Table 5-9.**

Table 5-8
Single Dry Year Supply and Demand Comparison

	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)
Supply totals	67,064	72,837	83,977	92,409	102,490
Demand totals	67,064	72,837	83,977	92,409	102,490
Difference	**0**	**0**	**0**	**0**	**0**
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%

This table corresponds to DWR Table 45

Table 5-9
Groundwater Pumping Surplus in Single Dry Year Conditions

Groundwater Supply	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)
Groundwater Rights	26,718	28,713	30,686	33,695	36,710
Additional Groundwater Pumping(1)	11,538	12,845	17,546	20,866	23,832
Total Projected GW Supply	**38,256**	**41,559**	**48,231**	**54,561**	**60,541**
Available GW Pumping Capacity	78,877	78,877	78,877	83,715	93,391
GW Pumping Surplus	**40,621**	**37,318**	**30,646**	**29,154**	**32,849**

(1) Additional groundwater pumping includes recycled water recharge, leases and transfers.

5.4 PROJECTED DEMAND AND SUPPLIES – MULTIPLE DRY YEAR

The water demands and supplies are also analyzed for the next 25 years in the event of a multiple dry year period. Multiple dry year periods consist of 3 consecutive years, rather than 4 years, as the City is only required to meets its shift obligation for 3 years as defined in the DYY Program.

The results are presented in per year for 5-year periods, compared to the 5-year intervals shown for the normal and single dry year conditions to demonstrate the effect of multiple dry years on water demands, conservation, and supplies. For each multiple dry year period, the first and last year of each 5-year period (ending in 0 and 5) are considered normal years, while the second through fourth year are selected a the dry years. An exception is the period 2005-2010, where years 2009 and 2010 are selected as the 2-year multiple dry year period, because full implementation of the DYY Program does not become effective until 2008. The water demand in the first year of a multiple dry year period is the same as a single dry year, while the demand in the second and third year are lowered with additional water conservation, corresponding to multiple dry year demand in **Appendix E**.

The City has the same water supply sources and supply amounts available in a multiple dry year as in a single dry year. The water supply mix under multiple dry year conditions for the period 2006-2010 is presented in **Table 5-10.** As shown in this table, the imported supplies in 2009 and 2010 are reduced by 8,076 acre-ft/yr, while the chino basin replenishment supplies are increased by this amount for these years.

Table 5-10
Projected Supply for a Multiple Dry Year Period ending in 2010

Supply Sources	**2006 (AFY)**	**2007 (AFY)**	**2008 (AFY)**	**2009 (AFY)**	**2010 (AFY)**
Climate Condition	**Normal**	**Normal**	**Dry**	**Dry**	**Dry**
Groundwater(1)	23,892	24,598	25,305	26,012	26,718
CDA-I and II	5,000	5,000	5,000	5,000	5,000
Additional Groundwater Pumping(2)	0	0	8,743	4,626	5,776
Imported Water	14,167	15,389	11,704	11,714	11,724
Recycled Water	3,042	4,268	6,551	8,013	9,449
Active Conservation	1,199	1,558	1,917	2,276	2,635
Additional Conservation	0	0	0	5,514	5,761
Total Supply	**47,299**	**50,813**	**59,220**	**63,154**	**67,064**
Groundwater	100%	100%	100%	100%	100%
CDA-I and II	100%	100%	100%	100%	100%
Additional Groundwater Pumping	100%	100%	100%	100%	100%
Imported Water	80%	81%	70%	66%	62%
Recycled Water	100%	100%	119%	119%	119%
% of projected normal	**103%**	**103%**	**116%**	**117%**	**117%**

This table corresponds to DWR Table 46
(1) Groundwater rights includes the Total share of Initial OSY, the SAWC shares, and the water rights from Sunkist.
(2) Additional groundwater includes groundwater pumping for the DYY shift obligation, recycled water recharge, and Chino Basin Leases and Replenishment.

Similarly to the single dry year conditions, the potable water demands for multiple dry years are increased with 8.1 percent (with the exception of Sunkist) to represent high annual demands, while recycled water demands are increased by 19 percent compared to normal year conditions. In addition to the "base water conservation" used for normal and single dry year conditions, additional water conservation equal to 10 percent of the projected high annual demand is deducted from the projected water demand in the second and third year of each multiple dry year period. The 10 percent additional water conservation is not applied to the first year of a 3-year multiple dry year period because it is unknown in the first year if a drought sustains. It is assumed that when a drought sustains, public notifications will be used effectively to reduce water consumption.

The projected demands under the period 2006-2010 with multiple dry years in 2009 and 2010 are shown in **Table 5-11**.

Table 5-11
Projected Demand for a Multiple Dry Year Period ending in 2010

Demand	2006 (AFY)	2007 (AFY)	2008 (AFY)	2009 (AFY)	2010 (AFY)
Climate Condition	**Normal**	**Normal**	**Dry**	**Dry**	**Dry**
Potable High Demand	0	0	52,669	55,142	57,615
Potable Normal Demand	44,257	46,545	0	0	0
Recycled Water	3,042	4,268	6,551	8,013	9,449
Total Demand without Conservation	**47,299**	**50,813**	**59,220**	**63,154**	**67,064**
Base Conservation	(1,199)	(1,558)	(1,917)	(2,276)	(2,635)
Additional Conservation	0	0	0	(5,514)	(5,761)
Total Demand with Conservation	**46,100**	**49,255**	**57,303**	**55,364**	**58,668**
% of projected normal	**100%**	**100%**	**109%**	**100%**	**100%**

This table corresponds to DWR Table 47

The comparison between the available water supplies and projected demands for multiple dry years in the period 2006-2010 is presented in **Table 5-12**.

Table 5-12
Supply and Demand Comparison for a Multiple Dry Year Period ending in 2010

Supply and Demand	2006 (AFY)	2007 (AFY)	2008 (AFY)	2009 (AFY)	2010 (AFY)
Climate Condition	**Normal**	**Normal**	**Dry**	**Dry**	**Dry**
Supply totals	47,299	50,813	59,220	63,154	67,064
Demand totals	47,299	50,813	59,220	63,154	67,064
Difference	2,276	1,972	0	0	0
Difference as % of Supply	4.7%	3.8%	0.0%	0.0%	0.0%
Difference as % of Demand	4.9%	4.0%	0.0%	0.0%	0.0%

This table corresponds to DWR Table 48

As shown in this table, the available supplies are equal to the projected demand, which means that the City has sufficient supply to meet the demands under single dry year conditions. Similarly to the supply strategy under normal and single dry year conditions, the City has the ability to pump more water if needed by using additional wells. The groundwater supply surplus under multiple dry year conditions based on continues groundwater pumping of all wells is shown in **Table 5-13**.

Table 5-13
Groundwater Pumping Surplus in Multiple Dry Year Conditions ending in 2010

Groundwater Supply	**2006 (AFY)**	**2007 (AFY)**	**2008 (AFY)**	**2009 (AFY)**	**2010 (AFY)**
Climate Condition	**Normal**	**Normal**	**Dry**	**Dry**	**Dry**
Groundwater Rights	23,892	24,598	25,305	26,012	26,718
Additional Groundwater Pumping(1)	0	0	8,743	4,626	5,776
Total Projected GW Supply	**23,892**	**24,598**	**34,048**	**30,638**	**32,494**
Available GW Pumping Capacity	49,204	78,877	78,877	78,877	83,715
GW Pumping Surplus	**25,313**	**54,279**	**44,829**	**48,239**	**51,221**

(1) Additional groundwater pumping includes recycled water recharge, leases and transfers.

The projected supply, demands, and the comparison of supply and demand, and the groundwater pumping surplus for the period 2011-2015 are presented in **Table 5-14**, **Table 5-15, Table 5-16**, and **Table 5-17,** respectively. Years 2011 and 2015 represent normal year conditions, while years 2012 through 2014 represent the multiple dry year period. As shown in **Table 5-16**, the City has sufficient water supplies to meet the projected demands and has excess groundwater pumping capacity as shown in **Table 5-17.**

Table 5-14
Projected Supply for a Multiple Dry Year Period ending in 2015

Supply Sources	**2011 (AFY)**	**2012 (AFY)**	**2013 (AFY)**	**2014 (AFY)**	**2015 (AFY)**
Climate Condition	**Normal**	**Dry**	**Dry**	**Dry**	**Normal**
Groundwater(1)	27,117	27,516	27,915	28,314	28,713
CDA-I and II	5,000	5,000	5,000	5,000	5,000
Additional Groundwater Pumping(2)	0	12,061	6,451	6,445	209
Imported Water	19,256	11,744	11,581	11,764	19,850
Recycled Water	8,378	10,501	11,015	11,528	8,816
Active Conservation	2,907	3,179	3,450	3,722	3,994
Additional Conservation	0	0	6,044	6,138	0
Total Supply	**62,657**	**70,001**	**71,457**	**72,912**	**66,583**
Groundwater	100%	100%	100%	100%	100%
CDA-I and II	100%	100%	100%	100%	100%
Additional Groundwater Pumping	100%	100%	100%	34983%	100%
Imported Water	100%	60%	59%	59%	100%
Recycled Water	100%	119%	119%	119%	100%
% of projected normal	**105%**	**118%**	**118%**	**119%**	**106%**

This table corresponds to DWR Table 49.; (1) Groundwater rights includes the Total share of Initial OSY, the SAWC shares, and the water rights from Sunkist. (2) Additional groundwater includes groundwater pumping for the DYY shift obligation, recycled water recharge, and Chino Basin Leases and Replenishment.

Table 5-15
Projected Demand for a Multiple Dry Year Period ending in 2015

Demand	2011 (AFY)	2012 (AFY)	2013 (AFY)	2014 (AFY)	2015 (AFY)
Climate Condition	**Normal**	**Dry**	**Dry**	**Dry**	**Normal**
Potable High Demand	0	59,500	60,442	61,384	0
Potable Normal Demand	54,280	0	0	0	57,767
Recycled Water	8,378	10,501	11,015	11,528	8,816
Total Demand without Conservation	**62,657**	**70,001**	**71,457**	**72,912**	**66,583**
Base Conservation	(2,907)	(3,179)	(3,450)	(3,722)	(3,994)
Additional Conservation	0	0	(6,044)	(6,138)	0
Total Demand with Conservation	**59,750**	**66,822**	**61,962**	**63,052**	**62,589**
% of projected normal	**100.0%**	**109.9%**	**100.2%**	**100.3%**	**100.0%**

This table corresponds to DWR Table 50.

Table 5-16
Supply and Demand Comparison for a Multiple Dry Year Period ending in 2015

Supply and Demand	2011 (AFY)	2012 (AFY)	2013 (AFY)	2014 (AFY)	2015 (AFY)
Climate Condition	**Normal**	**Dry**	**Dry**	**Dry**	**Normal**
Supply totals	62,657	70,001	71,457	72,912	66,583
Demand totals	62,657	70,001	71,457	72,912	66,583
Difference	**0**	**0**	**0**	**0**	**0**
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%

This table corresponds to DWR Table 51.

Table 5-17
Groundwater Pumping Surplus in Multiple Dry Year Conditions ending in 2015

Groundwater Supply	2011 (AFY)	2012 (AFY)	2013 (AFY)	2014 (AFY)	2015 (AFY)
Climate Condition	**Normal**	**Dry**	**Dry**	**Dry**	**Normal**
Groundwater Rights	27,117	27,516	27,915	28,314	28,713
Additional Groundwater Pumping(1)	0	12,061	6,451	6,445	209
Total Projected GW Supply	**27,117**	**39,577**	**34,366**	**34,760**	**28,923**
Available GW Pumping Capacity	49,204	78,877	78,877	78,877	83,715
GW Pumping Surplus	**22,087**	**39,300**	**44,511**	**44,117**	**54,792**

(1) Additional groundwater pumping includes recycled water recharge, leases and transfers.

The projected supply, demands, and the comparison of supply and demand, and the groundwater pumping surplus for the period 2016-2020 are presented in **Table 5-18**, **Table 5-19, Table 5-20**, and **Table 5-21**, respectively. Years 2016 and 2020 represent normal year conditions, while years 2017 through 2019 represent the multiple dry year period. As shown in **Table 5-20,** the City has sufficient water supplies to meet the projected demands and has excess groundwater pumping capacity as shown in **Table 5-21**.

Table 5-18
Projected Supply for a Multiple Dry Year Period ending in 2020

Supply Sources	2016 (AFY)	2017 (AFY)	2018 (AFY)	2019 (AFY)	2020 (AFY)
Climate Condition	**Normal**	**Dry**	**Dry**	**Dry**	**Normal**
Groundwater(1)	29,108	29,502	29,897	30,291	30,686
CDA-I and II	5,000	5,000	5,000	5,000	5,000
Additional Groundwater Pumping(2)	1,035	14,725	8,975	9,763	4,338
Imported Water	19,860	11,794	11,804	11,814	19,900
Recycled Water	10,259	12,420	12,609	12,798	11,761
Active Conservation	4,175	4,356	4,538	4,719	4,900
Additional Conservation	0	0	6,690	6,843	0
Total Supply	**69,437**	**77,798**	**79,513**	**81,227**	**76,585**
Groundwater	100%	100%	100%	100%	100%
CDA-I and II	100%	100%	100%	100%	100%
Additional Groundwater Pumping	100%	791%	334%	278%	100%
Imported Water	100%	59%	59%	59%	100%
Recycled Water	100%	119%	119%	119%	100%
% of projected normal	**106%**	**119%**	**119%**	**120%**	**107%**

This table corresponds to DWR Table 52

(1) Groundwater rights includes the Total share of Initial OSY, the SAWC shares, and the water rights from Sunkist.

(2) Additional groundwater includes groundwater pumping for the DYY shift obligation, recycled water recharge, and Chino Basin Leases and Replenishment.

Table 5-19
Projected Demand for a Multiple Dry Year Period ending in 2020

Demand	2016 (AFY)	2017 (AFY)	2018 (AFY)	2019 (AFY)	2020 (AFY)
Climate Condition	**Normal**	**Dry**	**Dry**	**Dry**	**Normal**
Potable High Demand	0	65,378	66,904	68,430	0
Potable Normal Demand	59,178	0	0	0	64,824
Recycled Water	10,259	12,420	12,609	12,798	11,761
Total Demand without Conservation	**69,437**	**77,798**	**79,513**	**81,227**	**76,585**
Base Conservation	(4,175)	(4,356)	(4,538)	(4,719)	(4,900)
Additional Conservation	0	0	(6,690)	(6,843)	0
Total Demand with Conservation	**65,262**	**73,441**	**68,285**	**69,666**	**71,685**
% of projected normal	**100.0%**	**110.2%**	**100.4%**	**100.3%**	**100.0%**

This table corresponds to DWR Table 53

Table 5-20
Supply and Demand Comparison for a Multiple Dry Year Period ending in 2020

Supply and Demand	2016 (AFY)	2017 (AFY)	2018 (AFY)	2019 (AFY)	2020 (AFY)
Climate Condition	**Normal**	**Dry**	**Dry**	**Dry**	**Normal**
Supply totals	69,437	77,798	79,513	81,227	76,585
Demand totals	69,437	77,798	79,513	81,227	76,585
Difference	0	0	0	0	0
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%

This table corresponds to DWR Table 54

Table 5-21
Groundwater Pumping Surplus in Multiple Dry Year Conditions ending in 2020

Groundwater Supply	2016 (AFY)	2017 (AFY)	2018 (AFY)	2019 (AFY)	2020 (AFY)
Climate Condition	**Normal**	**Dry**	**Dry**	**Dry**	**Normal**
Groundwater Rights	29,108	29,502	29,897	30,291	30,686
Additional Groundwater Pumping(1)	1,035	14,725	8,975	9,763	4,338
Total Projected GW Supply	**30,143**	**44,228**	**38,872**	**40,054**	**35,024**
Available GW Pumping Capacity	49,204	78,877	78,877	78,877	83,715
GW Pumping Surplus	**19,061**	**34,649**	**40,005**	**38,823**	**48,691**

(1) Additional groundwater pumping includes recycled water recharge, leases and transfers.

The projected supply, demands, and the comparison of supply and demand, and the groundwater pumping surplus for the period 2021-2025 are presented in **Table 5-22, Table 5-23, Table 5-24** and **Table 5-25**, respectively. Years 2021 and 2025 represent normal year conditions, while years 2022 through 2024 represent the multiple dry year period. As shown in **Table 5-24,** the City has sufficient water supplies to meet the projected demands and has excess groundwater pumping capacity as shown in **Table 5-25.**

Table 5-22
Projected Supply for a Multiple Dry Year Period ending in 2025

Supply Sources	2021 (AFY)	2022 (AFY)	2023 (AFY)	2024 (AFY)	2025 (AFY)
Climate Condition	**Normal**	**Dry**	**Dry**	**Dry**	**Normal**
Groundwater(1)	31,288	31,890	32,492	33,093	33,695
CDA-I and II	5,000	5,000	5,000	5,000	5,000
Additional Groundwater Pumping(2)	4,888	18,874	12,084	12,596	7,086
Imported Water	19,910	11,844	11,854	11,864	19,950
Recycled Water	11,103	13,487	13,736	13,986	12,435
Active Conservation	5,150	5,400	5,649	5,899	6,149
Additional Conservation	0	0	7,453	7,606	0
Total Supply	**77,338**	**86,493**	**88,269**	**90,045**	**84,316**

Table 5-22 (continued)
Projected Supply for a Multiple Dry Year Period ending in 2025

Supply Sources	2021 (AFY)	2022 (AFY)	2023 (AFY)	2024 (AFY)	2025 (AFY)
Groundwater	100%	100%	100%	100%	100%
CDA-I and II	100%	100%	100%	100%	100%
Additional Groundwater Pumping	100%	347%	202%	193%	100%
Imported Water	100%	59%	59%	59%	100%
Recycled Water	100%	119%	119%	119%	100%
% of projected normal	**107%**	**120%**	**120%**	**120%**	**108%**

This table corresponds to DWR Table 55.
(1) Groundwater rights includes the Total share of Initial OSY, the SAWC shares, and the water rights from Sunkist.
(2) Additional groundwater includes groundwater pumping for the DYY shift obligation, recycled water recharge, and Chino Basin Leases and Replenishment.

Table 5-23
Projected Demand for a Multiple Dry Year Period ending in 2025

Demand	2021 (AFY)	2022 (AFY)	2023 (AFY)	2024 (AFY)	2025 (AFY)
Climate Condition	**Normal**	**Dry**	**Dry**	**Dry**	**Normal**
Potable High Demand	0	73,007	74,533	76,058	0
Potable Normal Demand	66,235	0	0	0	71,881
Recycled Water	11,103	13,487	13,736	13,986	12,435
Total Demand without Conservation	**77,338**	**86,493**	**88,269**	**90,045**	**84,316**
Base Conservation	(5,150)	(5,400)	(5,649)	(5,899)	(6,149)
Additional Conservation	0	0	(7,453)	(7,606)	0
Total Demand with Conservation	**72,188**	**81,094**	**75,166**	**76,540**	**78,167**
% of projected normal	**100.0%**	**110.2%**	**100.3%**	**100.3%**	**100.0%**

This table corresponds to DWR Table 56

Table 5-24
Supply and Demand Comparison for a Multiple Dry Year Period ending in 2025

Supply and Demand	2021 (AFY)	2022 (AFY)	2023 (AFY)	2024 (AFY)	2025 (AFY)
Climate Condition	**Normal**	**Dry**	**Dry**	**Dry**	**Normal**
Supply totals	77,338	86,493	88,269	90,045	84,316
Demand totals	77,338	86,493	88,269	90,045	84,316
Difference	0	0	0	0	0
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%

This table corresponds to DWR Table 57

Table 5-25
Groundwater Pumping Surplus in Multiple Dry Year Conditions ending in 2025

Groundwater Supply	2021 (AFY)	2022 (AFY)	2023 (AFY)	2024 (AFY)	2025 (AFY)
Climate Condition	**Normal**	**Dry**	**Dry**	**Dry**	**Normal**
Groundwater Rights	31,288	31,890	32,492	33,093	33,695
Additional Groundwater Pumping(1)	4,888	18,874	12,084	12,596	7,086
Total Projected GW Supply	***36,175***	***50,763***	***44,576***	***45,689***	***40,782***
Available GW Pumping Capacity	49,204	78,877	78,877	78,877	83,715
GW Pumping Surplus	**13,029**	**28,114**	**34,301**	**33,188**	**42,933**

(1) Additional groundwater pumping includes recycled water recharge, leases and transfers.

The projected supply, demands, and the comparison of supply and demand, and the groundwater pumping surplus for the period 2026-2030 are presented in **Table 5-26**, **Table 5-27**, **Table 5-28**, and **Table 5-29**, respectively. Years 2026 and 2030 represent normal year conditions, while years 2027 through 2029 represent the multiple dry year period. As shown in **Table 5-28** the City has sufficient water supplies to meet the projected demands and has excess groundwater pumping capacity as shown in **Table 5-29**.

Table 5-26
Projected Supply for a Multiple Dry Year Period ending in 2030

Supply Sources	2026 (AFY)	2027 (AFY)	2028 (AFY)	2029 (AFY)	2030 (AFY)
Climate Condition	**Normal**	**Dry**	**Dry**	**Dry**	**Normal**
Groundwater(1)	34,298	34,901	35,504	36,107	36,710
CDA-I and II	5,000	5,000	5,000	5,000	5,000
Additional Groundwater Pumping(2)	7,565	22,052	14,429	14,870	9,481
Imported Water	19,960	11,894	11,904	11,914	20,000
Recycled Water	12,430	15,401	15,984	16,566	14,492
Active Conservation	6,469	6,788	7,108	7,427	7,747
Additional Conservation	**0**	**0**	**8,216**	**8,369**	**0**
Total Supply	85,722	96,037	98,145	100,253	93,430
Groundwater	100%	100%	100%	100%	100%
CDA-I and II	100%	100%	100%	100%	100%
Additional Groundwater Pumping	100%	274%	169%	165%	100%
Imported Water	100%	60%	60%	60%	100%
Recycled Water	100%	119%	119%	119%	100%
% of projected normal	108%	121%	121%	121%	109%

(1) Groundwater rights includes the Total share of Initial OSY, the SAWC shares, and the water rights from Sunkist.
(1) Additional groundwater includes groundwater pumping for the DYY shift obligation, recycled water recharge, and Chino Basin Leases and Replenishment.

Table 5-27
Projected Demand for a Multiple Dry Year Period ending in 2030

Demand	2026 (AFY)	2027 (AFY)	2028 (AFY)	2029 (AFY)	2030 (AFY)
Climate Condition	**Normal**	**Dry**	**Dry**	**Dry**	**Normal**
Potable High Demand	0	80,635	82,161	83,687	0
Potable Normal Demand	73,292	0	0	0	78,938
Recycled Water	12,430	15,401	15,984	16,566	14,492
Total Demand without Conservation	**85,722**	**96,037**	**98,145**	**100,253**	**93,430**
Base Conservation	(6,469)	(6,788)	(7,108)	(7,427)	(7,747)
Additional Conservation	0	0	(8,216)	(8,369)	0
Total Demand with Conservation	**79,253**	**89,248**	**82,821**	**84,457**	**85,683**
% of projected normal	**100.0%**	**110.4%**	**100.5%**	**100.6%**	**100.0%**

Table 5-28
Supply and Demand Comparison for a Multiple Dry Year Period ending in 2030

Supply and Demand	2026 (AFY)	2027 (AFY)	2028 (AFY)	2029 (AFY)	2030 (AFY)
Climate Condition	**Normal**	**Dry**	**Dry**	**Dry**	**Normal**
Supply totals	85,722	96,037	98,145	100,253	93,430
Demand totals	85,722	96,037	98,145	100,253	93,430
Difference	0	0	0	0	0
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%

Table 5-29
Groundwater Pumping Surplus in Multiple Dry Year Conditions ending in 2030

Groundwater Supply	2026 (AFY)	2027 (AFY)	2028 (AFY)	2029 (AFY)	2030 (AFY)
Climate Condition	**Normal**	**Dry**	**Dry**	**Dry**	**Normal**
Groundwater Rights	34,298	34,901	35,504	36,107	36,710
Additional Groundwater Pumping(1)	7,565	22,052	14,429	14,870	9,481
Total Projected GW Supply	**41,863**	**56,953**	**49,933**	**50,977**	**46,191**
Available GW Pumping Capacity	49,204	78,877	78,877	78,877	83,715
GW Pumping Surplus	**7,341**	**21,924**	**28,944**	**27,900**	**37,524**

(1) Additional groundwater pumping includes recycled water recharge, leases and transfers.

5.5 INTER-AGENCY CONNECTIONS

The City's water system is connected with neighboring cities and water utilities through five inter-agency connections. Only one of the five inter-agency connections can provide water supply to the City of Ontario, while four locations can provide water from Ontario to the adjacent water agencies. In 2006, the City will obtain water from CDA though three additional connections which will provide water to the City at a continuous rate. The 2005 Water Master Plan (MWH, 2005) includes recommendations for five additional inter-agency connections that would be used in emergencies only. These connections will increase the City's supply reliability and are summarized in **Table 5-30**.

Table 5-30
Existing and Proposed Inter-Agency Connections

ID	General Location	From		To	
		Agency	Zone	Agency	Zone
Existing Connections					
WFA	Benson Ave. & 18th St.	WFA	1618’	Ontario	1348’ and
CVWD-1	Sixth St. & Corona Ave.	Ontario	1348’	CVWD	1190’ or
CVWD-2	Sixth St. & Vineyard Ave.	Ontario	1348’	CVWD	1190’
CVWD-3	Milliken Ave. & 6th St.	CVWD	1310’	Ontario	1212’
Chino-1	Benson Avenue/State St.	Ontario (3)	1212’	Chino	980’
Upland-1	Campus Ave./Richland St.	Ontario	1348’	Upland	unknown
Future Connections					
CDA-1	Archibald & Schaefer Ave.	CDA-1	Unknown	Ontario	1212’
JCSD-1/ CDA2-1	Milliken Ave. and Philadelphia St.	JCSD/CDA-2	1110’	Ontario	1212’
JCSD-2/ CDA2-2	Milliken Ave. & Galena St.	JCSD/CDA-2	1110’	Ontario	925’
JCSD-3	Along Bellgrave Ave.	Ontario	925’	JSCD	870’
Chino-2	Euclid Ave & Chino Ave.	Chino	980’	Ontario	925’
MVWC-1	Benson Ave & San Bernardino Ave.	Ontario	1212’	MVWD	1207’
		MVWD	1355’	Ontario	1348’
Upland-2	Reservoir 1348’ (1-3)	Upland	Unknown	Ontario	1348’
FWC-1	Etiwanda Ave. & Airport Dr.	Fontana	1280’	Ontario	1212’

Section 6
Water Shortage Contingency Plan

The City of Ontario (City) has prepared and adopted a number of plans that address water shortages including the Emergency Response Plan (Boyle, 2003) and the Emergency Water Conservation Chapter of the Municipal Code (Ontario, 1999). This section provides a summary of these plans and presents actions to be undertaken to respond to water shortages in compliance with the Urban Water Management Plan (UWMP) Act (CC 10610). The Act requires every urban water supplier to file a plan, because of the worsening 1986-1992 drought. The Act is included in **Appendix B** and summarized below.

6.1 URBAN WATER MANAGEMENT PLAN ACT

In summary, Section 10632 of the UWMP Act requires than each urban water supplier provides an urban water shortage contingency analysis that includes each of the following elements, where applicable:

- A definition of stages of water supply conditions and the associated actions to be undertaken during each stage, including up to a 50 percent reduction in water supply. 10632 (a).
- Estimates the minimum water supply available at the end of 1, 2 and 3 years. 10632 (b)
- Actions to be undertaken to prepare for, and implement during, a catastrophic interruption of water supplies. 10632 (c)
- Mandatory prohibitions against specific water use during water shortages. 10632 (d)
- Consumption reductions to achieve up to a 50 percent reduction in water supply. 10632 (e)
- Penalties or charges for excessive use. 10632 (f)
- An analysis of the impacts on revenues and expenditures of each of the actions and conditions described in subdivisions (a) to (f)., 10632 (g)
- A draft water shortage contingency resolution or ordinance. 10632 (h)
- A mechanism for determining actual reductions in water use. 10632 (i)

6.2 MINIMUM SUPPLY AND DEMANDS DURING WATER SHORTAGES

Section 10632 (b) defines the minimum water supply as the supply available during each of the next three water years based on the driest three-year historic sequence for the City's water supply. The lowest 3-year supply occurred in the period 1991 through 1993, which partially overlaps with the 1986-1992 drought. However, the supply in this period is not driven by supply availability but by water demands. The City could have pumped more groundwater or imported more water from WFA in these years if needed. Therefore, the minimum supply in this UWMP is not based on historical data but on the assumption that the City's imported water supply would be cut back by 50 percent. The three-year minimum water supplies are compared with the normal year demands for the period 2005 through 2008 in **Table 6-1**

Table 6-1
Three-Year Minimum Water Supply

Year	Minimum Supply (acre-ft/yr)	Normal Year Demand (acre-ft/yr)	Supply Deficit(1) (acre-ft/yr)	Additional GW Pumping Capacity (acre-ft/yr)	Supply Surplus(2) (acre-ft/yr)
Year 1 (2005)	29,629	43,572	13,943	27,366	13,423
Year 2 (2006)	34,564	44,797	10,233	57,103	46,870
Year 3 (2007)	37,764	48,119	10,356	55,130	44,775

This table corresponds to DWR Table 24.
(1) Without groundwater pumping limited to the City's water rights.
(2) With additional groundwater pumping beyond City's water rights (limited by available firm groundwater pumping capacity.

The minimum supplies and demands listed in **Table 6-1** are based on the following assumptions:

- Imported water is reduced to 50 percent (4,749 acre-ft/yr) of the historical purchases in the period 1990-2003 (9,494 acre-ft/yr).
- Groundwater supply is limited to the City's water rights and transfer water rights from San Antonio Water Company (SAWC) and Sunkist.
- Leases and replenishment of groundwater are not included.
- Water from the Chino Basin Desalter Authority (CDA) is included for 2006 and 2007.
- Recycled water supplies are assumed to be equal to the projected recycled water demands.
- The base amount of water conservation per the goals set forth in Inland Empire Utilities Agency (IEUA) 2005 UWMP are included. Additional water conservation, as used for multiple dry year scenarios discussed in **Section 5**, are not included.

As shown in **Table 6-1**, the City needs to purchase additional groundwater beyond its water rights to meet its demands. As the Chino Basin judgement does not limit the City's groundwater supplies to its water rights, the City can pump additional groundwater in exchange for a groundwater replenishment fee to the Chino Basin Watermaster. The only limitation to the supply is the available groundwater pumping capacity, which is demonstrated to be sufficient in **Table 6-1** and under all scenarios presented in **Section 5**.

6.3 WATER SHORTAGE STAGES

On March 19th of 1999, the City adopted Ordinance No. 2500, adding Chapter 8A "*Emergency Water Conservation*" to Title 6 of the Ontario Municipal Code (Ontario, 1999). This ordinance established a phased approach to water conservation enforcement that consists of three mandatory water shortage phases, Phase 1 through Phase 3 that increase in severity of water shortage. These water supply shortage stages and the associated conditions are summarized in **Table 6-2**.

As shown in **Table 6-2**, a voluntary stage, Phase 0, has been added. The benefit of a voluntary stage is that the City can maintain its normal operations and it gives customers a chance to voluntarily conserve water compliance to comply to mandatory regulations is enforced. Based on the customers response to Phase 0, City Council can determine that it is necessary to implement Phase 1 to protect the public welfare and safety. Prior to the implementation of each mandatory phase, the City Council shall hold a public hearing for the purpose of determining

whether a shortage exists and which measures should be implemented. The public shall be informed of the public hearing at least 10 days prior before the hearing, and City Council shall notify the public of its determination by public proclamations.

Table 6-2
Water Supply Shortage Stages and Conditions

Stage No.	Water Supply Conditions	Shortage (percent)
0	Voluntary	0-10 %
1	Mandatory	0-10 %
2	Mandatory	11-20%
3	Mandatory	20-50%

This table corresponds to DWR Table 23.

6.3.1 Water Use Restrictions

The water use restrictions for each Phase are listed in **Table 6-3**. The voluntary water use restrictions selected of Phase 0 are the same as the mandatory water use restrictions of Phase 1.

Table 6-3
Mandatory Prohibitions and Stage

Examples of Prohibitions	Phase			
	0	1	2	3
Hose washing of outdoor paved surfaces, except for sanitary purposes	X	X	X	X
Washing of vehicles or mobile equipment, except at a commercial car wash or with reclaimed water.	X	X	X	X
Filling of decorative fountains, ponds or lakes.	X	X	X	X
Supply of water at a commercial venue unless requested by customer.	X	X	X	X
Not repairing leaks promptly.	X	X	X	X
Allowing water to leave a customer's property by drainage onto adjacent property due to excessive irrigation.	X	X	X	X
Lawn watering or irrigation during daylight.			X	X
Use of hand-held hose without automatic shut-off nozzle			X	X
Use of potable water for commercial street cleaning			X	X
Residential car washing			X	X
No residential outdoor watering at any time except by bucket.				X

In addition to the water use restrictions listed in **Table 6-3**, the Emergency Water Conservation Chapter (Ontario, 1999) defines that no water customer of the City shall make, cause, use or permit the use of water from the City for any purpose in an amount in excess of 85 percent for Phase 2 and 80 percent for Phase 3 of the amount used on the customer’s premises during the corresponding billing period during the prior calendar year.

Failure to comply with the mandatory phases 1-3 can lead to the fines as listed in **Table 6-4**.

Table 6-4
Penalties and Charges

Violation description	Violation number (1)	Penalty
Conservation Actions	First violation	The City issues a written notice of a first violation to the water customer.
	Second violations	The City imposes a surcharge in an amount of fifty dollars ($50.00) added to the water customer's water bill.
	Third violation	The City imposes a surcharge in an amount of one hundred dollars ($100.00) added to the water customer's water bill.
	Fourth violation	The City imposes a surcharge in an amount of one hundred fifty dollars ($150.00) added to the customer's water bill. And Install a flow restrictive device and charge the customer for the installation and disassembly.
Conservation Quantity		Pay a surcharge in an amount equal to one hundred percent (100%) of the portions of the water bill that exceeds the respective percentages set in those two subsections.

(1) Violations within one water shortage emergency

In addition to the water use restrictions listed in **Table 6-3**, the City could also add additional consumption reduction methods. Examples are presented in **Table 6-5**.

6.4 CATASTROPHE

Section 10632 (c) of the UWMP requires the definition of actions to be undertaken to prepare for, and implement during, a catastrophic interruption of water supplies. Catastrophic events include non-drought events such as earthquakes. With three of Southern California's imported water supplies (State Water Project, Colorado River Aqueduct, and the Los Angeles Aqueduct) all crossing the San Andreas Fault, it is likely that one or more of these supplies will be disrupted in the event of a major earthquake. It is estimated that restoring service to any of these facilities following a catastrophic outage could take up to six months, which could reduce annual imported water deliveries by roughly 50 percent.

Planning for catastrophes has been addressed in multiple documents that can be differentiated based on the level of detail specifically related to the City. These levels are:

- Southern California Region – MWD's Water Surplus and Drought Management Plan
- Inland Empire Region – IEUA's Emergency Response Plan
- City of Ontario – Ontario's Emergency Response Plan

Table 6-5
Other Consumption Reduction Methods

Consumption Reduction Method	Phase When Method Takes Effect	Projected Reduction (percent)
Coordinate with other agencies to issue press notification to the media	0	Unknown
Notify customers of need for additional conservation	0	
Ask large irrigation customers to reduce water usage	0	
Ask customers to reduce irrigation	0	
Reduce or suspend deliveries to neighboring water agencies	1	Unknown
Establish reduction targets for commercial landscape accounts	1	
Enforce water conservation and use restrictions	1	
Consider reassigning personnel to enforce water use regulations	2	Unknown
Require Agricultural Water Program customers to reduce usage up to 30 %	2	
Mandating water budgets for large landscape accounts	2	
Consider mandating water budgets for all customers	2	
Suspend all water use from temporary meters.	2	
Restrict filling of swimming pools, ponds or lakes	3	Unknown
Suspend all water use from temporary meters.	3	

MWD has developed a Water Surplus and Drought Management Plan (WSDM) to address water surplus and shortage scenarios and achieve the reliability goals of the Integrated Resources Plan (IRP). Substantial investments are made in emergency storage projects and water conservation measures to adapt to water supply catastrophes. And the unplanned 7-day shutdown of the Rialto Feeder in June 2004 demonstrated that customers respond well to the request to reduce water use. For example, the customers of Cucamonga Valley Water District (CVWD) reduced their overall water use by 60 percent during the week of repairs. Based on the ongoing projects, detailed analysis, and successful customers response during previous imported water supply interruptions, MWD expects to be 100 percent reliable for all non-discounted non-interruptible demands throughout the next ten years (MWD, 2005).

The IEUA updated its 1996 Emergency Response Plan in 2000. According to this plan, IEUA expects to meet emergency demands within the region through extraordinary water conservation and groundwater pumping measures. Multiple sources of power exist within the region, making any electrical shortages a temporary disruption (IEUA, 2005).

The City's Department of Public Works has prepared an Emergency Response Plan (Boyle, 2003) that defines disaster events and the actions to be taken by City staff to respond to these. The water supply related disasters are:

- Threat or actual intentional contamination of the water system
- Threat of contamination at a major event
- Notification from Health Department Officials of potential water contamination
- Intrusion through the Supervisory Control and Data Acquisition system
- Significant structural damage resulting from an intentional act

A model response to any of these events is described in the City's ERP including, but not limited to, details of the organization and responsibilities, contact phone numbers, training requirements,

and public notification samples. It should be noted that many of these disasters are water quality related. Hence, the ERP list the water quality constituents that are monitored.

In addition to the City's ERP, the impact of a number of catastrophic events on the City's ability to meet its water demands has been evaluated in the Water and Recycled Water Master Plan (MWH, 2005). The water supply balance per pressure zone under various emergency scenarios through year 2030 are presented and the necessary system improvements are included in the proposed Capital Improvement Program.

Actions that are included in the City's ERP are listed in **Table 6-6**. Overall it can be concluded that the City has prepared the appropriate documentation and planning documents to be prepared for a catastrophe. It is recommended that the City defines the different water shortage stages in terms of total supply available to provide a quantitative measure for declaring a certain water shortage stage and implement the associated water use restrictions.

Table 6-6
Preparation Actions for a Catastrophe

Actions	Included in ERP(1)
Quantify the definition of each phase of water shortage.	no
Stretch existing water storage.	yes
Obtain additional water supplies.	yes
Develop alternative water supplies.	yes
Determine where the funding will come from.	no
Contact and coordinate with other agencies.	yes
Create and Emergency Response Team /Coordinator.	yes
Create a catastrophe preparedness plan.	yes
Put employees/contractors on-call.	yes
Develop methods to communicate with the public.	yes
Develop methods to prepare for water quality interruptions.	yes
Reassess the Emergency Response Plan each year.	yes

(1) ERP = Emergency Response Plan (Boyle, 2003)

6.5 REVENUES AND EXPENDITURES

The impact of each of the phases of water reduction on the City's revenue and cost are estimated and presented in **Table 6-7**.

Table 6-7
Estimated Revenue Impacts at Various Demand Reduction Levels

Description	Baseline Year 2005	Phase 1 (10 percent reduction)	Phase 2 (20 percent reduction)	Phase 3 (50 percent reduction)
Projected Demand (acre-ft/yr)	42,583	38,325	34,066	21,291
Revenue from Sales	**$22,258,897**	**$20,033,007**	**$17,807,117**	**$11,129,448**
Groundwater	$3,462,605	$3,462,605	$3,462,605	$3,199,910
Groundwater L&R	$845,346	$2,771,783	$3,004,680	$0
Imported Water	$9,104,750	$4,552,375	$2,276,188	$1,138,094
Water Supply Cost	**$13,412,701**	**$10,786,763**	**$8,743,473**	**$4,338,004**
Revenue minus Supply Cost	$8,846,196	$9,246,244	$9,063,645	$6,791,445
Difference Compared to Baseline	**$0**	**$400,048**	**$217,449**	**-$2,054,751**
Difference with Baseline Revenue		2%	1%	-9%

The following assumptions have been made for these estimates listed in **Table 6-7**:

- The revenue estimates are based on the average potable water volume community charge of the baseline charge (0-15 hundred cubic feet) of $1.14/HCF and the second tier charge (> 15 HCF) of $1.26/HCF. The average volume community charge is $1.20/HCF.
- The first reduction in supply is based on a 50 percent cutback of WFA water
- The reduction of supply is compensated with additional groundwater pumping above the City's water rights
- For the 50 percent supply scenario, groundwater pumping is reduced such that the demands are met with 50 percent imported water supplies and groundwater pumping within the City's water rights.
- The unit cost of WFA water is $461/acre-ft.
- The unit cost of groundwater leases and replenishment is $343/acre-ft.
- The unit cost of groundwater within the City's water rights is $170/acre-ft.
- No reduction in operations and maintenance cost, as payroll for operational staff during a temporary catastrophe is expected to remain the same.
- The duration of the shortage is based on the average over one year.

As shown in **Table 6-7**, the reduction in water revenue is slightly less than the reduction in water supply cost for Phase 1 and 2 due to an increased use of lower cost water supply sources (groundwater). This results in a positive financial impact of approximately $200,000-$400,000, if the shortage would sustain for a full year. In Phase 3, the only source of supply is groundwater, which is the City's lowest cost source. However, due to the drastic demand reduction, the revenue is reduced more than the water supply cost, resulting in the need for additional funds of about $2 million.

Although it can be concluded that the net impact on revenue and expenditures is relatively small (two to nine percent of the normal demand year revenues) several measures could be taken to generate additional funds to absorb the negative financial impact of a severe water shortage. Examples of such measures are listed in **Table 6-8**.

Table 6-8
Proposed Measures to Overcome Revenue and Expenditure Impacts

Proposed Measure	Summary of Impacts
Rate Adjustment	• Increased savings to General Fund • In normal years, the City would receive more money that required for normal operations (increased profit). • Water customers resistance
Development of Reserves	• Increased savings to General Fund • Decreased availability for O&M or Capital Fund
Decrease Capital Expenditure	• Increased savings to General Fund • Delay of system rehabilitation • Decrease in quality of future system facilities
Decrease of O&M Expenditure	• Increased savings to General Fund • Less staff available to respond to emergencies • Reduced maintenance frequency of system facilities

This table corresponds with DWR Tables 29 and 30

6.6 WATER USE MONITORING MECHANISMS

The water use monitoring mechanisms that the City has implemented to date are summarized in **Table 6-9**.

Table 6-9
Water Use Monitoring Mechanisms

Mechanisms to Determine Water Use Reductions	Benefits
Water Meter Readings	Monthly records can help detect leaking service laterals
Remote Metering Program	Increased efficiency in meter readings and detection of leaking service laterals
Residential Meter Replacement Program (every 15 years)	Accurate readings and revenue collection
Large Meter Replacement Program (every 5-10 years)	Accurate readings and revenue collection
Inter-Agency Connection readings	Accurate readings and revenue collection
Water Quality Reports	Detect standing water
Valve Exercising Program	Avoid leaking valves
Daily Production Recording (Groundwater wells, WFA, CDA, and inter-agency connections)	Determine monthly or annual system losses on a when compared with billing records.

This table corresponds with DWR Tables 31

Section 7
Implementation Plan

The process for adopting this 2005 Urban Water Management Plan (UWMP) and submitting it to the California Department of Water Resources (DWR) is outlined in the California Water Code Sections 10640 through 10645. The City of Ontario (City) is required to review any amendments to the conservation and water recycling plans that were adopted as part of the Inland Empire Utilities Agency (IEUA) 2000 UWMP (IEUA, 2000).

7.1 ADOPTION PROCESS

This UWMP is prepared in accordance with the State of California Water Code Section 10610 through 10657 and has followed DWR's *Guideline to Assist Water Suppliers in the Preparation of a 2005 Urban Water Management Plan* (DWR, 2005). The Draft UWMP was submitted for review by the City's in October 2005. Comments were incorporated in a Final Draft UWMP.

According to Water Code 10620 (d), 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. The city is a member agency of the IEUA, Water Facilities Authority (WFA), Chino Desalter Authority (CDA), and the Chino Basin Watermaster (CBWM). The City coordinated the preparation of this Plan with these four regional agencies. In addition, the City has seven neighboring water retail agencies, City of Chino, City of Upland, Fontana Water Company (FWC), Jurupa Community Services District (JCSD), Monte Vista Water District (MVWD), Cucamonga Valley Water District (CVWD) and San Antonio Water Company (SAWC). The actions the City has taken to coordinate the preparation of this UWMP with these agencies is summarized in **Table 1-1**. The Final Draft UWMP was submitted to the City's neighboring water agencies, and wholesale agencies listed in this table were contacted per telephone or by e-mail during the preparation of the Draft UWMP. The UWMP reports prepared by the wholesale agencies were used, where available.

A public hearing process was announced to all water agencies and the general public through newspaper advertisement and City's homepage (Ontario, 2005b). The public hearing on December 20 was preceded by a 14-day review period. The review of the Review Draft UMWP by neighboring water agencies coincides with the public hearing period. No comments were received.

The 2005 UWMP was formally adopted on December 20, 2005 and submitted to the DWR on December 29, 2005, accordance with State Law. The adoption resolution is included in **Appendix F**.

7.2 IMPLEMENTATION PLAN

As presented in section 2.1, the population of the City is projected to increase from 168,950 (year 2004) to about 305,500 residents in year 2030. This population increase, which will primarily occur in the newly annexed area south of the City, the New Model Colony (NMC), will result in a substantial increase in water demand. The projected water demands for the period 2005 through 2030 in five year increments are listed in **Table 7-1** and is graphically presented in **Figure 7-1**. The total water use is the summation of the projected potable water demands, projected recycled water demands, sales to other agencies, water loss, and water conservation.

It should be noted that these projected water demands are based on an aggressive approach for both water conversation and recycled water use. The implementation of these plans is required to minimize the increase of potable water demands and the associated need for and dependence of imported water supplies

Table 7-1
Projected Water Use through 2030

Water Use	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)
Consumption	48,091	52,127	58,661	65,195	71,730
Recycled Water	7,926	8,816	11,761	12,435	14,492
Sunkist	1,470	1,470	1,470	1,470	1,470
Water Loss	3,847	4,170	4,693	5,216	5,738
Total w/o Conservation	**61,334**	**66,583**	**76,585**	**84,316**	**93,430**
Water Conservation	-2,635	-3,994	-4,900	-6,149	-7,747
Total with Conservation	**58,699**	**62,589**	**71,685**	**78,167**	**85,683**

This table corresponds to DWR Table 14.

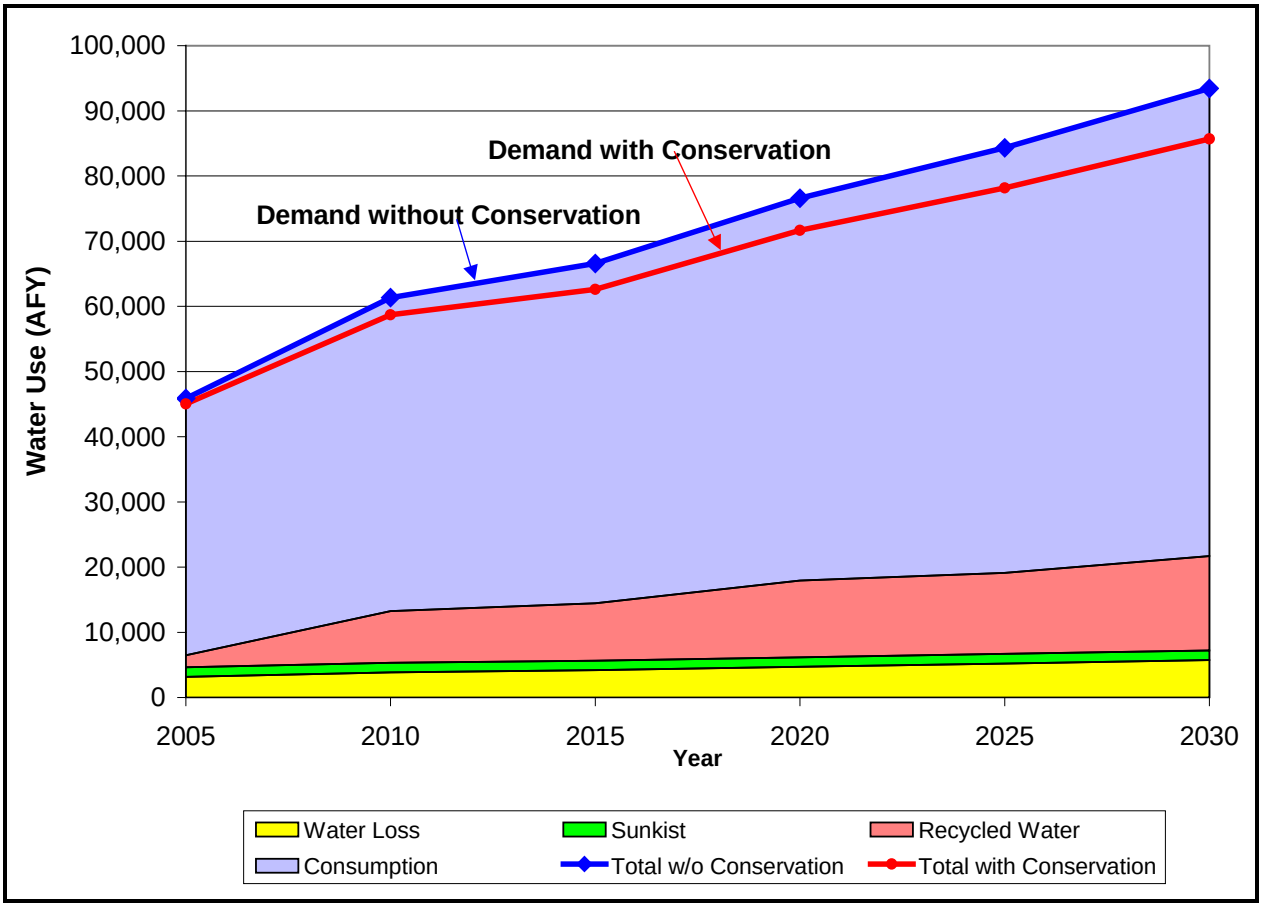
7.2.1 Water Conservation Plan

The primary focus of the City's water conservation efforts in the implementation of the Best Management Practices (BMPs) as discussed in detail in **Section 3**. As a signatory to the *Memorandum of Understanding regarding water conservation in California* (MOU), the City is a member of the California Urban Water Conservation Council (CUWCC). The City has provided the CUWCC with bi-annual reports to update its progress on the implementation of BMPs since fiscal year (FY) 2002/2003. These reports are included in **Appendix C**.

Based on the 2004 Activity Reports submitted to CUWCC, the water conservation amount achieved through active programs by the end of the fiscal year (FY) 2005 is estimated to be around 177 acre-feet per year (AFY). This is significantly less than the 2005 water conservation goals of 3,000 and 840 AFY set for the City in the 2000 UWMP (IEUA, 2000) and 2005 UWMP (IEUA, 2005), respectively.

To get the City back on track to meet the active water conservation goal of 1,800 AFY by 2010, a detailed BMP implementation schedule for the period 2005-2010 is prepared as part of this UWMP.

Figure 7-1
Projected Water Use through 2030



This schedule (see **Table 3-5**) will increase the City's active water conservation from an estimated 177 AFY to 1,800 AFY in year 2010 as shown on **Figure 3-1**. The main increase in water conservation will be achieved by implementation large landscaping metering programs (BMP 5). Other BMPs include plumbing retrofits of residential homes (BMP 2), rebates for residential High Efficiency Clothes Washers (HECW) and swimming pool covers (BMP 6), and Ultra Low Flush (ULF) toilets (BMP 9 and 14).

In addition to active water conservation programs, passive water conservation will happen automatically due to changes in the plumbing code and the available appliances. Passive conservation is also referred to as "Code Based water conservation". By year 2010, passive water conservation is estimated to account for nearly 3,900 AFY, which is about 68 percent of the combined water conservation goal for year 2010 (1,800 + 3,900 = 5,700 AFY).

7.2.2 Recycled Water Plan

The City has recently prepared a *Water and Recycled Water Master Plan* (WMP) (MWH, 2005) that identifies the City's potential to serve recycled water to existing and future customers. This WMP includes an aggressive approach to increase the use of recycled water in the City.

The recycled water system expansion of recycled water system in the Old Model Colony (OMC) includes 32 miles of new recycled water pipelines will connect to existing and proposed regional recycled water pipeline of IEUA. The recycled water demand served through these extensions is estimated to be about 4,325 AFY, which will increase the existing recycled water demand in the NMC of 1,229 AFY to about 5,554 AFY (350 percent increase).

In addition, the water system of the New Model Colony (NMC) is based on intensive use of recycled water with an estimated recycled water demand of 8,938 AFY, which is about 20 percent of the total NMC demand. The backbone recycled water system for the NMC is 52 miles, which does not include the mains for the small service streets.

The City also plans to temporarily serve about 3,300 AFY of recycled water to the existing agricultural customers in the NMC until development occurs by accelerating certain future planned recycled water pipelines.

7.2.3 Water Supply Strategy

The existing and proposed water supply sources of the City are:

- Chino Basin groundwater wells owned and operated by the City
- Chino Basin Groundwater from San Antonio Water Company (SAWC)
- Imported water from the Water Facilities Authority (WFA)
- Recycled water form the IEUA
- Treated Chino Basin groundwater from the Chino Basin Desalter Authority (CDA).
- Chino Basin groundwater wells that are part of the Dry Year Yield (DYY) Program

These sources are described in detail in **Section 4**. All sources are used under normal year, single dry year, and multiple dry year conditions. However, the amount of imported and leased groundwater water used from each source varies depending on the demand conditions. Leased groundwater is water pumped from the Chino Basin beyond the City's water rights (including transfers), which is subject to a replenishment fee. Supplies that are the same under all scenarios are:

- Groundwater pumping is maximized for all scenarios up to the City's water rights, as this is the cheapest source of supply. This groundwater amount will be increased over time as the groundwater rights gradually increase from 19,603 AFY in 2005 to 30,828 AFY in 2030 due to land use conversion.
- Starting in 2006, the City will obtain a constant delivery of 5,000 AFY from CDA under all demand scenarios.
- The recycled water supply is set equal to the projected demands, as IEUA has sufficient recycled water available to meet the projected demands (MWH, 2005a).

Under normal year conditions, about 30 percent of the water demands are met with imported water from WFA with a total supply of 20,000 AFY, which is 8,000 AFY less than the City's allotment in the treatment plant capacity. Under the single dry year and multiple dry year scenarios, the amount of imported water from WFA is reduced by the shift obligation amount of

8,076 AFY to be in compliance with the DYY agreement. This amount is pumped from the DYY wells. The amount of leased groundwater is adjusted to meet the demands. The water supply mix and reliability is evaluated for all three scenarios for the period 2005-2030 in **Section 5**. It can be concluded that the City has sufficient water supply to meet it's demand through year 2030, provided that the City can pump the projected amounts from the Chino Basin. As the Chino Basin Judgment does not limit the pumping and the City obtain pumping capacity beyond its water rights in exchange for a replenishment fee.

The comparison between the available water supplies and projected demands for multiple dry years in the period 2006-2010 is presented in **Table 5-10**. As shown in this table, the available supplies are equal to the projected demand, which means that the City has sufficient supply to meet the demands under normal, single dry year and multiple dry conditions. The City's groundwater supply is only limited by its pumping capacity, rather than by its water rights, as the Chino Basin judgement not limit pumping in excess to the assigned water rights because IEUA can recharge the basin through spreading basins in exchange for a replenishment fee. As shown in **Section 5**, the City has sufficient groundwater pumping capacity to provide a reliable water supply for the City through year 2030.

7.2.4 Water Shortage Contingency Plan

On March 19th of 1999, the City adopted Ordinance No. 2500, adding Chapter 8A "*Emergency Water Conservation*" to Title 6 of the Ontario Municipal Code (Ontario, 1999). This ordinance established a phased approach to water conservation enforcement that consists of three mandatory water shortage phases, Phase 1 through Phase 3 that increase in severity of water shortage. This UWMP introduced a "Phase 0", which consists of the same water use prohibitions, with the exception that these are voluntary under Phase 0 and mandatory under Phase 1. The water use restrictions for each Phase are listed in **Table 6-3**, while the associated penalties and charges are listed in **Table 6-4**.

Section 6 also includes a discussion on the actions to be undertaken to prepare for, and implement during, a catastrophic interruption of water supplies. Catastrophic events include non-drought events such as earthquakes. Planning for catastrophes has been addressed in multiple documents that can be differentiated based on the level of detail specifically related to the City. These levels are:

- Southern California Region – MWD's Water Surplus and Drought Management Plan
- Inland Empire Region – IEUA's Emergency Response Plan (ERP)
- City of Ontario – Ontario's ERP

Actions that are included in the City's ERP are listed in **Table 6-6**. Overall it can be concluded that the City has prepared the appropriate documentation and planning documents to be prepared for a catastrophe. It is recommended that the City defines the different water shortage stages in terms of total supply available to provide a quantitative measure for declaring a certain water shortage stage and implement the associated water use restrictions.

7.3 CONCLUSION

This UWMP is based upon an aggressive water conservation approach to meet the 2010 water conservation goals and include significant extensions of a recycled water in the next five years to increase the use of recycled water to reduce the use of limited potable water supplies where possible. The City has sufficient water supplies to meet its projected demands under normal, dry year, and multiple dry year scenarios with a combination of imported water and Chino Basin groundwater. This UWMP should be updated before December 2010 to be in compliance with the UMWP Act.

Appendix A
References

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Appendix B
Urban Water Management Plan Act

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Established: AB 797, Klehs, 1983
Amended: AB 2661, Klehs, 1990
AB 11X, Filante, 1991
AB 1869, Speier, 1991
AB 892, Frazee, 1993
SB 1017, McCorquodale, 1994
AB 2853, Cortese, 1994
AB 1845, Cortese, 1995
SB 1011, Polanco, 1995
AB 2552, Bates, 2000
SB 553, Kelley, 2000
SB 610, Costa, 2001
AB 901, Daucher, 2001
SB 672, Machado, 2001
SB 1348, Brulte, 2002
SB 1384, Costa, 2002
SB 1518, Torlakson, 2002
AB 105, Wiggins, 2004
SB 318, Alpert, 2004

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

CHAPTER 1. GENERAL DECLARATION AND POLICY

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

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

(1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.

(2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.

(3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.

(4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in

its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.

(5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.

(6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.

(7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.

(8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.

(9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.

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

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

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

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

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

CHAPTER 2. DEFINITIONS

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

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

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

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

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

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

10616. "Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.

10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.

10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

CHAPTER 3. URBAN WATER MANAGEMENT PLANS
Article 1. General Provisions

10620.

(a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d)

(1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

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

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

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

10621.

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

(b) Every urban water supplier required to prepare a plan pursuant to this part shall notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

Article 2. Contents of Plans

10630. It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

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

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

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.

For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

(1) An average water year.
(2) A single dry water year.
(3) Multiple dry water years.

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

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

(e)

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

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

(2) The water use projections shall be in the same five-year increments described in subdivision (a).

(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

(A) Water survey programs for single-family residential and multifamily residential customers.

(B) Residential plumbing retrofit.

(C) System water audits, leak detection, and repair.

(D) Metering with commodity rates for all new connections and retrofit of existing connections.

(E) Large landscape conservation programs and incentives.

(F) High-efficiency washing machine rebate programs.

(G) Public information programs.

(H) School education programs.

(I) Conservation programs for commercial, industrial, and institutional accounts.

(J) Wholesale agency programs.

(K) Conservation pricing.

(L) Water conservation coordinator.

(M) Water waste prohibition.

(N) Residential ultra-low-flush toilet replacement programs.

(2) A schedule of implementation for all water demand management measures proposed or described in the plan.

(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

(1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.

(2) Include a cost-benefit analysis, identifying total benefits and total costs.

(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.

(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

(j) Urban water suppliers that are members of the California Urban Water Conservation Council and submit annual reports to that council

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

(k) Urban water suppliers that rely upon a wholesale agency for a source of water, shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier’s plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c), including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

10631.5. The department shall take into consideration whether the urban water supplier is implementing or scheduled for implementation, the water demand management activities that the urban water supplier identified in its urban water management plan, pursuant to Section 10631, in evaluating applications for grants and loans made available pursuant to Section 79163. The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities.

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

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

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

(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including,

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

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

(e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

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

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

(h) A draft water shortage contingency resolution or ordinance.

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

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

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

(b) A description of the 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.

Appendix C
BMP Activity Report

This Appendix includes the following information:

- Water Supply and Reuse Summary 2004
- Water Account and Use Summary 2004
- BMP Activity Reports 2004
- Water Supply and Reuse Summary 2003
- Water Account and Use Summary 2003
- BMP Activity Reports 2003
- CUWCC Coverage Reports as of October 2005

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Water Supply & Reuse

Reporting Unit: **City of Ontario**

Year: **2003**

Water Supply Source Information

Supply Source Name	Quantity (AF) Supplied	Supply Type
Well No.3	896.19	Groundwater
Well No.9	133.14	Groundwater
Well No. 11	1777.46	Groundwater
Well No. 15	1837.91	Groundwater
Well No. 16	982.81	Groundwater
Well No.17	2077.4	Groundwater
Well No.20	693.45	Groundwater
Well No.24	2758.84	Groundwater
Well No.25	2087.05	Groundwater
Well No.26	335.86	Groundwater
Well No.27	903.2	Groundwater
Well No.29	3152.54	Groundwater
Well No.30	536.8	Groundwater
Well No.31	2847.3	Groundwater
Well No.34	2761.72	Groundwater
Well No.35	1838.98	Groundwater
Well No.36	1127.72	Groundwater
Well No.37	3835.16	Groundwater
Well No.38	1407.06	Groundwater
Well No.39	2639.69	Groundwater
State Proj/MWD	8255.08	Imported

Total AF: 42885.36

Reported as of 10/12/05

Accounts & Water Use

Reporting Unit Name:	Submitted to	Year:
City of Ontario	CUWCC **11/22/2004**	**2003**

A. Service Area Population Information:

1. Total service area population 165678

B. Number of Accounts and Water Deliveries (AF)

Type	Metered		Unmetered	
	No. of Accounts	Water Deliveries (AF)	No. of Accounts	Water Deliveries (AF)
1. Single-Family	25830	17038	0	0
2. Multi-Family	1977	6484	0	0
3. Commercial	2615	10423	0	0
4. Industrial	344	2473	0	0
5. Institutional	293	1171	0	0
6. Dedicated Irrigation	958	5052	0	0
7. Recycled Water	2	87	0	0
8. Other	0	0	0	0
9. Unaccounted	NA	5	NA	0
Total	32019	42733	0	0
	Metered		**Unmetered**	

Reported as of 10/12/05

BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2003**

A. Implementation

1. Based on your signed MOU date, 12/11/2002, your Agency STRATEGY DUE DATE is:	12/10/2004
2. Has your agency developed and implemented a targeting/ marketing strategy for SINGLE-FAMILY residential water use surveys?	no
a. If YES, when was it implemented?	
3. Has your agency developed and implemented a targeting/ marketing strategy for MULTI-FAMILY residential water use surveys?	no
a. If YES, when was it implemented?	

B. Water Survey Data

Survey Counts:	Single Family Accounts	Multi-Family Units
1. Number of surveys offered:	0	0
2. Number of surveys completed:	0	0
Indoor Survey:		
3. Check for leaks, including toilets, faucets and meter checks	no	no
4. Check showerhead flow rates, aerator flow rates, and offer to replace or recommend replacement, if necessary	no	no
5. Check toilet flow rates and offer to install or recommend installation of displacement device or direct customer to ULFT replacement program, as neccesary; replace leaking toilet flapper, as necessary	no	no
Outdoor Survey:		
6. Check irrigation system and timers	no	no
7. Review or develop customer irrigation schedule	no	no
8. Measure landscaped area (Recommended but not required for surveys)	no	no
9. Measure total irrigable area (Recommended but not required for surveys)	no	no
10. Which measurement method is typically used (Recommended but not required for surveys)		None
11. Were customers provided with	no	no

information packets that included evaluation results and water savings recommendations?		
12. Have the number of surveys offered and completed, survey results, and survey costs been tracked?	no	no
a. If yes, in what form are surveys tracked?		
b. Describe how your agency tracks this information.		

C. Water Survey Program Expenditures

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

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? yes

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

Leaks are checked at the meter during customer service work, in response to a customer complain, during meter exchanges and when the meter is read. The coverage % would be 100% coverage several times throughout the year. Additionally, during various in-home customer service visits, leaks are noticed to customers. Customers are also offered swimming pool rebates to reduce evaporation.

E. Comments

Reported as of 10/12/05

BMP 02: Residential Plumbing Retrofit

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2003**

A. Implementation

1. Is there an enforceable ordinance in effect in your service area requiring replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts?	no
a. If YES, list local jurisdictions in your service area and code or ordinance in each:	
2. Has your agency satisfied the 75% saturation requirement for single-family housing units?	no
3. Estimated percent of single-family households with low-flow showerheads:	1.4%
4. Has your agency satisfied the 75% saturation requirement for multi-family housing units?	no
5. Estimated percent of multi-family households with low-flow showerheads:	5.8%
6. If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.	

B. Low-Flow Device Distribution Information

1. Has your agency developed a targeting/ marketing strategy for distributing low-flow devices?	yes
a. If YES, when did your agency begin implementing this strategy?	1/1/2002

b. Describe your targeting/ marketing strategy.

Low flow showerheads are distributed at water quality/water conservation fair booths, during in-home water quality site visits and by customer service staff conducting routine fieldwork.

Low-Flow Devices Distributed/ Installed	**SF Accounts**	**MF Units**
2. Number of low-flow showerheads distributed:	375	125
3. Number of toilet-displacement devices distributed:	0	0
4. Number of toilet flappers distributed:	0	0
5. Number of faucet aerators distributed:	0	0

6. Does your agency track the distribution and cost of low-flow devices?	no
a. If YES, in what format are low-flow devices tracked?	

b. If yes, describe your tracking and distribution system :

C. Low-Flow Device Distribution Expenditures

	This Year	Next Year
1. Budgeted Expenditures	2000	2000
2. Actual Expenditures	2290	

D. "At Least As Effective As"

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

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

E. Comments

500 Low flow hoze nozzles were also distributed this year with the showerhead giveaways.

Reported as of 10/12/05

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2003**

A. Implementation

1. Has your agency completed a pre-screening system audit for this reporting year?	yes
2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production:	
a. Determine metered sales (AF)	42733
b. Determine other system verifiable uses (AF)	86.5
c. Determine total supply into the system (AF)	42885.36
d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required.	1.00
3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production?	yes
4. Did your agency complete a full-scale audit during this report year?	no
5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit?	yes
6. Does your agency operate a system leak detection program?	yes

a. If yes, describe the leak detection program:

Leaks are reported by Ontario Utilities employees and other Public Works employees working in the field who may observe leaks while reading meters, working on services lines or conducting misc. work within the City. Leaks are also reported directly by the customer. In addition, field crews investigate below ground leaks.

B. Survey Data

1. Total number of miles of distribution system line.	498
2. Number of miles of distribution system line surveyed.	0

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	20000	20000
2. Actual Expenditures	13000	

D. "At Least As Effective As"

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

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

be "at least as effective as."

E. Comments

Reported as of 10/12/05

BMP 04: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2003**

A. Implementation

1. Does your agency require meters for all new connections and bill by volume-of-use?	yes
2. Does your agency have a program for retrofitting existing unmetered connections and bill by volume-of-use?	no
a. If YES, when was the plan to retrofit and bill by volume-of-use existing unmetered connections completed?	
b. Describe the program:	
Not needed, all services are metered.	
3. Number of previously unmetered accounts fitted with meters during report year.	0

B. Feasibility Study

1. Has your agency conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters?	no
a. If YES, when was the feasibility study conducted? (mm/dd/yy)	
b. Describe the feasibility study:	
2. Number of CII accounts with mixed-use meters.	0
3. Number of CII accounts with mixed-use meters retrofitted with dedicated irrigation meters during reporting period.	0

C. Meter Retrofit Program Expenditures

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

D. "At Least As Effective As"

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

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

E. Comments

The number of CII accounts with mix-used meters is unknown at this time. The zero number reported above may not be an accurate reflection of the zero number reported above.

Reported as of 10/12/05

BMP 05: Large Landscape Conservation Programs and Incentives

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2003**

A. Water Use Budgets

1. Number of Dedicated Irrigation Meter Accounts:	890
2. Number of Dedicated Irrigation Meter Accounts with Water Budgets:	0
3. Budgeted Use for Irrigation Meter Accounts with Water Budgets (AF):	0
4. Actual Use for Irrigation Meter Accounts with Water Budgets (AF):	0
5. Does your agency provide water use notices to accounts with budgets each billing cycle?	no

B. Landscape Surveys

1. Has your agency developed a marketing / targeting strategy for landscape surveys?	no
a. If YES, when did your agency begin implementing this strategy?	
b. Description of marketing / targeting strategy:	
2. Number of Surveys Offered.	0
3. Number of Surveys Completed.	0
4. Indicate which of the following Landscape Elements are part of your survey:	
a. Irrigation System Check	no
b. Distribution Uniformity Analysis	no
c. Review / Develop Irrigation Schedules	no
d. Measure Landscape Area	no
e. Measure Total Irrigable Area	no
f. Provide Customer Report / Information	no
5. Do you track survey offers and results?	no
6. Does your agency provide follow-up surveys for previously completed surveys?	no
a. If YES, describe below:	

C. Other BMP 5 Actions

1. An agency can provide mixed-use accounts with ETo-based landscape budgets in lieu of a large landscape survey program. Does your agency provide mixed-use accounts with landscape budgets?	no
2. Number of CII mixed-use accounts with landscape budgets.	0

3. Do you offer landscape irrigation training?	yes
4. Does your agency offer financial incentives to improve landscape water use efficiency?	no

Type of Financial Incentive:	Budget (Dollars/ Year)	Number Awarded to Customers	Total Amount Awarded
a. Rebates	0	0	0
b. Loans	0	0	0
c. Grants	0	0	0

5. Do you provide landscape water use efficiency information to new customers and customers changing services?	No
a. If YES, describe below:	
6. Do you have irrigated landscaping at your facilities?	yes
a. If yes, is it water-efficient?	no
b. If yes, does it have dedicated irrigation metering?	yes
7. Do you provide customer notices at the start of the irrigation season?	no
8. Do you provide customer notices at the end of the irrigation season?	no

D. Landscape Conservation Program Expenditures

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

E. "At Least As Effective As"

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

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

F. Comments

Reported as of 10/12/05

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2003**

A. Implementation

1. Do any energy service providers or waste water utilities in your service area offer rebates for high-efficiency washers?	yes

a. If YES, describe the offerings and incentives as well as who the energy/waste water utility provider is.

Rebates are available through Inland Empire Utilities Agency in coordination with the Metropolitan Water District. The rebate is $100. The City does not offer a rebate in addition to the IEUA/MWD rebate.

2. Does your agency offer rebates for high-efficiency washers?	no
3. What is the level of the rebate?	0
4. Number of rebates awarded.	0

B. Rebate Program Expenditures

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

C. "At Least As Effective As"

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

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

D. Comments

Budgeted and actual expenditures may be reflected through IEUA regional program expenditures for this program. This City pays into this program and monies and programs and administered regionally.

Reported as of 10/12/05

BMP 07: Public Information Programs

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2003**

A. Implementation

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

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

Conservation information is distributed in a variety of ways. Conservation information is found prominantly in our water quality reports and our quarterly newsletter. Conservation topics are discussed with residents and businesses on an individual and group level. Various literature is targeted and distributed to various age levels.

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

Public Information Program Activity	Yes/No	Number of Events
a. Paid Advertising	yes	3
b. Public Service Announcement	no	
c. Bill Inserts / Newsletters / Brochures	yes	2
d. Bill showing water usage in comparison to previous year's usage	no	
e. Demonstration Gardens	yes	2
f. Special Events, Media Events	yes	2
g. Speaker's Bureau	yes	2
h. Program to coordinate with other government agencies, industry and public interest groups and media	yes	

B. Conservation Information Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	5000	5000
2. Actual Expenditures	4925	

C. "At Least As Effective As"

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

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

D. Comments

A budgeted amount of $1500 shown is paid to a regional conservation group called the Water Education and Water Awareness Committee whose purpose is to conduct public

education on water conservation. Additionally, budgeted expenditures reflect Ontario staff time to implement these programs.

Reported as of 10/12/05

BMP 08: School Education Programs

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2003**

A. Implementation

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

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

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	yes	0	0	0
Grades 4th-6th	yes	31	799	0
Grades 7th-8th	yes	0	0	0
High School	yes	0	0	0

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

4. When did your Agency begin implementing this program? 01/01/2003

B. School Education Program Expenditures

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

C. "At Least As Effective As"

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

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

D. Comments

Budgeted and actual expenditures will be reflected on the wholesale agency report.

Reported as of 10/12/05

BMP 09: Conservation Programs for CII Accounts

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2003**

A. Implementation

1. Has your agency identified and ranked COMMERCIAL customers according to use?	no
2. Has your agency identified and ranked INDUSTRIAL customers according to use?	yes
3. Has your agency identified and ranked INSTITUTIONAL customers according to use?	yes

---

Option A: CII Water Use Survey and Customer Incentives Program

---

4. Is your agency operating a CII water use survey and customer incentives program for the purpose of complying with BMP 9 under this option?	yes

CII Surveys	Commercial Accounts	Industrial Accounts	Institutional Accounts
a. Number of New Surveys Offered	0	0	0
b. Number of New Surveys Completed	0	0	0
c. Number of Site Follow-ups of Previous Surveys (within 1 yr)	0	0	0
d. Number of Phone Follow-ups of Previous Surveys (within 1 yr)	0	0	0

CII Survey Components	Commercial Accounts	Industrial Accounts	Institutional Accounts
e. Site Visit	no	no	no
f. Evaluation of all water-using apparatus and processes	no	no	no
g. Customer report identifying recommended efficiency measures, paybacks and agency incentives	no	no	no

Agency CII Customer Incentives	Budget ($/Year)	No. Awarded to Customers	Total $ Amount Awarded
h. Rebates	0	14	2100

i. Loans	0	0	0
j. Grants	0	0	0
k. Others	0	0	0

Option B: CII Conservation Program Targets

5. Does your agency track CII program interventions and water savings for the purpose of complying with BMP 9 under this option?	yes
6. Does your agency document and maintain records on how savings were realized and the method of calculation for estimated savings?	yes
7. Estimated annual savings (AF/yr) from site-verified actions taken by agency since 1991.	.65
8. Estimated annual savings (AF/yr) from non-site-verified actions taken by agency since 1991.	5.82

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	2515.5	

C. "At Least As Effective As"

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

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

D. Comments

Budgeted expenditures should be reflected on the wholesale agency report.

Reported as of 10/12/05

BMP 09a: CII ULFT Water Savings

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2003**

1. Did your agency implement a CII ULFT replacement program in the reporting year? If No, please explain why on Line B. 10.	Yes

A. Targeting and Marketing

1. What basis does your agency use to target customers for participation in this program? Check all that apply.	CII Sector or subsector CII ULFT Study subsector targeting

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

We found CII sectors and sub sectors most effective because we were able to version our marketing efforts appropriately.

2. How does your agency advertise this program? Check all that apply.	Direct letter Web page Bill insert Newsletter Newspapers Trade publications Other print media Trade shows and events Telemarketing

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

For the purposes of this program, Trade Allies have proven to be the most effective overall marketing tool, as well as the most effective per dollar expended. Trade Allies include plumbers, distributors, retail home improvement stores and product manufacturers.

B. Implementation

1. Does your agency keep and maintain customer participant information? (Read the Help information for a complete list of all the information for this BMP.)	Yes
2. Would your agency be willing to share this information if the CUWCC did a study to evaluate the program on behalf of your agency?	Yes
3. What is the total number of customer accounts participating in the program during the last year ?	0

CII Subsector	Number of Toilets Replaced			
4.	Standard Gravity Tank	Air Assisted	Valve Floor Mount	Valve Wall Mount
a. Offices	0	0	0	0
b. Retail / Wholesale	0	0	0	0
c. Hotels	0	0	0	0
d. Health	0	0	0	0
e. Industrial	0	0	0	0
f. Schools: K to 12	0	0	0	0
g. Eating	0	0	0	0
h. Govern-ment	0	0	0	0
i. Churches	0	0	0	0
j. Other	0	0	0	0

5. Program design.	Rebate or voucher
6. Does your agency use outside services to implement this program?	Yes
a. If yes, check all that apply.	Consultant
7. Participant tracking and follow-up.	Telephone Site Visit

8. Based on your program experience, please rank on a scale of 1 to 5, with 1 being the least frequent cause and 5 being the most frequent cause, the following reasons why customers refused to participate in the program.

a. Disruption to business	1
b. Inadequate payback	3
c. Inadequate ULFT performance	2
d. Lack of funding	5
e. American's with Disabilities Act	0
f. Permitting	0
g. Other. Please describe in B. 9.	

9. Please describe general program acceptance/resistance by customers, obstacles to implementation, and other isues affecting program implementation or effectiveness.

> Customers are generally more willing to participate in the program if the cost of the retrofit is in balance with the amount of the rebate, and the projected water savings is significant. Resistance occurs if the out-of-pocket expense for the retrofit is too costly and the

rebate amount is too low.

10. Please provide a general assessment of the program for this reporting year. Did your program achieve its objectives? Were your targeting and marketing approaches effective? Were program costs in line with expectations and budgeting?

Either Metropolitan or its Agencies to provide this response.

C. Conservation Program Expenditures for CII ULFT

1. CII ULFT Program: Annual Budget & Expenditure Data

	Budgeted	Actual Expenditure
a. Labor	0	0
b. Materials	0	0
c. Marketing & Advertising	0	0
d. Administration & Overhead	0	0
e. Outside Services	0	0
f. Total	0	0

2. CII ULFT Program: Annual Cost Sharing

a. Wholesale agency contribution	0
b. State agency contribution	0
c. Federal agency contribution	0
d. Other contribution	0
e. Total	0

D. Comments

The # of toilets is an estimate.

Reported as of 10/12/05

BMP 11: Conservation Pricing

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2003**

A. Implementation

Rate Structure Data Volumetric Rates for Water Service by Customer Class

1. Residential

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Increasing Block
c. Total Revenue from Volumetric Rates	$14221989
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$14221989

2. Commercial

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Increasing Block
c. Total Revenue from Volumetric Rates	$8580852
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$8580852

3. Industrial

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Increasing Block
c. Total Revenue from Volumetric Rates	$1381299
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$1381299

4. Institutional / Government

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Increasing Block
c. Total Revenue from Volumetric Rates	$709610
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$709610

5. Irrigation

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$0
d. Total Revenue from Non-	

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

B. Conservation Pricing Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	70000	0
2. Actual Expenditures	60000	

C. "At Least As Effective As"

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

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

D. Comments

Revenue for irrigation and recycled water is lumped into other revenue accounts and is not tracked separately. In addition, readiness-to-serve charges are also lumped into total revenue and cannot be broken out at this time. Conservation pricing expenditures covered a full-scale rate study.

Reported as of 10/12/05

BMP 12: Conservation Coordinator

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2003**

A. Implementation

1. Does your Agency have a conservation coordinator?	yes
2. Is this a full-time position?	no
3. If no, is the coordinator supplied by another agency with which you cooperate in a regional conservation program ?	yes
4. Partner agency's name:	Inland Empire Utilities Agency
5. If your agency supplies the conservation coordinator:	
a. What percent is this conservation coordinator's position?	30%
b. Coordinator's Name	Rosemarie Chora
c. Coordinator's Title	Water Quality Specialist
d. Coordinator's Experience and Number of Years	Water quality and supply/4 years
e. Date Coordinator's position was created (mm/dd/yyyy)	01/01/2000
6. Number of conservation staff, including Conservation Coordinator.	3

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	32000	35000
2. Actual Expenditures	31235	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? yes

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

Conservation activities are managed by the Environmental Programs Manager with primary responsibility to implement by the Water Quality Specialist. These positions are additionally supported by many other in-house and wholesaler staff members in order to implement the BMPs. The City is also an active participant in 2 regional conservation groups which pool resources to implement conservation programs. these groups are WEWAC and the IEUA Conservation Committee.

D. Comments

Reported as of 10/12/05

BMP 13: Water Waste Prohibition

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2003**

A. Requirements for Documenting BMP Implementation

1. Is a water waste prohibition ordinance in effect in your service area? no

a. If YES, describe the ordinance:

2. Is a copy of the most current ordinance(s) on file with CUWCC? no

a. List local jurisdictions in your service area in the first text box and water waste ordinance citations in each jurisdiction in the second text box:

City of Ontario none at this time

B. Implementation

1. Indicate which of the water uses listed below are prohibited by your agency or service area.

a. Gutter flooding no

b. Single-pass cooling systems for new connections no

c. Non-recirculating systems in all new conveyor or car wash systems no

d. Non-recirculating systems in all new commercial laundry systems no

e. Non-recirculating systems in all new decorative fountains no

f. Other, please name no

2. Describe measures that prohibit water uses listed above:

none at this time

Water Softeners:

3. Indicate which of the following measures your agency has supported in developing state law:

a. Allow the sale of more efficient, demand-initiated regenerating DIR models. no

b. Develop minimum appliance efficiency standards that:

i.) Increase the regeneration efficiency standard to at least 3,350 grains of hardness removed per pound of common salt used. no

ii.) Implement an identified maximum number of gallons discharged per gallon of soft water produced. no

c. Allow local agencies, including municipalities and special districts, to set more stringent standards and/or to ban on-site regeneration of water softeners if it is demonstrated and found by the yes

agency governing board that there is an adverse effect on the reclaimed water or groundwater supply.

4. Does your agency include water softener checks in home water audit programs?	no
5. Does your agency include information about DIR and exchange-type water softeners in educational efforts to encourage replacement of less efficient timer models?	no

C. Water Waste Prohibition Program Expenditures

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

D. "At Least As Effective As"

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

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

E. Comments

Water treatment devices (softeners) are limited to one cubic foot in size. Comm/Ind. users needing unit larger than this are prohibited from installation and must use and exchange service. Ontario is an active partner in the Inland Empire Utilities Agency salinity study which is looking at salinity from residential. If acceptable, this report will be used to move forward prohibition of "time controlled" regenerable softeners.

Reported as of 10/12/05

BMP 14: Residential ULFT Replacement Programs

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2003**

A. Implementation

	Single-Family Accounts	Multi-Family Units
1. Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	yes	yes

Number of Toilets Replaced by Agency Program During Report Year

Replacement Method	SF Accounts	MF Units
2. Rebate	0	0
3. Direct Install	0	0
4. CBO Distribution	852	284
5. Other	0	0
Total	**852**	**284**

6. Describe your agency's ULFT program for single-family residences.

ULFT Exchange events are hosted twice per year at the City's public works yard. Advertising is done through local newspapers and within the water bills. Toilets are given to Ontario water customers. Customers are required to install and return old toilet within 2 weeks on a predetermined exchange date. Random inspections are done to ensure installation at the address provided by the customer.

7. Describe your agency's ULFT program for multi-family residences.

None existing presently that specifically target multi-family residences. It is believed that a number of residences will obtain toilets through the regional events.

8. Is a toilet retrofit on resale ordinance in effect for your service area? no

9. List local jurisdictions in your service area in the left box and ordinance citations in each jurisdiction in the right box:

City of Ontario — None at this time.

B. Residential ULFT Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	20000	20000

2. Actual Expenditures 17920

C. "At Least As Effective As"

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

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

D. Comments

Actual costs associated with the toilets should be reflected in reporting from the wholesale agency. Costs reported above reflect staff time to distribute and accept returned toilets. Toilet numbers reported above include toilets distributed at regional events and also through rebate programs.

Reported as of 10/12/05

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Water Supply & Reuse

Reporting Unit: **City of Ontario**

Year: **2004**

Water Supply Source Information

Supply Source Name	Quantity (AF) Supplied	Supply Type
Well No.3	734.69	Groundwater
Well No.4	13.31	Groundwater
Well No.9	31.05	Groundwater
Well No.11	2116.59	Groundwater
Well No.15	0	Groundwater
Well No.16	714.66	Groundwater
Well No.17	1839.15	Groundwater
Well No.24	1047.31	Groundwater
Well No.25	1289.23	Groundwater
Well No.26	158.22	Groundwater
Well No.27	1073.83	Groundwater
Well No.29	3320.32	Groundwater
Well No.30	0	Groundwater
Well No.31	4009.64	Groundwater
Well No.34	2216.4	Groundwater
Well No.35	1263.48	Groundwater
Well No.36	1846.46	Groundwater
Well No.37	2516.79	Groundwater
Well No.38	1390.12	Groundwater
Well No.39	3293.8	Groundwater
State Proj/MWD	15938.05	Imported
Well No. 40	0	Groundwater
Well No. 41	0	Groundwater
Well No. 20	338.89	Groundwater

Total AF: 45151.99

Reported as of 10/12/05

Accounts & Water Use

Reporting Unit Name:	Submitted to	Year:
City of Ontario	CUWCC **12/10/2004**	**2004**

A. Service Area Population Information:

1. Total service area population 167000

B. Number of Accounts and Water Deliveries (AF)

Type	Metered		Unmetered	
	No. of Accounts	Water Deliveries (AF)	No. of Accounts	Water Deliveries (AF)
1. Single-Family	25648	17875	0	0
2. Multi-Family	2042	6621	0	0
3. Commercial	2758	8262	0	0
4. Industrial	345	2234	0	0
5. Institutional	333	1353	0	0
6. Dedicated Irrigation	1000	6402	0	0
7. Recycled Water	2	69	0	0
8. Other	0	0	0	0
9. Unaccounted	NA	5	NA	0
Total	32128	42821	0	0
	Metered		**Unmetered**	

Reported as of 10/12/05

BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2004**

A. Implementation

1. Based on your signed MOU date, 12/11/2002, your Agency STRATEGY DUE DATE is:	12/10/2004
2. Has your agency developed and implemented a targeting/ marketing strategy for SINGLE-FAMILY residential water use surveys?	no
a. If YES, when was it implemented?	
3. Has your agency developed and implemented a targeting/ marketing strategy for MULTI-FAMILY residential water use surveys?	no
a. If YES, when was it implemented?	

B. Water Survey Data

Survey Counts:	Single Family Accounts	Multi-Family Units
1. Number of surveys offered:	0	0
2. Number of surveys completed:	0	0
Indoor Survey:		
3. Check for leaks, including toilets, faucets and meter checks	no	no
4. Check showerhead flow rates, aerator flow rates, and offer to replace or recommend replacement, if necessary	no	no
5. Check toilet flow rates and offer to install or recommend installation of displacement device or direct customer to ULFT replacement program, as neccesary; replace leaking toilet flapper, as necessary	no	no
Outdoor Survey:		
6. Check irrigation system and timers	no	no
7. Review or develop customer irrigation schedule	no	no
8. Measure landscaped area (Recommended but not required for surveys)	no	no
9. Measure total irrigable area (Recommended but not required for surveys)	no	no
10. Which measurement method is typically used (Recommended but not required for surveys)		None
11. Were customers provided with	no	no

information packets that included evaluation results and water savings recommendations?		
12. Have the number of surveys offered and completed, survey results, and survey costs been tracked?	no	no
a. If yes, in what form are surveys tracked?		None
b. Describe how your agency tracks this information.		

C. Water Survey Program Expenditures

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

D. "At Least As Effective As"

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

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

E. Comments

Reported as of 10/12/05

BMP 02: Residential Plumbing Retrofit

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2004**

A. Implementation

1. Is there an enforceable ordinance in effect in your service area requiring replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts? — no

   a. If YES, list local jurisdictions in your service area and code or ordinance in each:

2. Has your agency satisfied the 75% saturation requirement for single-family housing units? — no
3. Estimated percent of single-family households with low-flow showerheads: — 2.7%
4. Has your agency satisfied the 75% saturation requirement for multi-family housing units? — no
5. Estimated percent of multi-family households with low-flow showerheads: — 11.6%
6. If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.

B. Low-Flow Device Distribution Information

1. Has your agency developed a targeting/ marketing strategy for distributing low-flow devices? — yes

   a. If YES, when did your agency begin implementing this strategy? — 1/1/2002

   b. Describe your targeting/ marketing strategy.

   Low flow showerheads are distributed at water quality/water conservation fair booths, during in-home water quality site visits and by customer service staff conducting routine fieldwork.

Low-Flow Devices Distributed/ Installed	SF Accounts	MF Units
2. Number of low-flow showerheads distributed:	375	125
3. Number of toilet-displacement devices distributed:	0	0
4. Number of toilet flappers distributed:	0	0
5. Number of faucet aerators distributed:	375	125

6. Does your agency track the distribution and cost of low-flow devices? — no

   a. If YES, in what format are low-flow devices tracked?

b. If yes, describe your tracking and distribution system :

C. Low-Flow Device Distribution Expenditures

	This Year	Next Year
1. Budgeted Expenditures	2000	4000
2. Actual Expenditures	2395	

D. "At Least As Effective As"

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

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

E. Comments

We will begin to track where these devices are being distributed in an effort to comply better with this BMP.

Reported as of 10/12/05

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2004**

A. Implementation

1. Has your agency completed a pre-screening system audit for this reporting year?	yes
2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production:	
a. Determine metered sales (AF)	42821
b. Determine other system verifiable uses (AF)	25
c. Determine total supply into the system (AF)	45151.99
d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required.	0.95
3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production?	yes
4. Did your agency complete a full-scale audit during this report year?	no
5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit?	yes
6. Does your agency operate a system leak detection program?	yes

a. If yes, describe the leak detection program:

Leaks are reported by Ontario Utilities employees and other Public Works employees working in the field who may observe leaks while reading meters, working on service lines or conducting misc. work within the City. Leaks are also reported directly by the customer. In addition, field crews investigate below ground leaks. Based on the leak percentage this year, we will slowly begin an active leak program.

B. Survey Data

1. Total number of miles of distribution system line.	531
2. Number of miles of distribution system line surveyed.	0

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	20000	20000
2. Actual Expenditures	13000	

D. "At Least As Effective As"

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

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

E. Comments

Reported as of 10/12/05

BMP 04: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2004**

A. Implementation

1. Does your agency require meters for all new connections and bill by volume-of-use?	yes
2. Does your agency have a program for retrofitting existing unmetered connections and bill by volume-of-use?	no
a. If YES, when was the plan to retrofit and bill by volume-of-use existing unmetered connections completed?	
b. Describe the program:	
Not needed, all services are metered.	
3. Number of previously unmetered accounts fitted with meters during report year.	0

B. Feasibility Study

1. Has your agency conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters?	no
a. If YES, when was the feasibility study conducted? (mm/dd/yy)	
b. Describe the feasibility study:	
2. Number of CII accounts with mixed-use meters.	0
3. Number of CII accounts with mixed-use meters retrofitted with dedicated irrigation meters during reporting period.	0

C. Meter Retrofit Program Expenditures

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

D. "At Least As Effective As"

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

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

E. Comments

The number of CII accounts with mix-used meters is unknown at this time. The zero number reported above may not be an accurate reflection of the zero number reported above.

Reported as of 10/12/05

BMP 05: Large Landscape Conservation Programs and Incentives

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2004**

A. Water Use Budgets

1. Number of Dedicated Irrigation Meter Accounts:	890
2. Number of Dedicated Irrigation Meter Accounts with Water Budgets:	0
3. Budgeted Use for Irrigation Meter Accounts with Water Budgets (AF):	0
4. Actual Use for Irrigation Meter Accounts with Water Budgets (AF):	0
5. Does your agency provide water use notices to accounts with budgets each billing cycle?	no

B. Landscape Surveys

1. Has your agency developed a marketing / targeting strategy for landscape surveys?	no
a. If YES, when did your agency begin implementing this strategy?	
b. Description of marketing / targeting strategy:	
2. Number of Surveys Offered.	0
3. Number of Surveys Completed.	0
4. Indicate which of the following Landscape Elements are part of your survey:	
a. Irrigation System Check	no
b. Distribution Uniformity Analysis	no
c. Review / Develop Irrigation Schedules	no
d. Measure Landscape Area	no
e. Measure Total Irrigable Area	no
f. Provide Customer Report / Information	no
5. Do you track survey offers and results?	no
6. Does your agency provide follow-up surveys for previously completed surveys?	no
a. If YES, describe below:	

C. Other BMP 5 Actions

1. An agency can provide mixed-use accounts with ETo-based landscape budgets in lieu of a large landscape survey program. Does your agency provide mixed-use accounts with landscape budgets?	no
2. Number of CII mixed-use accounts with landscape budgets.	0

3. Do you offer landscape irrigation training?	yes
4. Does your agency offer financial incentives to improve landscape water use efficiency?	no

Type of Financial Incentive:	Budget (Dollars/ Year)	Number Awarded to Customers	Total Amount Awarded
a. Rebates	0	0	0
b. Loans	0	0	0
c. Grants	0	0	0

5. Do you provide landscape water use efficiency information to new customers and customers changing services?	No
a. If YES, describe below:	
6. Do you have irrigated landscaping at your facilities?	yes
a. If yes, is it water-efficient?	no
b. If yes, does it have dedicated irrigation metering?	yes
7. Do you provide customer notices at the start of the irrigation season?	no
8. Do you provide customer notices at the end of the irrigation season?	no

D. Landscape Conservation Program Expenditures

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

E. "At Least As Effective As"

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

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

F. Comments

We began a pilot program in FY 04/05 which fulfills this BMP. If the pilot proves to be successful, a large full-scale program will be implemented. Though no budget is reflected, this program is funded through monies contributed by the City of Ontario to the Inland Empire Utilites Agency (our wholesaler) as a surcharge on imported water purchases. Monies are distributed among regional agencies.

Reported as of 10/12/05

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2004**

A. Implementation

1. Do any energy service providers or waste water utilities in your service area offer rebates for high-efficiency washers? yes

   a. If YES, describe the offerings and incentives as well as who the energy/waste water utility provider is.

   Rebates are available through Inland Empire Utilities Agency in coordination with the Metropolitan Water District. The rebate is $100. The City does not offer a rebate in addition to the IEUA/MWD rebate.

2. Does your agency offer rebates for high-efficiency washers? no
3. What is the level of the rebate? 0
4. Number of rebates awarded. 51

B. Rebate Program Expenditures

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

C. "At Least As Effective As"

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

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

D. Comments

Budgeted and actual expenditures may be reflected through IEUA regional program expenditures for this program. This City pays into this program and monies and programs and administered regionally. $282,500 is budgeted regionally for this program

Reported as of 10/12/05

BMP 07: Public Information Programs

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2004**

A. Implementation

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

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

Conservation information is distrbuted in a variety of ways. Conservation information is found prominantly in our water quality reports and quarterly newsletter. Conservation topics are discussed with residents on an individual and group level. Various literature is targeted to various age levels.

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

Public Information Program Activity	Yes/No	Number of Events
a. Paid Advertising	yes	3
b. Public Service Announcement	yes	2
c. Bill Inserts / Newsletters / Brochures	yes	2
d. Bill showing water usage in comparison to previous year's usage	no	
e. Demonstration Gardens	yes	2
f. Special Events, Media Events	yes	2
g. Speaker's Bureau	yes	10
h. Program to coordinate with other government agencies, industry and public interest groups and media	yes	

B. Conservation Information Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	5000	5000
2. Actual Expenditures	5023	

C. "At Least As Effective As"

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

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

D. Comments

A budgeted amount of $1500 shown is paid to a regional conservation group called the Water Education and Water Awareness Committee whose purpose is to conduct public education on water conservation. Additionally, budgeted

expenditures reflect Ontario staff time to implement the WEWAC awareness programs.

Reported as of 10/12/05

BMP 08: School Education Programs

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2004**

A. Implementation

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

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

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	yes	0	0	0
Grades 4th-6th	yes	39	796	0
Grades 7th-8th	yes	0	0	0
High School	yes	0	0	0

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

4. When did your Agency begin implementing this program? 01/01/2003

B. School Education Program Expenditures

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

C. "At Least As Effective As"

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

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

D. Comments

Budgeted expenditures will be reflected on the wholesale agency report

Reported as of 10/12/05

BMP 09: Conservation Programs for CII Accounts

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2004**

A. Implementation

1. Has your agency identified and ranked COMMERCIAL customers according to use?	no
2. Has your agency identified and ranked INDUSTRIAL customers according to use?	yes
3. Has your agency identified and ranked INSTITUTIONAL customers according to use?	yes

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Option A: CII Water Use Survey and Customer Incentives Program

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4. Is your agency operating a CII water use survey and customer incentives program for the purpose of complying with BMP 9 under this option?	yes

CII Surveys	Commercial Accounts	Industrial Accounts	Institutional Accounts
a. Number of New Surveys Offered	0	0	0
b. Number of New Surveys Completed	0	0	0
c. Number of Site Follow-ups of Previous Surveys (within 1 yr)	0	0	0
d. Number of Phone Follow-ups of Previous Surveys (within 1 yr)	0	0	0

CII Survey Components	Commercial Accounts	Industrial Accounts	Institutional Accounts
e. Site Visit	no	no	no
f. Evaluation of all water-using apparatus and processes	no	no	no
g. Customer report identifying recommended efficiency measures, paybacks and agency incentives	no	no	no

Agency CII Customer Incentives	Budget ($/Year)	No. Awarded to Customers	Total $ Amount Awarded
h. Rebates	0	197	22220

i. Loans	0	0	0
j. Grants	0	0	0
k. Others	0	0	0

Option B: CII Conservation Program Targets

5. Does your agency track CII program interventions and water savings for the purpose of complying with BMP 9 under this option?	yes
6. Does your agency document and maintain records on how savings were realized and the method of calculation for estimated savings?	yes
7. Estimated annual savings (AF/yr) from site-verified actions taken by agency since 1991.	1.3
8. Estimated annual savings (AF/yr) from non-site-verified actions taken by agency since 1991.	11.7

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	27262.5	

C. "At Least As Effective As"

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

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

D. Comments

Budgeted expenditures should be reflected on the wholesale agency report.

Reported as of 10/12/05

BMP 09a: CII ULFT Water Savings

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2004**

1. Did your agency implement a CII ULFT replacement program in the reporting year? If No, please explain why on Line B. 10.	Yes

A. Targeting and Marketing

1. What basis does your agency use to target customers for participation in this program? Check all that apply.	CII Sector or subsector CII ULFT Study subsector targeting

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

We found CII sectors and sub sectors most effective because we were able to version our marketing efforts appropriately.

2. How does your agency advertise this program? Check all that apply.	Direct letter Web page Newsletter Bill insert Newspapers Trade publications Other print media Trade shows and events Telemarketing

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

For the purposes of this program, Trade Allies have proven to be the most effective overall marketing tool, as well as the most effective per dollar expended. Trade Allies include plumbers, distributors, retail home improvement stores and product manufacturers.

B. Implementation

1. Does your agency keep and maintain customer participant information? (Read the Help information for a complete list of all the information for this BMP.)	Yes
2. Would your agency be willing to share this information if the CUWCC did a study to evaluate the program on behalf of your agency?	Yes
3. What is the total number of customer accounts participating in the program during the last year ?	2

CII Subsector	Number of Toilets Replaced			
4.	Standard Gravity Tank	Air Assisted	Valve Floor Mount	Valve Wall Mount
a. Offices	0	0	0	0
b. Retail / Wholesale	0	0	0	0
c. Hotels	137	0	0	0
d. Health	0	0	0	0
e. Industrial	0	0	0	0
f. Schools: K to 12	0	0	0	0
g. Eating	0	0	0	0
h. Govern-ment	0	0	0	0
i. Churches	0	0	0	0
j. Other	0	0	0	0

5. Program design.	Rebate or voucher
6. Does your agency use outside services to implement this program?	Yes
a. If yes, check all that apply.	Consultant
7. Participant tracking and follow-up.	Telephone Site Visit

8. Based on your program experience, please rank on a scale of 1 to 5, with 1 being the least frequent cause and 5 being the most frequent cause, the following reasons why customers refused to participate in the program.

a. Disruption to business	1
b. Inadequate payback	3
c. Inadequate ULFT performance	2
d. Lack of funding	5
e. American's with Disabilities Act	0
f. Permitting	0
g. Other. Please describe in B. 9.	

9. Please describe general program acceptance/resistance by customers, obstacles to implementation, and other isues affecting program implementation or effectiveness.

> Customers are generally more willing to participate in the program if the cost of the retrofit is in balance with the amount of the rebate, and the projected water savings is significant. Resistance occurs if the out-of-pocket expense for the retrofit is too costly and the

rebate amount is too low.

10. Please provide a general assessment of the program for this reporting year. Did your program achieve its objectives? Were your targeting and marketing approaches effective? Were program costs in line with expectations and budgeting?

Either Metropolitan or its Agencies to provide this response.

C. Conservation Program Expenditures for CII ULFT

1. CII ULFT Program: Annual Budget & Expenditure Data

	Budgeted	Actual Expenditure
a. Labor	0	0
b. Materials	0	0
c. Marketing & Advertising	0	0
d. Administration & Overhead	0	0
e. Outside Services	0	0
f. Total	0	0

2. CII ULFT Program: Annual Cost Sharing

a. Wholesale agency contribution	8220
b. State agency contribution	0
c. Federal agency contribution	0
d. Other contribution	0
e. Total	8220

D. Comments

.

Reported as of 10/12/05

BMP 11: Conservation Pricing

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2004**

A. Implementation

Rate Structure Data Volumetric Rates for Water Service by Customer Class

1. Residential

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Increasing Block
c. Total Revenue from Volumetric Rates	$14266962
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$14266962

2. Commercial

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Increasing Block
c. Total Revenue from Volumetric Rates	$9652163
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$9652163

3. Industrial

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Increasing Block
c. Total Revenue from Volumetric Rates	$1454459
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$1454459

4. Institutional / Government

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Increasing Block
c. Total Revenue from Volumetric Rates	$750286
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$750286

5. Irrigation

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$0
d. Total Revenue from Non-	

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

B. Conservation Pricing Program Expenditures

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

C. "At Least As Effective As"

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

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

D. Comments

See note from previous year for revenue explanations.
#6-other reflects recycled water.

Reported as of 10/12/05

BMP 12: Conservation Coordinator

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2004**

A. Implementation

1. Does your Agency have a conservation coordinator?	yes
2. Is this a full-time position?	no
3. If no, is the coordinator supplied by another agency with which you cooperate in a regional conservation program ?	yes
4. Partner agency's name:	Inland Empire Utilities Agency
5. If your agency supplies the conservation coordinator:	
a. What percent is this conservation coordinator's position?	30%
b. Coordinator's Name	Rosemarie Chora
c. Coordinator's Title	Water Quality Specialist
d. Coordinator's Experience and Number of Years	Water quality and supply/5 years
e. Date Coordinator's position was created (mm/dd/yyyy)	01/01/2000
6. Number of conservation staff, including Conservation Coordinator.	3

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	35000	35000
2. Actual Expenditures	32059	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? yes

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

Conservation activities are managed by the Environmental Programs Manager with primary responsibility to implement by the Water Quality Specialist. These positions are additionally supported by many other in-house and wholesaler staff members in order to implement the BMPs. The City is also an active participant in 2 regional conservation groups which pool resources to implement conservation programs. these groups are WEWAC and the IEUA Conservation Committee.

D. Comments

Reported as of 10/12/05

BMP 13: Water Waste Prohibition

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2004**

A. Requirements for Documenting BMP Implementation

1. Is a water waste prohibition ordinance in effect in your service area? no

a. If YES, describe the ordinance:

2. Is a copy of the most current ordinance(s) on file with CUWCC? no

a. List local jurisdictions in your service area in the first text box and water waste ordinance citations in each jurisdiction in the second text box:

City of Ontario	none at this time

B. Implementation

1. Indicate which of the water uses listed below are prohibited by your agency or service area.

a. Gutter flooding no

b. Single-pass cooling systems for new connections no

c. Non-recirculating systems in all new conveyor or car wash systems no

d. Non-recirculating systems in all new commercial laundry systems no

e. Non-recirculating systems in all new decorative fountains no

f. Other, please name no

2. Describe measures that prohibit water uses listed above:

none at this time

Water Softeners:

3. Indicate which of the following measures your agency has supported in developing state law:

a. Allow the sale of more efficient, demand-initiated regenerating DIR models. no

b. Develop minimum appliance efficiency standards that:

i.) Increase the regeneration efficiency standard to at least 3,350 grains of hardness removed per pound of common salt used. no

ii.) Implement an identified maximum number of gallons discharged per gallon of soft water produced. no

c. Allow local agencies, including municipalities and special districts, to set more stringent standards and/or to ban on-site regeneration of water softeners if it is demonstrated and found by the yes

agency governing board that there is an adverse effect on the reclaimed water or groundwater supply.

4. Does your agency include water softener checks in home water audit programs?	no
5. Does your agency include information about DIR and exchange-type water softeners in educational efforts to encourage replacement of less efficient timer models?	no

C. Water Waste Prohibition Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	5000
2. Actual Expenditures	0	

D. "At Least As Effective As"

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

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

E. Comments

Water treatment devices (softeners) are limited to one cubic foot in size for commercial and industrial use. Comm/ind. users that need larger units are prohibited by ordinance from installation and must use an off-site exchange and regeneration service. Ontario is continuing to be an active partner in the Inland Empire Utilities Agency salinity study which is looking at salinity generation from residential sources. If acceptable, this report will be used to move forward with prohibiting "time controlled" regenerable softeners.

Reported as of 10/12/05

BMP 14: Residential ULFT Replacement Programs

Reporting Unit:	BMP Form Status:	Year:
City of Ontario	**100% Complete**	**2004**

A. Implementation

	Single-Family Accounts	Multi-Family Units
1. Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	yes	yes

Number of Toilets Replaced by Agency Program During Report Year

Replacement Method	SF Accounts	MF Units
2. Rebate	103	34
3. Direct Install	0	0
4. CBO Distribution	362	121
5. Other	0	0
Total	**465**	**155**

6. Describe your agency's ULFT program for single-family residences.

The City continued to host ULFT Exchange events twice per year at the Public Works Yard. Ontario customers were also able to obtain toilets at an Inland Empire Utilities Agency regional toilet exchange event. See note for 02/03 for program implementation.

7. Describe your agency's ULFT program for multi-family residences.

None existing presently.

8. Is a toilet retrofit on resale ordinance in effect for your service area? no

9. List local jurisdictions in your service area in the left box and ordinance citations in each jurisdiction in the right box:

City of Ontario	None at this time.

B. Residential ULFT Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	20000	20000
2. Actual Expenditures	18300	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as no

effective as" variant of this BMP?

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

D. Comments

See note for 02/03

Reported as of 10/12/05

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Appendix D
Water Conservation Details

This Appendix includes the following information:

- Estimated Water Conservation Savings 2004/2005
- Water Conservation Strategy 2006 - 2010

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Estimated Water Conservation Savings by end of FY 2004/2005 (Existing BMPs)

Best Management Practices	Number of BMPs					BMP Savings	
	Pre 2002 - 2003	FY 02 - 03	2004	Total by the end of 2004	Unit	acre-ft/year per unit	Total (acre-ft/year)
(1) Water Survey Programs for Single-Family and Multi-Family Residential Customers	0	0	0	0	residential surveys		
(2) Residential Plumbing Retrofit - Single Family Residential	0	750	750	1,500	showerheads	0.01	14
(2) Residential Plumbing Retrofit - Multi Family Residential		250	250	500	showerheads	0.01	5
(3) System Water Audits, Leak Detection and Repair	yes	yes	yes	0	audit(1)		
(4) Metering with Commodity Rates for all New Connections and Retrofit of Existing	none	none	none	0	unmetered accounts		
(5) Large Landscape Conservation Programs and Incentives	none	none	none	0	landscape meters surveyed	0.96	
(6) High-Efficiency Washing Clothes Machine (HECW) Rebate Programs	189	226	274	689	washing machine rebates	0.05	31
Pool Covers	29	28	30	87	pool cover rebates	0.05	5
(7) Public Information Programs	0	11	21	32	events		
(8) School Education Programs	0	799	796	1,595	students		
(9) Conservation Programs for CII accounts	0	14	197	211	CII rebates		
CII ULF Toilets	50	0	137	187	toilet rebates	0.06	11
unaccounted CII Rebates	0	2	1	3	Other rebates	unknown	
CII Surveys	0	0	18	18	surveys		
High Efficiency Clothes Washers (HECW)	18		51	69	Washer rebates	0.12	8
Cooling Tower Conductivity Controllers (CTCC)	6	2	1	9	Cooling Tower Rebates	2.24	20
Waterbrooms	0	10	7	17	Waterbroom rebates	0.15	3
Performance Target savings	0	2	4	6	acre-ft/year	unknown	6
Conservation Program Targets	0	6.5	13	20	acre-ft/year	unknown	20
(10) Wholesale pricing	N/A	N/A	N/A	0	wholesale pricing		
(11) Conservation Pricing	yes	yes	yes	0	increasing price block		
(12) Conservation Coordinator	1	0	0	1	coordinator		
(13) Water Waste Prohibition	0	0	0	0	water waste ordinance		
(14) Residential ULFT Replacement Program	0	1136	620	1,756	residential ULFT rebates (2)	0.03	54
Total Estimated Savings	**n/a**	**n/a**	**n/a**	**6,700**	**n/a**	**n/a**	**177**

Note: Savings of BMPs with grey cells are assumed to be zero, as the impact of these can not be quantified.

(1) Audit determined that waterloss is less than 10 percent no further actions required.

(2) For 2003 year 852 SFR rebates and 284 MFR rebates and for 2004 year 465 SFR rebates and155 MFR rebates.

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Water Conservation Strategy 2006-2010

Best Management Practice	Historical	BMP Requirements per MOU					Additional BMP Activities					Units		Estimated Savings (acre-ft/year)					
	Pre FY 04-05	FY 05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10	FY 05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10	Unit	Savings (AFY/unit)	Pre FY 04-05	FY 05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10
(1) Water Survey Programs																			
SFR Customrs		408	490	571	648	724						Surveys	0						
MFR Customers		31	37	43	49	55						Surveys	0						
(2) Residential Plumbing Retrofit - single family		-	-	-	-	-						-	0						
SFR Customrs	1,500	1,386	1,386	1,386	1,386	1,386	1,000	1,000	1,000	1,000	1,000	showerheads	0.01	14	37	60	83	106	129
MFR Customers	500	108	108	108	108	108	1,000	1,000	1,000	1,000	1,000	showerheads	0.01	5	15	26	37	47	58
(3) System Water Audits, Leak Detection and Repair												audits[1]	0						
(4) Metering with Commodity Rates for all New Connections and Retrofit of Existing Customers												unmetered accounts	0						
(5) Large Landscape Conservation Programs and Incentives		225	225	450						50	50	landscape meters surveyed	0.96		216	432	864	912	960
(6) High-Efficiency Washing Machine Rebate Programs	689						200	200	200	200	200	HECW rebates	0.046	31	41	50	59	68	77
Pool Cover Rebates	87											pool cover rebates	0.052	5	5	5	5	5	5
(7) Public Information Programs	32											events	0						
(8) School Education Programs	1,595											students	0						
(9) Conservation Programs for CII accounts	-	-	-	-	-	-	-	-	-	-	-	CII conservation	0						
Commercial surveys per account	11	28	47	67	92	117						Surveys	0						
Industrial surveys per account	3	4	7	10	14	17						Surveys	0						
Institutional surveys per account	4	3	6	8	11	14						Surveys	0						
Number of CII ULFT rebates	187						450	500	550	600	650	CII ULFT rebates	0.06	11	38	68	101	137	176
unknown rebates	3											unknown CII rebates	0						
High Efficiency Clothes Washers (HECW)	69						10	10	10	15	20	CII HECW rebate	0.12	8	9	11	12	14	16
Cooling Tower Conductivity Controllers (CTCC)	9						5	5	5	5	5	CTCC rebate	2.24	20	31	43	54	65	76
Waterbrooms	17											Waterbroom rebates	0.15	3	3	3	3	3	3
Performance Target savings	6											acre-ft/year		6	6	6	6	6	6
Conservation Program Targets	20											acre-ft/year		20	20	20	20	20	20
(11) Conservation Pricing												increasing price block	0						
(12) Conservation Coordinator												coordinator	0						
(13) Water Waste Prohibition												water waste ordinance	0						
(14) Residential ULFT Replacement Program	1,756						500	1,000	1,500	2,000	2,500	ULFT rebates	0.03	54	70	101	147	209	287
Residential ULFT rebates	137											residential ULFT rebates [2]	0						
CBO Distribution	483											CBO distribution	0						
Total	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**Total**		**177**	**491**	**823**	**1,390**	**1,592**	**1,813**

Note: Savings of BMPs with grey cells are assumed to be zero, as the impact of these can not be quantified.

(1) Audit determined that waterloss is less than 10 percent no further actions required.

(2) For 2003 year 852 SFR rebates and 284 MFR rebates and for 2004 year 465 SFR rebates and155 MFR rebates.

Appendix E
Water Demand Projections by Year

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Water Demand Projections by Year

Demand Summary	2005	2006	2007	2008	2009	2010
1) Average Annual Demand	42,582	42,786	45,074	47,362	49,649	51,938
2) High Annual Demand	46,031	46,252	48,725	51,198	53,671	56,145
3) Sunkist Demand	1,470	1,470	1,470	1,470	1,470	1,470
4) Potable Normal Demand (1+3)	44,052	44,256	46,544	48,832	51,119	53,408
5) Potable High Demand (2+3)	47,501	47,722	50,195	52,668	55,141	57,615
6) Normal Year Recycled Water Demand	1,829	3,042	4,268	5,495	6,721	7,926
7) Dry Year Recycled Water Demand	2,181	3,627	5,089	6,551	8,013	9,449
8) Base Conservation*	-840	-1,199	-1,558	-1,917	-2,276	-2,635
9) Additional Conservation**	-4,750	-4,772	-5,019	-5,267	-5,514	-5,761
Normal Year Demand (1+3+6+8)	45,041	46,099	49,254	52,409	55,564	58,699
Single Dry Year Demand (2+3+7+8)	48,842	50,150	53,726	57,302	60,877	64,429
Multiple Dry Year Demand (2+3+7+8+9)	44,091	45,378	48,706	52,035	55,363	58,668

* Base Conservation includes passive and active conservation

** Additiona Conservation is 10 % * (2 + 3)

Demand Summary	2011	2012	2013	2014	2015
1) Average Annual Demand	52,810	53,681	54,553	55,425	56,297
2) High Annual Demand	57,087	58,030	58,972	59,914	60,857
3) Sunkist Demand	1,470	1,470	1,470	1,470	1,470
4) Potable Normal Demand (1+3)	54,280	55,151	56,023	56,895	57,767
5) Potable High Demand (2+3)	58,557	59,500	60,442	61,384	62,327
6) Normal Year Recycled Water	8,378	8,808	9,239	9,669	8,816
7) Dry Year Recycled Water	9,988	10,501	11,015	11,528	10,511
8) Base Conservation*	-2,907	-3,179	-3,450	-3,722	-3,994
9) Additional Conservation**	-5,856	-5,950	-6,044	-6,138	-6,233
Normal Year Demand (1+3+6+8)	59,750	60,781	61,812	62,842	62,589
Single Dry Year Demand (2+3+7+8)	65,638	66,822	68,006	69,190	68,843
Multiple Dry Year Demand (2+3+7+8+9)	59,783	60,872	61,962	63,052	62,611

* Base Conservation includes passive and active conservation

** Additiona Conservation is 10 % * (2 + 3)

Demand Summary	2016	2017	2018	2019	2020
1) Average Annual Demand	57,708	59,120	60,531	61,942	63,354
2) High Annual Demand	62,383	63,908	65,434	66,960	68,485
3) Sunkist Demand	1,470	1,470	1,470	1,470	1,470
4) Potable Normal Demand (1+3)	59,178	60,590	62,001	63,412	64,824
5) Potable High Demand (2+3)	63,853	65,378	66,904	68,430	69,955
6) Normal Year Recycled Water	10,259	10,417	10,576	10,734	11,761
7) Dry Year Recycled Water	12,230	12,420	12,609	12,798	14,022
8) Base Conservation*	-4,175	-4,356	-4,538	-4,719	-4,900
9) Additional Conservation**	-6,385	-6,538	-6,690	-6,843	-6,996
Normal Year Demand (1+3+6+8)	65,262	66,650	68,039	69,428	71,685
Single Dry Year Demand (2+3+7+8)	71,908	73,441	74,975	76,509	79,077
Multiple Dry Year Demand (2+3+7+8+9)	65,523	66,904	68,285	69,666	72,081

* Base Conservation includes passive and active conservation

** Additiona Conservation is 10 % * (2 + 3)

Demand Summary	2021	2022	2023	2024	2025
1) Average Annual Demand	64,765	66,177	67,588	68,999	70,411
2) High Annual Demand	70,011	71,537	73,063	74,588	76,114
3) Sunkist Demand	1,470	1,470	1,470	1,470	1,470
4) Potable Normal Demand (1+3)	66,235	67,647	69,058	70,469	71,881
5) Potable High Demand (2+3)	71,481	73,007	74,533	76,058	77,584
6) Normal Year Recycled Water	11,103	11,312	11,522	11,731	12,435
7) Dry Year Recycled Water	13,237	13,487	13,736	13,986	14,825
8) Base Conservation*	-5,150	-5,400	-5,649	-5,899	-6,149
9) Additional Conservation**	-7,148	-7,301	-7,453	-7,606	-7,758
Normal Year Demand (1+3+6+8)	72,188	73,559	74,930	76,301	78,167
Single Dry Year Demand (2+3+7+8)	79,568	81,094	82,620	84,145	86,260
Multiple Dry Year Demand (2+3+7+8+9)	72,420	73,793	75,166	76,540	78,502

* Base Conservation includes passive and active conservation

** Additiona Conservation is 10 % * (2 + 3)

Demand Summary	2026	2027	2028	2029	2030
1) Average Annual Demand	71,822	73,233	74,645	76,056	77,468
2) High Annual Demand	77,640	79,165	80,691	82,217	83,742
3) Sunkist Demand	1,470	1,470	1,470	1,470	1,470
4) Potable Normal Demand (1+3)	73,292	74,703	76,115	77,526	78,938
5) Potable High Demand (2+3)	79,110	80,635	82,161	83,687	85,212
6) Normal Year Recycled Water	12,430	12,918	13,407	13,895	14,492
7) Dry Year Recycled Water	14,819	15,401	15,984	16,566	17,278
8) Base Conservation*	-6,469	-6,788	-7,108	-7,427	-7,747
9) Additional Conservation**	-7,911	-8,064	-8,216	-8,369	-8,521
Normal Year Demand (1+3+6+8)	79,253	80,833	82,414	83,994	85,683
Single Dry Year Demand (2+3+7+8)	87,460	89,248	91,037	92,826	94,743
Multiple Dry Year Demand (2+3+7+8+9)	79,549	81,185	82,821	84,457	86,222

* Base Conservation includes passive and active conservation

** Additiona Conservation is 10 % * (2 + 3)

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Appendix F
Adoption Resolution

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RESOLUTION NO. 2005-126

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ONTARIO, CALIFORNIA ADOPTING THE 2005 URBAN WATER MANAGEMENT PLAN

WHEREAS, the California Legislature enacted Assembly Bill 797 (Water Code Section 10610 et seq., known as the Urban Water Management Planning Act) during the 1983-1984 Regular Session, and as amended subsequently, which mandates that every supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually prepare an Urban Water Management Plan; and

WHEREAS, the City of Ontario is a water supplier of more than 3,000 acre-feet annually; and

WHEREAS, the Plan is periodically reviewed at least once every five years; and

WHEREAS, the City of Ontario contracted with expert consultants, MWH Americas, to assist staff in completing the draft 2005 Urban Water Management Plan; and

WHEREAS, a public hearing was held by the City of Ontario City Council on December 20, 2005 to respond to public comments regarding on the draft Urban Water Management Plan .

NOW, THEREFORE, IT IS HEREBY RESOLVED as follows:

SECTION 1. The 2005 Urban Water Management Plan for the City of Ontario is hereby adopted.

SECTION 2. The Public Works/Community Services Director is hereby authorized to file three copies of the Plan with the State Department of Water Resources.

SECTION 3. The City Manager is hereby authorized and directed to implement the Water Programs as detailed in the adopted 2005 Urban Water Management Plan, including recommendations to the City Council regarding necessary procedures, rules, and regulations in an effort to carry out effective and equitable water programs.

SECTION 4. This Resolution shall take effect upon adoption.

I HEREBY CERTIFY, that the foregoing resolution was duly and regularly passed and adopted by the City Council of the City of Ontario, California, at a regular meeting thereof held on the 20th day of December, 2005.

Mary Wirtes

City Clerk of the City of Ontario

CITY OF ONTARIO
MEMORANDUM

TO: **Richard Ayala, Planning Department**

FROM: **Reymundo Trejo, Utilities Department**

DATE: **April 30, 2007**

SUBJECT: **PDEV04-047 Ontario Wal-Mart Supercenter Environmental Impact Report**

Comments on the water and sewer utilities sections are listed in the following table. The Utilities Section should be revised and resubmitted for review before finalizing the draft EIR.

Reference/ Page No.	**Comment**
Executive Summary	
Page S-3	The total building size is approximately 191,000 sf. The commercial land use requirement for a water supply assessment report is 500,000 sf or more. Therefore, a water supply assessment report does not appear to be required for the Wal-Mart Supercenter as a stand alone project. The EIR Consultant should also review this project and related Mountain Village development and confirm that a water supply assessment report is not required.
4.12 Utilities, Section 4.12.1 Water Services	
Page 4.12-2	Well 13 has been destroyed, so it is no longer a valid water supply source to the 1348 (13th St) Zone water system. New Well 46 will provide water supply to the 1348 Zone. Construction of Well 46 is scheduled to be completed in 2008. The MWD Upper Feeder pipeline runs through the City of Ontario; however it is no longer used as a source to the City's water supply. Construction of new potable and recycled water system distribution lines will be required as part of this project.
Page 4.12-4	The EIR should note that the City water system has sufficient water supply, based on the water supply evaluation contained in the 2005

	Urban Water Management Plan. Water service to the Wal-Mart Supercenter shall be provided from connections the 12-inch pipeline on Mountain Avenue. A separate fire flow service will be required to serve the Wal-Mart building. Based on the 2006 Water Master Plan, the City requires replacement of the existing 6-inch pipeline along the property frontage along 5th Street with an 8-inch pipeline to improve fire flow capacity of the existing water system. The 12-inch pipeline in Mountain Avenue was identified as an age replacement project in the 2006 Water Master Plan. Delete the reference to Well 13.
Page 4.12-5	Footnote references to Chino Basin Municipal Water District and CBMWD and note that CBMWD has change its name to Inland Empire Utilities Agency, since the Supplemental EIR for the Mountain Village Specific Plan was completed. Under "Previous Analysis," review the 2005 Ontario Urban Water Management Plan and confirm that sufficient water supply is available.
Page 4.12-6	For Mitigation Measure 8, the project compliance column should state that pipeline improvements will be constructed to address fire flow deficiencies that are identify in the 2006 Water Mater Plan and the water system hydraulic analysis.
4.12 Utilities, Section 4.12.2 Wastewater and Sewer Services	
Page 4.12-5-8	It is noted that there are sewer deficiencies downstream of the proposed Wal-Mart Supercenter based on the 1995 Sewer Master Plan. Most of these sewer deficiencies will be eliminated by diversion of flow to a proposed sewer trunk line in Holt Boulevard. The schedule of this sewer diversion projects need to be compared to the schedule of the Wal-Mart Supercenter to verify that the sewer diversion project will be completed and sewer capacity will be available prior to occupancy of the Wal-Mart Supercenter. The development will ensure that all sewer deficiencies are eliminated prior to occupancy. A 10-foot wide sewer easements have been recorded for segments of the existing sewer that cross the parking lot. If used, these sewer easements must be amended to increase to the easement width to meet current City Standards. If the site elevation is lowered, existing on-site sewers may need to be relocated to meet City Standards.

From: Dennis Mejia
To: Josephine Alido
Date: 11/21/2006 2:04:32 PM
Subject: Ontario Walmart Supercenter Letter dated 10/25/06

Josephine,

This is in response to your letter requesting information regarding the City's water system. Upon discussing with the Utilities Dept, the developer's engineer will be required to submit a Hydraulic Analysis for Potable Water per our guidelines.

1. The City's 2005 Urban Water Management Plan addresses this question. Additionally, attached is SB 221 and SB 610 law that may require a Water Supply Assessment.
2. A copy of the applicable water atlas sheet may be obtained from the Engineering Dept counter at City Hall.
3. Please refer to the attached Hydraulic Analysis guidelines.
4. The Developer's engineer shall submit a Hydraulic Analysis to address this item.
5. The Developer's engineer shall submit a Hydraulic Analysis to address this item.
6. The developer should use water efficient fixtures such as low-flush toilets and use recycled water for irrigation purposes.
7. The City's recycled water ordinance and design guidelines are available through Engineering.
8. The City's 2005 Urban Water Management Plan addresses this question. Please note that the plan was based on the City's 1998 General Plan Amendment land use.

Please let me know if you have any further questions.

Dennis Mejia, P.E.
Principal Engineer
City of Ontario
Engineering Department
303 East "B" Street
Ontario, CA 91764
Phone (909) 395-2144
Fax (909) 395-2122

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Executive Office

November 15, 2006

Via E-Mail

Ms. Josephine Alido
David Evans and Associates, Inc.
800 North Haven Avenue, Suite 300
Ontario, California 91764

Dear Ms. Alido:

Response to Letter – Ontario Walmart Supercenter

The Metropolitan Water District of Southern California (Metropolitan) has received your letter (dated October 25, 2006) requesting our input in assessing the Ontario Walmart Supercenter (Project) potential impacts on water service. The Project is proposed on approximately 15.23 acres located west of Mountain Avenue and north of Fifth Street, approximately ¼ mile south of the San Bernardino (I-10) Freeway in the northwestern section of the City of Ontario. The proposed Project would involve the demolition of existing on-site structures that are currently present but not in use and the construction of an approximately 190,803-square-foot building on the western portion of the site, with parking areas on the eastern portion. The proposed Project would include a general merchandise store, a grocery store, and an outside garden center. Infrastructure and street improvements would also accompany the Project. The city of Ontario (City) is the Lead Agency for this Project. This letter contains Metropolitan's response to the questions as provided in your letter.

1. **Where is the Metropolitan feeder line located and to and from where does it go? Are there other Metropolitan facilities near the site?**
   Metropolitan owns and operates the Upper Feeder, a 140-inch pipeline, which is located adjacent to the southern Project boundary along Fifth Street within street right-of-way. The Upper Feeder originates at Lake Mathews and extends west to the Eagle Rock Control Facility.

2. **Does this feeder line serve the site?**
   Metropolitan is a regional water agency that delivers supplemental water to its 26 member agencies. This Project is located within the boundaries of the Inland Empire Utility Agency (IEUA)—a Metropolitan member agency. Please consult with IEUA regarding service to the Project site.

3. **Are there guidelines that the applicant would need to comply with to prevent impacts on this feeder line?**
   Development, future excavation, construction, or utilities associated with the proposed Project must not restrict any of Metropolitan's day-to-day operations, repairs and/or its access to facilities. Metropolitan must also be allowed to maintain its rights-of-way and access to all of

its facilities at all times in order to repair and maintain the current condition of those facilities. Nor can the development affect the water quality of Metropolitan supplies by allowing for non-compatible land uses including open space designations. Please identify measures in the Draft EIR that would ensure avoidance of all impacts to Metropolitan's facilities.

In order to avoid potential conflicts with Metropolitan's rights-of-way, we request that any design plans for any activity in the area of Metropolitan's pipelines or facilities be submitted for our review and written approval. Detailed prints of drawings of Metropolitan's pipelines and rights-of-way may be obtained by calling Metropolitan's Substructures Information Line at (213) 217-6564. To assist in preparing plans that are compatible with Metropolitan's facilities, easements, and properties, we have enclosed a copy of the "Guidelines for Developments in the Area of Facilities, Fee Properties, and/or Easements of The Metropolitan Water District of Southern California." Please note that all submitted designs or plans must clearly identify Metropolitan's facilities and rights-of-way.

4. **Are there permits needed with regards to your facilities and the proposed Project?**
   No permits should be required, however, all plans must obtain Metropolitan approval, as noted above in response to Question No. 3.

5. **Does Metropolitan have any concerns or expect any long-term (10-year, 20-year, 30-year or longer) impacts associated with the provision of water services to the City of Ontario? If so, please describe the nature of these impacts and how this Project may contribute to those impacts.**
   Metropolitan is not a local water distributor but rather a regional wholesale supplier. From a regional perspective, Metropolitan's March 25, 2003, Report on Water Supplies indicates that Metropolitan's water supply plan will provide a reliable source of water to Southern California over the next 20 years. A discussion of this plan is outside the scope of this letter; however, a copy of the report is attached. The plan discusses not only Metropolitan's existing water supply, but also how it will develop reliable supplies into the future. Because Metropolitan is a supplemental supplier to the region, please consult with IEUA regarding current water statistics for the proposed project site, future water use based on the Project description, and whether there is the need to increase existing levels of service or facilities.

Additionally, Metropolitan encourages projects within its service area to include water conservation measures. Water conservation, reclaimed water use, and groundwater recharge programs are integral components to regional water supply planning. Metropolitan supports mitigation measures such as using water efficient fixtures, drought-tolerant landscaping, and reclaimed water to offset any significant increase in water use associated with the proposed Project.

We appreciate the opportunity to provide input to your planning process and we look forward to receiving future environmental documentation on this project. If we can be of further assistance, please contact me at (213) 217-6217.

Very truly yours,

Delaine W. Shane
Interim Manager, Environmental Planning Team

LIM/lim
(Public Folders/EPU/Letters/13-NOV-06A.doc – Josephine Alido)

Attachment: 1) Planning Guidelines
2) Report on Metropolitan's Water Supplies, March 25, 2003

Copy: Mr. Richard Ayala
The City of Ontario
Planning Department
303 East "B" Street
Ontario, California 91764

Mr. Richard Atwater
Chief Executive Officer/General Manager
Inland Empire Utility Agency
6075 Kimball Avenue
Chino, California 91709

Guidelines for Developments in the Area of Facilities, Fee Properties, and/or Easements of The Metropolitan Water District of Southern California

1. Introduction

a. The following general guidelines should be followed for the design of proposed facilities and developments in the area of Metropolitan's facilities, fee properties, and/or easements.

b. We require that 3 copies of your tentative and final record maps, grading, paving, street improvement, landscape, storm drain, and utility plans be submitted for our review and written approval as they pertain to Metropolitan's facilities, fee properties and/or easements, prior to the commencement of any construction work.

2. Plans, Parcel and Tract Maps

The following are Metropolitan's requirements for the identification of its facilities, fee properties, and/or easements on your plans, parcel maps and tract maps:

a. Metropolitan's fee properties and/or easements and its pipelines and other facilities must be fully shown and identified as Metropolitan's on all applicable plans.

b. Metropolitan's fee properties and/or easements must be shown and identified as Metropolitan's with the official recording data on all applicable parcel and tract maps.

c. Metropolitan's fee properties and/or easements and existing survey monuments must be dimensionally tied to the parcel or tract boundaries.

d. Metropolitan's records of surveys must be referenced on the parcel and tract maps.

3. Maintenance of Access Along Metropolitan's Rights-of-Way

a. Proposed cut or fill slopes exceeding 10 percent are normally not allowed within Metropolitan's fee properties or easements. This is required to facilitate the use of construction and maintenance equipment, and provide access to its aboveground and belowground facilities.

b. We require that 16-foot-wide commercial-type driveway approaches be constructed on both sides of all streets crossing Metropolitan's rights-of-way. Openings are required in any median island. Access ramps, if necessary, must be at least 16-feet-wide. Grades of ramps are normally not allowed to exceed 10 percent. If the slope of an access ramp must exceed 10 percent due to the topography, the ramp must be paved. We require a 40-foot-long level area on the driveway approach to access ramps where the ramp meets the street. At Metropolitan's fee properties, we may require fences and gates.

c. The terms of Metropolitan's permanent easement deeds normally preclude the building or maintenance of structures of any nature or kind within its easements, to ensure safety and avoid interference with operation and maintenance of Metropolitan's pipelines or other facilities. Metropolitan must have vehicular access along the easements at all times for inspection, patrolling, and for maintenance of the pipelines and other facilities on a routine basis. We require a 20-foot-wide clear zone around all above-ground facilities for this routine access. This clear zone should slope away from our facility on a grade not to exceed 2 percent. We must also have access along the easements with construction equipment. An example of this is shown on Figure 1.

d. The footings of any proposed buildings adjacent to Metropolitan's fee properties and/or easements must not encroach into the fee property or easement or impose additional loading on Metropolitan's pipelines or other facilities therein. A typical situation is shown on Figure 2. Prints of the detail plans of the footings for any building or structure adjacent to the fee property or easement must be submitted for our review and written approval as they pertain to the pipeline or other facilities therein. Also, roof eaves of buildings adjacent to the easement or fee property must not overhang into the fee property or easement area.

e. Metropolitan's pipelines and other facilities, e.g. structures, manholes, equipment, survey monuments, etc. within its fee properties and/or easements must be protected from damage by the easement holder on Metropolitan's property or the property owner where Metropolitan has an easement, at no expense to Metropolitan. If the facility is a cathodic protection station it shall be located prior to any grading or excavation. The exact location, description and way of protection shall be shown on the related plans for the easement area.

4. Easements on Metropolitan's Property

a. We encourage the use of Metropolitan's fee rights-of-way by governmental agencies for public street and utility purposes, provided that such use does not interfere with Metropolitan's use of the property, the entire width of the property is accepted into the agency's public street system and fair market value is paid for such use of the right-of-way.

b. Please contact the Director of Metropolitan's Right of Way and Land Division, telephone (213) 250-6302, concerning easements for landscaping, street, storm drain, sewer, water or other public facilities proposed within Metropolitan's fee properties. A map and legal description of the requested easements must be submitted. Also, written evidence must be submitted that shows the city or county will accept the easement for the specific purposes into its public system. The grant of the easement will be subject to Metropolitan's rights to use its land for water pipelines and related purposes to the same extent as if such grant had not been made. There will be a charge for the easement. Please note that, if entry is required on the property prior to issuance of the easement, an entry permit must be obtained. There will also be a charge for the entry permit.

5. Landscaping

Metropolitan's landscape guidelines for its fee properties and/or easements are as follows:

a. A green belt may be allowed within Metropolitan's fee property or easement.

b. All landscape plans shall show the location and size of Metropolitan's fee property and/or easement and the location and size of Metropolitan's pipeline or other facilities therein.

c. Absolutely no trees will be allowed within 15 feet of the centerline of Metropolitan's existing or future pipelines and facilities.

d. Deep-rooted trees are prohibited within Metropolitan's fee properties and/or easements. Shallow-rooted trees are the only trees allowed. The shallow-rooted trees will not be permitted any closer than 15 feet from the centerline of the pipeline, and such trees shall not be taller than 25 feet with a root spread no greater than 20 feet in diameter at maturity. Shrubs, bushes, vines, and ground cover are permitted, but larger shrubs and bushes should not be planted directly over our pipeline. Turf is acceptable. We require submittal of landscape plans for Metropolitan's prior review and written approval. (See Figure 3).

e. The landscape plans must contain provisions for Metropolitan's vehicular access at all times along its rights-of-way to its pipelines or facilities therein. Gates capable of accepting Metropolitan's locks are required in any fences across its rights-of-way. Also, any walks or drainage facilities across its access route must be constructed to AASHTO H-20 loading standards.

f. Rights to landscape any of Metropolitan's fee properties must be acquired from its Right of Way and Land Division. Appropriate entry permits must be obtained prior to any entry on its property. There will be a charge for any entry permit or easements required.

6. Fencing

Metropolitan requires that perimeter fencing of its fee properties and facilities be constructed of universal chain link, 6 feet in height and topped with 3 strands of barbed wire angled upward and outward at a 45 degree angle or an approved equal for a total fence height of 7 feet. Suitable substitute fencing may be considered by Metropolitan. (Please see Figure 5 for details).

7. Utilities in Metropolitan's Fee Properties and/or Easements or Adjacent to Its Pipeline in Public Streets

Metropolitan's policy for the alinement of utilities permitted within its fee properties and/or easements and street rights-of-way is as follows:

a. Permanent structures, including catch basins, manholes, power poles, telephone riser boxes, etc., shall not be located within its fee properties and/or easements.

b. We request that permanent utility structures within public streets, in which Metropolitan's facilities are constructed under the Metropolitan Water District Act, be placed as far from our pipeline as possible, but not closer than 5 feet from the outside of our pipeline.

c. The installation of utilities over or under Metropolitan's pipeline(s) must be in accordance with the requirements shown on the enclosed prints of Drawings Nos. C-11632 and C-9547. Whenever possible we request a minimum of one foot clearance between Metropolitan's pipe and your facility. Temporary support of Metropolitan's pipe may also be required at undercrossings of its pipe in an open trench. The temporary support plans must be reviewed and approved by Metropolitan.

d. Lateral utility crossings of Metropolitan's pipelines must be as perpendicular to its pipeline alinement as practical. Prior to any excavation our pipeline shall be located manually and any excavation within two feet of our pipeline must be done by hand. This shall be noted on the appropriate drawings.

e. Utilities constructed longitudinally within Metropolitan's rights-of-way must be located outside the theoretical trench prism for uncovering its pipeline and must be located parallel to and as close to its rights-of-way lines as practical.

f. When piping is jacked or installed in jacked casing or tunnel under Metropolitan's pipe, there must be at least two feet of vertical clearance between the bottom of Metropolitan's pipe and the top of the jacked pipe, jacked casing or tunnel. We also require that detail drawings of the shoring for the jacking or tunneling pits be submitted for our review and approval. Provisions must be made to grout any voids around the exterior of the jacked pipe, jacked casing or tunnel. If the piping is installed in a jacked casing or tunnel the annular space between the piping and the jacked casing or tunnel must be filled with grout.

g. Overhead electrical and telephone line requirements:

1) Conductor clearances are to conform to the California State Public Utilities Commission, General Order 95, for Overhead Electrical Line Construction or at a greater clearance if required by Metropolitan. Under no circumstances shall clearance be less than 35 feet.

2) A marker must be attached to the power pole showing the ground clearance and line voltage, to help prevent damage to your facilities during maintenance or other work being done in the area.

3) Line clearance over Metropolitan's fee properties and/or easements shall be shown on the drawing to indicate the lowest point of the line under the most adverse conditions including consideration of sag, wind load, temperature change, and support type. We require that overhead lines be located at least 30 feet laterally away from all above-ground structures on the pipelines.

4) When underground electrical conduits, 120 volts or greater, are installed within Metropolitan's fee property and/or easement, the conduits must be incased in a minimum of three inches of red concrete. Where possible, above ground warning signs must also be placed at the right-of-way lines where the conduits enter and exit the right-of-way.

h. The construction of sewerlines in Metropolitan's fee properties and/or easements must conform to the California Department of Health Services Criteria for the Separation of Water Mains and Sanitary Services and the local City or County Health Code Ordinance as it relates to installation of sewers in the vicinity of pressure waterlines. The construction of sewerlines should also conform to these standards in street rights-of- way.

i. Cross sections shall be provided for all pipeline crossings showing Metropolitan's fee property and/or easement limits and the location of our pipeline(s). The exact locations of the crossing pipelines and their elevations shall be marked on as-built drawings for our information.

j. Potholing of Metropolitan's pipeline is required if the vertical clearance between a utility and Metropolitan's pipeline is indicated on the plan to be one foot or less. If the indicated clearance is between one and two feet, potholing is suggested. Metropolitan will provide a representative to assists others in locating and identifying its pipeline. Two-working days notice is requested.

k. Adequate shoring and bracing is required for the full depth of the trench when the excavation encroaches within the zone shown on Figure 4.

l. The location of utilities within Metropolitan's fee property and/or easement shall be plainly marked to help prevent damage during maintenance or other work done in the area. Detectable tape over buried utilities should be placed a minimum of 12 inches above the utility and shall conform to the following requirements:

1) Water pipeline: A two-inch blue warning tape shall be imprinted with:

"CAUTION BURIED WATER PIPELINE"

2) Gas, oil, or chemical pipeline: A two-inch yellow warning tape shall be imprinted with:

"CAUTION BURIED _____ PIPELINE"

3) Sewer or storm drain pipeline: A two-inch green warning tape shall be imprinted with:

"CAUTION BURIED _____ PIPELINE"

4) Electric, street lighting, or traffic signals conduit: A two-inch red warning tape shall be imprinted with:

"CAUTION BURIED _____ CONDUIT"

5) Telephone, or television conduit: A two-inch orange warning tape shall be imprinted with:

"CAUTION BURIED _____ CONDUIT"

m. Cathodic Protection requirements:

1) If there is a cathodic protection station for Metropolitan's pipeline in the area of the proposed work, it shall be located prior to any grading or excavation. The exact location, description and manner of protection shall be shown on all applicable plans. Please contact Metropolitan's Corrosion Engineering Section, located at Metropolitan's F. E. Weymouth Softening and Filtration Plant, 700 North Moreno Avenue, La Verne, California 91750, telephone (714) 593-7474, for the locations of Metropolitan's cathodic protection stations.

2) If an induced-current cathodic protection system is to be installed on any pipeline crossing Metropolitan's pipeline, please contact Mr. Wayne E. Risner at (714) 593-7474 or (213) 250-5085. He will review the proposed system and determine if any conflicts will arise with the existing cathodic protection systems installed by Metropolitan.

3) Within Metropolitan's rights-of-way, pipelines and carrier pipes (casings) shall be coated with an approved protective coating to conform to Metropolitan's requirements, and shall be maintained in a neat and orderly condition as directed by Metropolitan. The application and monitoring of cathodic protection on the pipeline and casing shall conform to Title 49 of the Code of Federal Regulations, Part 195.

4) If a steel carrier pipe (casing) is used:

(a) Cathodic protection shall be provided by use of a sacrificial magnesium anode (a sketch showing the cathodic protection details can be provided for the designers information).

(b) The steel carrier pipe shall be protected with a coal tar enamel coating inside and out in accordance with AWWA C203 specification.

n. All trenches shall be excavated to comply with the CAL/OSHA Construction Safety Orders, Article 6, beginning with Sections 1539 through 1547. Trench backfill shall be placed in 8-inch lifts and shall be compacted to 95 percent relative compaction (ASTM D698) across roadways and through protective dikes. Trench backfill elsewhere will be compacted to 90 percent relative compaction (ASTM D698).

o. Control cables connected with the operation of Metropolitan's system are buried within streets, its fee properties and/or easements. The locations and elevations of these cables shall be shown on the drawings. The drawings shall note that prior to any excavation in the area, the control cables shall be located and measures shall be taken by the contractor to protect the cables in place.

p. Metropolitan is a member of Underground Service Alert (USA). The contractor (excavator) shall contact USA at 1-800-422-4133 (Southern California) at least 48 hours prior to starting any excavation work. The contractor will be liable for any damage to Metropolitan's facilities as a result of the construction.

8. Paramount Right

Facilities constructed within Metropolitan's fee properties and/or easements shall be subject to the paramount right of Metropolitan to use its fee properties and/or easements for the purpose for which they were acquired. If at any time Metropolitan or its assigns should, in the exercise of their rights, find it necessary to remove any of the facilities from the fee properties and/or easements, such removal and replacement shall be at the expense of the owner of the facility.

9. Modification of Metropolitan's Facilities

When a manhole or other of Metropolitan's facilities must be modified to accommodate your construction or reconstruction, Metropolitan will modify the facilities with its forces. This should be noted on the construction plans. The estimated cost to perform this modification will be given to you and we will require a deposit for this amount before the work is performed. Once the deposit is received, we will schedule the work. Our forces will coordinate the work with your contractor. Our final billing will be based on actual cost incurred, and will include materials, construction, engineering plan review, inspection, and administrative overhead charges calculated in accordance with Metropolitan's standard accounting practices. If the cost is less than the deposit, a refund will be made; however, if the cost exceeds the deposit, an invoice will be forwarded for payment of the additional amount.

10. Drainage

a. Residential or commercial development typically increases and concentrates the peak storm water runoff as well as the total yearly storm runoff from an area, thereby increasing the requirements for storm drain facilities downstream of the development. Also, throughout the year water from landscape irrigation, car washing, and other outdoor domestic water uses flows into the storm drainage system resulting in weed abatement, insect infestation, obstructed access and other problems. Therefore, it is Metropolitan's usual practice not to approve plans that show discharge of drainage from developments onto its fee properties and/or easements.

b. If water must be carried across or discharged onto Metropolitan's fee properties and/or easements, Metropolitan will insist that plans for development provide that it be carried by closed conduit or lined open channel approved in writing by Metropolitan. Also the drainage facilities must be maintained by others, e.g., city, county, homeowners association, etc. If the development proposes changes to existing drainage features, then the developer shall make provisions to provide for replacement and these changes must be approved by Metropolitan in writing.

11. Construction Coordination

During construction, Metropolitan's field representative will make periodic inspections. We request that a stipulation be added to the plans or specifications for notification of Mr. _____ of Metropolitan's Operations Services Branch, telephone (213) 250-____, at least two working days prior to any work in the vicinity of our facilities.

12. Pipeline Loading Restrictions

a. Metropolitan's pipelines and conduits vary in structural strength, and some are not adequate for AASHTO H-20 loading. Therefore, specific loads over the specific sections of pipe or conduit must be reviewed and approved by Metropolitan. However, Metropolitan's pipelines are typically adequate for AASHTO H-20 loading provided that the cover over the pipeline is not less than four feet or the cover is not substantially increased. If the temporary cover over the pipeline during construction is between three and four feet, equipment must restricted to that which

imposes loads no greater than AASHTO H-10. If the cover is between two and three feet, equipment must be restricted to that of a Caterpillar D-4 tract-type tractor. If the cover is less than two feet, only hand equipment may be used. Also, if the contractor plans to use any equipment over Metropolitan's pipeline which will impose loads greater than AASHTO H-20, it will be necessary to submit the specifications of such equipment for our review and approval at least one week prior to its use. More restrictive requirements may apply to the loading guideline over the San Diego Pipelines 1 and 2, portions of the Orange County Feeder, and the Colorado River Aqueduct. Please contact us for loading restrictions on all of Metropolitan's pipelines and conduits.

b. The existing cover over the pipeline shall be maintained unless Metropolitan determines that proposed changes do not pose a hazard to the integrity of the pipeline or an impediment to its maintenance.

13. Blasting

a. At least 20 days prior to the start of any drilling for rock excavation blasting, or any blasting, in the vicinity of Metropolitan's facilities, a two-part preliminary conceptual plan shall be submitted to Metropolitan as follows:

b. Part 1 of the conceptual plan shall include a complete summary of proposed transportation, handling, storage, and use of explosions.

c. Part 2 shall include the proposed general concept for blasting, including controlled blasting techniques and controls of noise, fly rock, airblast, and ground vibration.

14. CEQA Requirements

a. When Environmental Documents Have Not Been Prepared

1) Regulations implementing the California Environmental Quality Act (CEQA) require that Metropolitan have an opportunity to consult with the agency or consultants preparing any environmental documentation. We are required to review and consider the environmental effects of the project as shown in the Negative Declaration or Environmental Impact Report (EIR) prepared for your project before committing Metropolitan to approve your request.

2) In order to ensure compliance with the regulations implementing CEQA where Metropolitan is not the Lead Agency, the following minimum procedures to ensure compliance with the Act have been established:

a) Metropolitan shall be timely advised of any determination that a Categorical Exemption applies to the project. The Lead Agency is to advise Metropolitan that it and other agencies participating in the project have complied with the requirements of CEQA prior to Metropolitan's participation.

b) Metropolitan is to be consulted during the preparation of the Negative Declaration or EIR.

c) Metropolitan is to review and submit any necessary comments on the Negative Declaration or draft EIR.

d) Metropolitan is to be indemnified for any costs or liability arising out of any violation of any laws or regulations including but not limited to the California Environmental Quality Act and its implementing regulations.

b. <u>When Environmental Documents Have Been Prepared</u>

If environmental documents have been prepared for your project, please furnish us a copy for our review and files in a timely manner so that we may have sufficient time to review and comment. The following steps must also be accomplished:

1) The Lead Agency is to advise Metropolitan that it and other agencies participating in the project have complied with the requirements of CEQA prior to Metropolitan's participation.

2) You must agree to indemnify Metropolitan, its officers, engineers, and agents for any costs or liability arising out of any violation of any laws or regulations including but not limited to the California Environmental Quality Act and its implementing regulations.

15. <u>Metropolitan's Plan-Review Cost</u>

a. An engineering review of your proposed facilities and developments and the preparation of a letter response

giving Metropolitan's comments, requirements and/or approval that will require 8 man-hours or less of effort is typically performed at no cost to the developer, unless a facility must be modified where Metropolitan has superior rights. If an engineering review and letter response requires more than 8 man-hours of effort by Metropolitan to determine if the proposed facility or development is compatible with its facilities, or if modifications to Metropolitan's manhole(s) or other facilities will be required, then all of Metropolitan's costs associated with the project must be paid by the developer, unless the developer has superior rights.

b. A deposit of funds will be required from the developer before Metropolitan can begin its detailed engineering plan review that will exceed 8 hours. The amount of the required deposit will be determined after a cursory review of the plans for the proposed development.

c. Metropolitan's final billing will be based on actual cost incurred, and will include engineering plan review, inspection, materials, construction, and administrative overhead charges calculated in accordance with Metropolitan's standard accounting practices. If the cost is less than the deposit, a refund will be made; however, if the cost exceeds the deposit, an invoice will be forwarded for payment of the additional amount. Additional deposits may be required if the cost of Metropolitan's review exceeds the amount of the initial deposit.

16. Caution

We advise you that Metropolitan's plan reviews and responses are based upon information available to Metropolitan which was prepared by or on behalf of Metropolitan for general record purposes only. Such information may not be sufficiently detailed or accurate for your purposes. No warranty of any kind, either express or implied, is attached to the information therein conveyed as to its accuracy, and no inference should be drawn from Metropolitan's failure to comment on any aspect of your project. You are therefore cautioned to make such surveys and other field investigations as you may deem prudent to assure yourself that any plans for your project are correct.

17. Additional Information

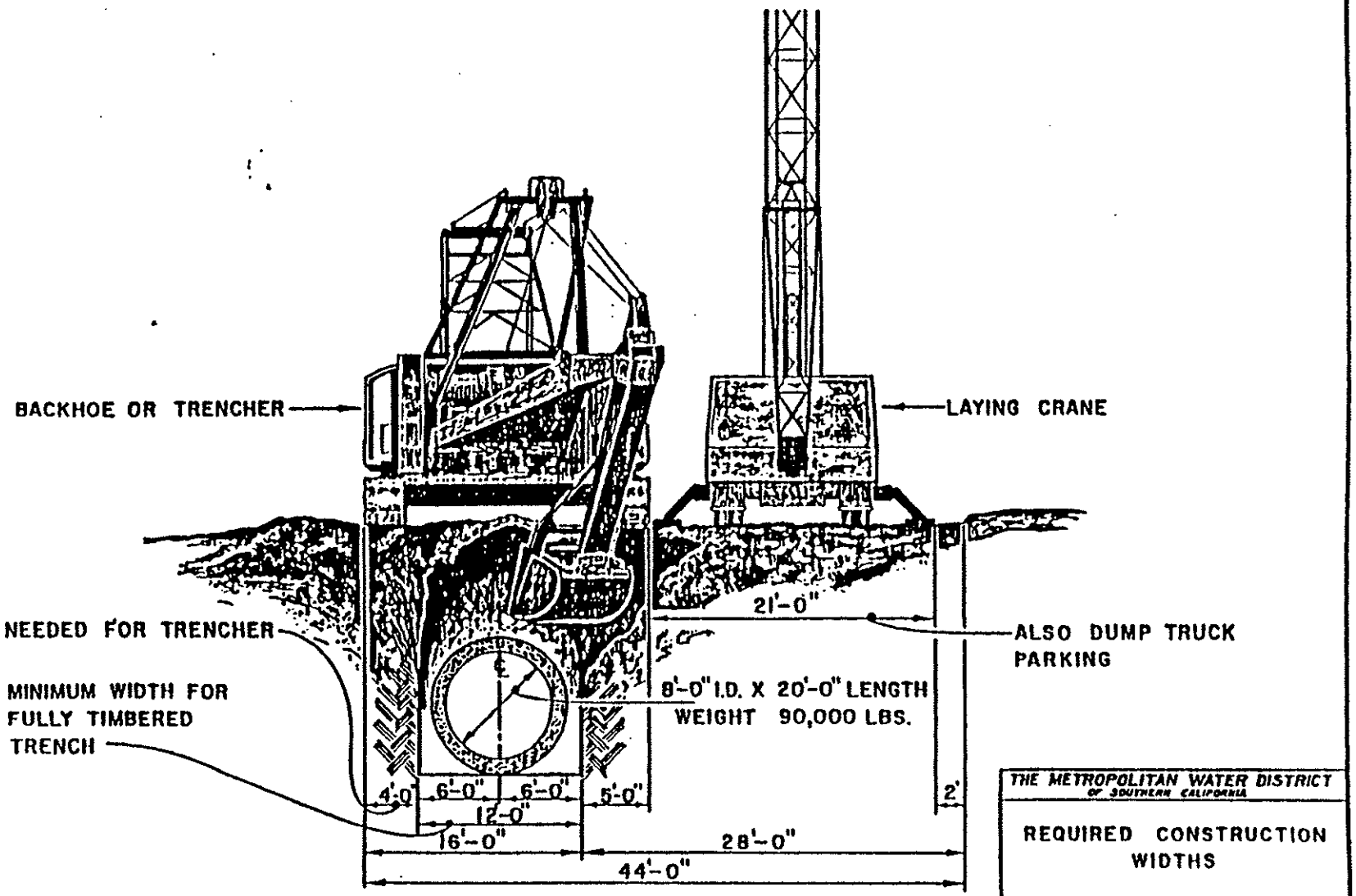
Should you require additional information, please contact:

Civil Engineering Substructures Section
Metropolitan Water District
of Southern California
P.O. Box 54153
Los Angeles, California 90054-0153
(213) 217-6000

JEH/MRW/lk

Rev. January 22, 1989

Encl.



THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

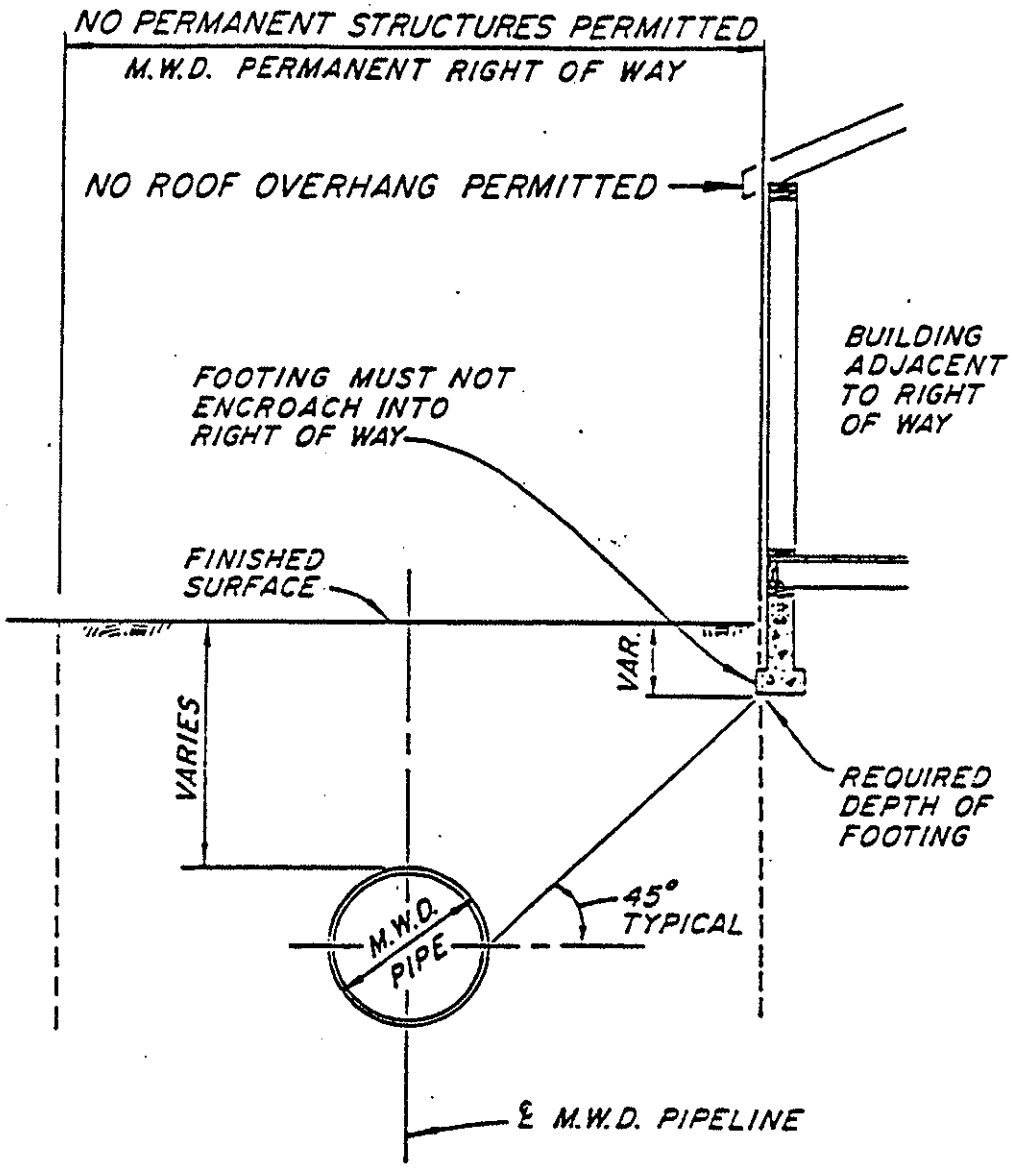
REQUIRED CONSTRUCTION WIDTHS

DRAWN..... RECOMMENDED.....
TRACED..... APPROVED.....
CHECKED.....

FIGURE 1

FORM NO 39 9 1000 11-66 P.O. NO. 49-5607

11-66 DIETERICH-POST CLEARPRINT 1020



NOTE: M.W.D. PIPELINE SIZE, DEPTH, LOCATION AND WIDTH OF PERMANENT RIGHT OF WAY VARIES.

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

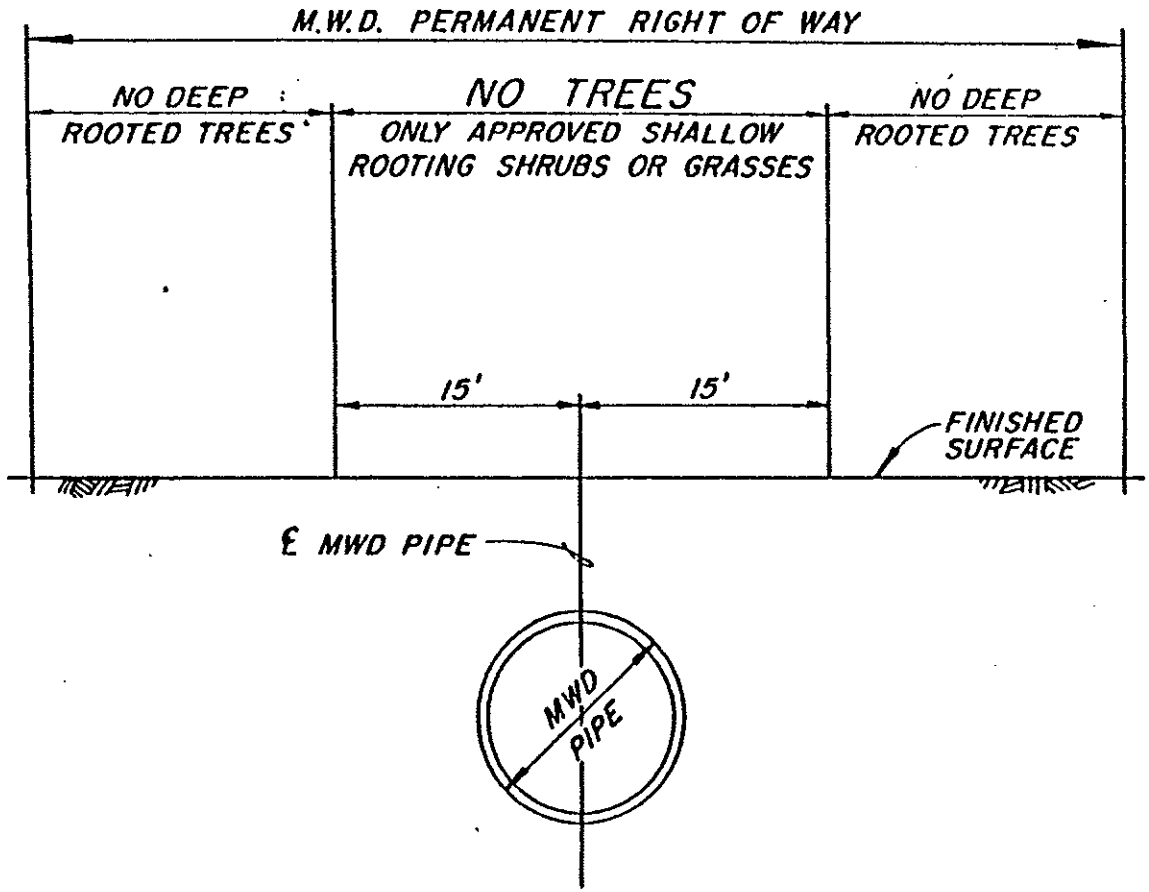
REQUIREMENTS FOR BUILDINGS AND FOOTINGS ADJACENT TO M.W.D. RIGHT OF WAY

DRAWN ____ RECOMMENDED ____
TRACED ____
CHECKED ____ APPROVED ____

FIGURE 2

FORM NO. 88 8 1000 11 67 P.O. 39-8214

11-67 DIETERICH-POST CLEARPRINT 1023



THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

LANDSCAPE GUIDELINES FOR M.W.D. RIGHT OF WAY

DRAWN..... RECOMMENDED.....
TRACED.....
CHECKED..... APPROVED.....

FIGURE 3

11-68 DIETERICH-POST CLEARPRINT 1023

FORM NO. 19 B 1000 11-68 P.O. NO. 68 3807

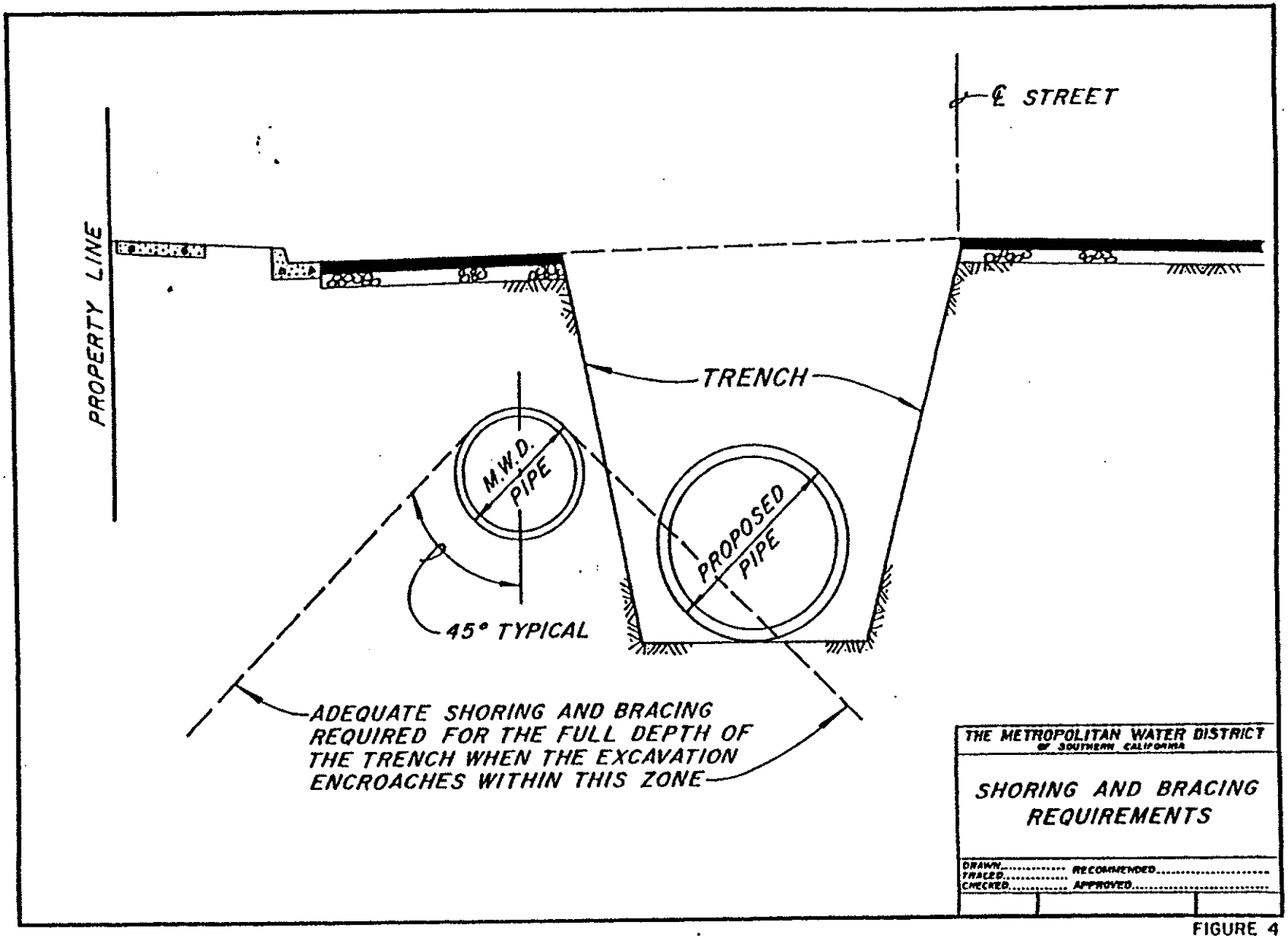
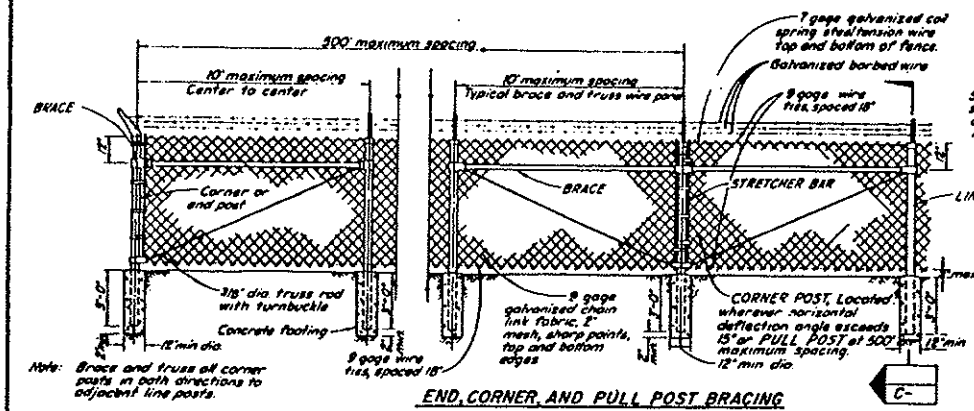


FIGURE 4

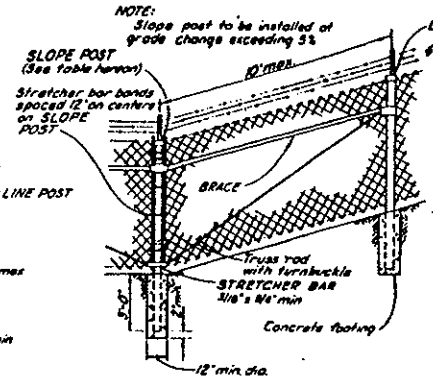
FORM NO. 59 9 1000 11-48 P.O. NO. 48 4407
DIETERICH-POST CLEARPRINT 1025

SPECIFICATIONS NO. SHEET NO.

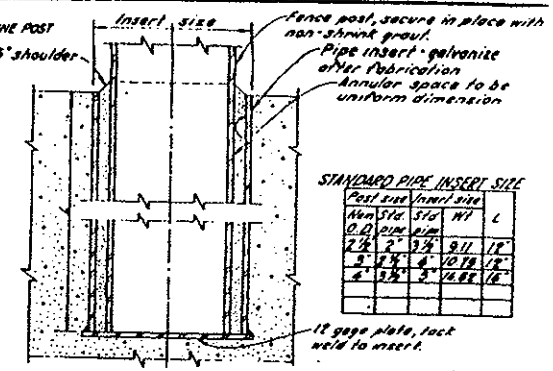


Note: Brace and truss all corner posts in both directions to adjacent line posts.

END, CORNER, AND PULL POST BRACING
(Not to scale)



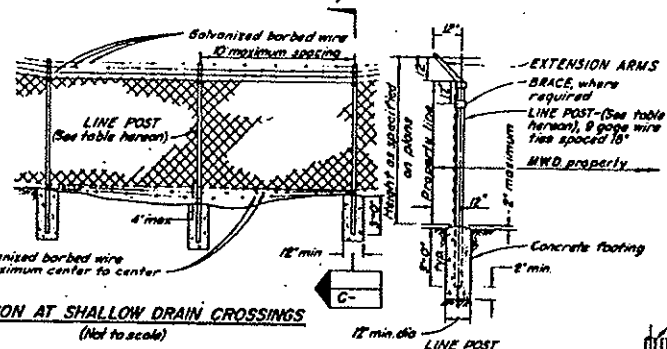
TYPICAL FENCE ON SLOPE
(Not to scale)



STANDARD PIPE INSERT SIZE

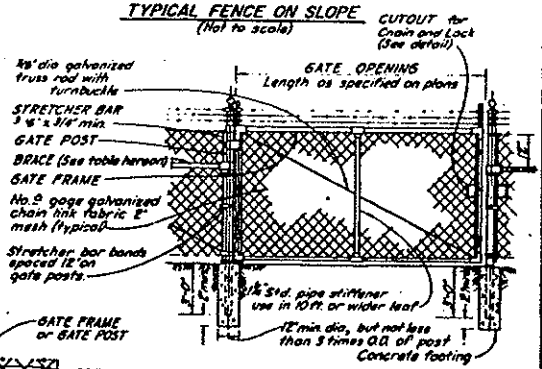
Post size Nom O.D.	Std. pipe	Insert size Std pipe	Wt	L
2 1/2	2"	3 1/2	9.11	12"
3	2 1/2"	4"	10.79	12"
4"	3 1/2"	5"	14.88	16"

FENCE POST INSERT FOR CONCRETE WALL AND CONCRETE CURB
(Not to scale)

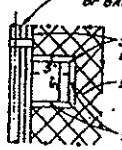


ELEVATION AT SHALLOW DRAIN CROSSINGS
(Not to scale)

LINE POST SECTION
(Not to scale) C-

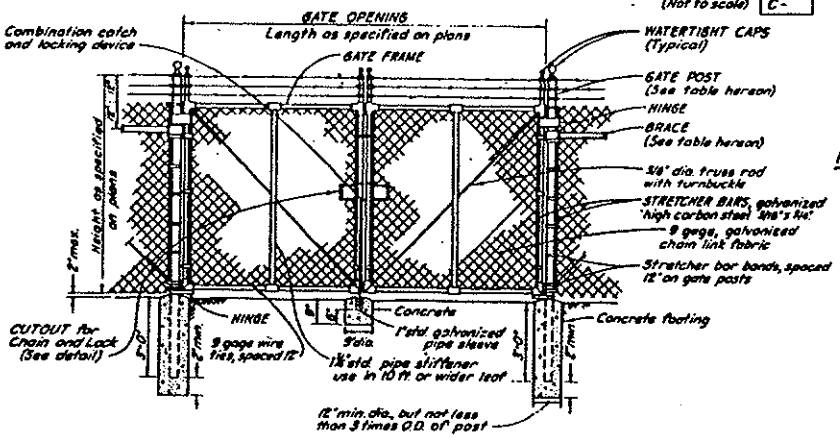


SINGLE SWING GATE DETAIL
(Not to scale)



DETAIL OF CUTOUT FOR CHAIN AND LOCK
(Not to scale)

Use	Type	Nominal Size (inches)	Actual O.D. (inches)	Weight per foot (Pounds)
End, corner, slope, pull and gate posts (for single gates 6 feet or less in width and double gates 12 feet or less in width) for chain link fabric 72" inches or higher	Pipe	2 1/2	2.875	5.79
End, corner, slope, pull and gate posts (for single gates 6 feet or less in width and double gates 12 feet or less in width) for chain link fabric less than 72 inches height	Pipe	2	2.375	3.65
Gate posts for single swing gates over 6 feet but not over 13 feet in width and double swing gates over 12 feet but not over 26 feet in width.	Pipe	3 1/2	4.000	9.11
Gate posts for single swing gates over 13 feet but not over 18 feet in width and double swing gates over 26 feet but not over 36 feet in width	Pipe	6	6.625	18.97
Gate posts for single swing gates over 18 feet in width and double swing gates over 36 feet in width	Pipe	8	8.625	24.70
Line posts for chain link fabric 72 inches or higher	Pipe	2	2.375	3.65
	H-Section	2 9/16 x 1 7/8		4.10
Line posts for chain link fabric less than 72 inches in height	Pipe	1 1/2	1.900	2.72
	H-Section	1 9/16 x 1 1/8		2.80
Braces	Pipe	1 1/2	1.660	2.27
	H-Section	1 9/16 x 1 1/8		2.80
Frame for gates	Pipe	1 1/2	1.900	2.72
Stiffeners for gates	Pipe	1 1/2	1.660	2.27



DOUBLE SWING GATE DETAIL
(Not to scale)

GENERAL NOTES

1. All ferrous parts and materials shall be galvanized after fabrication
2. Adjustable tightener shall be turnbuckle or equivalent, having minimum 6" take-up
3. Extension arms for barbed wire shall be steel, malleable iron or wrought iron and shall be attached to the top of the post with a 1/2 inch round head rivet. The extension arms shall carry three wires each at approximately 5 inch centers in a plane approximately 45° from the vertical.
4. All gate hinges shall be heavy duty malleable iron or steel, industrial service type, 270 degree swing, of approved quality and design.
5. Secure cap to post with 1/4 inch round head rivet

NO.	DATE	DWN.	CKD.	REVISION	REC.	APP.

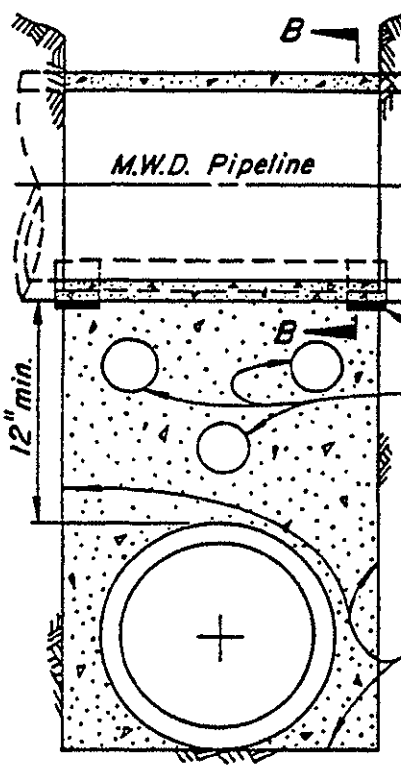
REVISION COORDINATION CHECK
ORIGINAL RELEASE | MECH. | STRUCT. | ELEC. | CHEM. | SPECS. | DATE
INTERSECTIONAL COORDINATION CHECK

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
DISTRIBUTION SYSTEM

CHAIN LINK FENCE DETAILS

DESIGNED
DRAWN
CHECKED
RECOMMENDED
APPROVED
WORK ORDER NO.
LOS ANGELES

FIGURE 5

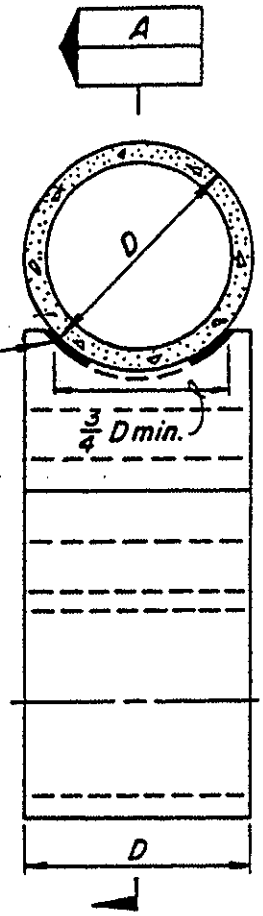


SECTION "A-A"

$\frac{3}{4}$" x 6" premolded expansion joint filler

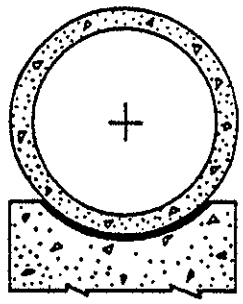
Apertures as directed by the Engineer, total volume not to exceed $\frac{1}{2}$ the volume of the supporting wall

Concrete support wall to be placed against undisturbed ground



CROSS SECTION

1. Supporting wall shall have a firm bearing on the subgrade and against the side of the excavation.
2. Premolded expansion joint filler per ASTM D-1751-73 to be used in support for steel pipe only.
3. If trench width is 4 feet or greater, measured along centerline of M.W.D. pipe, concrete support must be constructed.
4. If trench width is less than 4 feet, clean sand backfill, compacted to 90% density in accordance with the provisions of ASTM Standard D-1557-70 may be used in lieu of the concrete support wall.



SECTION "B-B"

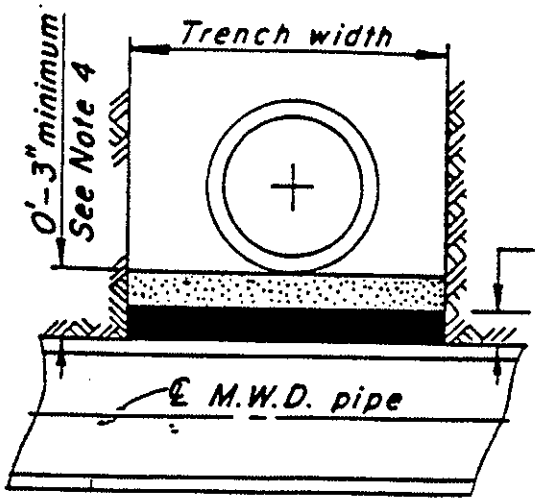
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

TYPICAL SUPPORT FOR M.W.D. PIPELINE

DRAWN ..... RECOMMENDED .....
TRACED .....
CHECKED ..... APPROVED .....

C-9547

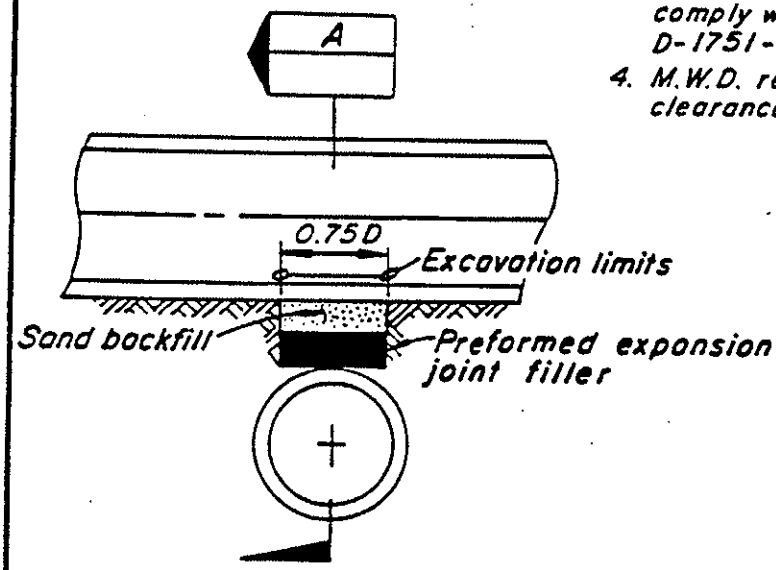
11-67 DIETERICH-POST CLEARPRINT 1025



SECTION A

NOTES

1. This method to be used where the utility line is 24" or greater in diameter and the clearance between the utility line and M.W.D. pipe is 12" or less.
2. Special protection may be required if the utility line diameter is greater than M.W.D. pipe or if the cover over the utility line to the street surface is minimal and there is 12" or less clearance between M.W.D. pipe and the utility line.
3. Preformed expansion joint filler to comply with ASTM designation D-1751-73.
4. M.W.D. requests 12" minimum clearance whenever possible.



CROSS SECTION

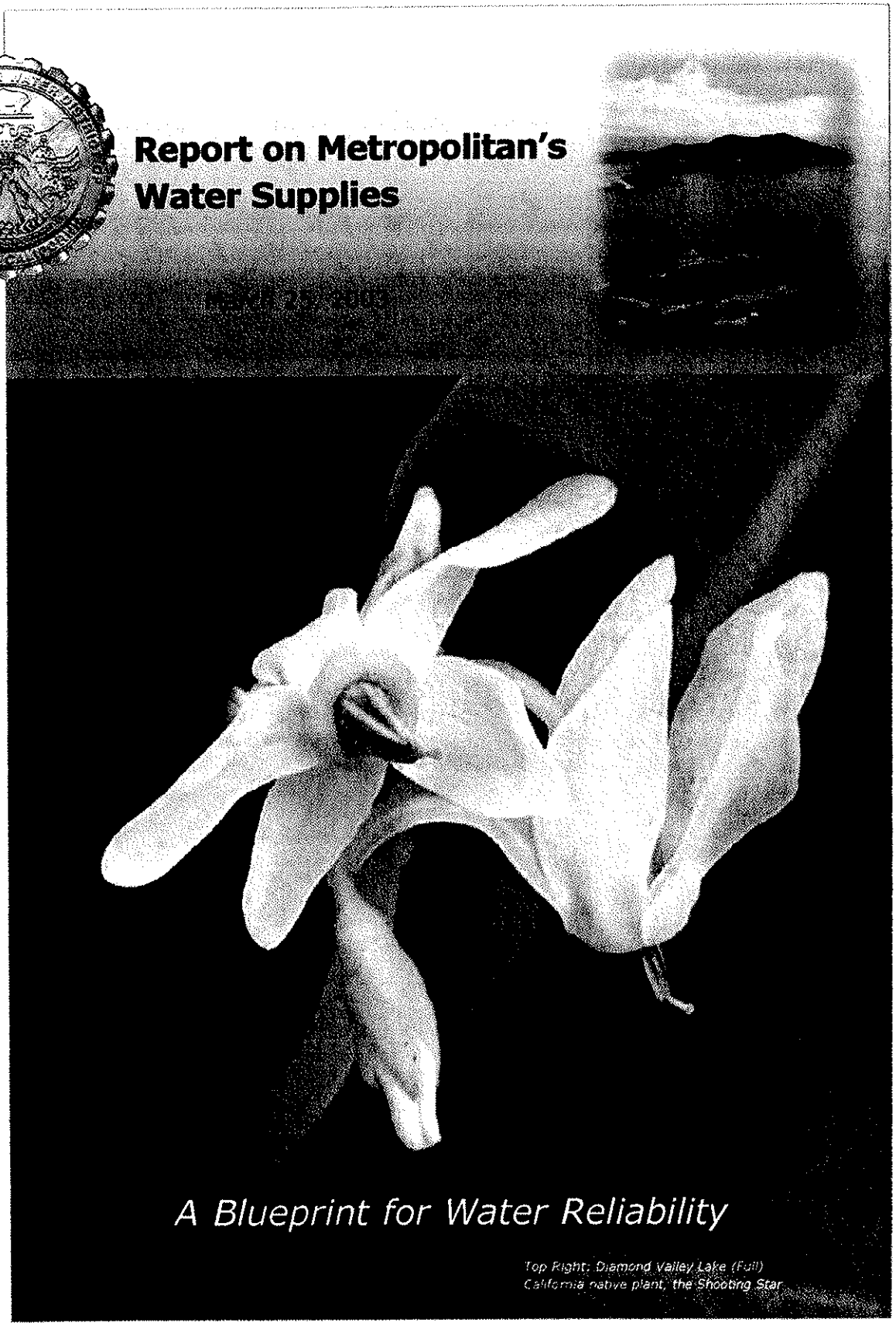
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

TYPICAL EXPANSION JOINT FILLER PROTECTION FOR OVERCROSSING OF M.W.D. PIPELINE

DRAWN ____ RECOMMENDED ____
TRACED ____
CHECKED ____ APPROVED ____

C-11632

Report on Metropolitan's Water Supplies



A Blueprint for Water Reliability

Top Right: Diamond Valley Lake (Full)
California native plant, the Shooting Star

Report on Metropolitan's Water Supplies

A Blueprint for Water Reliability

Dated March 25, 2003

Report on Metropolitan's Water Supplies

TABLE OF CONTENTS

Section	Page
Introduction	1
Background	5
Approach	8
Managing Change	12
Findings	23
Summary Supply and Demand Tables	26
Appendix A – Metropolitan Water Demands	
Retail Demand Forecast Overview	A - 1
Local Supplies	A - 5
Demand Summary Tables	A - 8
Appendix B – Colorado River Aqueduct Deliveries	
Summary Supply Tables	B - 1
Resource Program Data Sheets	B - 6
Appendix C – California Aqueduct Deliveries	
Summary Supply Tables	C - 1
Resource Program Data Sheets	C - 6
Appendix D – In-Basin Storage Deliveries	
Summary Supply Tables	D - 1
Resource Program Data Sheets	D - 6
Appendix E – Disclosure Statement	E - 1

INTRODUCTION

OBJECTIVE OF THE REPORT

This document, *Report on Metropolitan's Water Supplies,* provides the member public agencies, retail water utilities, cities and counties within the service area of The Metropolitan Water District of Southern California (Metropolitan), with information that may assist in their compliance with SB 221 (Kuehl) and SB 610 (Costa). The recently enacted laws require new development to meet certain criteria and provide "substantial evidence" of available water supplies in the event of drought. The responsibility the new law placed on water districts is to develop and publish information on available and planned future water supplies to assist local public agencies making land use decisions on new development. This report recognizes that retail water supply reliability is dependent on the development of both local resources and supplemental imported water supplies. In addition, the report identifies actual and projected demands for water from Metropolitan, as well as the water supplies available to Metropolitan to meet those demands. This report will be updated as new information and circumstances warrant. Information presented in this report is consistent with Metropolitan's February 2003 annual progress report to the California Legislature (SB60) on Conservation, Recycling and Groundwater Recharge. The approach in evaluating water supplies and demands is consistent with Metropolitan's December 2000 Regional Urban Water Management Plan.

This report serves four primary purposes. These purposes are to:

- Address recent changes in demand and supply conditions as compared to Metropolitan's December 2000 Regional Urban Water Management Plan and February 11, 2002 *Report on Metropolitan's Water Supplies.*
- Demonstrate Metropolitan's ability to meet projected demands over the next 20 years and provide additional resource reserves as a "margin-of-safety" that mitigates against uncertainties in demand projections and risks in implementing supply programs.
- Demonstrate that Metropolitan has a blueprint for water supply reliability and is implementing a comprehensive plan to secure reliable water supplies in accordance with policy principles and objectives established by Metropolitan's Board of Directors.
- Provide a planning tool for local and retail agencies providing local water supplies.

MANAGING CHANGE IN SOUTHERN CALIFORNIA'S WATER RESOURCES

Water providers continuously face the challenge of managing the planned and unexpected changes in water demands and supplies. Changes have resulted from variable weather conditions, political and legal issues, environmental and water quality regulations, and breakthroughs in the development of new resources. Such changes either present challenges or opportunities for water supply reliability. In 2003, six major changes in the region's water resources occurred. These changes include:

Changes Affecting Water Resources

Challenge	Opportunity
• Reduced Colorado River deliveries • Water quality constraints	• Full Diamond Valley Lake • Re-operation of storage and transfer programs • Enhanced conservation programs • Development of additional local resources

In California's dynamic hydrologic, economic, and political environment change is constant. In working closely with its 26 member public agencies, Metropolitan is prepared to adjust to change and maintain water supply reliability through its development of diversified resources and its financial strength.

Regional Approach: Insuring Water Supply Reliability Against Risks. In 2002, Metropolitan's service area faced record-breaking weather, as hot temperatures and dry conditions caused drought conditions in nearly half of the 48 contiguous states. Many parts of the Southland, including San Diego and Los Angeles, endured the driest rainfall season in recorded history. In addition to drought, California faces a reduction of about 35 percent of its draw of Colorado River water. Metropolitan, having a lower priority right to Colorado River water in California, bears the major portion of this reduction. Pursuant to the 1964 U.S. Supreme Court Decree in *Arizona v. California* and the Boulder Canyon Project Act, California must live within its 4.4 million acre-feet basic annual apportionment of Colorado River water in the absence of surplus river water and unused river water apportionments of Arizona and Nevada.

Southern California can withstand these hydrologic and political risks and expects to have a reliable water supply for the foreseeable future because of the integrated resources planning effort of Metropolitan and its member agencies. This integrated resources planning effort has created a diverse resource portfolio, complemented by an aggressive conservation program. As prudent utility managers, Metropolitan and its member agencies have developed supply contingencies to protect the reliability of its entire system. Two years ago, Metropolitan began aggressively preparing for the possibility that the Colorado River supply could be curtailed, either by drought or the failure of potential Colorado River agreements. Metropolitan maximized storage and water transfer options and today has more than 2 million acre-feet of water in storage and will purchase up to 250,000 acre-feet of additional short-term water supplies. Long-term plans to meet reliability needs through water transfer programs, outdoor conservation measures, and development of additional local resources, such as recycling, brackish water desalination, and seawater desalination has been expedited.

Financial Strength: Key to Adaptability. The hallmark of Metropolitan's success in securing water supplies in anticipation of future demand is its strong financial standing – reflected in one of the highest public bond ratings in California. Recently, Metropolitan approved a new rate structure that provides added flexibility and adaptability for meeting an expanding range of uncertainties. Uncertainties include: (1) difficulty in predicting growth changes over the next several years, (2) risks in implementing new local and regional supplies, (3) future water quality and environmental restrictions, and (4) climate change, currently being studied as another factor that may affect water availability. Experts have cited Metropolitan's ability to invest in necessary supply and infrastructure projects as key to the region's adaptability to these uncertainties. For example, the $1.2 billion Inland Feeder will allow Southern California to import and store greater volumes of water through the State Water Project when it's available. In addition, Metropolitan's new rate structure gives agencies the flexibility to secure their supplies from Metropolitan's imported sources and through expanded development of conservation, recycling, desalination or water transfers.

CONTENTS OF THE REPORT

The sections of the report are as follows:

- **Background:** This section discusses Metropolitan's policy objectives for water supply reliability, its resource strategy, and the implementation of the policy objectives and resource strategy.

- **Approach:** This section describes the major steps in forecasting water demands, assessing supply capabilities, and evaluating the sufficiency of the supplies to meet demands.

- **Managing Change:** This section describes the changes that occurred in 2002, the potential impact to Metropolitan's near- and long-term supply outlook, and the way the changes are being managed.

- **Findings:** This section evaluates the availability of Metropolitan's water supplies to meet projected supplemental demands and reserve supplies that provide a margin of safety to mitigate against uncertainties in demand projections and risks in implementing supply programs.

- **Appendix A:** This appendix documents Metropolitan's demand forecasts.

- **Appendix B:** This appendix presents an inventory of the resource programs that can be reasonably relied upon to deliver supplies through the Colorado River Aqueduct, documents the source of supply, expected supply capability, and provides supporting information for each program.

- **Appendix C:** This appendix presents an inventory of the resource programs that can be reasonably relied upon to deliver supplies through the California Aqueduct,

documents the source of supply, expected supply capability, and provides supporting information for each program.

- **Appendix D:** This appendix presents an inventory of the resource programs that can be reasonably relied upon to deliver supplies from in-basin storage, documents the source of supply, expected supply capability, and provides supporting information for each program.

- **Appendix E:** This appendix provides a statement of disclosure for this report.

BACKGROUND

METROPOLITAN'S POLICY OBJECTIVES FOR WATER SUPPLIES

Metropolitan's Board of Directors has established policy objectives for water supply reliability and Metropolitan's role and defined responsibilities in providing water service to the regionon a wholesale basis.

Water Supply Reliability. Metropolitan's Board established the policy objective for water supply reliability as part of its Integrated Resources Plan (IRP), approved by the Board in January 1996. This policy objective is:

> *Through the implementation of the IRP, Metropolitan and its member agencies will have the full capability to meet full-service demands at the retail level at all times.*

This policy objective calls for close coordination among Metropolitan, its member agencies and retail providers to integrate the development of imported and local resources and efficiently and affordably meet retail demands. Previous to the IRP, wholesale and retail water providers, including Metropolitan, had been independently planning investments in projects and programs within the service area to address water reliability needs. Without a coordinated and balanced regional response by water providers to growing demands, the region could run the risk of failing to demonstrate the availability of sufficient water supplies and risk overspending on its water supply and infrastructure.

Metropolitan's Role and Responsibilities. Recognizing the need for coordination with member agencies and retail providers, the IRP and the Strategic Plan Policy Principles, adopted in December 1999, established Metropolitan's role as a regional provider and redefined its responsibilities. The policy objective on water supply reliability places significant responsibility on Metropolitan to provide leadership in several areas. These areas include: (1) implementing water management programs that support the development of cost-effective local resources, (2) securing additional imported supplies as necessary through programs that increase the availability of water delivered through the Colorado River Aqueduct and the State Water Project, (3) providing the infrastructure needed to integrate imported and local sources, (4) establishing a comprehensive management plan dealing with periodic surplus and shortage conditions, and (5) developing a rate structure that strengthens Metropolitan's financial capabilities to implement water supply programs and make infrastructure improvements.

METROPOLITAN'S WATER RESOURCE STRATEGY

Metropolitan's challenge is to develop and execute a comprehensive water resource strategy that can adapt to continuous change, safeguard against uncertainties, and benefit from new opportunities. The key elements of Metropolitan's strategy are:

Portfolio of Diversified Supplies. Metropolitan continues to develop a portfolio of diversified supplies in accordance with targets set by the IRP and outlined in Metropolitan's Regional Urban Water Management Plan (RUWMP). The IRP established policy guidelines for investing in water conservation, recycling, desalination, Colorado River deliveries, State Water Project deliveries, water transfers, and storage in groundwater basins and surface reservoirs. The RUWMP was adopted by Metropolitan's Board in December 2000 in compliance with the California Urban Water Management Planning Act (Water Code Sections 10610 through 10656). The RUWMP presents Metropolitan's plans for reasonable and practical efficient water uses, including recycling and conservation activities, and drought contingencies.

The investments described in the IRP and RUWMP reduce the risk of failure in any single part of Metropolitan's resource portfolio. It also reduces the potential impact of a severe drought or an emergency, such as a major earthquake. The portfolio of diversified supplies avoids the pitfalls of "putting all your eggs in one basket."

Supply Reserves to Mitigate Uncertainties. Metropolitan plans to guard against supply uncertainties by continuing to secure supplies and make infrastructure improvements that are available in advance of the time of need and can provide back-up capabilities. This adaptive management approach creates supply reserves that maintain Metropolitan's flexibility in response to changes in demand and supply conditions.

New Rate Structure. Metropolitan's Board approved a new rate structure in October 2001. The rate structure provides the necessary financing capabilities to support the IRP and strategic planning vision that Metropolitan is a regional provider of services. As a regional provider, Metropolitan maintains the reliable delivery of imported water supplies, encourages the development of additional local supplies, like recycling and conservation, and accommodates a water transfer market. Through its regional services, Metropolitan ensures a baseline of reliability and quality for imported water deliveries. By unbundling its full-service water rate, Metropolitan provides greater opportunity for member agencies to competitively manage supplies and demand to meet future needs in a responsible, cost effective manner.

IMPLEMENTING POLICY OBJECTIVES AND RESOURCE STRATEGY

To demonstrate the availability of sufficient water supplies for the region, Metropolitan must continue to fulfill its responsibilities as the regional provider under the IRP and Strategic Plan. Metropolitan's progress in these areas of responsibility is as follows:

Realizing water management programs that support development of cost-effective local resources. Metropolitan has established programs that provide member agencies with financial incentives to develop local resources. These programs include the Local Resources Program (water recycling and groundwater recovery), Conservation Credits Program, and the recent Request-for-Proposal process for seawater desalination. With the local supply production that is currently outlined and projected to be available, these programs are meeting IRP resource objectives.

Metropolitan's efforts to support the development of conservation and local resources management programs are documented in Metropolitan's RUWMP and Metropolitan's February 2003 Annual Progress Report to the California State Legislature on Achievements in Conservation, Recycling and Groundwater Recharge.

Securing additional imported supplies through programs that increase the availability of water delivered through the Colorado River Aqueduct and the State Water Project. Metropolitan has several programs that continue the reliable deliveries of water supplies through the Colorado River Aqueduct, the California Aqueduct, and the development of in-basin groundwater storage. These efforts include participating in Federal and state initiatives such as California's Colorado River Water Use Plan, the CALFED Bay-Delta Program, and the Sacramento Valley Water Management Agreement. Beyond these initiatives, Metropolitan acquired additional supplies through cooperative agreements and business partnerships in the Central Valley and within the Colorado River Basin to execute water transfers, storage, conservation and land management programs. Finally, in accordance with Metropolitan's IRP and Strategic Plans, Metropolitan and the member agencies have maximized storage of available water supplies through in-basin groundwater conjunctive use programs.

Metropolitan's programs to secure additional supplemental imported water supplies are documented in Metropolitan's RUWMP and this document, 'Report on Metropolitan's Water Supplies.'

Providing the infrastructure needed to integrate imported and local sources of supply. Metropolitan's Capital Investment Plan (CIP) includes projects that have been identified in studies of projected water needs that are embodied in Board Approved documents such as the IRP, Distribution System Overview Study, and the Chief Executive Officer's Business Plan. The CIP identifies, assesses and prioritizes 155 reliability and rehabilitation projects.

The status and progress of Metropolitan's infrastructure improvements are documented in Metropolitan's Capital Investment Plan, which is presented to Metropolitan's Board as part of its annual budget review.

Establishing a comprehensive management plan for dealing with surplus and shortage conditions. In April 1999, Metropolitan's Board adopted the Water Surplus and Drought Management Plan (WSDM Plan). This plan guides the management of Metropolitan's water supplies during surplus and shortage conditions to achieve the IRP reliability goals.

The RUWMP and Metropolitan Report No. 1150, 'Water Surplus and Drought Management Plan' document the establishment of the comprehensive management plan for dealing with surplus and shortage conditions.

The new rate structure strengthens Metropolitan's financial capabilities to implement water supply programs and make infrastructure improvements. The approval of the new rate structure is documented in the October 2001 Board Letter.

APPROACH

Evaluating the availability of Metropolitan's imported supplies involves three basic steps: (1) forecasting supplemental water demands, (2) assessing Metropolitan's supply capabilities, and (3) comparing supplemental demand forecasts and supply capabilities.

DEMAND FORECASTS

Water demands on Metropolitan are affected by four key parameters -- retail demands, local replenishment demands, local supplies, and Metropolitan system storage requirements. The methodology and estimates of water demand projections are documented in Appendix A.

Retail Demands. To forecast retail water demands, Metropolitan uses an econometric model, the MWD-MAIN Water Use Forecasting System, that relates water use to independent variables such as, housing, employment, income, price, and weather. Many water resource agencies across the country use similar versions of this model including the U.S. Army Corps of Engineers, the U.S. Geological Survey, the state of New York, the Cities of Phoenix, Las Vegas, and Portland, and some of Metropolitan's member agencies.

The model's demographic and economic variables are based on the Southern California Association of Governments (SCAG) Regional Transportation Plan and the San Diego Association of Government (SANDAG) 2020 Forecast. Metropolitan contracted with the Center for Continuing Study of the California Economy (CCSCE) and SCAG to extend these projections to 2050. SCAG and SANDAG demographic projections are supported by environmental impact reports and based on city, county and regional general plans. If a proposed development within Metropolitan's service area is included in the local general plans in the SCAG and SANDAG projections, there should be a linkage between the water demands for that development and the supplies made available by Metropolitan and the member agencies.

Local Replenishment Demands. Local replenishment demands refer to the member agencies' need for water to recharge groundwater basins and surface reservoirs. Some of this need is met by the member agencies' purchases of deliveries under Metropolitan's Long-Term Seasonal Storage Program. These demands include Metropolitan water deliveries to member agencies and stored by member agencies for use in future years and not the current year.

Local Supplies. Local supplies include local groundwater and surface water, Los Angeles Aqueduct deliveries, water recycling, groundwater recovery, and seawater desalination. Member agencies and retail providers produce these local supplies. With plans to aggressively develop additional local resources, Metropolitan's member agencies have projected local resources production will increase by 21 percent over the next 20 years and meet up to 56 percent of the total retail demands in 2025.

Metropolitan System Storage Requirements. As part of Metropolitan's resource strategy, imported water deliveries during average and wet years would be stored in Metropolitan's surface reservoirs and groundwater storage accounts located within its service area and from the California Aqueduct and Colorado River Aqueduct systems. In addition to meeting consumptive and replenishment demands, Metropolitan also requires supplies in average and wet years to refill its surface reservoirs and groundwater storage accounts.

Water demands on Metropolitan are calculated as the retail demands plus local replenishment demands less local supplies. In average and wet years, Metropolitan's system replenishment requirements are included, consistent with Metropolitan's RUWP. Demand forecasts on Metropolitan are calculated in this manner and are shown in the following table. A comparison of the supplemental demands on Metropolitan according to the member agencies' urban water management plans also is shown. Metropolitan's supplemental projected demands on Metropolitan are 6 to 16 percent higher than member agencies projections. This difference indicates that Metropolitan's supplies, developed in accordance with this water supply update, provide a level of "margin of safety" or flexibility to accommodate delays in local resources development or adjustments in development plans.

Demands on Metropolitan
(million acre-feet per year)

Demands on Metropolitan (Average Year)	**2005**	**2010**	**2015**	**2020**
Metropolitan Projections	1.99	1.94	2.13	2.34
Member Agencies Plans[1]	1.68	1.82	1.94	2.09
Difference	0.31 16%	0.12 6%	0.19 9%	0.25 11%

1 Based on Metropolitan review of urban water management plans submitted by member agencies in December 2000.

SUPPLY CAPABILITIES

Metropolitan's supply capability equals the water that can be provided by specific supply programs included in Metropolitan's resource plan. Supply capabilities presented in this report vary according to year types (wet, average, and dry hydrologic conditions). To determine Metropolitan's supply capabilities, available supply sources have been inventoried and the associated supply yields have been estimated. The supply inventory and yields are documented in Appendices A, B, and C.

Supply Inventory. Metropolitan's available supplies have been inventoried in three basic categories: (1) Colorado River Aqueduct Deliveries, (2) California Aqueduct Deliveries, and (3) In-Basin Storage Deliveries.

In addition, the supplies are further categorized according to their status. Currently available supplies have a high degree of certainty and reliability because they have been successfully completed. Currently available supplies are those resource programs that have completed environmental review, have funds appropriated or budgeted for execution or construction, have requested or received permits and regulatory approvals, and are operational. Supplies that are under development are subject to some uncertainties in timing and supply yield, as they have not yet completed the critical implementation requirements. Supplies under development are resource programs that are undergoing technical feasibility studies, environmental review, and negotiations for final agreements to implement and operate. The inventory of Metropolitan's available supplies is shown in the following table.

Supply Capabilities. The maximum-supply capability of each of the resource programs has been estimated for various hydrologic events in years 2005, 2010, 2015, 2020 and 2025. The hydrologic events included are;

- ***Multiple-year dry period.*** A repeat of the 1990 to 1992 multi-year drought condition that occurred twice during the historic 77-year record. Thus having a probability of occurrence of 2.6%,
- ***Single dry-year.*** A repeat of 1977 below-normal conditions that occurred once during the historic 77-year record. Thus having a probability of occurrence of 1.3%,
- ***Average year.*** Statistical average of 77 historical hydrological conditions. When combined with above-normal conditions (wet-years) having a probability of occurrence of 73%, and
- ***Wet year.*** A repeat of 1985 above-normal condition.

The expected supply capability has been estimated according to two key considerations.

- Delivery from the Colorado River Aqueduct, California Aqueduct and in-basin storage are based on historical sequence of 77 hydrologic years from 1922 to 1998 are repeated into the future to determine Metropolitan's water delivery capabilities under the weather and system operating conditions for the year types.
- Delivery ability is based on historical record, ability of projects to comply with contractual rights to supply, written contracts or other proof, financing, and federal, state, and local permits/approvals to the extent each is applicable.

Supply Sufficiency. Demand forecasts and supply capabilities have been compared over the next 20 years under varying hydrologic conditions. These comparisons determine supplies that can be reasonably relied upon to meet projected supplemental demands and to provide reserves that can assure a "margin of safety" to mitigate against uncertainties in demand projections and supply program risks.

Metropolitan's Water Supplies

Colorado River Aqueduct Deliveries

Currently Available:
- Basic Apportionment (Priority 4)
- IID/MWD Conservation Program
- Priority 5 Apportionment
- Coachella & All-American Canal Lining Projects
- Off Aqueduct Storage
  - Hayfield Storage Program
  - Central Arizona Banking Demonstration Program

Under Development:
- IID/MWD Conservation Program (Including Coachella Option)
- Interim Surplus Guidelines
- IID/SDCWA Transfer
- PVID Land Management Program
- Off-Aqueduct Storage/Transfer Programs
  - Lower Coachella Valley Groundwater Storage Program
  - Chuckwalla Storage Program
  - Central Arizona Banking Program

California Aqueduct Deliveries

Currently Available:
- SWP Deliveries
- San Luis Reservoir Carryover Storage
- Advance Delivery with Coachella Valley WD and Desert WA
- Semitropic Water Banking and Exchange Program
- Arvin-Edison Water Management Program
- San Bernardino Valley MWD Program
- Kern Delta WD Program
- Market Transfer Options

Under Development:
- Delta Improvements (CALFED Implementation)
- Additional Transfers/Storage (San Bernardino Conjunctive Use Program, Westside Valley Transfers, and Eastside Valley Transfers)

In-Basin Storage Deliveries

Currently Available:
- Metropolitan Surface Storage (DVL, Lakes Mathews and Skinner)
- Flexible Storage in Castaic Lake and Lake Perris
- Groundwater Conjunctive Use Programs
  - Long-Term Seasonal Storage Program
  - North Las Posas Storage Program

Under Development:
- Groundwater Conjunctive Use Programs
  - Raymond Basin Storage Program
  - Proposition 13 Storage Programs
  - Additional Programs

MANAGING CHANGES IN SOUTHERN CALIFORNIA'S WATER RESOURCES

Change is inherent in the business of providing water to residents and businesses in Southern California. There are two major types of change: those that create challenges and those that create opportunities. For example, a source of supply can be curtailed due to drought conditions, political and legal challenges, and environmental and water quality regulations. On the other hand, the successful identification and implementation of additional resource programs and key infrastructure improvements present new opportunities to improve the region's ability to effectively manage supplies that are available in average and wet hydrology and meet demands during critical drought events.

Water supply reliability for Southern California is dependent on how well water providers manage and leverage these changes. Metropolitan and its member agencies have aggressively invested in a portfolio of diversified water resources to manage risks and enhance their supply capabilities. In 2002, six major changes in the region's water resources have occurred as both supply risks and supply improvements. These changes include:

Changes Affecting Water Resources

Challenge	Opportunity
• Reduced Colorado River deliveries • Water quality constraints	• Full Diamond Valley Lake • Re-operation of storage and transfer programs • Enhanced conservation programs • Development of additional local resources

The effectiveness of the approach to diversify water resources in managing supply challenges and leveraging opportunities is now being tested. Each change, its potential impact to Metropolitan's near- and long-term supply outlook, and the manner in which the change is being managed to maintain regional supply reliability are addressed in the following discussion.

REDUCED COLORADO RIVER DELIVERIES - Challenge

Changed Condition. California has recently lost access to more than 35 percent of its expected Colorado River supply. This reduction resulted from California's failure to execute the Quantification Settlement Agreement (QSA) by December 31, 2002 and the unprecedented drought in the Colorado River basin.

- ***No QSA***. California has long used supplies in addition to its basic 4.4 million acre-feet apportionment of Colorado River water. California is entitled under federal law to use surplus and other states unused water when it is available. However, it is clear that surpluses will be less frequently available because of growth in the other Colorado River Basin States. As a result, California has acknowledged the need to wean itself from this extra water. Under a plan adopted by the state's Colorado River Board (the "4.4" Plan or California Plan"), California has identified steps to gradually reduce the state's use of Colorado River water. The US Department of the Interior (DOI) responded by adopting Colorado River Interim Surplus Guidelines (ISG) that allowed California to take more surplus water than would otherwise be expected to be available for 15 years. A predicate of the ISG was an agreement among Metropolitan, the Imperial Irrigation District (IID) and the Coachella Valley Water District (CVWD) to quantify agricultural water use by IID and CVWD. It also was expected that IID would reduce its water use and transfer conserved water to CVWD and the San Diego County Water Authority (SDCWA). Metropolitan would receive rights to use other conserved water (e.g. All-American Canal lining water and Palo Verde Irrigation District [PVID] conserved water). This agreement was known as the Quantification Settlement Agreement (QSA).

  On January 1, 2003, DOI suspended the ISG because of the inability of the California water agencies to reach agreement on a QSA and related agreements. As a result, California's access to use surplus Colorado River water in 2003 year has been suspended.

- ***Record Drought Conditions***. The Colorado River Basin has experienced an unprecedented drought over the last three years. In 2002, unregulated inflow into Lake Mead was only 25 percent of average. In January 2003, Lake Mead was 65 percent full. Under these conditions, a Bureau of Reclamation (Bureau) study indicates Metropolitan's access to surplus water from the ISG would not have been available in each of the next 15 years, as was anticipated when the California Plan was drafted in 1998. Even if the ISG are reinstated and average hydrology occurs in the Colorado River watershed ending current drought conditions, the Bureau study further estimates that special surplus deliveries would only be half of the amount originally planned over the next 12 years..

Managing the Change. At a special January 6, 2003, board meeting, Metropolitan staff briefed its Board on the situation. The message provided and widely reported in the media was simple: The suspension of certain provisions of the ISG and absence of an executed QSA is a very serious matter, but it is not an emergency. The reason that it is not an emergency is the contingency planning by Metropolitan and its member agencies for the region and its 18 million people.

- ***Contingency Planning.*** Two years ago, Metropolitan and its member agencies began aggressively preparing for the possibility that Colorado River supplies could be curtailed by either drought conditions or the failure of a QSA. Reductions in Colorado River deliveries can be offset with the use of more than 2.2 million acre-feet of water

stored in reservoirs and existing banking programs in the Central Valley and Southern California; options to purchase up to 250,000 acre-feet of additional transfer water from sellers in Sacramento, San Joaquin and San Bernardino valleys; enhanced conservation programs; and the development of additional local resources, including recycling, brackish desalination, and seawater desalination.

- ***Maintaining Reliability.*** As a result of contingency planning, Southern California will meet water demands over the next two years even under worst-case conditions, which if it occurred would consist of concurrent record drought in Southern California, the Colorado River watershed, and SWP system. Under historic conditions, Metropolitan and its member agencies would be able to meet demands for up to 10 years. Finally, Metropolitan, in partnership with member agencies, will continue to execute conservation, recycling, groundwater storage, seawater desalination projects as well as available water transfers to provide sufficient water supplies for at least 20 years. The necessity to maintain this level of reliability will not diminish even if the Interim Surplus Guidelines are reinstated in light of the existing low storage levels in Lake Mead lowered by the extended drought.

WATER QUALITY CONSTRAINTS - Challenge

Changed Condition. Metropolitan faces two water quality challenges in meeting the Microbial Disinfection By-Products Rule established by the U.S. Environmental Protection Agency. These challenges are: (1) increased levels of total organic carbons (TOC) and bromides in SWP deliveries and (2) limitations in the blend of CRA and SWP deliveries due to the expected reductions in CRA deliveries. These conditions impose additional treatment and operational requirements on Metropolitan to maintain consistent compliance with primary drinking water standards.

- ***High Organics and Bromides in SWP Deliveries.*** In the past two years, increased levels of total organic carbons (TOC) and bromides have been detected in SWP deliveries through the East Branch of the California Aqueduct. The additional treatment facilities currently being developed at Metropolitan's five treatment plants can treat import water with TOC levels below 4 mg/l without forming disinfectant by-products. During the period of 1981 to 2000, TOC levels at Lake Silverwood remained low, only exceeding 4 mg/l seven percent of the time. However, between 2000 and 2002, TOC levels exceeded 4 mg/l 36 percent of the time. During that same two-year period, bromides reached 5 mg/l, creating additional treatment difficulties.

- ***Reduced Colorado River Deliveries.*** One approach to lowering the organic and bromide levels is to blend CRA and SWP deliveries. The quality of Colorado River water does not have the same organic and bromide characteristics as SWP water. A full or near full CRA delivery every year would help to ensure against risks of high organic and bromide levels. However, reductions in CRA deliveries are expected because of the record drought conditions in the Colorado River watershed.

Managing the Change. To manage the increased organic and bromide levels in SWP deliveries at Metropolitan's water treatment plants and comply with drinking water standards, Metropolitan's Board reviewed several water quality and treatment recommendations at the February 2003 Engineering and Operation Committee and the Water Planning, Quality & Resources Committee. These recommendations include:

- Altering available treatment processes at Metropolitan's Weymouth, Diemer, and Skinner filtration plants whenever feasible.
- Install additional solid handling facilities at the plants including, chemical storage, sludge pumps, sludge thickeners, belt presses, and earthen sludge lagoons.
- Pursue water quality improvements. These improvements would include maximizing deliveries of better quality water from existing banking programs and water exchanges along the California Aqueduct; securing additional Colorado River supply; and drafting DVL.
- Maintain the schedule for an alternative disinfectant at the Skinner filtration plant to meet primary drinking water standards.
- Accelerate the schedule for an alternative disinfectant at the Weymouth and Diemer filtration plants to meet primary drinking water standards.

FULL DIAMOND VALLEY LAKE - Opportunity

Changed Condition. Diamond Valley Lake (DVL) is now fully operational completing initial fill, final inspection by the Department of Safety of Dams, and the increased conveyance capacity for refill of system storage.

- ***Completion of Initial Fill Operations.*** DVL initial fill was completed by the end of 2002. DVL is full with 800,000 acre-feet of stored water and is being drafted to meet ongoing needs.
- ***Division of Safety of Dams.*** With the completion of initial fill operations, the State Department of Water Resources Division of Safety of Dams provided its Certificate of Approval for full operations of DVL to spillway crest, in 2002. As part of this approval, DVL's full capacity is operational and Metropolitan can release up to 600,000 acre-feet within a six-month period. As of January 2003, DVL can be fully operated in accordance with Metropolitan's operating criteria.
- ***Increased Conveyance Capacity for Refill of DVL.*** As of December 2002 the intertie between the existing Foothill Pipeline, owned and operated by San Bernardino Valley Municipal Water District, and the existing segment of Metropolitan's Inland Feeder, has been completed and is operational. This intertie allows Metropolitan to move SWP water from the East Branch of the California Aqueduct, through the Foothill Pipeline, and Inland Feeder segment, and into DVL and the Colorado River Aqueduct.

As a result, the intertie increases Metropolitan's capability to replenish and maintain storage in DVL by 260 cubic feet per second.

Supplies to refill Metropolitan's system storage are available in years of normal and wet hydrology. SWP allocations greater than 40 percent would occur under 69 of the 77 years of hydrologic record. In addition, over 1.65 million acre-feet of SWP water was actually available to Metropolitan 50 percent of the time. Due to conveyance and storage constraints, Metropolitan has not taken delivery of all available SWP water. With greater replenishment capabilities, however, Metropolitan can take delivery of greater amounts of the available SWP water during wet and normal-year to and maintain system storage.

Managing the Change. With a full DVL and increased refill capacity, operations of Southern California reservoirs have been coordinated to maximize use of storage and meet emergency, regulatory, drought, and water quality needs. The primary reservoirs available for use within Metropolitan's service area include Metropolitan's facilities (DVL, Lake Mathews, and Lake Skinner) and DWR facilities (Castaic Lake, Lake Perris, Pyramid Lake, Silverwood Lake and Elderberry Forebay).

- ***Updated Emergency Storage Requirements***. Metropolitan's criteria for determining emergency storage requirements are established in the October 1991 Final Environmental Impact Report for the Eastside Reservoir (DVL) Project and in Southern California's March 1996 Integrated Resources Plan. Metropolitan's Board approved both documents. Emergency storage requirements are based on the potential for a major earthquake to damage the Colorado River, California and Los Angeles aqueducts. Emergency water reserves are essential within Metropolitan's service area to supplement local production during an emergency, or severe water shortages will occur during the period the aqueducts are out of service. Damage from such an event could render the aqueducts out of service for six months. During this period, all interruptible service deliveries would be suspended, accompanied by a mandatory water supply reduction of 25 percent from normal-year demand levels. Also water stored in surface reservoirs and groundwater basins under Metropolitan's interruptible program would be made available, and it is anticipated that full local groundwater production would be sustained. This emergency storage also would be used during other situations, including unexpected disruptions of aqueduct deliveries due to environmental and water quality regulations.

  Storage reserved in system reservoirs for emergency purposes changes over the next 20 years in accordance with the projected demands on Metropolitan as shown below.

- ***Updated Storage Requirements for Dry-Year Supply and Seasonal Needs***. Storage capacity in system reservoirs, including DVL, also is earmarked for dry-year supply and system regulation purposes. Dry-year supply storage within Metropolitan's service area is required to meet the additional water demands that occur during single-year and extended droughts. This storage requirement is the difference between normal-year demand and above-normal demand during dry years. Seasonal storage is

required to meet seasonal peak demands during the year, and is the difference between normal winter demands and normal summer demands. Dry-year supply and seasonal storage also provide sufficient reserves to permit about 5 percent downtime for rehabilitation, repair and maintenance of raw water transmission facilities. Full use of this storage capacity also is required to improve blends with SWP water and reduce the total organic carbons at the Weymouth, Diemer and Skinner treatment facilities.

The storage reserved in system reservoirs for dry-year supply and seasonal needs are shown below.

Surface Storage Requirements
Average-year
(acre-feet)

	Average-Year Storage Projection				
	2005	**2010**	**2015**	**2020**	**2025**
Surface Storage in MWD Service Area	1,669,100	1,669,100	1,669,100	1,669,100	1,669,100
Emergency	508,400	401,000	433,600	493,300	540,500
Dry-Year/Seasonal	1,160,700	1,268,100	1,235,500	1,175,800	1,128,600

RE-OPERATION OF STORAGE AND TRANSFER PROGRAMS - Opportunity

Changed Condition. In 2003, Metropolitan developed additional storage and transfer capabilities and completed filling local resources to achieve full storage accounts in operational reservoirs and banking/transfer programs. The benefits of storage and transfer capabilities as of January 1, 2003 are:

- ***System Integration.*** With a fully operational DVL and increased conveyance capacity to refill system storage, Metropolitan can integrate operations of reservoirs and banking/transfer programs to maximize supplies and meet dry-year demands and water quality needs.

- ***Increased Storage Capacity.*** More than 4.0 million acre-feet of storage capacity are available to Metropolitan in reservoirs and banking/transfer programs. Metropolitan's access to this storage capacity over the long-term is allowed by ownership or contracts that extend to years 2028 to 2035. In this past year, 266,000 acre-feet of storage capacity has been developed through long-term banking agreements with member agencies: The City of Long Beach and Three Valleys Municipal Water District: and the Kern Delta Water District in California's San Joaquin Valley.

Of the total storage capacity, 85 percent or 3.45 million acre-feet is currently reserved for Metropolitan's use to meet demands during single-year and multiple-year droughts. The remaining 15 percent or approximately 0.55 million acre-feet is dedicated for emergencies.

- ***Increased Dry-Year Supplies.*** Metropolitan has over 2.0 million acre-feet of "wet" water stored and available for immediate use during single-year and multiple-year droughts. This amount of stored water is greater than what is required to meet one year of Metropolitan's expected demands.

- ***Potential Water Quality Improvements.*** Water quality improvements in SWP deliveries can be achieved through the return of water from Metropolitan's banking/transfer programs along the California Aqueduct. Water returned from banking/transfer programs has better water quality than the SWP supplies in terms of total organic carbons and bromides.

- ***Market Transfer Options.*** Metropolitan has access to transfer options of 80,000 acre-feet per year in the San Bernardino Valley. In addition, Metropolitan has acquired 167,000 acre-feet of transfer options on a single-year basis through executed agreements with Sacramento Valley water districts. These agreements demonstrate that Metropolitan has increased access to market transfers through direct agreements with Sacramento Valley water interests. In addition, in 2003 DWR made available dry-year purchases through the Dry-year Purchase Program. This demonstrates the potential value of single-year transfer options market every year.

Managing the Change. Opportunity to maximize supply yield by re-operating banking/transfer programs and reservoir storage.

- ***Maximizing Banking/Transfer Programs.*** With a full DVL, operation of these banking/transfer programs that deliver supplies through the California Aqueduct can now be coordinated with reservoir operations to make the most of the supply yields and water quality benefits.

  Current Programs. Current banking/transfer programs that deliver supplies via the California Aqueduct include:

  Semitropic Water Banking and Exchange Program, Wasco
  Arvin-Edison Water Management Program, Arvin
  San Bernardino Valley Municipal Water District Program, San Bernardino
  Kern Delta Water District Water Management Program, Taft
  Desert Water Agency/Coachella Valley Water District Exchange Program, Coachella
  Market Transfer Options, DWR Dry-year Purchase Program and Sacramento Valley Transfer Agreements

  These programs are currently are operating from periods that range from 2028 to 2035, with provisions for extensions. The programs provide Metropolitan with a total

storage capacity of more than 1.1 million acre-feet and dry-year supply yield of more than 500,000 acre-feet per year. These programs were originally envisioned to be operated during the four summer months of critical dry years. As a result, these programs would provide minimum supply benefits during infrequent droughts, which have occurred 8 out of 77 years of record.

Re-operation of Banking/Transfer Programs. To maximize supply yield, the re-operation of banking/transfer programs are based on the following criteria:

- Initiate supply returns to the California Aqueduct from the banking/transfer programs early in the calendar year, to blend down high organic and bromide levels, and if needed continue supply returns from the banking/transfer programs through the spring, summer and fall, to make the most of dry-year supply yields.

- Accelerate the implementation of banking/transfer programs in Central and Southern California. These programs include: (1) Kern Delta Water District Water Management Program, which completed environmental review and was approved in 2003, and (2) Proposition 13 Groundwater Conjunctive Use Programs within Metropolitan's service area.

- Access market transfer options through the DWR Dry-year Purchase Program and/or direct agreements with water interests in the Sacramento Valley and San Joaquin Valley to secure additional supplies on an as needed basis to meet demands during severe droughts and to refill system storage during wet and normal years.

Increasing Supply Yield. Compared to February 11, 2002 estimates, the re-operation of banking/transfer programs that deliver supplies through the California Aqueduct would more than double the supply yields in single-years and multiple-years and provide water quality improvements. Documentation of each banking/transfer program and their expected supply yield is provided in Appendix C.

It should be noted that there are additional banking/transfer programs along the Colorado River Aqueduct and groundwater conjunctive use programs within Metropolitan's service area. However, due to the drought in the Colorado River watershed and the water quality blend constraints, Metropolitan does not have the opportunity to re-operate these programs at this time and the supply yield from these programs remain unchanged.

➢ ***Maximizing Reservoir Yields.*** Metropolitan has the use of storage capacity in 14 reservoirs that are owned and operated by Metropolitan and DWR. With a full DVL and the re-operation of banking/transfer programs, these storage capacities can be fully combined to produce higher supply yields during dry years.

Metropolitan Reservoirs. Metropolitan owns and operates nine reservoirs. DVL, Lake Mathews, and Lake Skinner provide 96 percent of Metropolitan's storage

capacity and can be operated in conjunction with DWR reservoirs to meet emergency, dry-year supply and seasonal needs. These reservoirs are:

Diamond Valley Lake, Hemet
Lake Mathews, Riverside
Lake Skinner, Winchester
Copper Basin, Parker Dam
Live Oak, La Vern
Garvey, Monterey Park
Palos Verdes, Rolling Hills
Gene Wash, Parker Dam
Orange County, Brea

DWR Reservoirs. There are five reservoirs, owned and operated by DWR located within or adjacent to Metropolitan's service area. Based on the SWP contract between DWR and Metropolitan, Metropolitan has rights to use specified portions of SWP southern reservoirs to supply water in addition to approved SWP deliveries. These reservoirs are:

Pyramid Lake, Piru Creek
Castaic Lake, Ventura County
Elderberry Forebay, Ventura County
Lake Perris, Riverside County
Silverwood Lake, San Bernardino County

Re-operation of Reservoirs. Reservoir re-operation to maximize yield with the following criteria:

- Coordinate operation of Metropolitan and DWR reservoirs with the re-operation of Metropolitan's banking/transfer programs to meet emergency, dry-year supply, system regulation and water quality needs. Storage capacity available for Metropolitan's use is 1.67 million acre-feet. This usable storage does not include dead storage and water allocations to other SWP contractors.

- Utilize reservoirs to provide peak deliveries. Reservoirs provide flexibility with the capability to withdraw larger volumes of water in short periods. Reservoirs can be drawn to meet peak, above normal demands that typically occur during the summer and early fall. In addition, reservoir deliveries would be used to adjust SWP water blends when high organic levels unexpectedly spike in the deliveries from the California Aqueduct.

- Utilize reservoirs to provide dry-year deliveries. Dry-year supply storage within Metropolitan's service area is required to meet the additional water demands that occur during single-year and extended droughts. Surface reservoirs provide significant flexibility in meeting potential droughts conditions by storing water when available. In Metropolitan's October 1991 Final Environmental Impact

Report for the Eastside Reservoir (DVL) Project and in Southern California's March 1996 Integrated Resources Plan criteria for utilizing storage to meet drought requirements has been established. These criteria provided that surface reservoirs could be expected to withdraw all drought storage water within a two-year period.

Increasing Supply Yield. Compared to February 11, 2002 estimates, the re-operation of reservoirs could provide 70 percent higher dry-year storage capacity; more than double the reservoir yields during a single dry-year; and provide up to 65 percent higher reservoir yields during multiple dry-year events. Documentation on Metropolitan's reservoirs and DWR's reservoirs and the supply yields capability are provided in Appendix D.

ENHANCED CONSERVATION PROGRAMS - Opportunity

Changed Condition. The latest entry in the expanding resource portfolio is Metropolitan's initiative to enhance conservation efforts. Launched in summer 2002, a new campaign is designed: to encourage more efficient outdoor water use and promote innovative conservation measures.

- ***Native and Drought-Proof Plant Program.*** This program marks an expansion of Metropolitan's successful indoor conservation program to outdoor conservation in order to tap into an area with great potential for savings. An estimated 30 to 70 percent of residential water use in Metropolitan's service area goes outside to water the landscape. This program begins a new initiative to achieve new water savings through outdoor conservation.

- ***Innovative Conservation Program.*** Last year, Metropolitan's first Innovative Conservation Program (ICP) was completed, providing more than $200,000 for 10 promising conservation ideas. As a result of the program, two new conservation tools – a re-circulating X-ray film developer and a pressurized water broom – were adopted within Metropolitan's rebate program.

- ***Expanded Conservation Credits Program.*** In addition to the existing Conservation Credits Program discussed in the February 11, 2002 report, Metropolitan's Board has approved additional rebates for dual-flush toilets, rebates for evapotranspiration (ET) landscape irrigation controllers, and a hotel/motel/restaurant customer water conservation education card program.

- ***Commercial, Industrial and Institutional Program.*** In May 2002, Metropolitan's Board authorized a time extension and a funding increase for the Commercial, Industrial and Institutional (CII) rebate program to fund the purchase of non-residential water conserving hardware, including ULFT's, urinals, water-efficient cloths washers and cooling tower retrofits.

Managing the Change. Estimates show that 7 to 12 percent of water demands can be offset with the enhanced conservation programs. These water savings have been incorporated into forecasts of demands on Metropolitan.

DEVELOPMENT OF ADDITIONAL LOCAL RESOURCES - Opportunity

Changed Condition. Metropolitan and its member agencies have embarked on an aggressive campaign to develop additional local resources. There are promising opportunities to develop seawater desalination and expand the Local Resources Program.

- ***Seawater Desalination.*** Turning seawater into drinking water became more viable with the introduction of Metropolitan's Seawater Desalination Program. Launched in the summer of 2001, the program will provide financial and technical support for the development of local cost-effective seawater desalination projects. A call for proposals produced five projects proposed by member agencies, which were evaluated by Metropolitan's review committee of staff and consultants. Collectively, the projects could produce about 132,000 acre-feet of drinking water per year. The program is in its early stages and projects are subject to approval by Metropolitan's board.

- ***Local Resources Program.*** In 1982, Metropolitan initiated the Local Projects Program to promote the development of water recycling projects that reduced demand for imported water and improved regional water supply reliability. In 1991, the Groundwater Recovery Program was implemented to similarly promote the recovery of local degraded groundwater supplies. In 1995, both programs were combined into the Local Resources Program. Currently the Local Resources Program, encompassing both recycling and groundwater recovery, has implemented 53 recycled water projects yielding over 235,000 acre feet of local supply and 22 groundwater recovery projects yielding over 80,000 acre feet of local supply.

Managing the Change. In accordance with the IRP, Metropolitan's regional production target is 500,000 acre-feet by 2020 for its Local Resources Program. Metropolitan continues to provide financial incentives through its Local Resources Program to its member agencies to encourage development of local water resource process. These expected water supply benefits are incorporated into the forecasts of demand on Metropolitan.

FINDINGS

In summary, this analysis finds that current practices of diversifying water supplies and securing supply reserves allow Metropolitan and its member agencies to adjust to changes in demands and supplies and to maintain a high degree of reliability. If all imported water supply programs and local projects proceed as planned, without changes in demand projections, reliability would be assured beyond 20 years.

The availability of Metropolitan's water supplies is determined by comparing total projected water demands and conservatively estimated water supplies over the next 20 years. These comparisons are shown in the following graphs and tables. They demonstrate that sufficient supplies can be reasonably relied upon to meet projected supplemental demands. The comparison also shows that additional reserve supplies could provide a "margin of safety" to guard against uncertainties in demand projections and risks in fully implementing all supply programs under development.

In more detail, the findings of the *Report on Metropolitan's Water Supplies* are:

RETAIL WATER SUPPLY RELIABILITY. Retail water supply reliability is provided through a combination of both local resources and supplemental imported water supplies.

The local resources include groundwater, recycling, seawater desalination, and local surface water. The existing and planned local resources required for the region are described in the urban water management plans and updated information prepared by the member agencies and retailers. Supplemental water supplies include available deliveries from the Colorado River Aqueduct, California Aqueduct, and in-basin storage (reservoirs and groundwater conjunctive use programs). These supplemental supplies meet demands that exceed local supplies. The existing and planned supplemental imported water supplies required for the region are described in Metropolitan's comprehensive supply plan as documented in this Report. Metropolitan and its member agencies are working together to implement local and supplemental supply plans to maintain retail water supply reliability.

COMPREHENSIVE SUPPLEMENTAL SUPPLY PLAN. Metropolitan has a comprehensive supply plan to provide sufficient supplemental water supplies and to provide a prudent supply reserve over the next 20 years and beyond.

Diversified Resources. Metropolitan continues to develop a portfolio of diversified supplies in accordance with a comprehensive supply plan. This plan is based on the Integrated Resources Plan and Regional Urban Management Plan, which establish policy guidelines for investing in water conservation, recycling, desalination, Colorado River deliveries, State Water Project deliveries, water transfers, and storage in groundwater basins and surface reservoirs. The implementation of Metropolitan's comprehensive supply plan would provide sufficient water supplies to meet projected supplemental demands over the next 20 years and beyond.

Prudent Supply Reserves. Consistent with current practice, Metropolitan has and will continue to have the capability to develop supplies that are available at least 10 years in advance of need and ensure water supply reliability. This recognizes that a program may require several years to become fully operational and reach ultimate production capability. In addition, the advance supply provides a reserve that safeguards against potential demand and supply uncertainties during the interim years, while being an investment that is fully utilized at the time of need. This practice provides reliability without wasted cost.

Flexibility in Demand Projections. The comprehensive resources plan provides flexibility in demand projections. Based on a conservative approach, Metropolitan estimates that the supplemental demand projections on Metropolitan are 6 to 16 percent higher than the projections presented in the member agencies' urban water management plans. This difference indicates that Metropolitan's water supplies developed in accordance with this water supply update would provide a "margin of safety" or measure of flexibility to accommodate some delays in local resources development.

IMPLEMENTING THE PLAN. If Metropolitan's supply programs were implemented under this comprehensive resource plan, Metropolitan would have the capability to reliably meet projected supplemental water demands through 2030.

Implementing the Plan – Existing and Planned Supplies. Metropolitan is implementing a comprehensive plan that secures water resources to meet projected supplemental water demands and to maintain supply reserves. From a resource management standpoint, it is prudent for Metropolitan to secure supplies in advance of need and maintain a high degree of reliability. From a benefit/cost standpoint, it is important that Metropolitan times its supply investments such that value can be derived from the use of these investments in the near term and Metropolitan is able to take advantage of favorable market conditions in the future. As a result, Metropolitan has supplies that are currently available at least 10 years in advance of need and supplies that are under development for longer-term needs.

- **Existing Supplies**. Based on water supplies that are currently available, Metropolitan already has in place the existing capability to:

  Average and Wet Years (73% Occurrence)
  - Meet 100 percent of its member agencies' projected supplemental demands (consumptive and replenishment) over the next 20 years.
  - Provide significant surplus supplies to refill system storage.

  Multiple Dry Years (2.6% Occurrence)
  - Meet 100 percent of its member agencies' projected supplemental demands (consumptive and replenishment) even under the repeat of the worst multiple-year drought event over the next 15 years.
  - Provide 8 to 26 percent reserve supply even under the repeat of the worst multiple-year drought event over the next 15 years. The supply reserve would mitigate

unexpected changes in demand or supply conditions and facilitate the refill of system storage in this 15-year period.

Single Dry-Year (1.3% Occurrence)

- Meet 100 percent of its member agencies' projected supplemental demands (consumptive and replenishment) even under the repeat of the worst single-year drought event over the next 15 years.
- Provide 8 to 25 percent reserve supply even under the repeat of the worst single-year drought event over the next 15 years. The supply reserve would mitigate unexpected changes in demand or supply conditions and facilitate the refill of system storage in this dry condition over the next 15 years.

➢ **Planned Supplies.** With the addition of all water supplies that are under development, Metropolitan would have the total capability (existing and planned supplies) to:

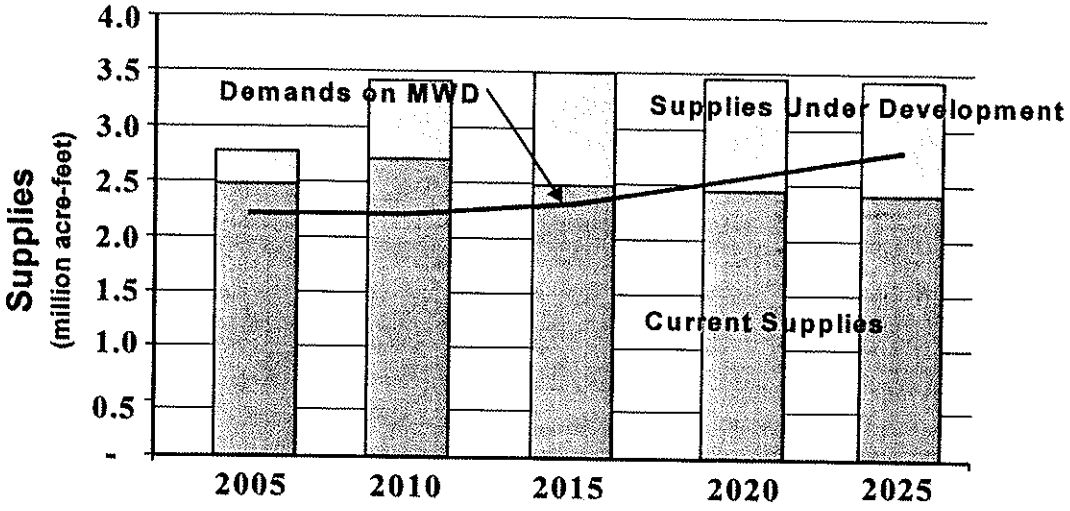
- Meet 100 percent of its member agencies' projected supplemental demands (consumptive and replenishment) through 2030 even under a repeat of the worst drought.
- Provide a 20 to 25 percent reserve supply (depending on hydrologic conditions) that can manage the risk of local or imported resource projects not performing up to expectations and provide greater assurances in meeting demands during dry years.

MANAGING CHANGE: Diversified resources and prudent supply reserves assure reliable water supplies for the region.

➢ **Challenges and Opportunities**. In 2002, there have occurred changes that create both challenges and opportunities for Southern California's water resources. Metropolitan and its member agencies have aggressively prepared for two possible risks to imported water supplies: (1) the reduction of Colorado River supply due to either the unprecedented drought or the absence of a Quantification Settlement Agreement and (2) increasing water quality constraints on imported water supplies. These risks have been offset by significant improvements in the region's supply capabilities: (1) a fully operational DVL and increased refill capabilities; (2) integrating the use of reservoirs and banking/transfer programs to fully use more than 2 million acre-feet of water available in storage and access up to 250,000 acre-feet of additional transfer options; (3) enhanced conservation programs, (4) aggressive development of additional local resources (groundwater, recycling and ocean desalination), and (5) treatment plant improvements.

Multiple Dry-year Supply Capability[1] & Projected Demands[2]

(Repeat of 1990-92 Hydrology)



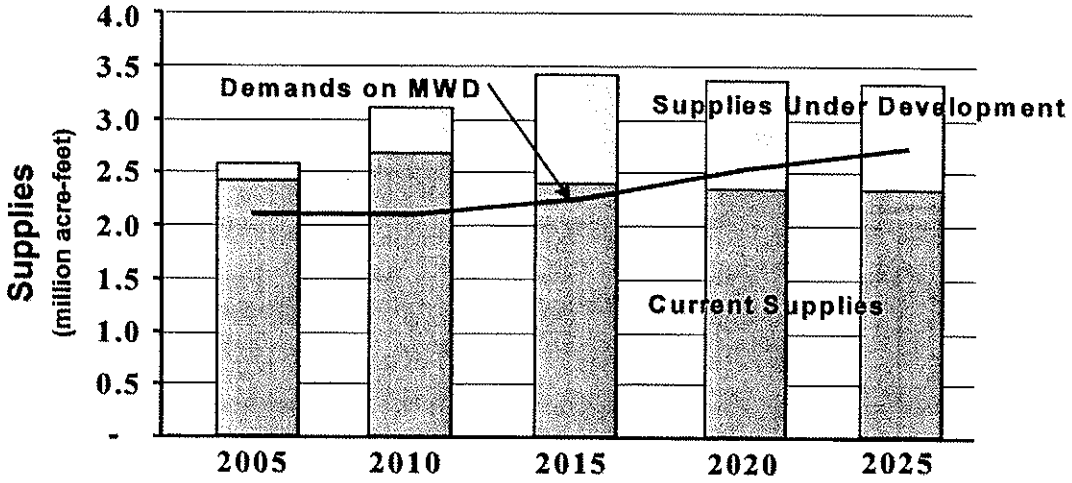
Supply Capability[1] & Potential Reserve or Replenishment

	2005	2010	2015	2020	2025
			(acre-feet per year)		
Current Supplies					
Colorado River[2]	721,330	833,292	833,292	833,292	833,292
California Aqueduct	1,290,300	1,376,100	1,146,100	1,120,300	1,120,300
In-Basin Storage	455,300	531,700	530,400	513,000	499,200
Supplies Under Development					
Colorado River[2]	167,300	416,708	416,708	416,708	416,708
California Aqueduct	20,000	195,000	390,000	390,000	390,000
In-Basin Storage	-	89,000	200,000	200,000	200,000
Maximum Supply Capability[1]	**2,654,200**	**3,441,800**	**3,516,500**	**3,473,300**	**3,459,500**
Total Demands on Metropolitan[3] (Firm & Replenishment)	**2,245,200**	**2,175,600**	**2,320,900**	**2,534,100**	**2,688,500**
Potential Reserve & System Replenishment Supply	**409,000**	**1,266,200**	**1,195,600**	**939,200**	**771,000**

1 -- Represents expected supply capability for resource programs.
2 -- Total Colorado River Aqueduct Deliveries limited to 1,250,000 acre-feet per year.
3 -- Based on SCAG 98 RTP, SANDAG 1998 forecasts and member agency projections of local supplies.

Single Dry-year Supply Capability[1] & Projected Demands[2]

(Repeat of 1977 Hydrology)

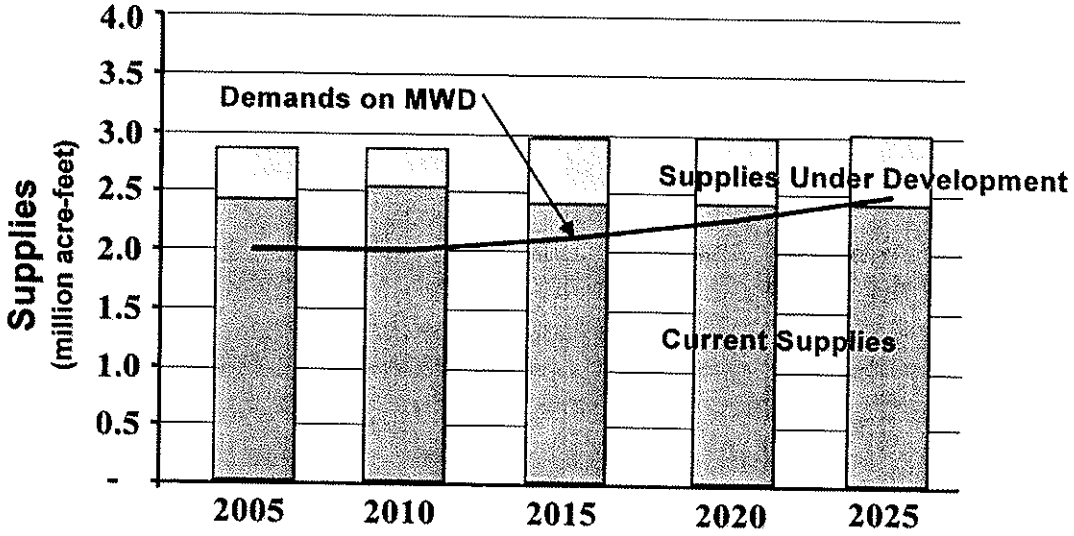


Supply Capability[1] & Potential Reserve or Replenishment

	2005	2010	2015	2020	2025
			(acre-feet per year)		
Current Supplies					
Colorado River[2]	721,330	833,292	833,292	833,292	833,292
California Aqueduct	997,300	997,300	822,300	822,300	822,300
In-Basin Storage	730,400	790,000	787,800	757,900	734,300
Supplies Under Development					
Colorado River[2]	208,600	230,538	416,708	416,708	416,708
California Aqueduct	20,000	195,000	390,000	390,000	390,000
In-Basin Storage	-	89,000	200,000	200,000	200,000
Maximum Supply Capability[1]	**2,677,630**	**3,135,130**	**3,450,100**	**3,420,200**	**3,396,600**
Total Demands on Metropolitan[3] (Firm & Replenishment)	**2,169,300**	**2,096,100**	**2,266,500**	**2,487,900**	**2,618,700**
Potential Reserve & System Replenishment Supply	**508,330**	**1,039,030**	**1,183,600**	**932,300**	**777,900**

1 -- Represents expected supply capability for resource programs.
2 -- Total Colorado River Aqueduct Deliveries limited to 1,250,000 acre-feet per year.
3 -- Based on SCAG 98 RTP, SANDAG 1998 forecasts and member agency projections of local supplies.

Average-year Supply Capability[1] & Projected Demands



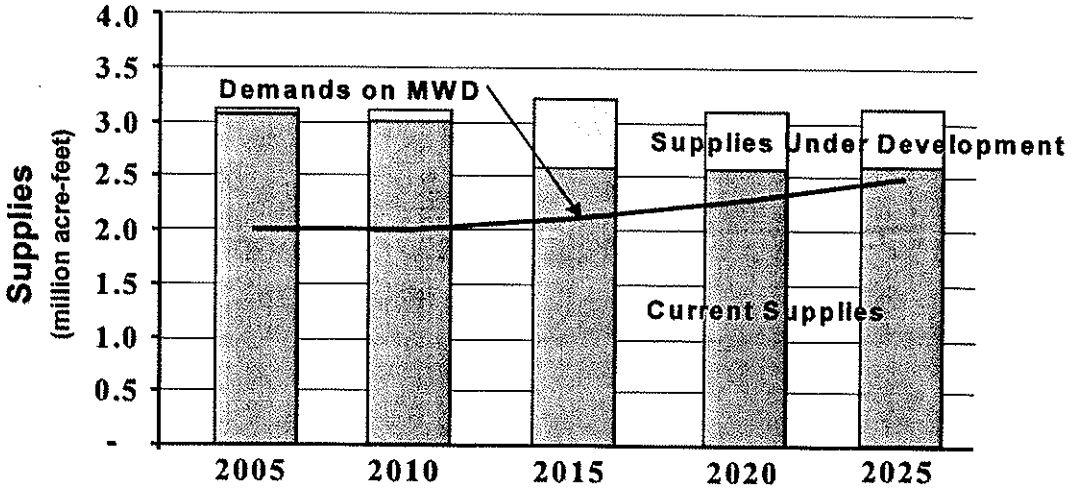
Supply Capability[1] & Potential Reserve or Replenishment

	2005	2010	2015	2020	2025
			(acre-feet per year)		
Current Supplies					
Colorado River[2]	695,330	735,222	719,292	707,292	719,292
California Aqueduct	1,780,800	1,783,200	1,723,900	1,714,900	1,705,900
In-Basin Storage	-	-	-	-	-
Supplies Under Development					
Colorado River[2]	321,500	228,608	260,538	350,038	360,538
California Aqueduct	20,000	65,000	220,000	220,000	220,000
In-Basin Storage	-	-	-	-	-
Maximum Supply Capability[1]	**2,817,630**	**2,812,030**	**2,923,730**	**2,995,230**	**3,005,730**
Total Demands on Metropolitan[3] (Firm & Replenishment)	**1,969,700**	**1,886,500**	**2,054,800**	**2,274,000**	**2,402,300**
Potential Reserve & System Replenishment Supply	**847,930**	**925,530**	**868,930**	**721,230**	**603,430**

1 -- Represents expected supply capability for resource programs.
2 -- Total Colorado River Aqueduct Deliveries limited to 1,250,000 acre-feet per year.
3 -- Based on SCAG 98 RTP, SANDAG 1998 forecasts and member agency projections of local supplies

Wet-year Supply Capability[1] & Projected Demands

(Repeat of 1985 Hydrology)



Supply Capability[1] & Potential Reserve or Replenishment

	2005	2010	2015	2020	2025
			(acre-feet per year)		
Current Supplies					
Colorado River[2]	1,156,330	1,156,830	683,292	683,292	683,292
California Aqueduct	1,882,200	1,882,200	1,882,200	1,882,200	1,882,200
In-Basin Storage	-	-	-	-	-
Supplies Under Development					
Colorado River[2]	93,670	93,170	503,138	353,038	360,538
California Aqueduct	20,000	65,000	220,000	220,000	220,000
In-Basin Storage	-	-	-	-	-
Maximum Supply Capability[1]	**3,152,200**	**3,197,200**	**3,288,630**	**3,138,530**	**3,146,030**
Total Demands on Metropolitan[3] (Firm & Replenishment)	**1,932,700**	**1,871,500**	**2,046,200**	**2,272,500**	**2,406,000**
Potential Reserve & System Replenishment Supply	**1,219,500**	**1,325,700**	**1,242,430**	**866,030**	**740,030**

1 -- Represents expected supply capability for resource programs.
2 -- Total Colorado River Aqueduct Deliveries limited to 1,250,000 acre-feet per year.
3 -- Based on SCAG 98 RTP, SANDAG 1998 forecasts and member agency projections of local supplies.

Demand Projections

RETAIL DEMAND FORECAST OVERVIEW

Water demand in the Metropolitan service area has experienced several discernable trends in the past five years. Southern California emerged from a severe recession in the mid-1990s. Despite a sustained recovery that has led to a robust economy, the intense developments of long-term conservation programs and increases in pricing have succeeded in suppressing growth in per capita water demands. Metropolitan projects that retail water demand will continue along this trend; per capita water demand will not return to its pre-drought highs, with conservation programs and water pricing offsetting water demand growth.

To forecast urban retail water demands, Metropolitan uses the MWD-MAIN Water Use Forecasting System. MWD-MAIN is a model combining statistical and end-use methods that has been adapted to conditions in Southern California. The statistical portion of the model incorporates projections of demographic and economic variables from regional planning agencies (the Southern California Association of Governments, or SCAG, and the San Diego Association of Governments, or SANDAG) into statistically estimated water demand models to produce forecasts of water demand. The end-use portion of the model derives estimates of conservation by adding additional information on how that water is utilized.

The MWD-MAIN system features a separate unique model for each sector. In the residential sector, the forecasts of water demand per dwelling unit are ultimately combined with the forecasts of dwelling units from the regional planning agencies to yield an estimate of total sector water demand. Similarly, in the nonresidential sector, water use per employee is combined with forecasts of employment to yield an estimate of total non-residential water demand.

The SCAG and SANDAG demographic projections used in the retail demand forecast are developed primarily for transportation planning, air quality management, and other regional planning purposes. The SCAG and SANDAG forecasts provide a linkage to local development and land use plans through the inclusion of sub-regional plans, and through extensive stakeholder input and feedback processes. Final plans adopted by SCAG and SANDAG are supported by EIR/EIS documentation.

The SCAG and SANDAG projections currently used by Metropolitan extend to 2020. Metropolitan contracted with the Center for Continuing Study of the California Economy (CCSCE) and SCAG to extend these projections to 2050. CCSCE developed projections for the six counties served by Metropolitan from national projections produced by the US Census Bureau. Member agency demographics for 2050 were then derived using SCAG's GIS-based allocation models. Demographics for interim years such as 2025 were interpolated from the 2020 SCAG/SANDAG projections and the 2050 estimates developed by CCSCE.

In addition to accounting for future demographic trends, Metropolitan's water demand forecasts incorporate current and future water demand management (conservation) efforts: In 1991, Metropolitan signed a Memorandum of Understanding Regarding Urban Water Conservation in California (MOU). The MOU commits Metropolitan to implement a number of long-term water conservation measures referred to as Best Management Practices (BMPs).

The MWD-MAIN model embeds a detailed accounting of water conservation, distinguishing between:

- *Passive Conservation* - Water saved as a result of changes in water efficiency requirements for plumbing fixtures in plumbing codes. This form of conservation would occur without any water agency action.

- *Active Conservation* - Water saved directly as a result of conservation programs by water agencies (including implementation of Best Management Practices). This form of conservation is unlikely to occur without agency action.

- *Price-effect Conservation* - Water saved by retail customers attributable to the effect of changes in the real (inflation-adjusted) price of water. There may be some overlap between this form of conservation and the previous two. For example, increased water prices might induce a consumer to take part in one of the active conservation programs run by the providing agency.

Metropolitan's demand projections account for the effects of the conservation BMPs, including projected changes in the price of water. The forecast is based on expected BMP participation, recognizing that some of the region's retail agencies are not BMP signatories and that some BMPs are not cost effective in Metropolitan's service area.

TRENDS IN SOUTHERN CALIFORNIA

Population: The population of Metropolitan's service area was approximately 15.8 million in 1995 and has grown to approximately 16.9 million in 2000. This represents an annual addition over this five-year period of about 211,000 people per year. The population in the entire service area is projected to be approximately 22.1 million by the year 2020, constituting an average annual increase of about 208,000 people per year.

Industrial and Commercial: Southern California generates a significant portion of the state's economy, accounting for approximately 53 percent of the state's total personal income. In 2001, total personal: income in Southern California was estimated to be $600 billion. Employment growth is not projected to occur at the same rate across the six counties. Over the 25-year period between 2000 and 2025, the greatest employment increases are expected to occur in Los Angeles County, with more than one million additional jobs expected. Relative to existing employment, Riverside and

San Bernardino counties are expected to have the fastest rates of growth (114 and 100 percent), followed by Ventura and Orange counties (66 and 44 percent), and San Diego and Los Angeles counties (32 and 28 percent). The number of people employed is expected to increase from 7.9 million in 2000 to about 10.9 million in 2025. This increase of about 39 percent is greater than the projected population (31 percent) and housing growth (36 percent), suggesting that a somewhat greater proportion of the population will be employed over time.

Residential Consumers: SCAG and SANDAG have projected residential housing growth in all geographic areas of Metropolitan's service area. The total occupied housing stock is expected to increase about 36 percent from 2000 to 2025 (from 5.4 to 7.4 million housing units). Much of this growth is forecasted to occur in inland areas. Within the service area, the average household size (household population divided by total occupied dwelling units) is forecasted to remain at around three persons per household. Annexations to Metropolitan's service area are not projected to have a significant impact on population, housing or demand growth.

Water Demands: Historical retail water demands in Metropolitan's service area have increased from 3.1 million acre-feet in 1980 to 3.9 million acre-feet in 1990. Due to the recession, wet weather, unprecedented conservation efforts, and lingering drought impacts, water use was lower for several years in the mid-nineties. Of the 3.5 million acre-feet used in 1998, 3.2 million acre-feet (91 percent) were used for municipal and industrial purposes (M&I), and 0.3 million acre-feet (9 percent) were used for agricultural purposes. The relative share of M&I water use to total water use has been increasing over time as agricultural water use has declined due to urbanization and market factors, including the price of water. Agricultural water use accounted for 14 percent in 1980, 11 percent in 1990, 9 percent in 1995, and 8.3 percent in 1997. Total water use is projected to grow from a projected 3.8 million acre-feet in 2000 to 4.9 million acre-feet in 2025. All water demand projections discussed here reflect normal weather conditions. These water demand forecasts account for water savings resulting from plumbing codes, price effects, and actual and projected implementation of Best Management Practices. The demand models account for the effect of increasing regional income, growing penetration rates of water-using appliances, and growth in hot and dry areas. As a result per capita water demand is forecast to remain relatively constant over the 25-year forecast horizon

- *By County* - Total retail water demand is not expected to grow uniformly across counties. Following the pattern of the demographic projections, the greatest increase in urban water demands is expected to occur in Los Angeles, Riverside, and San Diego counties. The largest absolute increase in water demand is expected to occur in Los Angeles County, an increase of over 400,000 acre-feet between 2000 and 2025. On a percentage basis, demands in Riverside County are expected to increase at the fastest rate (51 percent between 2000 and 2025), while Los Angeles and Orange Counties are expected to increase with the lowest rate.

- *By Sector* - Water use can also be broken down by sector. Between 2000 and 2025, single-family residential water use is expected to increase by 27 percent, while multifamily water use is expected to increase by 47 percent. Nonresidential water use between 2000 and 2025 is expected to increase by 29 percent. Water use projections for the nonresidential sector generally follow the employment projections shown in Table A.1-3. There is an additional sector, which is needed to account for system losses and any other retail demand.

RESIDENTIAL WATER USE

Although single-family homes account for about 55 percent of the total occupied housing stock, they account for about 70 percent of total residential water demands. This variation occurs because single-family households tend to use more water than households in a multi-family structure (such as apartment buildings) on a per housing-unit basis. Single-family households tend to have more persons living in the household; they are likely to have more water-using appliances and fixtures; and they tend to have more landscaping per home.

NONRESIDENTIAL WATER USE

Nonresidential water use represents about 25 percent of the total M&I demand in Metropolitan's service area. The nonresidential sector represents water that is used by businesses, services, government, institutions (such as hospitals and schools), and industrial (or manufacturing) establishments. Within the commercial/institutional category, the top water users include schools, hospitals, hotels, amusement parks, colleges, laundries, and restaurants. In Southern California, the major industrial users include electronics, aircraft, petroleum refining, beverages, food processing, and other industries that use water as a major component of the manufacturing process.

AGRICULTURAL WATER USE

Agricultural water use currently constitutes about 8 percent of total regional water demand in Metropolitan's service area. Metropolitan has historically provided water supplies to meet 30 to 50 percent of total agricultural water demand. Remaining agricultural water demands are met by local water supplies.

LOCAL SUPPLIES

The Integrated Resources Plan (IRP) was formulated to address the region's water supply needs through a comprehensive planning process that identifies a diverse mix of water resources. The IRP was a collaborative effort by Metropolitan and its member agencies to achieve regional objectives for water reliability, water quality and cost containment by establishing goals for development of the various water resource options. Since it was adopted in 1996, the IRP promoted steady progress towards improving the region's supply reliability in a cost-effective manner. In November 2002, Metropolitan provided an update of the IRP resource targets and strategies to ensure water supply reliability through 2025 against multiple uncertainties and reasonable assumptions of resource implementation risk. As part of this IRP update, the status of developing local supplies such as, groundwater, water recycling, groundwater recovery, and seawater desalination was reevaluated. In addition to these local supplies, Metropolitan initiated a new program, enhancement of water conservation efforts. These local water resources are summarized below.

Local Groundwater Supplies: Groundwater accounts for about 90 percent of the natural local water supplies, in Southern California, and is one of the regions most valuable water assets. In addition to supplying a basic source of water, groundwater basins provide a critical storage function that allows for reduced dependency on imported water during dry years and droughts, as well as during peak summer periods. Within a given year, a groundwater basin production peaks in the summer and replenishes during the winter. Because groundwater basins contain such a large volume of stored water, it is possible to produce more water than is naturally recharged, in the short-term, and be replenished from imported supplies, when available. During a dry-year or drought, replenishment deliveries can be curtailed, further reducing the demand for imported supplies. To compensate for this curtailment it is necessary to replenish groundwater supplies when imported water becomes available. The major groundwater basins in Southern California provide an average annual supply of approximately 1.36 million acre-feet. Most of this production is naturally recharged by surface runoff, but about 200,000 acre-feet per year is replenished by Metropolitan using available imported water. By 2025 it is estimated that groundwater production will increase to about 1.58 million acre-feet, thus requiring Metropolitan to provide about 415,000 acre-feet of replenishment water.

Local Surface Water And Los Angeles Aqueduct Supplies: In addition to groundwater supplies, local agencies maintain surface reservoir capacity and imported supply facilities for the development of local yield. Through the use of local surface reservoirs, the average annual yield from local watersheds is estimated at approximately 135,000 acre-feet per year. Local runoff and falls within San Diego County Water Authority's service area provide most of this local supply, 80,000 acre-feet per year. In addition to these local surface supplies the City of Los Angeles maintains the Los Angeles Aqueduct. The Los Angeles Aqueduct is estimated to provide an average-year supply of approximately 300,000 acre-feet per year. During a

repeat of a historical dry period, this supply is estimated to decrease to less than 150,000 acre-feet.

Seawater Desalination: The ocean represents a potentially abundant source of water supply. Although there is public support for this resource, seawater desalination has in the past been limited by its relatively high costs, environmental impacts of brine disposal, and siting considerations. Emerging technology may alleviate high costs and environmental constraints and may warrant further analysis of seawater desalination as a viable source of supply in the near-term. As part of its local supply strategy, Metropolitan's Board adopted and updated policy principles to guide development of seawater desalination in 1995 and 2001, and reviewed the status of the approach in November 2002. Initially, 50,000 acre-feet per year was targeted in Metropolitan's request for proposals (RFP) process that was initiated in November 2001. As a result, five proposals were submitted by member agencies and were evaluated by Metropolitan for participation. These proposals have a combined potential to produce more than 130,000 acre-feet per year of desalinated seawater within Metropolitan's service area. Most of this production is currently scheduled to be available by 2010, 100,000 acre-feet, with the remainder coming on line by 2015.

Water Recycling And Groundwater Recovery: Water recycling (reclamation of wastewater to produce water which is safe and acceptable for various non-potable uses) has provided a valuable source of water supply for Southern California. Southern California has been a leader in developing recycled water projects. As a result, recycled water is currently used for numerous applications including groundwater recharge, seawater intrusion barriers, landscape and agricultural irrigation, and in industrial processes. Water recycling can improve reliability not only during a drought, but also during normal and wet years. Currently, Metropolitan has entered into agreements covering 53 projects through its Local Resource Program that have the capability to produce about 235,000 acre-feet per year. Presently 37 of these water recycling projects are partially operational and will have the ultimate capability to produce an additional 200,000 acre-feet per year when fully operational.

Recovery of contaminated groundwater supplies is an important resource strategy for Southern California. This resource option is usually more expensive than other resources, but has the potential to control existing contamination and prevent this contamination from spreading and further reducing the usefulness of groundwater. Currently, Metropolitan has entered into agreements covering 22 projects with an ultimate yield of about 82,000 acre-feet per year. Presently 12 of these groundwater recovery projects are partially operational and will have the capability to produce about 55,000 acre-feet per year when fully operational. The combined IRP regional targets for water recycling and groundwater recovery projects is about 460,000 acre-feet year by 2010 and 500,000 acre-feet year by 2020.

Enhanced Water Conservation: Metropolitan has initiated a heightened public awareness and incentive program to reduce outdoor water use in its service area. A

reduction in water use within Metropolitan's service area will have a measurable and lasting impact in ensuring water supply reliability. Encouraging reductions in outdoor water use has the potential to reduce household landscape water use by 30 to 60 percent for those households that are using water for landscapes. Metropolitan's Board of Directors has approved an accelerated public outreach program. A target estimate of 7 to 12 percent of household water use has been established for the summer of 2003. As an integral part of Metropolitan's conservation supplies, the Outdoor Conservation Program will be instrumental in meeting the IRP goals for Southern California's water supply portfolio.

As discussed above, local agencies have developed and continue to implement significant local resources. Based on these local agency supply plans and demand reduction due to enhanced water conservation, on-average it is projected that local supplies will be provide 2,294,100 acre-feet per year by 2005 and 2,949,600 acre-feet per year by 2025.

DEMAND SUMMARY TABLES

The following tables show total retail demands (municipal and industrial, and agricultural), total replenishment demands, total locally produced water supplies, and the supplemental demands for water that are met by Metropolitan. The figures below are derived using a historical sequence of hydrologic outcomes from 1922 through 1998, for each of the forecasted years shown. The "Average" is the statistical mean, calculated over 77 hydrologic outcomes from 1922 through 1998. "Wet" is the outcome from the hydrologic year 1985. "Single Dry" is the outcome from the hydrologic year 1977. "Multiple Dry" is the average outcome over three sequential hydrologic years from 1990-1992.

Estimated Water Demands
Forecast Year 2005
(acre-feet per year)

	Multiple Dry-years (1990-1992)	**Single Dry-year (1977 Hydrology)**	**Average Year**	**Wet Year (1985 Hydrology)**
Retail Demand (MI & AG)	4,141,600	4,097,600	4,057,400	4,148,600
GW Replenishment	212,600	206,400	206,400	206,500
Local Supplies	2,109,000	2,134,700	2,294,100	2,422,400
Demands On Metropolitan	2,245,200	2,169,300	1,969,700	1,932,700

Forecast Year 2025
(acre-feet per year)

	Multiple Dry-years (1990-1992)	**Single Dry-year (1977 Hydrology)**	**Average Year**	**Wet Year (1985 Hydrology)**
Retail Demand (MI & AG)	5,065,000	4,985,900	4,938,400	5,053,100
GW Replenishment	420,300	420,400	413,500	431,100
Local Supplies	2,796,800	2,787,600	2,949,600	3,078,200
Demands On Metropolitan	2,688,500	2,618,700	2,402,300	2,406,000

Colorado River Aqueduct Deliveries

Colorado River Aqueduct Deliveries
Program Capabilities[1]
Year 2005
(acre-feet per year)

	Event Occurring in 2005			
	Multiple Dry Years (1990-92)	**Single Dry Year (1977 Hydrology)**	**Average Year**	**Wet Year (1985 Hydrology)**
Current Programs				
Base Apportionment – Priority 4	550,000	550,000	550,000	550,000
IID/MWD Conservation Program	105,130	105,130	105,130	105,130
Priority 5 Apportionment	-	-	19,000	480,000
Coachella & All-American Canals Lining Projects	21,200	21,200	21,200	21,200
Off-Aqueduct Storage				
• Hayfield Storage Program	45,000	45,000	-	-
Subtotal of Current Programs	**721,330**	**721,330**	**695,330**	**1,156,330**
Programs Under Development				
Interim Surplus Guidelines	26,300	67,600	180,500	-
IID/MWD Conservation Program	-	-	-	-
SDCWA Transfer	30,000	30,000	30,000	30,000
PVID Land Management Program	111,000	111,000	111,000	111,000
Off-Aqueduct Storage/Transfers				
• Lower Coachella Storage Program	-	-	-	-
• Chuckwalla Storage Program	-	-	-	-
• Central Arizona Banking	-	-	-	-
Subtotal of Proposed Programs	**167,300**	**208,600**	**321,500**	**141,000**
Maximum Supply Capability[2]	**888,600**	**929,930**	**1,016,830**	**1,297,330**
Maximum Expected CRA Deliveries[3]	**888,600**	**929,930**	**1,016,830**	**1,250,000**

1 -- Represents expected supply capability for resource programs.
2 -- Total maximum supply capability is shown to be greater than the CRA capacity. This indicates that full CRA deliveries can be maintained even with the loss or deferral of individual programs and that Metropolitan has the operational flexibility to optimize the use of programs.
3 - Total Colorado River Aqueduct Deliveries limited to 1,250,000 acre-feet per year.

Colorado River Aqueduct Deliveries
Program Capabilities[1]
Year 2010
(acre-feet per year)

	Event Occurring in 2010			
	Multiple Dry Years (1990-92)	Single Dry Year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
Current Programs				
Base Apportionment – Priority 4	550,000	550,000	550,000	550,000
IID/MWD Conservation Program	55,592	55,592	57,522	105,130
Priority 5 Apportionment	-	-	50,000	424,000
Coachella & All-American Canals Lining Projects	77,700	77,700	77,700	77,700
Off-Aqueduct Storage				
• Hayfield Storage Program	150,000	150,000	-	-
Subtotal of Current Programs	**833,292**	**833,292**	**735,222**	**1,156,830**
Programs Under Development				
Interim Surplus Guidelines	324,300	-	-	-
IID/MWD Conservation Program	49,538	49,538	47,608	-
SDCWA Transfer	70,000	70,000	70,000	70,000
PVID Land Management Program	111,000	111,000	111,000	111,000
Off-Aqueduct Storage/Transfers				
• Lower Coachella Storage Program	-	-	-	-
• Chuckwalla Storage Program	-	-	-	-
• Central Arizona Banking	33,000	-	-	-
Subtotal of Proposed Programs	**587,838**	**230,538**	**228,608**	**181,000**
Maximum Supply Capability[2]	**1,421,130**	**1,063,830**	**963,830**	**1,337,830**
Maximum Expected CRA Deliveries[3]	**1,250,000**	**1,063,830**	**963,830**	**1,250,000**

1 -- Represents expected supply capability for resource programs.
2 -- Total maximum supply capability is shown to be greater than the CRA capacity. This indicates that full CRA deliveries can be maintained even with the loss or deferral of individual programs and that Metropolitan has the operational flexibility to optimize the use of programs.
3 - Total Colorado River Aqueduct Deliveries limited to 1,250,000 acre-feet per year.

Colorado River Aqueduct Deliveries
Program Capabilities[1]
Year 2015
(acre-feet per year)

	Event Occurring in 2015			
	Multiple Dry Years (1990-92)	**Single Dry Year (1977 Hydrology)**	**Average Year**	**Wet Year (1985 Hydrology)**
Current Programs				
Base Apportionment – Priority 4	550,000	550,000	550,000	550,000
IID/MWD Conservation Program	55,592	55,592	55,592	55,592
Priority 5 Apportionment	-	-	36,000	-
Coachella & All-American Canals Lining Projects	77,700	77,700	77,700	77,700
Off-Aqueduct Storage				
• Hayfield Storage Program	150,000	150,000	-	-
Subtotal of Current Programs	**833,292**	**833,292**	**719,292**	**683,292**
Programs Under Development				
Interim Surplus Guidelines	275,300	-	-	242,600
IID/MWD Conservation Program	49,538	49,538	49,538	49,538
SDCWA Transfer	100,000	100,000	100,000	100,000
PVID Land Management Program	111,000	111,000	111,000	111,000
Off-Aqueduct Storage/Transfers				
• Lower Coachella Storage Program	150,000	150,000	-	-
• Chuckwalla Storage Program	150,000	150,000	-	-
• Central Arizona Banking	14,000	-	-	-
Subtotal of Proposed Programs	**849,838**	**560,538**	**260,538**	**503,138**
Maximum Supply Capability[2]	**1,683,130**	**1,393,830**	**979,830**	**1,186,430**
Maximum Expected CRA Deliveries[3]	**1,250,000**	**1,250,000**	**979,830**	**1,186,430**

1 -- Represents expected supply capability for resource programs.
2 -- Total maximum supply capability is shown to be greater than the CRA capacity. This indicates that full CRA deliveries can be maintained even with the loss or deferral of individual programs and that Metropolitan has the operational flexibility to optimize the use of programs.
3 - Total Colorado River Aqueduct Deliveries limited to 1,250,000 acre-feet per year.

Colorado River Aqueduct Deliveries
Program Capabilities[1]
Year 2020
(acre-feet per year)

	Event Occurring in 2020			
	Multiple Dry Years (1990-92)	**Single Dry Year (1977 Hydrology)**	**Average Year**	**Wet Year (1985 Hydrology)**
Current Programs				
Base Apportionment – Priority 4	550,000	550,000	550,000	550,000
IID/MWD Conservation Program	55,592	55,592	55,592	55,592
Priority 5 Apportionment	-	-	24,000	-
Coachella & All-American Canals Lining Projects	77,700	77,700	77,700	77,700
Off-Aqueduct Storage				
• Hayfield Storage Program	150,000	150,000	-	-
Subtotal of Current Programs	**833,292**	**833,292**	**707,292**	**683,292**
Programs Under Development				
Interim Surplus Guidelines	-	-	-	-
IID/MWD Conservation Program	49,538	49,538	49,538	49,538
SDCWA Transfer	192,500	192,500	192,500	192,500
PVID Land Management Program	111,000	111,000	111,000	111,000
Off-Aqueduct Storage/Transfers				
• Lower Coachella Storage Program	150,000	150,000	-	-
• Chuckwalla Storage Program	150,000	150,000	-	-
• Central Arizona Banking	-	-	-	-
Subtotal of Proposed Programs	**653,038**	**653,038**	**353,038**	**353,038**
Maximum Supply Capability[2]	**1,486,330**	**1,486,330**	**1,060,330**	**1,036,330**
Maximum Expected CRA Deliveries[3]	**1,250,000**	**1,250,000**	**1,060,330**	**1,036,330**

1 -- Represents expected supply capability for resource programs.
2 -- Total maximum supply capability is shown to be greater than the CRA capacity. This indicates that full CRA deliveries can be maintained even with the loss or deferral of individual programs and that Metropolitan has the operational flexibility to optimize the use of programs.
3 - Total Colorado River Aqueduct Deliveries limited to 1,250,000 acre-feet per year.

Colorado River Aqueduct Deliveries
Program Capabilities[1]
Year 2025
(acre-feet per year)

	Event Occurring in 2025			
	Multiple Dry Years (1990-92)	**Single Dry Year (1977 Hydrology)**	**Average Year**	**Wet Year (1985 Hydrology)**
Current Programs				
Base Apportionment – Priority 4	550,000	550,000	550,000	550,000
IID/MWD Conservation Program	55,592	55,592	55,592	55,592
Priority 5 Apportionment	-	-	36,000	-
Coachella & All-American Canals Lining Projects	77,700	77,700	77,700	77,700
Off-Aqueduct Storage				
• Hayfield Storage Program	150,000	150,000	-	-
Subtotal of Current Programs	**833,292**	**833,292**	**719,292**	**683,292**
Programs Under Development				
Interim Surplus Guidelines	-	-	-	-
IID/MWD Conservation Program	49,538	49,538	49,538	49,538
SDCWA Transfer	200,000	200,000	200,000	200,000
PVID Land Management Program	111,000	111,000	111,000	111,000
Off-Aqueduct Storage/Transfers				
• Lower Coachella Storage Program	150,000	150,000	-	-
• Chuckwalla Storage Program	150,000	150,000	-	-
• Central Arizona Banking	-	-	-	-
Subtotal of Proposed Programs	**660,538**	**660,538**	**360,538**	**360,538**
Maximum Supply Capability[2]	**1,493,830**	**1,493,830**	**1,079,830**	**1,043,830**
Maximum Expected CRA Deliveries[3]	**1,250,000**	**1,250,000**	**1,079,830**	**1,043,830**

1 -- Represents expected supply capability for resource programs.
2 -- Total maximum supply capability is shown to be greater than the CRA capacity. This indicates that full CRA deliveries can be maintained even with the loss or deferral of individual programs and that Metropolitan has the operational flexibility to optimize the use of programs.
3 - Total Colorado River Aqueduct Deliveries limited to 1,250,000 acre-feet per year.

COLORADO RIVER AQUEDUCT DELIVERIES
BASIC APPORTIONMENT - PRIORITY 4
UNUSED / SURPLUS WATER – PRIORITY 5

SOURCE OF SUPPLY

Under "The Law of the River", Metropolitan's priorities to Colorado River water yield an annual supply that is delivered to Metropolitan's service area via its Colorado River Aqueduct (CRA). This supply is currently available and consists of a firm annual supply of 550,000 acre-feet per year, Metropolitan's fourth priority to California's basic apportionment, water covered through the IID/MWD Water Conservation Program and surplus water when available. The amount of surplus water available is determined annually by the Secretary of Interior (Secretary). Metropolitan diverts surplus water in accordance with Metropolitan's fifth priority and surplus water contract. Metropolitan conveys Colorado River water 242 miles from its Lake Havasu intake through the CRA and distribution system to Metropolitan's terminal reservoirs. Metropolitan's terminal reservoirs include Lake Mathews, located near the City of Riverside, and Diamond Valley Lake, located near the City of Hemet.

EXPECTED SUPPLY CAPABILITY

Metropolitan's dependable water supply from its fourth priority apportionment of California's Colorado River water is expected to be 550,000 acre-feet in every of the next 20 years. In other words, it is expected that the supply would be available during all year types, including wet, average, single dry-year, and multiple dry-year weather.

Estimated Water Supplies Available for Metropolitan's Use
Under the Basic Apportionment - Priority 4 *
(acre-feet per year)

Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	550,000	550,000	550,000	550,000
2010	550,000	550,000	550,000	550,000
2015	550,000	550,000	550,000	550,000
2020	550,000	550,000	550,000	550,000
2025	550,000	550,000	550,000	550,000

* --Represents expected supply capability for the resource program.

The Secretary of the Interior has allowed Metropolitan to divert surplus water and water that is unused by Arizona and Nevada under Metropolitan's fifth priority to California's apportionment in the past. The Colorado River water supply available under the fifth priority is projected through to simulations of future Colorado River system reservoirs operations.

Estimated Water Supplies Available for Metropolitan's Use
Under the Unused/Surplus Allocation - Priority 5
Without Execution of the Quantification Settlement Agreement *
(acre-feet per year based on Bureau's of Reclamation methodology utilized in FEIS)

Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	-	-	19,000	480,000
2010	-	-	50,000	424,000
2015	-	-	36,000	-
2020	-	-	24,000	-
2025	-	-	36,000	-

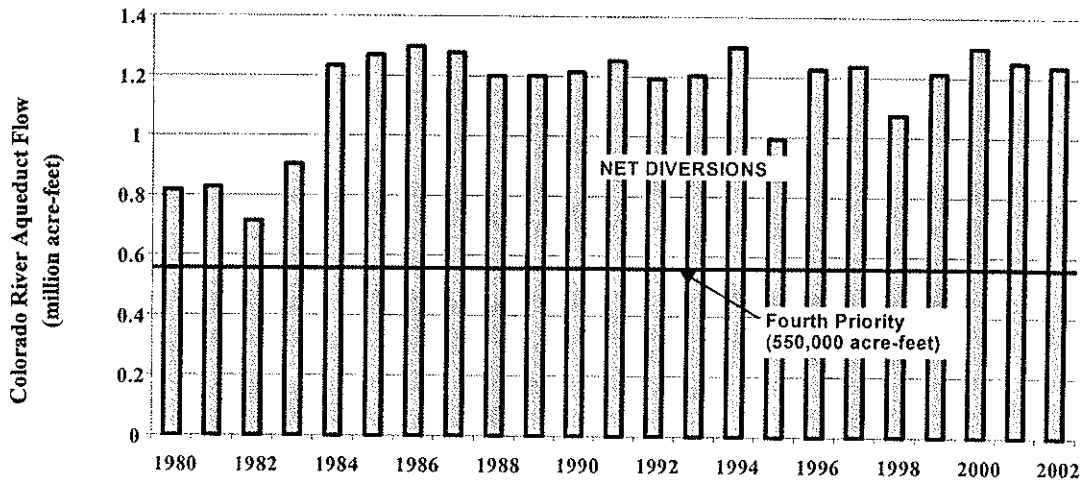
* Represents expected supply capability for the resource program.

RATIONALE FOR EXPECTED SUPPLY

Implementation Status: Water supply under Metropolitan's apportionment of Colorado River water has been delivered since 1939 and by existing contract would continue to be available in perpetuity.

Historical Record: The historical record for available Colorado River water that could be diverted by Metropolitan under its fourth priority to California's apportionment is shown in the following graph. Over the last 20 years, an average of 1.212 million acre-feet per year has been available for Metropolitan's use, enabling Metropolitan to maintain essentially full CRA delivery capability each year. The historical record indicates that Metropolitan's fourth priority supply has been available in every year and can reasonably be expected to be available over the next 20 years.

Metropolitan's Net Colorado River Diversions



Written Contracts or Other Proof: Metropolitan's entitlement to Colorado River water is based on "The Law of the River". The "Law of the River" is a collective body of laws, court decrees, compacts, agreements, regulations, and an international treaty that govern the distribution and management of Colorado River water. The documents that specifically determine Metropolitan's dependable supplies are as follows:

- 1931 Seven Party Agreement. The 1931 Agreement recommended California's Colorado River use priorities and has no termination date. California's basic annual apportionment is 4.4 million acre-feet. Palo Verde Irrigation District (PVID), Yuma Project (Reservation Division), Imperial Irrigation District (IID), Coachella Valley Water District (CVWD), and Metropolitan are the entities that hold the priorities. These priorities are included in the contracts that the Department of the Interior executed with the California agencies in the 1930's for water from Hoover Dam. These priorities are shown in the following table. Metropolitan has the fourth priority to California's Basic Apportionment of Colorado River water and utilizes this water, 550,000 acre-feet per year, every year. In addition, Metropolitan has access to additional Colorado River water, up to 662,000 acre-feet per year, through its fifth priority in the California apportionment. Since the initial Central Arizona Project deliveries in 1985 the Secretary of the Interior determines the availability of certain fifth priority water on an annual basis. The fifth priority water consists of: (1) water apportioned to, but unused, by Arizona and Nevada, (2) surplus Colorado River water, (3) water unused by holders of priorities 1 to 3 in California, and (4) an amount of water equal to the amount conserved under the 1988 and 1989 agreements with Imperial Irrigation District. This year, the department of the Interior has chosen to deduct from the amount of water available to Metropolitan, 28,500 acre-feet, the amount projected to be used by holders of Indian and miscellaneous presented perfected rights and others adjacent to the Colorado River who divert water. Use of water by holders of Indian and miscellaneous presented perfected rights are not specifically addressed in the Seven Party Agreement. The U.S. Supreme Court in its 1964, 1979, and 2000 decrees quantified these rights.

- Metropolitan's Basic Contracts. Metropolitan's 1930, 1931, and 1946 basic contracts with the Secretary permit the delivery of 1.212 million acre-feet per year when sufficient water is available. Metropolitan's 1987 surplus flow contract with Reclamation permits the delivery of water to fill the remainder of the Colorado River Aqueduct when water is available. Certain programs discussed subsequently are being implemented and planned to increase assurances that this water will be available.

- 1964 Court Decree. The 1964 U.S. Supreme Court Decree confirmed the Arizona, California, and Nevada basic apportionments of 2.8 million acre-feet per year, 4.4 million acre-feet per year and 300,000 acre-feet per year, respectively. The Decree also permits the Secretary of the Interior to make water unused by one of the states available for use in the other two states. In addition, it permits the Secretary to make available surplus water.

Priority in Seven-Party Agreement and Water Delivery Contracts

Priority	Description	Acre-feet Annually
1	Palo Verde Irrigation District gross area of 104,500 acres of land in the Palo Verde valley	
2	Yuma Project (Reservation Division) not exceeding a gross area of 25,000 acres in California	
3(a)	Imperial Irrigation District and land in Imperial and Coachella Valleys[1] to be served by the All American Canal	3,850,000
3(b)	Palo Verde Irrigation District – 16,000 acres of land on the Lower Palo Verde Mesa	
4	Metropolitan Water District of Southern California for use on the coastal plain	550,000
	subtotal	**4,400,000**
5(a)	Metropolitan Water District of Southern California for use on the coastal plain	550,000
5(b)	Metropolitan Water District of Southern California for use on the coastal plain[2]	112,000
6(a)	Imperial Irrigation District and land in Imperial and Coachella Valleys[1] to be served by the All American Canal	
6(b)	Palo Verde Irrigation District – 16,000 acres of land on the Lower Palo Verde Mesa	300,000
7	Agricultural Use in the Colorado River Basin in California	--
	total	**5,362,000**

[1] – The Coachella Valley Water District now serves Coachella Valley

[2] – In 1946, the City of San Diego, San Diego County Water Authority, Metropolitan, and the Secretary of the Interior entered into a contract that merged and added the City of San Diego's rights to storage and delivery of Colorado River water to the rights of Metropolitan. The conditions of that agreement have since been satisfied.

Financing: The cost of delivering fourth priority Colorado River water is included in Metropolitan's budget. These costs are paid from water sales revenue.

Regulatory Permits for Delivery of Supply: Metropolitan's fourth priority Colorado River water is currently available. Delivery of the Basic apportionment is assured under this priority.

COLORADO RIVER AQUEDUCT DELIVERIES INTERIM SURPLUS GUIDELINES

SOURCE OF SUPPLY

On January 16, 2001, the Secretary of the Interior signed a Record of Decision to implement the Colorado River Interim Surplus Guidelines (ISG). Adoption of the ISG recognizes California's Colorado River Water Use Plan and its commitment to reduce its draw of Colorado River water.

The Bureau of Reclamation uses the ISG to determine the availability of surplus water to Metropolitan and Southern Nevada Water Authority through 2016. Under a seven-state agreement, California has 15 years to reduce its draw on the river from about 5.2 million acre-feet to its basic apportionment of 4.4 million acre-feet a year in the absence of surplus water. During the 15-year ramp-down period, California would continue to receive surplus water from the river; the annual amount depends on whether there is a flood control release, or a full or partial domestic surplus condition.

The Secretary could, and did, suspend certain provisions of the ISG because the Quantification Settlement Agreement (QSA) was not implemented by December 31, 2002, and they will remain suspended until such time as either the QSA is executed or such other actions as are required by the Secretary of the Interior are completed. The ISG also included specific benchmarks for reduced agricultural water use that must be satisfied to avoid a reduction in surplus water availability to Metropolitan. The framework for meeting those benchmarks was agreed to in mid-October 2002.

EXPECTED SUPPLY CAPABILITY

In the Final Environmental Impact Statement (EIS) for the ISG, the U.S. Bureau of Reclamation (Bureau) reported the results of its simulation of Colorado River deliveries and Lake Mead operations under the ISG and estimated the available ISG water over the next twenty years. If certain provisions of ISG were reinstated, incremental increases in water supplies would be available for Metropolitan's use during dry-year conditions. However, Metropolitan may be required to provide deliveries to Arizona to offset water shortages in Arizona caused by certain provisions of the ISG. The incremental increases or decreases in deliveries under the ISG have been estimated based on the Bureau's simulation modeling methodology and are shown as follows:

Estimated Incremental Water Supplies Available for Metropolitan's Use Under the Interim Surplus Guidelines With Execution of the Quantification Settlement Agreement *
(acre-feet per year based on Bureau's methodology utilized in FEIS)

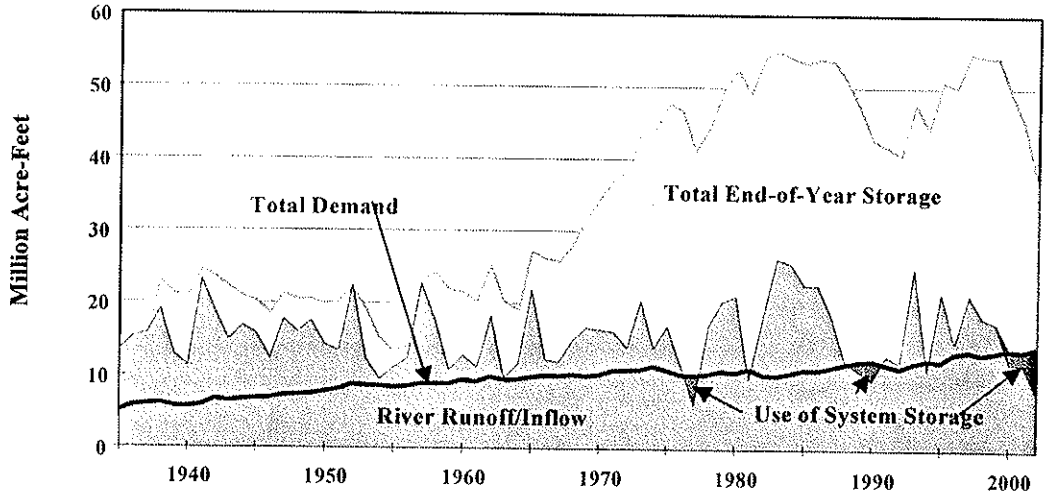
Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	26,300	67,600	180,500	-
2010	324,300	-	-	-
2015	275,300	-	-	242,600
2020	-	-	-	-
2025	-	-	-	-

* After 2016 the ISG are no longer in effect and the availability of surplus and unused Colorado River water is determined by the Secretary on an annual basis under Metropolitan's Priority 5 entitlement.
* If the ISG creates a shortage in the Central Arizona Project (CAP), Metropolitan would be obligated to pay back, up to 1.0 million acre-feet of water to the CAP over an agreed period of time.
* Represents expected supply capability for the resource program.

RATIONALE FOR EXPECTED SUPPLY

Implementation Status: The ISG were implemented in January 2002 and extends through December 2016.

Historical Colorado River Supply & Demand



Historical Record: The historical record of Colorado River system annual runoff, demands and storage conditions the demonstrate that the River's reservoirs can be managed to provide Arizona, California, and Nevada with more predictable water supply for an interim period. The historical record is depicted below. The total storage capacity in the Colorado River Basin is approximately 60 million acre-feet, almost four times the River's average annual

flow. As of the end of December 2002, total storage in the system reservoirs was over 36.8 million acre-feet, about 62% of capacity.

Written Contracts or Other Proof:

- Adoption of Interim Surplus Guidelines. The Interim Surplus Guidelines were approved by the Secretary of the Interior on January 16, 2001. The ISG are effective for a 15-year term (2002 – 2016). Certain provisions of the ISG were suspended in 2003 as the proposed Quantification Settlement Agreement (QSA) was not executed. These provisions can be reinstated with execution of the QSA or by California completing all required actions and reducing the aggregate use of Colorado River water by the Palo Verde Irrigation District, Yuma Project Reservation Division, Coachella Valley Water District and Imperial Irrigation District to meet specified targets by specified years.
- Agreement with Arizona. The Metropolitan-Arizona Interim Surplus Guidelines Agreement was executed in May 2001. Under this agreement, Metropolitan would mitigate Colorado River shortages in Arizona due to the ISG.
- Agreement with Nevada. The Metropolitan-Southern Nevada Water Authority Interim Surplus Guidelines Agreement was executed in May 2002. This agreement establishes the allocation of unused Arizona water and determines the priority for storing water in the Arizona Water Bank between Metropolitan and Southern Nevada Water Authority.

Financing: The cost of delivering the ISG water supply is included in Metropolitan's annual O&M budget and long-range financial plan.

Federal, State and Local Permits/Approvals:

- EIS for ISG. The Final Environmental Impact Statement for Interim Surplus Criteria was published by the U. S. Bureau of Reclamation in December 2000. The Record of Decision was approved by the Secretary of the Interior on January 16, 2001.

COLORADO RIVER AQUEDUCT DELIVERIES
IID - METROPOLITAN CONSERVATION PROGRAM

SOURCE OF SUPPLY

The IID-Metropolitan Conservation Program provides an annual supply that is delivered to Metropolitan's service area via its CRA over a minimum 35-year period following full program implementation. In 1988, Metropolitan executed a Conservation Agreement to fund water efficiency improvements within the Imperial Irrigation District's (IID) service area in return for the right to divert the water conserved by those improvements. The program consists of structural and non-structural measures, including the concrete lining of existing canals, the construction of local reservoirs and spill-interceptor canals, installation of non-leak gates, and automation of the distribution system. Other implemented projects include the delivery of water to farmers on a 12-hour basis rather than a 24-hour basis and improvements in on-farm water management through the installation of tailwater pumpback systems, drip irrigation systems, and linear-move irrigation systems.

EXPECTED SUPPLY CAPABILITY

The IID-Metropolitan Conservation Program has been operational since 1990 and is expected to yield 105,130 acre-feet per year of conserved water. The program agreement provides Coachella Valley Water District the option to call up to 45,130 acre-feet of conserved water if needed to meet its demands under non-surplus conditions. Based upon Coachella's water resources plans, its projected water demands through 2005 can be met by Priority 3 water delivered at current levels. As a result, it is expected that Metropolitan's dependable water supply from the IID-Metropolitan Conservation Program would be 105,130 acre-feet in the near-term. During dry conditions, without implementation of the QSA, it has been assumed, that Metropolitan and Coachella Valley Water District would share in the conserved water, with Metropolitan receiving 60,000 acre-feet and remaining conserved water being utilized by Coachella Valley Water District.

Estimated Water Supplies Available for Metropolitan's Use
Under the IID - Metropolitan Conservation Program
Without Execution of the Quantification Settlement Agreement *
(acre-feet per year)

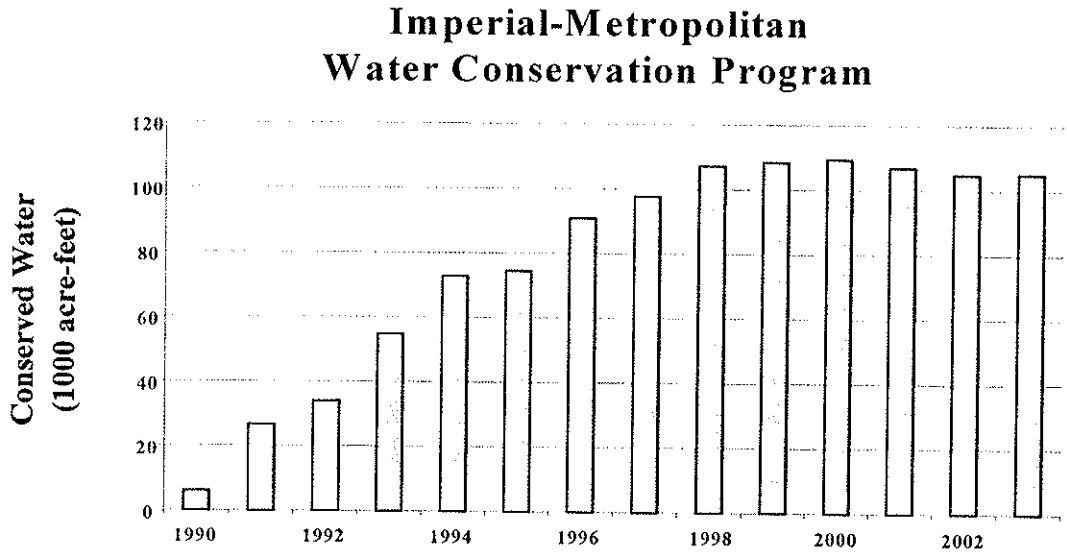
Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	105,130	105,130	105,130	105,130
2010	55,592	55,592	57,522	105,130
2015	55,592	55,592	55,592	55,592
2020	55,592	55,592	55,592	55,592
2025	55,592	55,592	55,592	55,592

* --Represents expected supply capability for the resource program.

RATIONALE FOR EXPECTED SUPPLY

Implementation Status: The IID-Metropolitan Conservation Program has been operational since 1990 and by existing agreements will continue to be in place with a possible extension to 2077 with implementation of the QSA.

Historical Record: The historical record for conserved water that has been diverted by Metropolitan under the IID-Metropolitan Conservation Program is shown in the following graph. With operations beginning in 1990, the program has conserved up to 106,880 acre-feet per year to date, with 105,130 acre-feet available to Metropolitan in 2003 and could reach a yield of 110,000 acre-feet per year in 2004. The historical record indicates that Metropolitan's expected supply of 90,000 acre-feet per year with implementation of the quantification settlement has been available since 1996 and would be available over the next 20 years and beyond.



Written Contracts or Other Proof: Metropolitan's annual supply from the IID-Metropolitan Conservation Program is based on three agreements.

- 1988 IID-Metropolitan Conservation and Use of Conserved Water Agreement. This Agreement was executed in December 1988 by Imperial Irrigation District and Metropolitan for a 35-year term following completion of program implementation (1998 – 2033).
- 1989 Approval Agreement. This Agreement secured the approval of Palo Verde Irrigation District and Coachella Valley Water District to not divert an amount of water equal to the amount conserved except under limited circumstances. The Agreement was executed in December 1989.
- 1989 Supplemental Approval Agreement. This Agreement was executed in December 1989 between Metropolitan and Coachella Valley Water District to coordinate Colorado River diversions and the use of the conserved water provided by the Program.

- Key Terms for Quantification Settlement. The Key Terms for Quantification Settlement were signed by the State of California, Metropolitan, Imperial Irrigation District, and Coachella Valley Water District in October 1999. These key terms provide the basis for completing detailed agreements to quantify the rights and uses of Colorado River water with respect to Priorities 3a and 6a of the 1931 California Seven-Party Agreement. Included in the Key Terms is the provision that approximately 90,000 acre-feet per year of water obtained through this Program would continue to be available to Metropolitan for an extended term ending as late as 2078. The remainder of the conserved water from this program (20,000 acre-feet per year) would be available to CVWD.

Financing: The water efficiency improvements under this Program have already been funded, constructed and put into operation. The cost of Program operation and maintenance and delivering the conserved water under the IID-Metropolitan Conservation Program is included in Metropolitan's 10-year capital and O&M budget.

Federal, State, and Local Permits/Approvals: A comprehensive environmental review process supported implementation.

- EIR for Program. The Imperial Irrigation District Board certified the final Environmental Impact Report for the Program in December 1986.
- EIR for Supplemental Program. The Imperial Irrigation District Board certified the final Environmental Impact Report for the Completion Program in June 1994.

COLORADO RIVER DELIVERIES
HAYFIELD GROUNDWATER STORAGE PROJECT

SOURCE OF SUPPLY

The Hayfield Groundwater Storage Project (Hayfield Project) is planned to supply up to 150,000 acre-feet annually during dry year or non-surplus Colorado River conditions. The Hayfield Project is also planned to provide additional supplemental supplies from previously stored CRA water during normal year conditions. During wet and surplus years, Metropolitan would replenish the Hayfield Project from the CRA.

EXPECTED SUPPLY CAPABILITY:

It is estimated that the Hayfield aquifer can hold up to 800,000 acre-feet of additional CRA water. This water could be extracted during dry year conditions at a rate of up to 150,000 acre-feet per year. This supply would be available to Metropolitan in any year, but delivery is constrained by the existing capacity of the CRA. Incremental deliveries of water to the CRA from the Hayfield Project can be made during wet or normal years depending on operating conditions along the CRA. For example, the Hayfield Project may provide operational efficiencies in meeting delivery obligations at Whitewater or other locations along the CRA.

RATIONALE FOR EXPECTED SUPPLY

As an integral part of the Colorado River resource strategy for storage programs, the Hayfield Project could be used to assist in keeping the CRA full in 2010 and following years when surpluses may not be available. The water supply available to Metropolitan is presented below:

Estimated Water Supplies Available for Metropolitan's Use
Under the Hayfield Groundwater Storage Program *
(acre-feet per year)

Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	45,000	45,000	-	-
2010	150,000	150,000	-	-
2015	150,000	150,000	-	-
2020	150,000	150,000	-	-
2025	150,000	150,000	-	-

* -- Represents expected supply capability for the resource program.

Program Facilities: The Hayfield Program would consist of facilities in two general areas, as follows:

- 390 acres of spreading basins;
- A well field, consisting of 40 new wells, to extract water from the aquifer and pump it back to the Colorado River Aqueduct;

Historical Record: Metropolitan's Board of Directors authorized implementation of the Hayfield Project in April 1999. Approximately 67,000 acre-feet of water have been stored in the Hayfield aquifer since the Project was approved.

Written Contracts or Other Proof: The Hayfield Project has been implemented as a component of California's Colorado River Water Use Plan. The following actions have occurred:

- 1998 Memorandum of Understanding (MOU) between Metropolitan and the U. S. Department of the Interior Bureau of Land Management (BLM). This MOU describes the intent of both Metropolitan and the BLM to exchange properties overlying the Hayfield Basin in order to support the implementation of the Hayfield Project. Approximately 3,800 acres of Federally owned property in the Hayfield valley would be exchanged with like properties held by Metropolitan. The purpose of this exchange of properties is to manage the underlying groundwater resource and protect water quality.
- April 1999 Board of Directors Adoption of the CEQA Document. Metropolitan's Board of Directors adopted the Mitigated Negative Declaration for the Hayfield Project at their regularly scheduled Board of Directors meeting in April 1999.
- June 2000 Board of Directors Approval of the Hayfield Project. Metropolitan's Board of Directors approved the Hayfield Project and appropriated an additional $7.35 million for land acquisition, preliminary design, continued water quality monitoring, additional aquifer testing and other tasks. The Board authorized storage of up to 800,000 acre-feet of CRA water.
- October 2001 Reimbursement Agreement Number 4600001909 from the California Department of Water Resources. Metropolitan and the Department of Water Resources entered into a Reimbursement Agreement in accordance with the California Water Code Section 15262. This section of Water Code calls for the DWR to reimburse up to $35 million for groundwater conjunctive use programs along the Colorado River Aqueduct. This Agreement was effective October 9, 2001.
- December 2002 Board of Directors Appropriation of Design, Testing and Construction Funds. Metropolitan authorized expenditure of an additional $18 million to implement the Hayfield Project. The action increased the authorized funding to implement the Hayfield Project to more than $27 million. Schedule on line date for the Hayfield Project is 2007.

Financing: The capital cost of the Hayfield Project is estimated to be approximately $75 million. This budget is included in Metropolitan's 10-year capital budget and would be financed through a combination of bonds and water sales revenue. A portion of this capital cost would be reimbursed to Metropolitan from Agreement No. 4600001909 with the DWR.

Federal, State and Local Permits for Construction: Metropolitan has applied for and requested all appropriate Federal, State and Local permits for construction. For example, Metropolitan is currently conducting long term water quality baseline monitoring in support of a possible Source Water Permit application from the Department of Health Services. Monitoring wells and production wells were completed in accordance with Riverside County permitting procedures. Necessary environmental permits would be acquired as needed.

COLORADO RIVER DELIVERIES
ARIZONA/METROPOLITAN GROUNDWATER BANKING PROGRAM

SOURCE OF SUPPLY

Interstate off stream water banking of unused basic and/or surplus Colorado River water apportionments provides an added water management opportunity for meeting the water supply needs of Arizona, California, and Nevada. In 1992, Metropolitan entered into an agreement with the Central Arizona Water Conservation District (CAWCD) to implement a demonstration program that allowed unused Colorado River water to be stored in central Arizona aquifers, thus capturing water that otherwise would not have been diverted due to future flood control releases from Lake Mead. Unused capacity in the Central Arizona Project (CAP) was used to transport Colorado River water to central Arizona. The Southern Nevada Water Authority also participated in the program.

In 1996, the Arizona Legislature created the Arizona Water Banking Authority (AWBA). It was created specifically to protect Arizona's supply of Colorado River water and to provide opportunities for interstate banking. Its major objective is to store Arizona's unused Colorado River apportionment. The statute provides a role for interstate storage programs, limiting the annual recovery amount to no more than 100,000 acre-feet in total for entities in California and Nevada.

In November 1999, the Department of the Interior issued a Final Rule to facilitate voluntary interstate offstream storage of Colorado River water among Arizona, California and Nevada. The Final Rule establishes a framework for the Secretary to follow in considering, participating in, and administrating storage and interstate release agreements among entities in Arizona, California and Nevada. The final rule permits state-authorized entities in Nevada and California to have Colorado River water stored off stream in groundwater basins. In years in which Nevada and/or California entities wish to receive the benefit of stored water, Arizona would reduce its diversion of Colorado River water resulting in intentionally created unused apportionment (ICUA). The ICUA would be made available to the Secretary for release and use in another of the three states that is party to a storage and interstate release agreement.

EXPECTED SUPPLY CAPABILITY

When Metropolitan wishes to recover the stored water, expected to be in either 2003 or 2004, CAWCD would reduce its CAP diversions, and the Secretary of the Interior would allocate the unused CAP apportionment to Metropolitan. This mechanism can be exercised in a year when Arizona's Colorado River supply is at least 2.8 million acre-feet. The maximum recoverable amount is 15,000 acre-feet per month. When Metropolitan recovers any of the water stored under this program, Metropolitan's storage credits would be debited by 110 percent of the recovered water. The factor of 110 percent is to comply with Arizona's state law, which requires that a portion of any stored water be left underground. As of December 2002, Metropolitan had a storage account balance of 89,000 acre-feet of which about 81,000 acre-feet is available for return to Metropolitan (after losses). This amount of

water is scheduled for use prior to 2005 and is not considered available in the 20-year assessment of the report.

AWBA and Metropolitan are discussing the implementation of a long-term program. Water Supplies available under the long-term program are estimated as follows:

Estimated Water Supplies Available for Metropolitan's Use Under a Long-term Arizona Groundwater Banking Program *
(acre-feet per year)

Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	-	-	-	-
2010	33,000	-	-	-
2015	14,000	-	-	-
2020	-	-	-	-
2025	-	-	-	-

* -- Represents expected supply capability for the resource program.

RATIONALE FOR EXPECTED SUPPLY

Historical Record: This Program is one of many identified in California's Colorado River Water Use Plan. As of December 2002, Metropolitan has a storage account balance of 89,000 acre-feet under the demonstration program of which about 81,000 acre-feet is available for return to Metropolitan (after losses). While water has been stored, it has not been necessary to have it withdrawn to date and remains available for use in the future.

Written Contracts or Other Proof:

- 1992 Central Arizona Water Conservation District-Metropolitan Agreement. This Agreement was executed in 1992 by the Central Arizona Water Conservation District and Metropolitan to store unused Colorado River water in the groundwater basins underlying central Arizona through 2000.

- 1999 Department of the Interior final rule. This final rule established a framework for the Secretary to follow in considering, participating in, and administrating new storage and interstate release agreements among entities in Arizona, California and Nevada.

Financing: The total estimated cost of this program is approximately $270 million. The remaining estimated program cost is $262 million that would be paid from Metropolitan's Water Transfer Fund.

Federal, State, and Local Permits for Construction: The project which is the subject of the 1992 agreement was exempt from the provisions of CEQA as it consisted of a minor alteration of the operation of existing facilities. The Bureau of Reclamation issued a Final

Programmatic Environmental Assessment for the 1999 final rule. A Finding of No Significant Impact was prepared as part of completion of the NEPA process for the final rule.

COLORADO RIVER DELIVERIES
ALL AMERICAN CANAL AND COACHELLA CANAL LINING PROJECTS

SOURCE OF SUPPLY

The All American Canal and Coachella Canal Lining Projects can provide an annual supply that is delivered to Metropolitan's service area via the Colorado River Aqueduct. In 1988, Public Law 100-675 authorized the Secretary of the Interior to reduce seepage from portions of the existing earthen All American Canal and to concrete line the Coachella Canal. The All American Canal Lining Project consists of constructing a concrete-lined canal parallel to 23 miles of the existing All American Canal from Pilot Knob to Drop 3. The Coachella Canal Lining Project consists of lining 33 miles of the Coachella Canal from Siphon 7 to 14 and from Siphon 15 to 32. The law also authorized the Secretary to enter into a construction or funding agreement with one or more of the California contractors holding a delivery contract for Colorado River water.

EXPECTED SUPPLY CAPABILITY

The All American Canal and Coachella Canal Lining Projects are expected to yield 77,700 acre-feet per year of supply to Metropolitan's service area via the Colorado River Aqueduct, other than when surplus Colorado River water is available for California's use when IID elects to use such water and such use does not adversely affect Metropolitan. Metropolitan would receive 56,200 acre-feet per year from the All American Canal Lining Project and 21,500 acre-feet per year from the Coachella Canal Lining Project for up to 75 years. The water supply that would be available to Metropolitan is presented below:

Estimated Water Supplies Available for Metropolitan's Use
Under the Coachella & All American Canal Lining Projects *
(acre-feet per year)

Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	21,200	21,200	21,200	21,200
2010	77,700	77,700	77,700	77,700
2015	77,700	77,700	77,700	77,700
2020	77,700	77,700	77,700	77,700
2025	77,700	77,700	77,700	77,700

* -- Represents expected supply capability for the resource program.

RATIONALE FOR EXPECTED SUPPLY

Implementation Status: Design of the Coachella Canal Lining Project was 90 percent completed as of January 2003. An Advance Funding Agreement to complete the Environmental Commitment Plan and a programmatic agreement with the State Historic Preservation Office for the Project, and initiate All American Canal Lining Project management was executed in December 2002 by the Bureau of Reclamation, IID and Metropolitan.

Written Contracts: The following actions have been taken to proceed towards project implementation.

- 1988, Public Law 100-675. Authorized the Department of the Interior to reduce seepage from the existing earthen All American and Coachella Canals. This law calls for the conservation of water from lining the canals and the delivery of this conserved water to the party who pays for the linings.
- 2001, California Department of Water Resources-Metropolitan Funding Agreement. Reimburse Metropolitan for project work necessary to construct the lining of the Coachella Canal in an amount not to exceed $74 million.
- 2001, California Department of Water Resources-IID Funding Agreement. Reimburse Imperial Irrigation District for project work necessary to construct a lined All American Canal in an amount not exceed $126 million.
- 2002, Metropolitan-CVWD Assignment and Delegation of Design Obligations Agreement. Assigns design of the Coachella Canal Lining Project to CVWD.
- 2002, Metropolitan-CVWD Financial Arrangements Agreement for Design Obligations. Obligates Metropolitan to advance funds to CVWD to cover costs for Coachella Canal Lining Project design and CVWD to invoice Metropolitan to permit the Department of Water Resources to be billed for work completed.

Financing: The advancing of funds for the Coachella Canal Lining Project is included in Metropolitan's long-range financial plan and capital investment plan. Metropolitan would initially fund this project. Up to $200 million of the costs of constructing the projects would be reimbursed by the State of California in accordance with the executed funding agreements.

Federal, State and Local Permits for Construction

- March 1994. The Bureau of Reclamation released the Final EIS/EIR for the All American Canal Lining Project.
- April 2001. The Bureau of Reclamation released the Final EIS/EIR for the Coachella Canal Lining Project.

COLORADO RIVER DELIVERIES
SAN DIEGO WATER TRANSFER

SOURCE OF SUPPLY

On April 29, 1998, the Imperial Irrigation District (IID) and the San Diego County Water Authority (Authority) executed the Agreement for Transfer of Conserved Water (Transfer Agreement). Under this market-based transaction, the Authority would pay IID a unit price to arrange for water to be conserved within its service area and transfer the conserved water to the Authority. To conserve water IID would (i) contract with landowners in its service area to undertake water conservation efforts and reduce its use of Colorado River water, and/or (ii) make improvements to its distribution system in order to reduce system losses. To facilitate the Authority's receipt of water from IID, in November 1998 Metropolitan and the Authority entered into an Exchange Agreement under which the Authority would transfer the water received from IID to Metropolitan for diversion into the Colorado River Aqueduct. In exchange, Metropolitan would deliver to the Authority a like amount and quality of water from whatever sources and using such facilities as Metropolitan determines.

EXPECTED SUPPLY CAPABILITY

Under the Exchange Agreement Metropolitan would annually receive 200,000 acre-feet of Colorado River water for diversion into the Colorado River Aqueduct of water IID conserves and transfers to the Authority under the Transfer Agreement. Under the ramp-up schedule, 200,000 acre-feet of water would be available annually by the year 2021. The Transfer Agreement between the Authority and IID has an initial term of 45 years and may be extended to a total of 75 years. The Exchange Agreement between Metropolitan and the Authority has a term of 30 years. The first increment of 10,000 acre-feet may be available as soon as 2003. The maximum water supply that would be available to Metropolitan is presented below:

Estimated Water Supplies Available for Metropolitan's Use
Under the San Diego Water Transfer Program *
(acre-feet per year)

Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	30,000	30,000	30,000	30,000
2010	70,000	70,000	70,000	70,000
2015	100,000	100,000	100,000	100,000
2020	192,500	192,500	192,500	192,500
2025	200,000	200,000	200,000	200,000

* -- Represents expected supply capability for the resource program.

RATIONALE FOR EXPECTED SUPPLY

Historical Record: Under the 1988 IID-Metropolitan Conservation and Use of Conserved Water Agreement, IID has been conserving water within its service area at Metropolitan's cost and making the conserved water available for diversion by Metropolitan. With operations beginning in 1990, the program has conserved up to 106,880 acre-feet per year to date.

Written Contracts or Other Proof: Metropolitan's annual supply from the proposed IID/Authority transfer is based primarily on two agreements.

- 1998 Agreement for Transfer of Conserved Water by and between IID and the Authority, 2000 Amendment no. 1 and 2, 2001 Amendment No. 3, and 2003 Fourth Amendment. This Agreement provides for a market-based transaction in which the Authority would pay IID a unit price for water conserved by IID and transferred to the Authority.
- 1998 Authority/Metropolitan Exchange Agreement. This Agreement provides for the Authority to transfer the water received from IID to Metropolitan for diversion into the Colorado River Aqueduct. In exchange, Metropolitan would deliver to the Authority a like amount and quality of water from whatever sources and using such facilities as Metropolitan determines.

Financing: Under the first 20 years of the Exchange Agreement the Authority would pay to Metropolitan $90 (increasing by 1.55 percent for every year after 1998) for each acre-foot Metropolitan delivers to the Authority in exchange for receiving water conserved by IID. During the final 10 years of the Exchange Agreement the Authority would pay to Metropolitan $80 (increasing by 1.44 percent for every year after 1998) for each acre foot Metropolitan delivers to the Authority in exchange for receiving water conserved by IID. To offset the discount provided by Metropolitan to the Authority under the Exchange Agreement, the State Legislature enacted and the Governor approved SB 1765 in 1998, which appropriated $200 million from the State's General Fund for lining portions of the All-American and Coachella canals and appropriated $35 million to help fund groundwater storage projects along the Colorado River Aqueduct. Assuming Metropolitan receives the yield from these projects, the State appropriations would make Metropolitan financially whole with respect to the Exchange Agreement.

Federal, State and Local Permits/Approvals: Environmental review has been undertaken and permits are sought by IID before it would implement the transfer program.

- EIR/EIS for Program. IID certified its Final EIR/EIS for the IID Water Conservation and Transfer Project on June 28, 2002. The June 2002 Final EIR/EIS incorporated the Draft EIR/EIS, together with modifications and additions thereto set forth in an Errata, copies of all written and oral comments received on the Draft EIR/EIS, and responses to those comments. In order to comply with Council on Environmental Quality regulations implementing NEPA, related to the use of errata, Reclamation prepared a fully integrated, stand alone October 2002 Final EIR/EIS. IID published an Addendum to the Final EIR for the IID Water Conservation and Transfer Project and its Mitigation Monitoring and Reporting Program for the Project in December 2002. A Record of Decision must still be issued by the Bureau of Reclamation.

- ESA/CESA Permitting. The transfer could proceed with ESA/CESA permits from both the US Fish &Wildlife Service and the California Department of Fish & Game as soon as the program was implemented. IID would then seek an HCP from the US Fish &Wildlife Service and an NCCP from the California Department of Fish & Game to be developed while the transfer was underway. IID would receive the assistance from San Diego County Water Authority and Metropolitan and Coachella Valley Water District in seeking this broader ESA/CESA coverage. IID has developed a Habitat Conservation Plan (HCP) in consultation with the US Fish &Wildlife Service, a draft of which is appended to the June 2002 and October 2002 Final EIR/EIS.
- State Water Resources Control Board (SWRCB) Petition. IID requested the SWRCB to make certain findings before it would implement the IID/Authority Water Transfer Agreement. The hearing process resulted in SWRCB Order WRO 2002 – 0013 in October 2002 and SWRCB Order WRO 2002 – 16 in December 2002. The SWRCB conditionally approved the joint petition filed by IID and the Authority for approval of a long-term transfer of conserved water from IID to SDCWA pursuant to an agreement between IID and SDCWA, and conditionally approved a petition filed by IID to change the point of diversion, place of use, and purpose of use under Permit No. 7643. This Order was conditional upon execution of the QSA by December 31 2002 and thus is not effective at the time. For the transfer to proceed, the SWRCB order would need to be reinstated.

COLORADO RIVER DELIVERIES
PALO VERDE IRRIGATION DISTRICT LAND MANAGEMENT, CROP ROTATION AND WATER SUPPLY PROGRAM

SOURCE OF SUPPLY

The Palo Verde Irrigation District (PVID) and Metropolitan have entered into Principles of Agreement for a Land Management, Crop Rotation and Water Supply Program. Metropolitan would develop a flexible water supply for 35 years and assist in stabilizing the local farm economy in the Palo Verde Valley. PVID has the first priority for Colorado River use under the U.S. water delivery contracts.

EXPECTED SUPPLY CAPABILITY

It is estimated that the PVID/Metropolitan Program would provide up to 111,000 acre-feet per year of additional Colorado River water. This water would be available in any year as needed and in accordance with the provisions described in the Principles of Agreement. The water supply available to Metropolitan is presented below:

Estimated Water Supplies Available for Metropolitan's Use Under the Palo Verde Irrigation District Land Management, Crop Rotation and Water Supply Program *
(acre-feet per year)

Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	111,000	111,000	111,000	111,000
2010	111,000	111,000	111,000	111,000
2015	111,000	111,000	111,000	111,000
2020	111,000	111,000	111,000	111,000
2025	111,000	111,000	111,000	111,000

* -- Represents expected supply capability for the resource program.

RATIONALE FOR EXPECTED SUPPLY

Historical Record: Metropolitan and PVID have tested the concept of developing a water supply for Metropolitan by entering into an agreement in 1992. Agreements were signed with landowners and lessees in the Palo Verde Valley to forego irrigation for a two-year period from August 1992 to July 1994. Water unused by PVID, in the amount of 186,000 acre-feet was stored in Lake Mead for Metropolitan. Both PVID and Metropolitan signed approved Principles of Agreement in 2001. The Final Environmental Impact Report for the Proposed Palo Verde Irrigation District Land management, Crop Rotation and Water Supply Program was issued by PVID in September 2002. The next step for the program is to enter into agreements through which the farmers would manage lands and rotate crops making a water supply available to Metropolitan.

Written Contracts or Other Proof:

- 2001 Principles of Agreement. Metropolitan's Board of Directors approved Principles of Agreement in 2001.

Financing: The cost of the PVID/Metropolitan Program is included in Metropolitan's O&M budget and would be funded from the Water Transfer Fund.

Federal, State and Local Permits: A Notice of Preparation for the PVID/Metropolitan Program was published on October 29, 2001. The CEQA documentation was completed in September 2002.

COLORADO RIVER DELIVERIES
LOWER COACHELLA VALLEY GROUNDWATER STORAGE PROGRAM

SOURCE OF SUPPLY

Metropolitan has identified the feasibility of developing a conjunctive use storage program in the Lower Coachella groundwater basin. The basin is currently in an over-drafted condition. The Lower Coachella groundwater basin underlies the service area of the Coachella Valley Water District (CVWD). The CVWD transports its Colorado River entitlement by way of the All American and Coachella Canal systems. The projected growth for the CVWD service area is expected to gradually increase to a build out to 2015. Wet year hydrology on the Colorado River could provide surplus supplies even without the Interim Surplus Guidelines in place. This program provides Metropolitan with the flexibility of being able to store water while continuing to convey a full CRA.

EXPECTED SUPPLY CAPABILITY

The Program has potential to provide up to 500,000 acre-feet of storage capacity. The Program is expected to produce 100,000 to 175,000 acre-feet per year of dry year supplies with a scheduled on-line date by 2015, the water supply that could be available to Metropolitan is presented below:

Estimated Water Supplies Available for Metropolitan's Use Under the Lower Coachella Groundwater Storage Program *
(acre-feet per year)

Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	-	-	-	-
2010	-	-	-	-
2015	150,000	150,000	-	-
2020	150,000	150,000	-	-
2025	150,000	150,000	-	-

* -- Represents expected supply capability for the resource program.

RATIONALE FOR EXPECTED SUPPLY

This Program is one of many identified in California's Colorado River Water Use Plan. If implemented, it would assist in positioning California to reduce its use of Colorado River water.

The storage and dry-year program capacity does not influence the ability to maintain a full Colorado River Aqueduct in the future. However, the use of Colorado River water to put

water into the Lower Coachella Valley Storage Program may be influenced by other Colorado River related storage/transfer programs. Program storage and extraction capacities as well as up-front payments and capital outlays for construction may impact Metropolitan's budget.

Written Contracts or Other Proof: The terms of the proposed program agreement must be negotiated with CVWD.

Financing: This program would be funded through the Water Transfer Fund

Environmental Review: The implementation of a groundwater storage project in Coachella Valley could result in the availability of additional Colorado River water to allow for the reduction in groundwater use so that current rates of groundwater overdraft would be reduced. The feasibility report identified the environmental checklist in accordance to CEQA guidelines.

COLORADO RIVER DELIVERIES
CHUCKWALLA GROUNDWATER STORAGE PROGRAM

SOURCE OF SUPPLY

The Chuckwalla Groundwater Basin Feasibility Study (Chuckwalla Study) was identified in Phase I investigations as a groundwater basin along the Colorado River Aqueduct having the potential to store available supplies of CRA water. Up to 150,000 acre-feet per year would be returned to the CRA in dry years or non-surplus Colorado River conditions. Metropolitan has initiated the Chuckwalla Study, which will investigate the potential for such a program. This feasibility study is in progress with emphasis on ambient groundwater quality conditions. During wet and surplus years, Metropolitan would replenish the Upper Chuckwalla Basin with available deliveries from the CRA. The Upper Chuckwalla Valley is located near Metropolitan's Eagle Mountain Pumping Plant.

EXPECTED SUPPLY CAPABILITY:

It is estimated that the Upper Chuckwalla groundwater basin could hold up to 500,000 acre-feet of CRA water. This water would be extracted during dry year conditions at a rate of up to 150,000 acre-feet per year. This supply would be available to Metropolitan in any year, but delivery is constrained by the existing capacity of the CRA, the water supply that would be available to Metropolitan under this program is presented below:

Estimated Water Supplies Available for Metropolitan's Use
Under the Chuckwalla Groundwater Storage Program *
(acre-feet per year)

Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	-	-	-	-
2010	-	-	-	-
2015	150,000	150,000	-	-
2020	150,000	150,000	-	-
2025	150,000	150,000	-	-

* -- Represents expected supply capability for the resource program.

RATIONALE FOR EXPECTED SUPPLY:

As an integral part of the Colorado River resource strategy for storage programs, deliveries of water previously stored under the Chuckwalla Project could be used to assist in keeping the CRA full in 2015 and the following years during dry years.

Program Facilities: The Chuckwalla Project would consist of facilities in three general areas, as follows:

- 400 acres of spreading basins;

- Water conveyance facilities, including approximately 10 miles of pipeline and a pumping station, to pump water from the extraction wells to the Colorado River Aqueduct; and
- A well field, consisting of 40 new wells to extract water from the aquifer and pump it back to the Colorado River Aqueduct.

Historical Record: Metropolitan's Board of Directors approved the Chuckwalla Study in June 2000. A consultant has been selected and has begun conducting this feasibility study. The Chuckwalla Study is scheduled to be completed in 2003

Written Contracts or Other Proof: The Chuckwalla Study has been initiated as a potential component of California's Colorado River Water Use Plan. The following actions have occurred:

- 1998 Phase I Feasibility Report for Off stream Storage on the Colorado River Aqueduct. This Report identified the Upper Chuckwalla Basin as having the potential for off stream storage of CRA water.
- June 2000 Board of Directors Approved the Upper Chuckwalla Feasibility Study. Metropolitan's Board of Directors approved the Upper Chuckwalla Feasibility Study, made a CEQA determination and appropriated $2 million to complete geophysical, hydrogeological, infiltration, water quality and risk assessment investigations for the study.
- June 2001 Department of Water Resources awarded Metropolitan an AB 303 Study Grant of $250,000 to complete the Upper Chuckwalla Feasibility Investigations. In accordance with AB 303, a planning grant of $250,000 was awarded to Metropolitan for the Upper Chuckwalla Feasibility Study. Metropolitan is currently executing the contract for this grant.
- March 2001 Consultant Contract Awarded. Metropolitan's Board of Directors approved a contract to conduct feasibility investigations. An agreement was executed in May 2001 and the feasibility study is in progress.

Financing: The cost of the Upper Chuckwalla Feasibility Study is estimated to be approximately $2 million. This amount is included in Metropolitan's 10 year capital and O&M budget. In addition, an AB 303 planning grant of $250,000 will be reimbursed to Metropolitan by contract with the DWR.

Federal, State and Local Permits for Construction: Metropolitan would acquire all appropriate Federal, State and Local permits for construction. For example, Metropolitan is currently conducting long term water quality baseline monitoring in support of a possible Source Water Permit application from the Department of Health Services. Monitoring wells and production wells would be completed in accordance with Riverside County permitting procedures. Additional necessary environmental permits would be acquired as needed.

California Aqueduct Deliveries

California Aqueduct Deliveries
Program Capabilities*
Year 2005
(acre-feet per year)

	Event Occurring in 2005			
	Multiple Dry Years (1990-92)	**Single Dry Year (1977 Hydrology)**	**Average Year**	**Wet Year (1985 Hydrology)**
Current Programs				
SWP Deliveries	794,700	418,000	1,549,100	1,741,000
San Luis Reservoir Carryover	-	50,000	128,600	-
Advance Delivery with Coachella Valley WD and Desert WA	24,600	12,300	46,100	61,200
Semitropic Program	107,000	107,000	-	-
Arvin Edison Program	90,000	90,000	-	-
San Bernardino Valley MWD Program	54,000	70,000	57,000	80,000
Kern Delta WD Program	20,000	50,000	-	-
Market Transfer Options	200,000	200,000	-	-
Subtotal of Current Programs	**1,290,300**	**997,300**	**1,780,800**	**1,882,200**
Programs Under Development				
Delta Improvements	-	-	-	-
Additional Transfers/Storage • San Bernardino Valley MWD Conjunctive-use Program • Westside Valley Transfers • Eastside Valley Transfers	20,000	20,000	20,000	20,000
Subtotal of Proposed Programs	**20,000**	**20,000**	**20,000**	**20,000**
Maximum Supply Capability	**1,310,300**	**1,017,300**	**1,800,800**	**1,902,200**

* -- Represents expected supply capability for resource programs.

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

	Event Occurring in 2010			
	Multiple Dry Years (1990-92)	**Single Dry Year (1977 Hydrology)**	**Average Year**	**Wet Year (1985 Hydrology)**
Current Programs				
SWP Deliveries	794,700	418,000	1,549,100	1,741,000
San Luis Reservoir Carryover	55,800	50,000	131,000	-
Advance Delivery with Coachella Valley WD and Desert WA	24,600	12,300	46,100	61,200
Semitropic Program	107,000	107,000	-	-
Arvin Edison Program	90,000	90,000	-	-
San Bernardino Valley MWD Program	54,000	70,000	57,000	80,000
Kern Delta WD Program	50,000	50,000	-	-
Market Transfer Options	200,000	200,000	-	-
Subtotal of Current Programs	**1,376,100**	**997,300**	**1,783,200**	**1,882,200**
Programs Under Development				
Delta Improvements	45,000	45,000	45,000	45,000
Additional Transfers/Storage	150,000	150,000	20,000	20,000
• San Bernardino Valley MWD Conjunctive-use Program				
• Westside Valley Transfers				
• Eastside Valley Transfers				
Subtotal of Proposed Programs	**195,000**	**195,000**	**65,000**	**65,000**
Maximum Supply Capability	**1,571,100**	**1,192,300**	**1,848,200**	**1,947,200**

* -- Represents expected supply capability for resource programs.

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

	Event Occurring in 2015			
	Multiple Dry Years (1990-92)	**Single Dry Year (1977 Hydrology)**	**Average Year**	**Wet Year (1985 Hydrology)**
Current Programs				
SWP Deliveries	794,700	418,000	1,538,100	1,741,000
San Luis Reservoir Carryover	25,800	75,000	82,700	-
Advance Delivery with Coachella Valley WD and Desert WA	24,600	12,300	46,100	61,200
Semitropic Program	107,000	107,000	-	-
Arvin Edison Program	90,000	90,000	-	-
San Bernardino Valley MWD Program	54,000	70,000	57,000	80,000
Kern Delta WD Program	50,000	50,000	-	-
Market Transfer Options	-	-	-	-
Subtotal of Current Programs	**1,146,100**	**822,300**	**1,723,900**	**1,882,200**
Programs Under Development				
Delta Improvements	200,000	200,000	200,000	200,000
Additional Transfers/Storage	190,000	190,000	20,000	20,000
• San Bernardino Valley MWD Conjunctive-use Program				
• Westside Valley Transfers				
• Eastside Valley Transfers				
Subtotal of Proposed Programs	**390,000**	**390,000**	**220,000**	**220,000**
Maximum Supply Capability	**1,536,100**	**1,212,300**	**1,943,900**	**2,102,200**

* -- Represents expected supply capability for resource programs.

California Aqueduct Deliveries
Program Capabilities*
Year 2020

(acre-feet per year)

	Event Occurring in 2020			
	Multiple Dry Years (1990-92)	**Single Dry Year (1977 Hydrology)**	**Average Year**	**Wet Year (1985 Hydrology)**
Current Programs				
SWP Deliveries	794,700	418,000	1,530,700	1,741,000
San Luis Reservoir Carryover	-	75,000	81,100	-
Advance Delivery with Coachella Valley WD and Desert WA	24,600	12,300	46,100	61,200
Semitropic Program	107,000	107,000	-	-
Arvin Edison Program	90,000	90,000	-	-
San Bernardino Valley MWD Program	54,000	70,000	57,000	80,000
Kern Delta WD Program	50,000	50,000	-	-
Market Transfer Options	-	-	-	-
Subtotal of Current Programs	**1,120,300**	**822,300**	**1,714,900**	**1,882,200**
Programs Under Development				
Delta Improvements	200,000	200,000	200,000	200,000
Additional Transfers/Storage	190,000	190,000	20,000	20,000
• San Bernardino Valley MWD Conjunctive-use Program				
• Westside Valley Transfers				
• Eastside Valley Transfers				
Subtotal of Proposed Programs	**390,000**	**390,000**	**220,000**	**220,000**
Maximum Supply Capability	**1,510,300**	**1,212,300**	**1,934,900**	**2,102,200**

* -- Represents expected supply capability for resource programs.

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

	Event Occurring in 2025			
	Multiple Dry Years (1990-92)	**Single Dry Year (1977 Hydrology)**	**Average Year**	**Wet Year (1985 Hydrology)**
Current Programs				
SWP Deliveries	794,700	418,000	1,523,300	1,741,000
San Luis Reservoir Carryover	-	75,000	79,500	-
Advance Delivery with Coachella Valley WD and Desert WA	24,600	12,300	46,100	61,200
Semitropic Program	107,000	107,000	-	-
Arvin Edison Program	90,000	90,000	-	-
San Bernardino Valley MWD Program	54,000	70,000	57,000	80,000
Kern Delta WD Program	50,000	50,000	-	-
Market Transfer Options	-	-	-	-
Subtotal of Current Programs	**1,120,300**	**822,300**	**1,705,900**	**1,882,200**
Programs Under Development				
Delta Improvements	200,000	200,000	200,000	200,000
Additional Transfers/Storage	190,000	190,000	20,000	20,000
• San Bernardino Valley MWD Conjunctive-use Program				
• Westside Valley Transfers				
• Eastside Valley Transfers				
Subtotal of Proposed Programs	**390,000**	**390,000**	**220,000**	**220,000**
Maximum Supply Capability	**1,510,300**	**1,212,300**	**1,925,900**	**2,102,200**

* -- Represents expected supply capability for resource programs.

CALIFORNIA AQUEDUCT DELIVERIES
STATE WATER PROJECT DELIVERIES

SOURCE OF SUPPLY

The State Water Project provides imported water to the Metropolitan service area and has historically provided from 25 to 50 percent of Metropolitan's supplies. In accordance with its contract with the Department of Water Resources (DWR), Metropolitan has under contract a Table A allocation of 2,011,500 acre-feet per year from the State Water Project. Actual deliveries have never reached this amount and depend on availability of supplies as determined by DWR. The availability of SWP supplies for delivery through the California Aqueduct over the next 23 years is estimated according to the historical record of hydrologic conditions, existing system capabilities, requests of the state water contractors and SWP contract provisions for allocating Table A, Article 21 and other SWP deliveries to each contractor. As a result, the estimates of SWP deliveries to Metropolitan as shown in this report are more conservative than the estimates provided in the "The State Water Project Delivery Reliability Report, Draft" prepared by the California Department of Water Resources in August 2002.

As part of its contract with DWR, Metropolitan pays both fixed costs of financing SWP facilities construction and variable costs of operations, maintenance, power and replacement costs for water delivered each year. SWP water is delivered to Metropolitan through the East Branch at Devils Canyon Power Plant afterbay, along the Santa Ana Valley Pipeline and at Lake Perris. Metropolitan takes delivery from the West Branch at Castaic Lake.

EXPECTED SUPPLY CAPABILITY

The Edmund G. Brown California Aqueduct is capable of transporting Metropolitan's full contract amount of 2,011,500 acre-feet per year. The quantity of water available for export through the California Aqueduct, however, can vary significantly year to year. The amount of precipitation and runoff in the Sacramento and San Joaquin watersheds, system reservoir storage, regulatory requirements and contractor demands for SWP supplies impact the quantity of water available to Metropolitan.

Prior to the execution of the Bay-Delta Accord in December 1994, significant uncertainties existed regarding how much of the water in the Sacramento San Joaquin Bay-Delta would be available for export and how much would be required to meet regulatory requirements for meeting water quality standards and sustaining endangered spices. The Bay-Delta Accord and the subsequent CALFED process removed significant uncertainties associated with regulatory requirement thus providing a base for the DWR and the SWP contractors to estimate available water supplies. As discussed in a subsequent section, actions being undertaken by the CALFED process and the Phase 8 water rights process should enhance the reliability of supplies in the future.

Utilizing the regulatory standards in the Bay-Delta Accord, and historic precipitation and runoff data and reservoir levels, DWR estimates the water supply available for export to

Metropolitan and the SWP contractors. These estimated base supplies are shown on the table below.

RATIONALE FOR EXPECTED SUPPLY

Metropolitan and 28 other public entities have contracts with the State of California, for a State Water Project water supply. These contracts require the state through its DWR, utilize reasonable efforts to develop and maintain the SWP water supply. The state has made significant investment in infrastructure. It has constructed 28 dams and reservoirs,

Estimated Water Supplies Available for Metropolitan's Use Under the State Water Project Deliveries *
(acre-feet per year)

Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	794,700	418,000	1,549,100	1,741,000
2010	794,700	418,000	1,549,100	1,741,000
2015	794,700	418,000	1,538,100	1,741,000
2020	794,700	418,000	1,530,700	1,741,000
2025	794,700	418,000	1,523,300	1,741,000

* --Represents expected supply capability for the resource program.

26 pumping and generation plants and about 660 miles of aqueducts. Over 19 million of residents benefit from water from the SWP. To date the project has delivered in excess of 56 million acre-feet with the single year deliveries exceeding 3.5 million acre-feet in 2000. DWR estimates that with current facilities and regulatory environment the project will on average deliver 3 million acre-feet per year. Under its contract Metropolitan may utilize 48% of this quantity.

Further, under the water supply contract DWR is required to utilize reasonable efforts to maintain and increase the reliability of service to Metropolitan. As discussed in a subsequent section DWR is participating in the CALFED process to achieve these requirements.

Historical Record: The historic record shows significant accomplishments by DWR in providing its contractors with SWP water supplies. To date the project has delivered in excess of 56 million acre-feet. Deliveries exceeded 3.5 million acre-feet in 2000. DWR has continued to invest in SWP facilities to deliver water to its contractors. Some of the significant projects are listed below:

Written Contracts or Other Proof:

- 1960 Contract between the State of California and the Metropolitan Water District of Southern California for a Water Supply. This Contract, initially executed in 1960 and amended numerous times since, is the basis for SWP deliveries to Metropolitan. It

requires the DWR to make reasonable efforts to secure water supplies for Metropolitan and its other contractors. The contract expires in 2035, however, Metropolitan has the option to renew the contract under the same basic conditions.

Financing: Metropolitan's payments for its State Water contract obligation are approved each year by Metropolitan's Board of Directors and currently constitute approximately 35% of Metropolitan's annual budget.

Federal, State and Local Permits: The DWR is responsible for acquiring, maintaining and complying with numerous Federal and State permits for operation of the SWP. In 2000, the DWR has taken a leading role in acquiring and delivering power in California. Metropolitan has be active in monitoring the issues affecting its contract with DWR.

- Environmental Impact Report for the Eastbranch Enlargement. In April 1984 DWR prepared and finalized an Environmental Impact Report for the Enlargement of the East Branch of the Governor Edmund G. Brown California Aqueduct.
- Environmental Impact Report for the Harvey O. Banks Pumping Plant. In January 1986 DWR prepared and finalized an Environmental Impact Report for the Additional Pumping Units at Harvey O. Banks Delta Pumping Plant.
- Environmental Impact Report for the Mission Hills Extension. In 1990 DWR prepared and finalized an Environmental Impact Report for the State Water Project Coastal Branch, Phase II and Mission Hills Extension.
- East Branch Extension Project Phase 1. In 1998 DWR completed an EIR to extend the East Branch of the California Aqueduct to provide service to San Gorgonio Pass Water Agency. Construction of phase 1 will be completed in 2002.

CALIFORNIA AQUEDUCT DELIVERIES DESERT WATER AGENCY/COACHELLA VALLEY WATER DISTRICT/METROPOLITAN WATER EXCHANGE PROGRAM

SOURCE OF SUPPLY

The Desert Water Agency (DWA) and Coachella Valley Water District (CVWD), both in Riverside County, have rights to State Water Project (SWP) deliveries, but do not have any physical connections to the SWP facilities. Both Agencies are adjacent to the Colorado River Aqueduct. In order for DWA and CVWD to obtain water equal to their SWP allocations, Metropolitan has agreed to exchange an equal quantity of its Colorado River water for DWA and CVWD's SWP water. DWA has a SWP Table A contract right of 38,100 acre-feet per year and CVWD has a SWP Table A contract right of 23,100 acre-feet per year, for a total of 61,200 acre-feet per year.

EXPECTED SUPPLY CAPABILITY

Under the existing agreements, Metropolitan provides water from its Colorado River Aqueduct to DWA and CVWD in exchange for SWP deliveries. Metropolitan can deliver additional water to its DWA/CVWD service connections permitting these agencies to store water. When supplies are needed, Metropolitan can then receive its full Colorado River supply as well as the State Water Project allocation from the two agencies, while the two agencies can rely on the stored water for meeting their water supply needs. As of the end of September 2001, there was 238,795 acre-feet in the Advance Delivery account. The combined SWP Table A contract right of DWA and CVWD is 61,200 acre-feet. The water supply available to Metropolitan is presented below:

Estimated Water Supplies Available for Metropolitan's Use Under the Desert Water Agency & Coachella Valley Water District Water Exchange Program *
(acre-feet per year)

Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	24,600	12,300	46,100	61,200
2010	24,600	12,300	46,100	61,200
2015	24,600	12,300	46,100	61,200
2020	24,600	12,300	46,100	61,200
2025	24,600	12,300	46,100	61,200

* --Represents expected supply capability for the resource program.

RATIONALE FOR EXPECTED SUPPLY

The DWR estimates the amount of supplies that are available each year. Metropolitan uses a forecasting method for SWP deliveries based on historical patterns of precipitation, runoff and actual deliveries of water.

Historical Record: The DWA and CVWD Exchange Program is currently in operation. The Advance Delivery Agreement has been in place since 1967 and modified in 1984.

Written Contracts or Other Proof:

- 1967 and 1983 Water Exchange Contract and Agreements. The DWA and CVWD Program is currently in operation. The DWA and CVWD water exchange contracts have been in place since 1967, amended in 1972 and were modified with execution of additional agreements in 1983.
- 1984 Advance Delivery Agreement. DWA, CVWD and Metropolitan executed an Advance Delivery Agreement. This Advance Delivery Agreement allows Metropolitan to supply DWA and CVWD with Colorado River water in advance of the time these agencies are entitled to receive water under the Exchange Agreement. In future years, Metropolitan can recover this water by reducing its deliveries under the exchange agreement.

Financing: The funds for deliveries under this Program are included in Metropolitan's O&M budget and Long-range Financial Plan.

Federal, State, and Local Permits for Construction: The DWR is responsible for acquiring, maintaining and complying with numerous Federal and State permits for operation of the SWP.

- July 26, 1983 CVWD Negative Declaration, Whitewater River Spreading Area expansion Phase 1.

- February 1983, DWA Final EIR for the proposed extension of time for utilizing Colorado River water to recharge the upper Coachella Valley groundwater basins to the year 2035, Volume I and II, April 1983 Volume III

CALIFORNIA AQUEDUCT DELIVERIES
SEMITROPIC WATER BANKING AND EXCHANGE PROGRAM

SOURCE OF SUPPLY

The agreement between Semitropic Water Storage District (Semitropic) and Metropolitan was implemented in February 1994. Semitropic obtains water from the SWP through its contracts with the Kern County Water Agency. SWP supplies irrigate an area of 161,200 acres within Semitropic's service area. When this surface water is not available, these growers withdraw water from the underlying aquifer. The agreement between Semitropic and Metropolitan to allow Metropolitan to make use of 35% of the additional storage in Semitropic's groundwater basin. In years of plentiful supply, Metropolitan could deliver available SWP supplies to Semitropic through the California Aqueduct. During dry years, Metropolitan could withdraw this stored water. Four other banking partners participate in this Program and utilize the remaining 65% of the additional storage in Semitropic's groundwater basin.

EXPECTED SUPPLY CAPABILITY

The Semitropic-Metropolitan Program provides Metropolitan with the capacity to store up to 350,000 acre-feet of water under the current agreement. During dry years, Metropolitan can recover its stored water through a combination of direct pumping of the groundwater and the release of Semitropic's SWP Table A contract right. Based on the terms and conditions of the program agreements, the return of water to Metropolitan ranges from a minimum of 31,000 acre-feet per year (peak 4-month summer period) up to 170,000 acre-feet (over a 12-month period).

Estimated Water Supplies Available for Metropolitan's Use
Under the Semitropic Water Banking and Exchange Program *
(acre-feet per year)

Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	107,000	107,000	-	-
2010	107,000	107,000	-	-
2015	107,000	107,000	-	-
2020	107,000	107,000	-	-
2025	107,000	107,000	-	-

* --Represents expected supply capability for the resource program based on 10-month operation.

RATIONALE FOR EXPECTED SUPPLY

Implementation Status: The Semitropic-Metropolitan Water Banking & Exchange Program has been operational since 1994 and with existing agreements will continue to operate over the term of 41 years (1994-2035). Metropolitan has 360,000 acre-feet in its storage account and withdrew 40,000 acre-feet in 2001.

Written Contracts or Other Proof:

- 1992 Turn-in/out Construction, Operation and Maintenance Agreement. This Agreement was executed in 1992 by the Department of Water Resources and Semitropic to allow construction, operation and maintenance of the Semitropic California Aqueduct Turn in/out.
- 1993 Temporary Semitropic-Metropolitan Water Banking Agreement. This Agreement was executed in February 1993 by Semitropic and Metropolitan to allow the storage of available Metropolitan Supplies in advance of execution of the long-term agreement.
- 1994 Semitropic/Metropolitan Water Banking and Exchange Agreement. This Agreement was executed in December 1994 by Semitropic and Metropolitan to implement the program for a 41 year term (1994-2035).
- 1995 Point of Delivery Agreement. This agreement, with The Department of Water Resources, Kern County Water Agency and Metropolitan, allows Metropolitan to divert water from the California Aqueduct into Semitropic's service area.
- 1995 Introduction of Local water into the California Aqueduct. This agreement, with The Department of Water Resources, Kern County Water Agency and Semitropic, allows Metropolitan to receive water from the program into the California Aqueduct.

Financing: Metropolitan's payments for the Semitropic Program are included in the O&M budget and paid out of the Water Transfer Fund.

Federal, State and Local Permits for Construction:

- Final EIR. Semitropic acting as the Lead agency under CEQA and Metropolitan acting as a responsible agency jointly completed the Environmental Impact Report for the Program. The EIR was certified by Semitropic In July 1994 and adopted by Metropolitan in August 1994
- Regulatory Approvals. All regulatory approvals are in place and program is operational.

CALIFORNIA AQUEDUCT DELIVERIES
ARVIN-EDISON WATER MANAGEMENT PROGRAM

SOURCE OF SUPPLY

The Arvin-Edison Water Storage District (Arvin-Edison) manages the delivery of local groundwater and water imported into its service area from the Central Valley Project's (CVP) Millerton Reservoir via the Friant-Kern Canal. The surface water service area consists of 132,000 acres of predominantly agricultural land, and to a minor degree, municipal and industrial uses. It is situated in Kern County. Arvin-Edison operates its supplies conjunctively, storing water in the underlying aquifer when imported supplies are available and withdrawing that water when the availability of imported supplies are reduced. In 1997, Metropolitan entered into an agreement with the Arvin-Edison Water Storage District. The agreement allows Metropolitan to store available water in Arvin-Edison's groundwater basin, either through direct spreading operations, or through deliveries to growers in Arvin-Edison's service area. Similar to Arvin-Edison's own usage, this previously stored water could be withdrawn when the availability of imported supplies to Metropolitan is reduced.

EXPECTED SUPPLY CAPABILITY

The Arvin-Edison/Metropolitan Program provides Metropolitan with the capacity to store up to 250,000 acre-feet of water under the current agreement, and the option to increase the storage capacity to 350,000 acre-feet. During dry years, Metropolitan can recover its stored water either through direct pumping of the groundwater or through exchange. Based on the terms and conditions of the program agreement, the return of water to Metropolitan ranges from a minimum of 40,000 acre-feet per year (peak 4-month summer period) up to 110,000 acre-feet (over a 12-month period).

Estimated Water Supplies Available for Metropolitan's Use
Under the Arvin-Edison Water Banking Program *
(acre-feet per year)

Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	90,000	90,000	-	-
2010	90,000	90,000	-	-
2015	90,000	90,000	-	-
2020	90,000	90,000	-	-
2025	90,000	90,000	-	-

* --Represents expected supply capability for the resource program based on 10-month operation.

RATIONALE FOR EXPECTED SUPPLY

Implementation Status: The Arvin-Edison/Metropolitan Water Management Program has been operational since 1997 and by existing agreements will continue to operate over the term of 30 years (1997-2027) with a possible extension to 2035. Metropolitan has 230,000 acre-feet in its storage account and withdrew 20,000 acre-feet in 2001.

Written Contracts or Other Proof:

- 1997 Arvin-Edison/Metropolitan Water Management Agreement. This Agreement was executed in December 1997 by Arvin-Edison and Metropolitan to implement the program for a 30-year term (1997-2027).
- 1998 Turn-in/out Construction and Maintenance Agreement. This Agreement was executed in 1998 by the Department of Water Resources, Kern County Water Agency, Arvin-Edison and Metropolitan to allow construction, operation and maintenance of the Arvin-Edison California Aqueduct Turn in/out.
- 1998-2002 Water Delivery and Return Agreements. These agreements, with the Department of Water Resources, Kern County Water Agency, Arvin-Edison and Metropolitan, allow Metropolitan to divert water from, and introduce water to, the California Aqueduct.

Financing: Metropolitan's payments for the Arvin-Edison Program are included in the O&M budget and paid out of the Water Transfer Fund.

Federal, State and Local Permits for Construction:

- Regulatory Approvals. All regulatory approvals are in place
- Environmental Status. The Negative Declaration was completed in 1996.

CALIFORNIA AQUEDUCT DELIVERIES SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT PROGRAM

SOURCE OF SUPPLY

The San Bernardino Valley Municipal Water District Program allows Metropolitan to purchase a dependable annual supply, as well as, an additional supply for dry year needs. Under this program, Metropolitan purchases water provided to San Bernardino Valley Municipal Water District (Valley District) from its annual State Water Project (SWP) water allocation. Valley District delivers the purchased supplies to Metropolitan's service area through the coordinated use of facilities and interconnections within the water conveyance system of the two districts.

The purchased SWP supply is provided to Metropolitan as direct deliveries of annual SWP water through the California Aqueduct to Metropolitan's service area and as deliveries of recaptured SWP water previously stored in the San Bernardino groundwater basin to Metropolitan's service area. Under this Program, Metropolitan purchases a minimum of 20,000 acre-feet per year of SWP allocation every year. In addition, Metropolitan has the option to purchase Valley District's additional SWP allocation, if available, and the first-right-of-refusal to purchase additional SWP supplies available beyond the minimum and option amounts. In the event that Metropolitan's operational needs do not require all, or a portion of the minimum purchased water, that unused amount may be carried forward up to a total of 50,000 acre-feet for later delivery. Finally, the program establishes a critical dry year supply account for Metropolitan, which could provide additional amounts of dry year supplies. During any year designated by DWR as a critically dry year, Valley District could deliver from this account up to 50,000 acre-feet of recaptured SWP water previously stored in the San Bernardino groundwater basin.

In order to facilitate the transfer, the program also provides the coordinated use of existing facilities, including the Valley District's Foothill Pipeline and Inland Feeder, to improve the conveyance capabilities of the delivery of SWP water to the service areas of both districts. The intertie between the foothill Pipeline and existing segment of the Inland Feeder has been constructed and is operational as of December 2002. This intertie allows Metropolitan to move SWP water from the East Branch of the California Aqueduct through the Foothill Pipeline, Inland Feeder and into DVL and the Colorado River Aqueduct. As a result of this intertie, the conveyance capacity into Metropolitan's system has been increased by 260 cfs, thus increasing Metropolitan's capability to refill and maintain storage in DVL.

EXPECTED SUPPLY CAPABILITY

Based on contract provisions for the minimum, option, first-right-of-refusal, and critical dry year supply account purchases of available SWP water from Valley District, the water supply available to Metropolitan are as follows:

RATIONALE OF EXPECTED SUPPLY

Implementation Status: The San Bernardino Valley Municipal Water District Program began operations in 2001 and is expected to remain in effect on an evergreen term basis.

Historical Record: Metropolitan has purchased 20,000 acre-feet of water under this Program in July 2001 and is scheduled to purchase at least 20,000 acre-feet of water in 2002.

Estimated Water Supplies Available for Metropolitan's Use Under the San Bernardino Valley Municipal Water District Program *
(acre-feet per year)

Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	54,000	70,000	57,000	80,000
2010	54,000	70,000	57,000	80,000
2015	54,000	70,000	57,000	80,000
2020	54,000	70,000	57,000	80,000
2025	54,000	70,000	57,000	80,000

* --Represents expected supply capability for the resource program.

Written Contracts or Other Proof: Metropolitan's dependable annual and dry-year supplies from the San Bernardino Valley Municipal Water District Program are based on Metropolitan Board actions and agreements.

- 2000 Board Approval of Coordinated Operating Agreement. In June 2000, Metropolitan's Board authorized entering into a Coordinated Operating Agreement between Metropolitan and Valley District to develop projects that could provide benefits to both districts through the coordinated use of facilities and SWP supplies.
- 2000 Coordinated Operating Agreement. The Coordinate Operating Agreement between Metropolitan and Valley District was executed in July 2000.
- 2001 Board Approval of the Coordinated Use Agreement. In April 2001, Metropolitan's Board authorized entering into the Coordinated Use Agreement for Conveyance Facilities and SWP Water Supplies between Metropolitan and Valley District for the purchase of dependable annual and dry year supplies by Metropolitan.
- 2001 Coordinated Use Agreement. The Coordinated Use Agreement for Conveyance Facilities and SWP Water Supplies between Metropolitan and Valley District for the purchase of dependable annual and dry year supplies by Metropolitan was executed May 2001. The Agreement is effective as of July 1, 2001 for an "evergreen" term (10-year term with automatic annual extensions unless otherwise notified).

Financing: The funds to purchase Program water are included in Metropolitan's Water Transfer Fund and O&M budget.

Federal, State, and Local Permits/Approvals: The Program is effective as of July 1, 2001. An environmental review process and regulatory approval supported implementation.

- Final EIR. Final Regional Water Facilities Master Plan Environmental Impact Report dated February 1, 2001 was certified by Valley District, as lead agency, and by Metropolitan, as responsible agency. Notices of determinations were filed by Valley District and Metropolitan on May 29, 2001 and April 18, 2001, respectively.
- State Water Contractors' Review. In May 2001 the State Water Contractors reviewed and issued a letter supporting the program.
- DWR Review. The California Department of Water Resources agreed to the program in December 2001.

CALIFORNIA AQUEDUCT DELIVERIES
BAY-DELTA IMPROVEMENTS

SOURCE OF SUPPLY

Improving the water supply reliability of the State Water Project (SWP) is a primary focus of Metropolitan's long-term planning efforts. Metropolitan's strategy is to reduce its dependence on SWP supplies during dry years, when risks to the Bay-Delta ecosystem are greatest, and to maximize its deliveries of available SWP water during wetter years to store in surface reservoirs and groundwater basins for later use during droughts and emergencies. Restoring and stabilizing the environmental health and supply reliability of the Bay-Delta through the implementation of CALFED's Bay-Delta Program and the Sacramento Valley Water Management Agreement are important steps to accomplishing this objective. These improvements are necessary for Metropolitan to attain its goal of 650,000 acre-feet of supply yield from the Bay-Delta in dry years by 2020. This yield is 200,000 to 250,000 acre-feet over existing available dry-year supplies, as described in its July 1999 policy direction regarding the Bay-Delta and CALFED. This goal means that Metropolitan rely on only 32.5 percent of its total SWP contract amount of 2.0 million acre-feet per year in dry years. In addition, Metropolitan policy objectives for Bay-Delta improvements include an average of 1.5 million acre-feet of supply yield to Metropolitan over all year types.

The SWP conveys water from the western slope of the Sierra Nevada to water users both north and south of the Bay-Delta. Specifically, SWP is delivered to Metropolitan's service area through a system of reservoirs, the Bay-Delta, pumping plants and the California Aqueduct. Owned and operated by the California Department of Water Resources (DWR), the SWP provides municipal and agricultural water to 29 State Water Contractors. Annual deliveries for the SWP average about 2.5 million acre-feet. Municipal uses account for about 60 percent of annual deliveries, with the remaining 40 percent going to agriculture.

CALFED Bay-Delta Program: CALFED is a process involving numerous stakeholders (federal and state resource agency representatives, water users, environmental entities, and other interests) to develop solutions for Bay-Delta problems. On August 28, 2000, CALFED's Bay-Delta Program was approved and laid out final implementation plans for the first phase – the first seven years – of what is conceived to be up to 30 years of improvements in the Bay–Delta. This Program would be implemented through 11 major elements.

- Storage. By pursuing more water storage capacity in both surface reservoirs and underground aquifers, the Program could help to meet the needs of California's growing population, and provide much-needed flexibility to improve water quality and restore ecosystems. This Storage Element provides for the development of up to 950,000 acre-feet of new surface storage capacity and up to 1 million acre-feet of new groundwater storage capacity in Stage 1 of CALFED.

- Conveyance. Moving water through the Bay-Delta as efficiently as possible could increase the water system's flexibility and boost ecosystem health, water quality and levee stability. The Conveyance Element commits to through-delta conveyance

improvements, such as channel enlargements, the possibility of a screened Sacramento River water diversion to the Central Delta, and South of Delta programs.

- Water Use Efficiency. The Program proposes significant investments in water-use efficiency to generate real water supply benefits in the short-term. The Water Use Efficiency Element establishes the following annual targets: urban conservation savings of 520,000 to 680,000 acre-feet; agricultural savings of 260,000 to 350,000 acre-feet; and savings from water recycling of 225,000 to 310,000 acre-feet.
- Water Transfers. Through development of an effective water transfer market, CALFED aims to stretch existing water supplies by promoting transfers from willing sellers to buyers while protecting other water users, local economies and the environment. The Water Transfer Element seeks to streamline the approval process of state and federal agencies for water transfers and to create an Internet-based Water Transfers Information Clearinghouse.
- Ecosystem Restoration. Improvements in ecosystem health could reduce the conflict between environmental water use and other beneficial uses, and could allow more flexibility in water management decisions. The Ecosystem Restoration Element could recover at-risk native species; rehabilitate natural processes related to hydrology, stream channels, sediment, floodplains, and ecosystem water quality; maintain and enhance populations of species critical to commercial fisheries; protect and restore functional habitats; reduce the negative impacts of invasive species; and improve and maintain water and sediment quality.
- Environmental Water Account. Under the Environmental Water Account, water is acquired, stored and allocated to better protect fish and habitats at critical times. Many water users, including Metropolitan have transferred water supplies to this account. In return for the environmental benefits of water under this account, there are regulatory assurances that the existing deliveries of SWP and Central Valley Project water would not be disrupted.
- Watersheds. By providing financial and technical assistance for local watershed projects, CALFED would support projects that reduce water quality problems, restore and protect habitats, and improve water supply reliability. The Watershed Element seeks to foster local leadership by encouraging landowners, community members, environmental organizations and local public agencies to come together on watershed projects.
- Drinking Water Quality. The Drinking Water Quality Element identifies four actions for implementation: implement programs to manage salt loadings in the San Joaquin Valley; implement source control programs to reduce contaminants from Delta and upstream sources; invest in water treatment technology demonstration projects for UV disinfection and desalination; and control runoff into the California Aqueduct with the construction of necessary physical improvements.
- Levee System Integrity. This Program element provides for the stabilization and improvement of Delta levees to protect in-Delta as well as export users. It seeks to improve levees to a higher standard for greater protection; improve emergency response capabilities; reduce conflicts between levee maintenance and habitat needs;

improve coordination permit processes; and develop adequate and reliable funding for levee maintenance.

- Science Methods. The Bay-Delta Program commits to a science program to guide adaptive management decisions. The program includes the appointment of an eminent lead scientist to be assisted by an Independent Science Board. The Board will issue annual reports regarding the status and effectiveness of program measures and will recommend adjustments.
- Program Tracking and Accountability. Performance measures are used to translate program goals and objectives into measurable benchmarks of program success. They present information on conditions, trends and their significance. The Program will develop a project tracking system; track each project's performance, cost and schedule; measure progress to assure balance across all elements of the Program; and provide monthly status information on each project.

Sacramento Valley Water Management Agreement: Along with other SWP contractors, Metropolitan has worked to ensure the burden of meeting flow requirements set out by the 1995 Water Quality Control Plan (WQCP) was fairly shared across all Bay-Delta water users in the State Water Resources Control Board (SWRCB) Phase 8 hearing process. This hearing process was stayed in April 2001 to allow discussions on a settlement agreement between the parties. The goal of the settlement agreement was to draft a work plan to develop and manage water resources to meet Sacramento Valley in-basin needs, environmental needs under the WQCP, and export supply needs for consumptive demands and water quality.

In December 2002, the Phase 8 parties signed a settlement agreement referred to as the Sacramento Valley Water Management Agreement. This agreement includes a work plan detailing projects that could provide benefits by the 2003 and 2004 water years. This plan comprises over 60 projects that have been submitted for evaluation by the Work Plan Development Team from 16 entities in the Sacramento Valley. These projects can be divided into four categories; (1) conjunctive use projects involving development of groundwater supplies to be used in conjunction with surface water to provide for additional in-basin and export needs, including the WQCP relief, (2) system improvement projects involving the lining of canals, diversion modifications and improvement in water measurement, (3) groundwater planning and monitoring projects intended to better characterize the resource and allow for expansion of conjunctive use and water transfer activities, and (4) resolution of certain regulatory or institutional issues which present impediments to resolution of in-basin needs or water transfers. About 185,000 acre-feet of water annually are expected to be produced by the conjunctive use projects in the Sacramento Valley and would be available for use under a settlement. Metropolitan's allotment of this new yield is projected to be 45, 000 acre-feet per year.

EXPECTED SUPPLY CAPABILITY

Based on the work plans for CALFED's Bay-Delta Program and the Phase 8 SWRCB Water Rights Proceedings, annual and dry-year supplies capabilities are projected as follows:

Estimated Water Supplies Available for Metropolitan's Use Under the Bay-Delta Improvements
(acre-feet per year)

Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	-	-	-	-
2010 *	45,000	45,000	45,000	45,000
2015 **	200,000	200,000	200,000	200,000
2020 **	200,000	200,000	200,000	200,000
2025 **	200,000	200,000	200,000	200,000

* Based on the short-term work plan for the Sacramento Valley Water Management Agreement.
** Based on the medium and long-term work plans for the Sacramento Valley Water Management Agreement and approved implementation plan for CALFED's Bay-Delta Program.

RATIONALE FOR EXPECTED SUPPLY

Implementation Status: Expected supplies are projected in accordance with the approved implementation plan for CALFED's Bay-Delta Program and with the work plans for the Sacramento Valley Water Management Agreement.

Written Contracts or Other Proof: Metropolitan's projected dependable annual and dry-year supplies from planned Bay-Delta improvements are based on Metropolitan Board actions and agreements.

- CALFED's Bay-Delta Program.
  - Bay-Delta Accord approved in December 1994.
  - Proposition 204 funds approved by voter in November 1996.
  - Metropolitan policy direction regarding CALFED's Bay-Delta Program adopted in July 1999. This policy direction established water supply goals.
  - Proposition 13 funds approved by voters in March 2000.
  - CALFED Framework announced in June 2000.
  - Final implementation plans for the first phase of CALFED's Bay-Delta Program approved in August 2000, in conjunction with the approval of the Program and conclusion of the environmental review process.
  - Proposition funds approved by voters in November 2002.
  - Annual Federal appropriations.
- Sacramento Valley Water Management Agreement.
  - Work plans detailing projects that could provide benefits by the 2002 and 2003 water years were developed in October 2001.
  - Statement of settlement policy principles recommended in December 2001 by negotiators for approval.

- Statement of settlement policy principles approved by Metropolitan's Board in January 2002.
- A Sacramento Valley Water Management Agreement was signed and approved by settlement parties in December 2002.

Financing. Financing for Bay-Delta improvements are as follows:

- CALFED's Bay-Delta Program. Overall cost-sharing plans assume an equal distribution of the program costs among state, federal, and user/local funds. Final cost-sharing arrangements will depend on the specific projects that are implemented, and will vary year by year. Initial years could be heavily funded by federal and state dollars. This initial funding will not include the cost of constructing major storage or conveyance elements. Final cost shares, including reimbursement of up-front funding, are intended to be based upon a "beneficiaries pay" principle.
  - Year 1 funding arrangements were established in July 2000.

State	$528.1 million
Federal	$ 78.0 million
Other	$221.0 million
Unmet	$ 77.7 million

  - Year 2 funding arrangements were initiated in July 2001.

State	$553.1 million
Federal and Unmet Needs	$370.0 million
Other	$ 33.5 million

Federal, State, and Local Permits/Approvals:

- CALFED's Bay-Delta Program.
  - Programmatic Environmental Impact Report/Statement finalized in July 2000.
  - Record of Decision issued in August 2000 for the final Programmatic Environmental Impact Report/Statement regarding the CALFED Bay-Delta Program.
- Sacramento Valley Water Management Agreement.
  - Settlement parties approved Sacramento Valley Management Agreement in December 2002.
  - Environmental review will be conducted by the applicable lead agencies on the various work plan projects to comply with the California Environmental Quality Act, and as appropriate the National Environmental Policy Act.

CALIFORNIA AQUEDUCT DELIVERIES
KERN DELTA WATER MANAGEMENT PROGRAM

SOURCE OF SUPPLY

In December 1999 Metropolitan advertised a request for proposals for participation in "The California Aqueduct Dry-year Transfer Program." As a result of this request for proposals, four programs were selected for further consideration of which Kern Delta Water District (Kern Delta) was part. In 2001, Metropolitan entered into Principles of Agreement with Kern Delta for the development of a Dry-year supply program. Kern Delta serves 125,000 acres of actively farmed highly productive farmland located in the San Joaquin Valley portion of southern Kern County. Kern Delta has under contract 180,000 acre-feet per year of good quality highly reliable pre- 1914 Kern River water and 25,500 acre-feet per year of SWP Table A contract right (under contract with Kern County Water Agency).

The dry-year supply program between Kern Delta and Metropolitan involves the storage of water with Kern Delta. Basically, in years of plentiful supply the agreement allows Metropolitan to store water in Kern Delta's groundwater basin, either through direct spreading operations, or through deliveries to growers in Kern Delta's service area. Metropolitan has access to the capacity to store up to 250,000 acre-feet of water at any one time and 400,000 acre-feet of water at any one time over the term of the agreement. When needed, Metropolitan can recover its stored water either through direct pumping of the groundwater or exchange at a rate of 50,000 acre-feet per year. The duration of the program will be from 2002 to 2027 with provisions allowing the water to be withdrawn until 2033.

EXPECTED SUPPLY CAPABILITY

The Kern Delta/Metropolitan Program provides Metropolitan with the capacity to store up to 250,000 acre-feet of water at any one time, and the option to store 400,000 acre-feet of water at any one time over the term of the agreement. When needed, Metropolitan can recover its stored water either through direct pumping of the groundwater or exchange at a rate of 50,000 acre-feet per year.

Estimated Water Supplies Available for Metropolitan's Use
Under the Kern Delta Water Management Program
(acre-feet per year)

Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	20,000	50,000	-	-
2010	50,000	50,000	-	-
2015	50,000	50,000	-	-
2020	50,000	50,000	-	-
2025	50,000	50,000	-	-

* --Represents expected supply capability for the resource program.

RATIONALE FOR EXPECTED SUPPLY

Implementation Status: Expected supplies are projected in accordance with accepted detailed groundwater modeling that has been accomplished for the program. In addition, the Kern Delta/Metropolitan Water Management Program will be operational and accepting water for storage by fall of 2003.

Financing: Metropolitan's payments for the Kern Delta/Metropolitan Program are included in the O&M budget and paid out of the Water Transfer Fund.

Written Contracts or Other Proof:

- 2001 Kern Delta/Metropolitan Principles of Agreement. Principles of agreement were entered into between Kern Delta and Metropolitan in June 2001, covering program costs, operational aspects and risks/responsibilities.
- 2002 Kern Delta and Metropolitan Boards of Directors approved executing the Long-term Agreement. The Long-term Water Banking Agreement between Kern Delta and Metropolitan, delineates program operations, costs, and risks/responsibilities

Federal, State and Local Permits for Construction: Kern Delta, acting as lead agency under CEQA has prepared a full Environmental Impact Report. As part of this EIR, Kern Delta published a Notice of Preparation, and held meetings with the general public, interested agencies and resource agencies. In November 2002 the Final EIR certified by Kern Delta and adopted by Metropolitan.

CALIFORNIA AQUEDUCT DELIVERIES MARKET TRANSFER OPTIONS

SOURCE OF SUPPLY

Metropolitan has acquired dry-year supplies through spot market water transfers in the past 10 years. Spot market water transfers involve water that is purchased only during the time of need (usually a drought). Payment for these transfers occurs only when water is needed. It is expected that water could continue to be available for spot market water purchases in the future. Up to 27 million acre-feet of water (80 percent of California's developed water) is delivered for agricultural use every year. Over half of this water is in the Central Valley; and much of it is delivered by, or adjacent to, SWP and Central Valley Project (CVP) conveyance facilities. This allows for the voluntary transfer of water to many urban areas, including Metropolitan, via the California Aqueduct.

Recent events indicate that a portion of this water could be available through mutually beneficial transfer agreements:

- The Governor's Water Bank (Bank) in 1991, 1992, and 1994 secured 140,000 acre-feet per year to 820,000 acre-feet per year of water supply. Further, the Department of Water Resource's (DWR's) Dry Year Water Purchase Program (Purchase Program) in 2001, 2002 and 2003 secured a total of 162,000 acre-feet. Finally, DWR is facilitating a Water Transfer Program in 2003 specifically to meet Metropolitan's needs and assisted Metropolitan in securing 167,200 acre-feet. The DWR established and administered the Bank and the Purchase Program by facilitating purchasing water from willing sellers and transferring the water to those with critical needs using the State Water Project (SWP) facilities. Sellers, such as farmers and water districts, made water available for the Bank, Purchase Program, and Water Tranafer Program by fallowing crops, shifting crops, releasing surplus reservoir storage, and by substituting groundwater for surface supplies.
- Under the Central Valley Improvement Act, passed by Congress in October 1992, water agencies, such as Metropolitan, may for the first time be able to acquire a portion of the Central Valley Project's 7.8 million acre-feet per year of supply.
- Many member of the agricultural community are actively promoting the economic benefits resulting from the voluntary transfer of some of their water supplies.

EXPECTED SUPPLY CAPABILITY

Metropolitan could purchase dry year supplies from the Bank and/or Purchase Program on an "as-needed" basis. The acquired water provides a reserve supply that could be available to Metropolitan to mitigate for unforeseen uncertainties that may impact expected supply capabilities. Metropolitan has purchased water from the Bank varying in amounts from 100 to 215,000 acre-feet in a given year. Since initiating in 2001 the DWR Dry Year Water Purchase Program, from 1,500 to 139,000 acre-feet were purchased in a given year.

RATIONALE FOR EXPECTED SUPPLY

Implementation Status: The availability of dry year supplies from the Bank, Purchase Program, and/or Water Transfer Program has been demonstrated 1991, 1992, 1994, 2001, 2002, and 2003.

Historical Record The historical record for purchases from the Bank, Purchase Program, and Water Transfer Program and the number of sellers and buyers participating in these Programs is a strong indicator that there are significant amounts of water that can be purchased through spot market water transfers during dry year. This historical record is summarized are as follows:

Historical Record
Market Water Purchases

Program	Purchases from Bank (acre-feet per year)		Participants	
	Total	Metropolitan	Sellers	Buyers
1991 Governor's Water Bank	820,000	215,000	351	13
1992 Governor's Water Bank	193,246	10,000	18	16
1994 Governor's Water Bank	220,000	100	6	15
2001 Dry-year Purchase Program	138,000	80,000	9	8
2003 Water Transfer Program	167,200	167,200	11	1

Written Contracts or Other Proof:

- Executive Order. In response to the extended 1987-92 drought, Governor Wilson issued an executive order establishing a Drought Action Team. This team, made up of state and federal officials, developed an action plan to lessen the impacts of the continuing drought (State 1991). One of the proposed actions was the formation of an emergency water bank managed by DWR. The purpose of the bank would be to help California's urban, agricultural, and environmental interests meet their critical water supply needs.
- Agreements with Buyers. Preceding the implementation of the 1995 and 2001 Banks contracts between DWR and agencies interested in buying were executed. The essential terms and conditions for negotiating purchases, including maximum offering price, quantity of water needed, and the timing of delivery, were established in these contracts.
- Agreements with Sellers. Purchases of water for the Bank, Purchase Program and Water Transfer Program have been secured through written contracts signed by DWR and sellers.
- 1999 Board Directive. Metropolitan's Board has authorized the acquisition and call of spot market water transfers in accordance with the Water Surplus and Drought

Management Plan (WSDM Plan) adopted in April 1999. The WSDM Plan is a comprehensive policy guideline for managing Metropolitan's water supply during periodic surplus and shortage conditions. During shortage conditions, the plan specifies the type, priority and timing of drought actions, including the purchase of transfers on the spot market that could be taken in order to prevent or mitigate negative impacts on retail demands.

Financing: Funds for spot market water purchases are included in Metropolitan's s annual O&M budget. Spot market purchases are paid out of Metropolitan's Water Transfer Fund.

Federal, State, and Local Permits/Approvals:

- Environmental Impact Report for the Bank. In November 1993, DWR prepared and finalized a programmatic Environmental Impact Report for the operation of the drought water banks during future drought events.
- Water Transfer Program. In 2002-2003, individual sellers prepared CEQA documentation to support their transfers. In addition, the U.S. Bureau of Reclamation prepared NEPA documentation for those transfers requiring federal approval.

In-Basin Storage Deliveries

In-Basin Storage Deliveries
Program Capabilities*
Year 2005
(acre-feet per year)

	Event Occurring in 2005			
	Multiple Dry Years (1990-92)	**Single Dry Year (1977 Hydrology)**	**Average Year**	**Wet Year (1985 Hydrology)**
Current Programs				
Metropolitan Surface Storage (DVL, Mathews, Skinner)	274,400	470,400	-	-
Flexible Storage in Castaic Lake and Lake Perris	64,200	110,000	-	-
Groundwater Conjunctive-use				
• Long-term Seasonal Storage	100,000	100,000	-	-
• North Las Posas Storage Program	16,700	50,000	-	-
Subtotal of Current Programs	455,300	730,400	-	-
Programs Under Development				
Groundwater Conjunctive-use Programs				
• 2010 Programs (Raymond and Proposition 13 Programs)	-	-	-	-
• Additional Programs	-	-	-	-
Subtotal of Proposed Programs	-	-	-	-
Maximum Supply Capability	**455,300**	**730,400**	-	-

* -- Represents expected supply capability for resource programs.

In-Basin Storage Deliveries
Program Capabilities*
Year 2010
(acre-feet per year)

	Event Occurring in 2010			
	Multiple Dry Years (1990-92)	**Single Dry Year (1977 Hydrology)**	**Average Year**	**Wet Year (1985 Hydrology)**
Current Programs				
Metropolitan Surface Storage (DVL, Mathews, Skinner)	297,500	510,000	-	-
Flexible Storage in Castaic Lake and Lake Perris	64,200	110,000	-	-
Groundwater Conjunctive-use				
• Long-term Seasonal Storage	100,000	100,000	-	-
• North Las Posas Storage Program	70,000	70,000	-	-
Subtotal of Current Programs	**531,700**	**790,000**	-	-
Programs Under Development				
Groundwater Conjunctive-use Programs				
• 2010 Programs (Raymond and Proposition 13 Programs)	89,000	89,000	-	-
• Additional Programs	-	-	-	-
Subtotal of Proposed Programs	**89,000**	**89,000**	-	-
Maximum Supply Capability	**620,700**	**879,000**	-	-

* -- Represents expected supply capability for resource programs.

In-Basin Storage Deliveries
Program Capabilities*
Year 2015
(acre-feet per year)

	Event Occurring in 2015			
	Multiple Dry Years (1990-92)	**Single Dry Year (1977 Hydrology)**	**Average Year**	**Wet Year (1985 Hydrology)**
Current Programs				
Metropolitan Surface Storage (DVL, Mathews, Skinner)	296,200	507,800	-	-
Flexible Storage in Castaic Lake and Lake Perris	64,200	110,000	-	-
Groundwater Conjunctive-use				
• Long-term Seasonal Storage	100,000	100,000	-	-
• North Las Posas Storage Program	70,000	70,000	-	-
Subtotal of Current Programs	**530,400**	**787,800**	-	-
Programs Under Development				
Groundwater Conjunctive-use Programs				
• 2010 Programs (Raymond and Proposition 13 Programs)	89,000	89,000	-	-
• Additional Programs	111,000	111,000	-	-
Subtotal of Proposed Programs	**200,000**	**200,000**	-	-
Maximum Supply Capability	**730,400**	**987,800**	-	-

* -- Represents expected supply capability for resource programs.

In-Basin Storage Deliveries
Program Capabilities*
Year 2020
(acre-feet per year)

	Event Occurring in 2020			
	Multiple Dry Years (1990-92)	**Single Dry Year (1977 Hydrology)**	**Average Year**	**Wet Year (1985 Hydrology)**
Current Programs				
Metropolitan Surface Storage (DVL, Mathews, Skinner)	278,800	477,900	-	-
Flexible Storage in Castaic Lake and Lake Perris	64,200	110,000	-	-
Groundwater Conjunctive-use				
• Long-term Seasonal Storage	100,000	100,000	-	-
• North Las Posas Storage Program	70,000	70,000	-	-
Subtotal of Current Programs	**513,000**	**757,900**	-	-
Programs Under Development				
Groundwater Conjunctive-use Programs				
• 2010 Programs (Raymond and Proposition 13 Programs)	89,000	89,000	-	-
• Additional Programs	111,000	111,000	-	-
Subtotal of Proposed Programs	**200,000**	**200,000**	-	-
Maximum Supply Capability	**713,000**	**957,900**	-	-

* -- Represents expected supply capability for resource programs.

In-Basin Storage Deliveries
Program Capabilities*
Year 2025

(acre-feet per year)

	Event Occurring in 2025			
	Multiple Dry Years (1990-92)	**Single Dry Year (1977 Hydrology)**	**Average Year**	**Wet Year (1985 Hydrology)**
Current Programs				
Metropolitan Surface Storage (DVL, Mathews, Skinner)	265,000	454,300	-	-
Flexible Storage in Castaic Lake and Lake Perris	64,200	110,000	-	-
Groundwater Conjunctive-use				
• Long-term Seasonal Storage	100,000	100,000	-	-
• North Las Posas Storage Program	70,000	70,000	-	-
Subtotal of Current Programs	**499,200**	**734,300**	-	-
Programs Under Development				
Groundwater Conjunctive-use Programs				
• 2010 Programs (Raymond and Proposition 13 Programs)	89,000	89,000	-	-
• Additional Programs	111,000	111,000	-	-
Subtotal of Proposed Programs	**200,000**	**200,000**	-	-
Maximum Supply Capability	**699,200**	**934,300**	-	-

* -- Represents expected supply capability for resource programs.

IN-BASIN STORAGE DELIVERIES
SURFACE STORAGE

SOURCE OF SUPPLY

Surface storage is a critical element of Southern California's water resources strategy. Because California experiences dramatic swings in weather and hydrology, surface storage is important to regulate those swings and mitigate against possible supply shortages. Simply put, surface storage provides a means of storing water during normal and wet years for later use during dry years, when imported supplies are limited.

Since the early twentieth century the Department of Water Resources and Metropolitan have constructed surface water reservoirs to meet emergency, drought/seasonal and regulatory water needs for Southern California. These reservoirs include, Pyramid Lake, Castaic Lake, Elderberry Forebay, Silverwood Lake, Lake Perris, Lake Skinner, Lake Mathews, Live Oak Reservoir, Garvey Reservoir, Palos Verdes Reservoir, Orange County Reservoir and Metropolitan's recently completed Diamond Valley Lake. Some reservoirs such as; Live Oak Reservoir, Garvey Reservoir, Palos Verdes Reservoir, and Orange County Reservoir, which have a total combined capacity of about 3,500 acre-feet, are used solely for regulatory purposes. The remaining surface reservoirs are primarily utilized to meet emergency, drought and seasonal requirements. The total gross storage capacity for these larger remaining reservoirs is 1,768,100 acre-feet. However, not all of the gross storage capacity is available to Metropolitan, dead storage and storage allocated to others reduce the amount of storage that is available to Metropolitan down to 1,669,100 acre-feet.

EXPECTED SUPPLY CAPABILITY

Surface storage reservoirs are an integral component of Metropolitan meeting the water needs of its service area. As discussed in the Final Environmental Impact Report for the Eastside Reservoir (DVL) Project dated October 1991, and in Southern California's Integrated Resources Plan, dated March 1996, the allocation of available surface storage can be divided into two primary components: emergency, and drought/seasonal. As specified by Metropolitan's Board of Directors in the Final EIR for DVL, "Metropolitan shall maintain sufficient water reserves within its service area to supplement local production during an emergency, or severe water shortage." With the completion of Diamond Valley Lake and it becoming operational, Metropolitan can now re-operate the surface reservoirs and meet the Board's stated objectives.

Updated Emergency Storage Requirements: Metropolitan's criteria for determining emergency storage requirements, which was approved by Metropolitan's Board, was established in the Final EIR for DVL and further discussed in the IRP. Emergency Storage requirements are based on the potential for a major earthquake to damage the Colorado River Aqueduct, Los Angeles Aqueduct, and both branches of the California Aqueducts. It is necessary that emergency water reserves are available within Metropolitan's service area to supplement local production during an emergency, or severe water shortages will occur during the period while the aqueducts are out of service. Damage would be severe enough from such an event that the aqueducts would be out of service for 6 months. During this

period, all interruptible service deliveries would be suspended, accompanied by a mandatory reduction in water use of 25 percent from normal-year demand levels, water stored in surface reservoirs and groundwater basins under Metropolitan's interruptible program would be made available, and full local groundwater production would be sustained. The storage reserved in system reservoirs for emergency purposes changes over the next 20 years in accordance with the projected demands on Metropolitan as shown below. The residual storage available to meet other needs, dry-year/seasonal, is also shown below and is discussed in further detail in this appendix.

Updated Storage Requirements for Dry-Year Supply and Seasonal Needs: Storage capacity in system reservoirs, including DVL, is also earmarked for dry-year supply and system regulation purposes. Dry-year supply storage within Metropolitan's service area is required to meet the additional water demands that occur during single-year and extended droughts. As specified in the Final EIR for DVL and further discussed in the IRP, this storage requirement is defined as the difference between normal-year demand and above-normal demand during dry years. In addition to dry-year storage, seasonal storage is required to meet seasonal peak demands during the year and are defined as the difference between normal winter demands and normal summer demands. The dry-year supply and seasonal storage also provides sufficient reserves to permit approximately 5 percent downtime for rehabilitation, repair and maintenance of raw water transmission facilities. The storage provided in system reservoirs for dry-year supply and seasonal needs are shown below.

Surface Storage Utilization
(acre-feet)

	Average-Year Storage Projection				
	2005	2010	2015	2020	2025
Surface Storage in MWD Service Area	1,669,100	1,669,100	1,669,100	1,669,100	1,669,100
Emergency	508,400	401,000	433,600	493,300	540,500
Dry-Year/Seasonal	1,160,700	1,268,100	1,235,500	1,175,800	1,128,600

* Determined in accordance with Metropolitan Board policy objectives discussed in the Final Environmental Impact Report for the Eastside Reservoir (DVL) Project dated October 1991, and in Southern California's Integrated Resources Plan, dated March 1996

Historical Record: Metropolitan has a contract with the Department of Water Resources that allows use of DWR's terminal reservoirs, such as Lake Castaic on the West Branch and Lake Perris on the East Branch of the California Aqueduct. Metropolitan makes annual payments to the DWR based on the amount of water delivered, percentage of facilities actually used, power, operations, maintenance and other charges. In addition, Metropolitan owns and operates surface reservoirs such as Lake Skinner, Lake Mathews and Diamond Valley Lake to enhance its water supply reliability for its Member Agencies.

Written Contracts or Other Proof of Usage: The Surface Reservoirs used by Metropolitan are available either by contract (in the case of the DWR terminal reservoirs) or by construction of its own facilities. The following historical record is provided:

- November 1960 Contract between the State of California Department of Water Resources and the Metropolitan Water District of Southern California for a Water Supply. This Contract and its numerous amendments, describe Metropolitan's legal access to and obligations for the operation of the State Water Project for the benefit of its Contractors. Metropolitan has an entitlement to 2,050,000 acre-feet of water each year subject to availability. The terms of this Contract describe Metropolitan's rights to and obligations for the terminal surface reservoirs for water supply purposes.
- November 1974 Memorandum of Understanding and Agreement on Operation of Lake Skinner. This MOU, signed by Metropolitan and other affected parties, governs Metropolitan's operations of Lake Skinner in Riverside County. The DWR Division of Safety and Dams also reviews monitoring data on the safety of the dam annually.
- November 1999 Memorandum of Understanding on Operation of Diamond Valley Lake. This MOU, signed by Metropolitan and other affected parties, governs Metropolitan's operations of Lake Skinner in Riverside County. The DWR Division of Safety and Dams also reviews monitoring data on the safety of the dam annually.
- Elderberry Forebay Contract for Conditions for Use. Conditions for Use of storage are described in the Contract Between the Department of Water Resources, State of California, and the Department of Water and Power, City of Los Angeles, for Cooperative Development, West Branch, California Aqueduct; Amendment No. 1, July 3, 1969; and Amendment No. 4, June 27, 1985.
- June 2002 Division of Safety of Dams Certificate of Approval. The Department of Water Resources, Division of Safety of Dams issued the Certificate of Approval for operation of Diamond Valley Lake in early 2000, with three conditions. These conditions were: (1) Satisfactory operation of the butterfly valves and emergency gate in the inlet/outlet tower, (2) completion of the Tank Saddle Cutoff remediation and (3) completion of the Signal Spillway. Metropolitan completed these conditions in 2001 and the Diamond Valley Lake is currently operational in accordance with the Certificate of Approval.
- October 1991 Final Environmental Impact Report for the Eastside Reservoir Project (DVL). The EIR established criteria for integrating the operations of Metropolitan's reservoirs and DWR's southern reservoirs for emergency purposes. This criteria also provided that Metropolitan reservoirs could be expected to withdraw all drought storage water within a two-year period.

IN-BASIN STORAGE DELIVERIES
FLEXIBLE STORAGE USE OF CASTAIC LAKE AND LAKE PERRIS

SOURCE OF STORAGE

The flexible storage use of Castaic Lake and Lake Perris, SWP reservoirs, provides Metropolitan with dry-year supply. The State Water Project (SWP) contractors participating in repayment of the capital costs of Castaic Lake and Lake Perris have the contract right to withdraw SWP water from these reservoirs in addition to their allocated supply in any year on an as-needed basis. These contractors must replace the water that is withdrawn under this program within five years of the first withdrawal. This storage is referred to as "flexible storage". It is available in Castaic Lake to Metropolitan, Ventura County Flood Control and Water Conservation District, and Castaic Lake Water Agency and available in Lake Perris to Metropolitan.

EXPECTED SUPPLY CAPABILITY

The dry year supply available to Metropolitan from the flexible storage use of Castaic Lake and Lake Perris totals up to 218, 940 acre-feet. This total supply is comprised of 153,940 acre-feet in Castaic Lake and 65,000 acre-feet in Lake Perris. The use of this available supply in accordance with Metropolitan's operating criteria is planned as follows:

Estimated Water Supplies Available for Metropolitan's Use
Under the Flexible Storage Use of Castaic Lake and Lake Perris *
(acre-feet per year)

Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	64,200	110,000	-	-
2010	64,200	110,000	-	-
2015	64,200	110,000	-	-
2020	64,200	110,000	-	-
2025	64,200	110,000	-	-

* --Represents expected supply capability for the resource program.

RATIONALE FOR EXPECTED SUPPLY

Implementation Status: Express provisions have been incorporated in Metropolitan's SWP contract since 1995. It has been available for use since 1995 and will continue to be in effect indefinitely commensurate with the SWP contracts.

Historical Record: Metropolitan has exercised the flexible storage provision in 2000, 2001 and 2002.

Written Contracts or Other Proof: Metropolitan's dry-year supply from flexible storage is based on existing contract provisions.

- DWR Bulletin 132-94. The use of Castaic Lake and Lake Perris is determined in accordance with the proportionate use factors from Bulletin 132-94, Table B, upon which capital cost repayment obligations are based. Based on its capital repayment obligations, Metropolitan's proportionate use of Castaic Lake is 96.2% and of Lake Perris is 100%. Per its SWP contract, Metropolitan has express rights to utilize certain portions of the SWP southern reservoirs to supply water in amounts in addition to approved SWP deliveries. Independently Metropolitan has the ability to utilize these reservoirs for such purposes.
- Metropolitan's SWP Contract. Metropolitan's SWP contract was amended in 1995 to include Article 54, "Usage of Lakes Castaic and Perris." This article provides flexible storage to contractors participating in repayment of the capital costs of Castaic Lake and Lake Perris. Each contractor shall be permitted to withdraw up to a Maximum Allocation from Castaic Lake and Lake Perris. These contractors may withdraw a collective Maximum Allocation up to 160,000 acre-feet in Castaic Lake and 65,000 acre-feet in Lake Perris, which shall be apportioned among them pursuant to the respective proportionate use factors, as follows:

Flexible Storage Allocations

Participating Contractor	Proportionate Use Factor	Maximum Flexible Storage Allocation (acre-feet)
Castaic Lake		
Metropolitan	0.96212388	153,940
Ventura County Flood Control and Water Conservation District	0.00860328	1,376
Castaic Lake Water Agency	0.02927284	4,684
Total Castaic Lake	**1.00000000**	**160,000**
Lake Perris		
Metropolitan	**1.00000000**	**65,000**

Financing: The cost associated with the withdrawal and replacement of water in the flexible storage is included in Metropolitan's annual payments under the State Water Contract.

Federal, State, and Local Permits/Approvals: The flexible storage provision became effective in 1995. DWR has the approval authority to affect changes in the operations and usage of existing SWP facilities, including Castaic Lake and Lake Perris.

IN-BASIN STORAGE DELIVERIES METROPOLITAN SURFACE RESERVOIRS

SOURCE OF SUPPLY

Storage capacity in Metropolitan reservoirs, including Lake Skinner, Lake Mathews, Live Oak Reservoir, Garvey Reservoir, Palos Verdes Reservoir, Orange County Reservoir and Metropolitan's recently completed Diamond Valley Lake, is earmarked to meet emergency, dry-year/seasonal and system regulation needs. Dry-year/seasonal storage within Metropolitan's service area is required to meet the additional water demands that occur during single-year and extended droughts. This storage requirement is defined as the difference between normal year demand and above normal demand during dry years. Seasonal storage is required to meet seasonal peak demands during the year and are defined as the difference between normal winter demands and normal summer demands. The dry-year supply and seasonal storage also provides sufficient reserves to permit approximately 5 percent downtime for rehabilitation, repair and maintenance of raw water transmission facilities.

EXPECTED SUPPLY CAPABILITY

The total available storage capacity for Metropolitan for all surface reservoirs is 1,669,100. As discussed earlier, approximately 650,000 in 2005 rising to 800,000 acre-feet in 2025 has been set aside to meet the emergency and flexible storage requirements of the service area. After accounting for system operational storage, the surface storage available to meet dry-year/seasonal requirements ranges from approximately 1,020,000 acre-feet in 2005 to 866,000 acre-feet by 2025. The dry-year/seasonal water supply available to Metropolitan in accordance with Metropolitan's operating criteria is presented below:

Estimated Water Supplies Available for Metropolitan's Use Under the Metropolitan Surface Reservoirs *
(acre-feet per year)

Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	274,400	470,400	-	-
2010	297,500	510,000	-	-
2015	296,200	507,800	-	-
2020	278,800	477,900	-	-
2020	265,000	454,300	-	-

* --Represents expected supply capability for the resource program.

RATIONALE FOR EXPECTED SUPPLY

Program Facilities

Major facilities for Lake Mathews include an earthen dam to impound water, and a recently completed new outlet tower. Major facilities for Lake Skinner include an earthen dam to impound water, an outlet tower, a inlet from the San Diego Canal to deliver water into the

reservoir, a water treatment filtration facility, and recreational facilities consisting of a marina, parks, swimming areas, golf course, and hiking trails. Major facilities at Diamond Valley Lake include three earth dams to impound water, an inlet/outlet tower, a secondary inlet from the Inland Feeder, a large pumping station to deliver water into the reservoir, and power generating facilities. Recreational facilities consisting of a marina, parks, swimming areas, golf course, hiking trails, equestrian trails and lodging are planned.

Historical Record: The Diamond Valley Lake is currently operational and is essentially full. Lake Mathews and Lake Skinner have been service for over 30 years and are currently available for full operations.

- November 1974 Memorandum of Understanding and Agreement on Operation of Lake Skinner. This MOU, signed by Metropolitan and other affected parties, governs Metropolitan's operations of Lake Skinner in Riverside County. The DWR Division of Safety and Dams also reviews monitoring data on the safety of the dam annually.
- October 1991 Final Environmental Impact Report for the Eastside Reservoir Project (DVL). The EIR established criteria for integrating the operations of Metropolitan's reservoirs and DWR's southern reservoirs for emergency purposes. This criteria also provided that Metropolitan reservoirs could be expected to withdraw all drought storage water within a two-year period.
- November 1999 Memorandum of Understanding on Operation of Diamond Valley Lake. This MOU, signed by Metropolitan and other affected parties, governs Metropolitan's operations of Lake Skinner in Riverside County. The DWR Division of Safety and Dams also reviews monitoring data on the safety of the dam annually.
- June 2002 Division of Safety of Dams Certificate of Approval. The Department of Water Resources, Division of Safety of Dams issued the Certificate of Approval for operation of Diamond Valley Lake in early 2000, with three conditions. These conditions were: (1) Satisfactory operation of the butterfly valves and emergency gate in the inlet/outlet tower, (2) completion of the Tank Saddle Cutoff remediation and (3) completion of the Signal Spillway. Metropolitan completed these conditions in 2001 and the Diamond Valley Lake is currently operational in accordance with the Certificate of Approval.

Financing. The capital cost of Diamond Valley Lake, Lake Mathews and Lake Skinner was financed by a combination of revenue bonds and operating revenues. Annual operating costs, including maintenance and pumping, are included in Metropolitan's annual O&M budget.

Federal, State, and Local Permits/Approvals. All necessary permits have been obtained. A permit to generate and sell power has been acquired from the Federal Energy Regulatory Commission. No further regulatory permits are required.

IN-BASIN STORAGE DELIVERIES
GROUNDWATER CONJUNCTIVE USE PROGRAMS

SOURCE OF SUPPLY

The Integrated Resources Plan (IRP) approved by the Metropolitan Board established Metropolitan's strategy to store imported water that is most available during wet years in surface reservoirs or groundwater aquifers for later use during droughts and emergencies. In this way, Metropolitan can reduce its reliance on direct deliveries from the State Water Project (SWP) and the Colorado River during dry years when competing demands by other users and risks to the watershed ecosystems are greatest. During the development of the IRP, the Association of Groundwater Agencies (AGWA), in cooperation with Metropolitan, undertook a study to examine the potential for groundwater storage. AGWA, which is comprised of representation for six major basins in Southern California, was created in order to work collectively on groundwater issues, including conjunctive use of imported water. The findings of the AGWA study indicated that up to 1.5 million acre-feet of total storage capacity could be dedicated to regional storage of imported supplies. Utilization of current facilities, along with some facilities improvements, could result in up to 350,000 acre-feet of additional groundwater production as a result of storing imported water over the next 20 to 30 years. Based on the AGWA study, the 1996 IRP set a resource objective to develop about 275,000 acre-feet per year of dry-year supply from in-basin groundwater storage by 2010 and 300,000 acre-feet per year by 2020. Groundwater conjunctive use capabilities are being developed in accordance with the IRP through the following programs.

Long-term Seasonal Storage Program: Metropolitan currently administers the Long-term Seasonal Storage Program to encourage the replenishment of available water in groundwater basins and local reservoirs. This program is a pricing program that makes system supplies, which are in excess of that amount needed to meet consumptive municipal and industrial demands, available to the member agencies at a discounted water rate. The replenished water must be held in storage for over one year so that it can be used subsequently during dry years.

It is estimated that an average of 100,000 acre-feet per year of groundwater supply is produced as a result of Metropolitan's existing discount pricing for winter season deliveries. In order to meet the 1996 IRP resource objective, contractual groundwater conjunctive use programs should be developed to provide 200,000 acre-feet per year of dry-year supply by 2020.

North Las Posas Groundwater Storage Program. Metropolitan's first contractual conjunctive use program was developed in the North Las Posas groundwater basin. The agreement between Metropolitan and Calleguas Municipal Water District was signed in 1995 and amended in 1998. The term of the agreement extends to 2035. By December 2004, 47,000 acre-feet per year of withdrawal capacity will be available, with additional program facilities under construction. By 2010, the North Las Posas Program will be completed and provide maximum storage capacity of 210,000 acre-feet per year and an

ultimate dry-year yield of 70,000 acre-feet per year. The construction and performance of this Program are phased.

- Annual Replenishment Capacity. The total replenishment or "put" capacity for the program will be up to 50,000 acre-feet per year. This replenishment capacity will be provided through the construction of 30 aquifer storage and recovery wells in three phases.
  - Phase 1: 8,000 acre-feet per year
  - Phase 2: An additional 25,000 acre-feet per year
  - Phase 3: An additional 17,000 acre-feet per year
- Annual Withdrawal Capacity. The total withdrawal or "take" capacity for the program will be up to 70,000 acre-feet per year. This withdrawal capacity will be provided through the construction of 30 aquifer storage and recovery wells in three phases).
  - Phase 1: 12,000 acre-feet per year
  - Phase 2: An additional 35,000 acre-feet per year
  - Phase 3: An additional 23,000 acre-feet per year
- Maximum Storage Capacity. The maximum storage capacity is 210,000 acre-feet.

Based on the parameters and construction schedules for the program, the dry-year supply available from this program is as follows.

Estimated Water Supplies Available for Metropolitan's Use Under the North Las Posas Program *
(acre-feet per year)

Year	Multiple Dry-years (1990-1992)	Single Dry-year (1977 Hydrology)	Average Year	Wet Year (1985 Hydrology)
2005	16,700	50,000	-	-
2010	70,000	70,000	-	-
2015	70,000	70,000	-	-
2020	70,000	70,000	-	-
2025	70,000	70,000	-	-

* --Represents expected supply capability for the resource program.

Groundwater Storage Programs Operational by 2010: Metropolitan is currently negotiating additional contractual conjunctive use agreement in Raymond Basin and several programs partially funded by Proposition 13. In January 2000, the Metropolitan Board authorized entering into agreements with the City of Pasadena and Foothill MWD to implement the groundwater storage program contingent upon satisfactory completion of all necessary environmental documentation. The Board also appropriated funds to conduct initial environmental, engineering, and planning studies. The Program is expected to yield 25,000 acre-feet in a dry year by 2010.

A total of $45 million in Proposition 13 local assistance grant funds have been allocated to Metropolitan by the California Department of Water Resources to help finance groundwater conjunctive use programs within Metropolitan's service area. Metropolitan

Contractual Groundwater Storage Programs Operational by 2010

Programs	Total Storage Capacity (acre-feet)	Dry-Year Yield (acre-feet per year)
Project Name: Raymond Basin Groundwater Storage Program Submitted by: City of Pasadena, Foothill MWD	75,000	25,000
Project Name: Phase 1: Long Beach Conjunctive Use Storage Project Submitted by: Central Basin MWD, West Basin MWD, Long Beach, Compton, Torrance	13,000	4,333
Project Name: Foothill Area Groundwater Storage Project Submitted by: Foothill Municipal Water District	9,000	3,000
Project Name: Mission Basin Groundwater Storage and Recovery Submitted by: City of Oceanside Sponsored by: San Diego County Water Authority	5,700	1,900
Project Name: Orange County Groundwater Conjunctive Use Program Submitted by: Orange County Water District Sponsored by: Municipal Water District of Orange County	60,000	20,000
Project Name: San Dieguito Recharge and Extraction Project Submitted by: Olivenhain MWD Sponsored by: San Diego County Water Authority	2,250	750
Project Name: Live Oak Basin Conjunctive Use Project Submitted by: Three Valleys MWD	3,000	1,000
Project Name: Chino Basin Programs Submitted by: Chino Basin Watermaster Sponsored by: Inland Empire Utility Agency	100,000	33,000
Total	**267,950**	**89,000**

* --Represents expected supply capability for the resource program.

issued a Request-for-Proposal (RFP) to its member agencies in November 2000. In response to this RFP, 18 proposals were submitted by twelve member agencies. Nine of the proposals were shortlisted and an additional two were wait-listed. In April 2001, the Metropolitan Board of Directors authorized finalization of agreement terms with the member agencies submitting shortlisted proposals and required that implementation of the agreement include the initiation of construction by September 2003. The approved

Proposition 13 Programs are expected to yield 64,000 acre-feet in a dry year starting in 2005-2006 and continue to be operational over the 25-year agreement term. The dry-year yield from these groundwater conjunctive use programs, which are expected to be operational by 2010, are as follows:

Additional Groundwater Conjunctive Use Programs: Beyond 2010, it is anticipated that additional dry-year supply would be developed through the implementation of the wait-listed proposals, the potential expansions of the programs and issuance of a second Request for Proposals to solicit additional storage projects. These potential programs are described as follows:

Additional Groundwater Conjunctive Use Programs

Programs	Total Storage Capacity (acre-feet)	Dry-Year Yield (acre-feet per year)
Project Name: Elsinore Valley Groundwater Storage Program Submitted by: Elsinore Valley MWD Sponsored by: Western MWD	66,000	22,000
Project Name: San Gabriel Basin Conjunctive Use Project Submitted by: Three Valleys MWD	15,000	5,000
Expansion of 2010 Programs	TBD	TBD
New Groundwater Storage Programs	TBD	TBD
Total **(Required Yield to Meet IRP Resource Objective in 2020)**	**302,700**	**111,000**

* --Represents expected supply capability for the resource program.

RATIONALE FOR EXPECTED SUPPLY

Implementation Status: The status of implementation for the groundwater conjunctive use programs has been described under the "Source of Supply".

Historical Record:

- Long-term Seasonal Storage Program. As a result of Metropolitan's Long-term Seasonal Storage Program, local agencies are currently storing available imported water in order to increase groundwater production during the summer season and dry years. Based on the historical record for replenishment deliveries, it is estimated that an average of 100,000 acre-feet per year of groundwater supply is produced as a result of Metropolitan's existing Long-term Seasonal Storage Program.

- North Las Posas Groundwater Storage Program. The first phase of the program's ASR wells has been constructed, providing approximately 8,000 acre-feet per year of replenishment capacity and 12,000 acre-feet per year of withdrawal capacity. Metropolitan currently has about 30,000 acre-feet in storage..

Written Contracts or Other Proof: Metropolitan's dry-year supply from the groundwater conjunctive use programs is based on Metropolitan's Board actions and agreements.

- Approval of Long-term Seasonal Storage Program. Beginning in fiscal year 1989-90, Metropolitan implemented the Long-term Seasonal Storage Program. The continuation of this program was reaffirmed as part of the new rate structure that was approved by Metropolitan's Board in October 2001.
- Agreements for North Las Posas Groundwater Storage Program.
  - An Agreement between Metropolitan and Calleguas Municipal Water District (Calleguas) was executed in June 1995. The term of the Agreement extends to 2035. In this Agreement, a groundwater conjunctive use program would be implemented in the North Las Posas Groundwater Basin. Calleguas would build and operate a total of 30 Aquifer Storage and Recovery (ASR) wells and appurtenant facilities. Metropolitan would reimburse Calleguas for the cost of construction in exchange for use of the storage and pumping capacities. Metropolitan would have the capability to store 100,000 acre-feet of imported water and withdraw from storage 70,000 acre-feet per year.
  - An amendment to the Agreement between Metropolitan and Calleguas was executed in May 1998. The amendment allows Metropolitan to increase its storage capability from 100,000 acre-feet to 210,000 acre-feet and Metropolitan and Calleguas to improve the operation plans and financing structure for the program.
- Groundwater Conjunctive Use Programs Operational by 2010.
  - AGWA study dated month 1994, identifying the potential storage capacity and return capabilities from groundwater conjunctive use programs.
  - Principles for groundwater storage adopted by the Metropolitan Board in January 2000.
  - Resolution for Proposition 13 Funds adopted by the Metropolitan Board in October 2000.
  - Request-for-Proposal for groundwater conjunctive use projects issued in November 2000.
  - Information Letter to Metropolitan Board regarding the selection of groundwater conjunctive use projects in April 2001.
  - Term sheet for groundwater storage program between Metropolitan and Municipal Water District of Orange County executed in August 2001.
  - Term sheet for a groundwater storage program between Metropolitan and Inland Empire Utility Agency executed in August 2001with an agreement to be executed by April 20003.
  - Agreement for a groundwater storage program between Metropolitan and Three Valleys MWD executed in October 2002.
  - Agreement for groundwater storage program between Metropolitan and Central-West Basin, and the cities of Torrance, Compton, & Long Beach executed in July 2002.
  - Agreement for groundwater storage program between Metropolitan and Foothill MWD executed in February 2003.
  - Term sheets for San Diego groundwater storage programs executed in April and May 2002.

Financing: Financing has been supplied from multiple sources as discussed below:

- Financing for Long-term Seasonal Storage Program. No capital or O&M costs are associated with the implementation of the Long-term Season Storage Program. Rather Metropolitan provides a discounted water rate to encourage member agencies to take delivery of surplus water for storage purposes.
- Financing for North Las Posas Groundwater Storage Program.
  - Metropolitan's Board appropriated $6 million to construct wells and appurtenant facilities in Phase 1 of the program in June 1995.
  - Metropolitan's Board appropriated $25 million to construct wells and appurtenant facilities Phase 2 of the program in January 1998.
- Financing for 2010 and Additional Groundwater Storage Programs
  - Metropolitan's Board appropriated $210,000 to conduct initial environmental, engineering and planning studies for the Raymond Basin storage program in January 2000.
  - Proposition 13 funds ($45 million) were allocated to Metropolitan by the state in May 2000 for the development of local groundwater storage projects.
  - Metropolitan's long-term capital program includes $210 million to implement groundwater conjunctive use programs through 2020.

Federal, State, and Local Permits/Approvals.

- Final EIR for North Las Posas Groundwater Storage Program. Environmental Impact Report for the North Las Posas Groundwater Storage Program was certified by Calleguas Municipal Water District, lead agency, and by Metropolitan, responsible agency, in April 1995 and June 1995, respectively.
- Long Beach Conjunctive-use Storage Project. Environmental documentation for the Long Beach Conjunctive-use Storage Project was certified by the City of Long Beach in August 2001.
- Live Oak Basin Conjunctive-use Storage Project. Environmental documentation for the Live Oak Basin Conjunctive-use Storage Project was certified by Three Valleys MWD in January 2002.
- Foothill Area Groundwater Storage Project. Environmental documentation for the Foothill Area Groundwater Storage Project was certified by Foothill Municipal Water District in January 2003.
- Chino Basin Groundwater Storage Project. Environmental documentation for the Chino Basin Groundwater Storage Project was certified by Inland Empire Utility Agency in December 2002.
- Environmental Review for 2010 Programs. Environmental review of the 2010 Groundwater Conjunctive Use Programs will be completed prior to signing agreements.

Disclosure Document

REPORT ON METROPOLITAN'S WATER SUPPLIES DISCLOSURE STATEMENT

With legislation authored by Senator Sheila Kuehl (SB221) and Senator Jim Costa (SB610) water retailers are required to demonstrate whether their water supplies are sufficient for certain proposed subdivisions and large development projects subject to the California Environmental Quality Act (CEQA). Although Metropolitan and other wholesalers do not have verification responsibilities under this legislation, information provided by Metropolitan may be useful to retailers in complying with these responsibilities.

This report identifies actual and projected demands for water from Metropolitan as well as the water supplies available to Metropolitan to meet those demands. The information used in developing demand projections in this report includes data provided by the Southern California Association of Governments (SCAG), the San Diego Association of Governments (SANDAG), Metropolitan's public member agencies and other sources. The information used in developing supply projections includes data provided by the California Department of Water Resources regarding State Water Project supplies, the United States Bureau of Reclamation regarding Colorado River supplies, and other sources. Other information regarding water demand and supply is available to readers in Metropolitan's Integrated Resource Plan (IRP) and Regional Urban Water Management Plan (RUWMP). While there is information in the report discussing dry year water availability and Metropolitan's Water Supply and Drought Management Plan (WSDM Plan), this report does not cover Metropolitan's policies regarding water shortage allocations. Metropolitan's policy for water shortage allocations is to provide deliveries consistent with California law and the WSDM Plan; more information on this matter is available elsewhere.

Although all information in this report is believed to be accurate as of the time of issuance, Metropolitan does not warrant as to the reliability of information contained in this report supplied by third parties. Readers should make their own judgements to the extent on which they rely on the information in this report. This report will be updated as new information and circumstances warrant.

DRAFT

CITY OF ONTARIO

PUBLIC WORKS AGENCY
1425 South Bon View Avenue
Ontario, CA 91761
Phone: (909) 395-2600

POTABLE AND RECYCLED WATER GUIDELINES FOR THE PREPARATION AND REVIEW OF HYDRAULIC ANALYSIS FOR NEW DEVELOPMENTS IN THE CITY OF ONTARIO UPDATED 12-01-05

This document provides guidelines for the preparation and review of EIR and Specific Plan hydraulic analyses performed for developments within the City of Ontario's New Model Colony (NMC). The City is currently finalizing the 2005 Water and Recycled Water Master Plans. The information contained herein is the best available to date. However, this data shall continue to be subject to revisions as necessary. The guidelines presented herein are divided into the following categories:

- Water Demand Estimates
- System Evaluation Criteria
- Modeling Requirements
- Documentation Requirements

Potable and Recycled Water Demand Estimates

Potable water demands should be estimated with the water demand factors presented in **Table 1**.

Table 1
Water Demand Equivalents By Land Use

Land Use	Water Demand Factor (gpd/ac)	Avg. Day Demand (gpm/ac)	Max Day Peaking Factor	Max Day Demand (gpm/ac)	Avg. Density (units/ac)	Water Demand Equivalents (WDE) (gpm/unit)
Residential Detached (4-6 units/acre)	3,982	2.77	1.57	4.34	5.0	0.87
Residential Detached (6-8 units/acre)	4,141	2.88	1.57	4.52	7.0	0.65
Residential Detached (8+ units/acre)	4,248	2.95	1.57	4.63	9.0	0.51
Residential Attached (10-20 units/acre)	5,760	4.00	1.57	6.28	15.0	0.42
Commercial *	2,495	1.73	1.48	2.56	1.0	2.56
Industrial/Business Park *	1,400	0.97	1.42	1.38	1.0	1.38
Schools	2,600	1.81	1.88	3.39	1.0	3.39
Parks	3,400	2.36	2.50	5.90	1.0	5.90
Recreational Centers *	4,000	2.78	2.50	6.94	1.0	6.94

* Water demand for these land uses may vary significantly. Actual water demand shall be determined based on site specific development.

Table 2 presents the percentages to be used to separate total water demand into potable and recycled water demand components. As shown in **Table 2**, the potable water demand percentage for residential land use categories is 100 percent to allow for recycled water demand uncertainties and service from the potable system in the event of a service outage.

Table 2
Potable and Recycled Water Service Assumptions

Land Use	Potable System	Recycled System[1]
Residential Detached (4-6 units/acre)	100%	10%
Residential Detached (6-8 units/acre)	100%	15%
Residential Detached (8+ units/acre)	100%	15%
Residential Attached (10-20 units/acre)	100%	20%
Commercial Usage	85%	15%
School Usage	60%	40%
Park Usage	20%	80%
Arterial Street Landscaping	0%	100%

[1] Due to service outages and timing uncertainties, residential factors assigned for hydraulic analysis provide pipeline capacity for irrigation in either the potable or recycled water system.

Table 3 contains sample water supply calculations. To calculate the total maximum day water demand in gallons per minute (gpm), multiply the appropriate land use value (dwelling units for residential categories, acreage for non-residential categories) by the corresponding Water Demand Equivalents (WDE) factor. To calculate the maximum day potable and recycled water demands in gallons per minute (gpm) (for non-residential land use categories), multiply the calculated total water demand by the recycled water percentage to obtain the recycled water demand. Subtract the recycled water demand from the total water demand to determine the potable water demand.

Table 3
Example Water Supply Calculation

Land Use	Acres (gross)	Residential Units	Density (units/acre)	WDE Factor (gpm)	% recycled water	Potable MDD (gpm)	Recycled MDD (gpm)
Residential Detached (4-6 units/acre)	600	3000	5.0	0.87	0%	2610	0
Residential Detached (6-8 units/acre)	400	3000	7.5	0.65	0%	1950	0
Residential Attached (10-20 units/acre)	150	1800	12.0	0.42	0%	756	0
Commercial	75	n/a	1.0	2.56	15%	163	29
TOTAL	**1225**	**7800**				**5479**	**29**
remaining available potable supply = 5,600gpm - 5479 gpm = 121 gpm.							

In addition to the calculation of maximum day demand (MDD), and average day demands (ADD), Minimum Month Demand (MinMD) and peak hour demand (PHD) need to be calculated by multiplying ADD with the appropriate peaking factors listed in **Table 4**. The peaking hour factors have been developed based on the historical data and typical diurnal curves. Table 4 lists the relationships between ADD and other peaking demands.

Table 4
Peaking Factors

Water System	ADD	MinDD/ADD	MDD/ADD	PHD/ADD
Residential	1.0	0.7	1.57	3.0
Commercial	1.0	0.7	1.48	2.1
Industrial	1.0	0.7	1.42	3.0
Schools	1.0	0.7	1.88	2.6
Irrigation (Recycled 8-hr nighttime)	1.0	0.7	2.6	7.8

ADD = Average Day Demand, MinDD = Minimum Day Demand, MDD = Maximum Day Demand, PHD = Peak Hour Demand.

System Evaluation Criteria

System evaluation criteria is presented in **Table 5** and **Table 6**. The system evaluation criteria has been developed reviewing typical planning criteria used by similar water utilities and defined in local codes, engineering judgment, commonly accepted industry standards and input from the City of Ontario staff. The "industry standards" are typically ranges of values that are acceptable for the criteria in question, thus are used more as a check to confirm that the values being developed are reasonable. The system evaluation that should be used for the hydraulic analysis of water and recycled water systems are summarized in **Table 5**. The fire flow criteria that apply to potable water systems only are presented in **Table 6**. Some of the criteria are discussed in more detail below.

Table 5
System Evaluation Criteria

Evaluation Criteria	Value	Units	Evaluation Demand Conditions
System Pressure (Potable and Recycled Water Systems)			
Maximum Pressure	125	psi	MinMD
Minimum Pressure, normal conditions	40	psi	PHD
Minimum Pressure, with fire flow	20	psi	MDD
Minimum Pressure, Recycled Water System	55	psi	PHD
Pipeline Velocity (Potable and Recycled Water Systems)			
Maximum Velocity (excludes fire hydrant runs)	10	fps	PHD
Maximum Design Velocity (distribution pipes ≤ 12-inch diameter)	6	fps	MDD
Maximum Design Velocity (transmission mains > 12-inch diameter)	6	fps	MDD[1]
Potable Water Storage Volume			
Operational Storage	25 percent of MDD	MG	MDD
Fire Fighting Storage	Highest fire flow requirement (flow * duration)	MG	MDD
Emergency Storage	1.0 times ADD	MG	ADD
Potable Water Supply Reliability			
Water Supply Reliability – CDA Out-of-Service	Provide MDD with groundwater wells only		MDD

1 – Includes reservoir refill condition (low demand and all wells on).

Table 6
Fire Flow Criteria

Evaluation Criteria	Value	Units	Evaluation Demand Conditions
Residential Detached (4-6 units/acre)	1,500	gpm for 2 hours	MDD
Residential Detached (6-8 units/acre)	1,500	gpm for 2 hours	MDD
Residential Detached (8+ units/acre)	2,000	gpm for 2 hours	MDD
Residential Attached (10-20 units/acre)	3,500	gpm for 4 hours	MDD
Neighborhood Commercial (NC)	2,500	gpm for 3 hours	MDD
General Commercial (GC)	3,000	gpm for 3 hours	MDD
Administrative Professional (AP)	3,000	gpm for 3 hours	MDD
Light Industrial (LI)	3,500	gpm for 4 hours	MDD
Heavy Industrial (HI)	6,000	gpm for 4 hours	MDD
Industrial Park (IP)	3,500	gpm for 4 hours	MDD
Public School (PPS)	2,500	gpm for 3 hours	MDD
Park/Recreational Open Space (PROS)	1,500	gpm for 2 hours	MDD
Non-Recreational Open Space (NROS)	1,500	gpm for 2 hours	MDD
Public Facilities (PF)	3,500	gpm for 4 hours	MDD

Pressure Zones

For the potable water system, NMC development will be served from the expansion of the existing 1010 Zone (formerly Phillips Street Zone) and creation of the new 925 Zone (formerly Francis Street Zone).

The recycled water system will be served from connections to Inland Empire Utilities Agency (IEUA) pressure zones. NMC development, north of Chino Avenue, will be served from IEUA's 1050 pressure zone via a connection at the discharge side of the RP-1 booster station. NMC development, south of Chino Avenue, will be served from IEUA's 930 pressure zone via connections at the RP-1 outfall and proposed Edison pipeline at major street intersections.

System Pressures

Minimum system pressures should be evaluated under two different scenarios: Peak Hour Demand (PHD) and Maximum Day Demand (MDD) plus fire flow. The minimum pressure criterion for normal PHD conditions (i.e. without supplying emergency and fire flows) is 40 psi, while the minimum pressure criterion under MDD with fire flow conditions is 20 psi. The pressure analysis is limited to demand nodes because only locations where customers are served need to meet such pressure requirements. Lower pressures may be acceptable for junctions at water system facilities and on transmission mains provided State Department of Health Services requirements are met.

System pressures in the recycled water system need to meet the minimum pressure criterion of 55 psi at the service meter under PHD conditions. Since recycled water would not be used for fire fighting, fire flow criteria or residual pressure criteria do not apply.

Pipeline Size

The minimum potable water pipeline size for new development is 8-inch diameter. For recycled water, the minimum pipeline size in arterial streets of new development is 8-inch diameter. Smaller diameter pipeline will be consider in collector streets on a case-by-case basis.

Potable Water Reservoir Storage Volume

The total storage required for a potable water system consists of three components: 1) storage for operational use 2) storage for fire fighting and 3) storage for emergencies. The capacities are calculated as follows:

- The operational storage is calculated as 25 percent of the MDD of a pressure zone.
- Fire flow storage is determined based on the highest fire flow requirement of each pressure zone multiplied by the corresponding duration. For example, if the highest fire flow of a zone is 6,000 gpm with duration of 4 hours, the required storage for that zone is 1.44 MG. For analysis purposes, it is assumed that there will only be one fire per zone at any one time.
- The emergency storage required is calculated as 1.0 times ADD of a pressure zone.

The total required storage of these three components should be determined by pressure zone. The available storage by pressure zone should be compared with the required storage to determine if a zone has a storage surplus or deficit. The following reservoirs are planned to serve Phase 1 development.

The following new reservoirs will provide storage for Phase 1 development:

- A new 6 MG-925 Zone Reservoir to be constructed on a site at the northeast of the intersection of Jurupa Street and Dupont Avenue.
- A new second 9 MG-1010 Zone Reservoir (Reservoir 1010-2B) to be constructed on the site of the existing City 1010 Zone Reservoir (Reservoir 1010-2A), southeast of the intersection of Milliken Avenue and Interstate 10.

Potable Water Supply

The following water supply is planned for NMC Phase 1 development:

- Chino Desalter Authority (CDA) No. 1 Connection – 930 gpm
- CDA No. 2 Connection –2,170 gpm
- 3 New NMC Wells in 925 Zone –2,000 gpm (estimated capacity).
- 1 New NMC Well No. 4 in 1010 Zone –2,000 gpm (estimated capacity).

Modeling Requirements

The hydraulic analysis of both the potable and recycled water systems of a new development should be modeled using hydraulic modeling software compatible with the City's modeling platform, H_2OMAP Water from MWH Soft, Inc. If another hydraulic modeling software program is used, provide detailed data file and exhibits (paper copy and Excel spreadsheet or similar electronic

format) to facilitate export of the data into the City's H_2OMAP model. The proposed water systems can be modeled as follows:

- By adding the proposed pipelines to the existing potable water or recycled water model
- By creating a new model that is supplied by one or multiple sources, depending on the number of connections with the existing distribution system. These connections should be modeled as fixed grade nodes that use the hydraulic grade lines (HGLs) of the latest City model as boundary conditions under ADD, MDD and MinDD conditions.
- Model the reservoirs at two-thirds full for 30 foot water level depth tank. Use an HGL of 1,000 feet for the1010 Zone and 915 feet for the 925 Zone.

The model and modeling analysis should at a minimum consists of:

- All pipelines of 8-inch in diameter and greater that are proposed as part of the new development.
- Input of pipeline diameter, roughness coefficient, length, material, and pressure zone.
- Input of junction demand (gpm), peaking factor, ground elevation, and pressure zone.
- Input of additional wells, reservoirs, and booster stations (if applicable confirm the facility representation in the latest City model).
- Steady state runs, evaluating pressures under PHD and MDD plus fire flow conditions.
- Exhibits presenting the proposed potable and recycled water systems with the pipeline diameters annotated.
- Exhibits presenting the system layout with pipeline velocities and system pressures annotated for each of the model runs.

Reference Exhibits

The following exhibits are attached for reference:

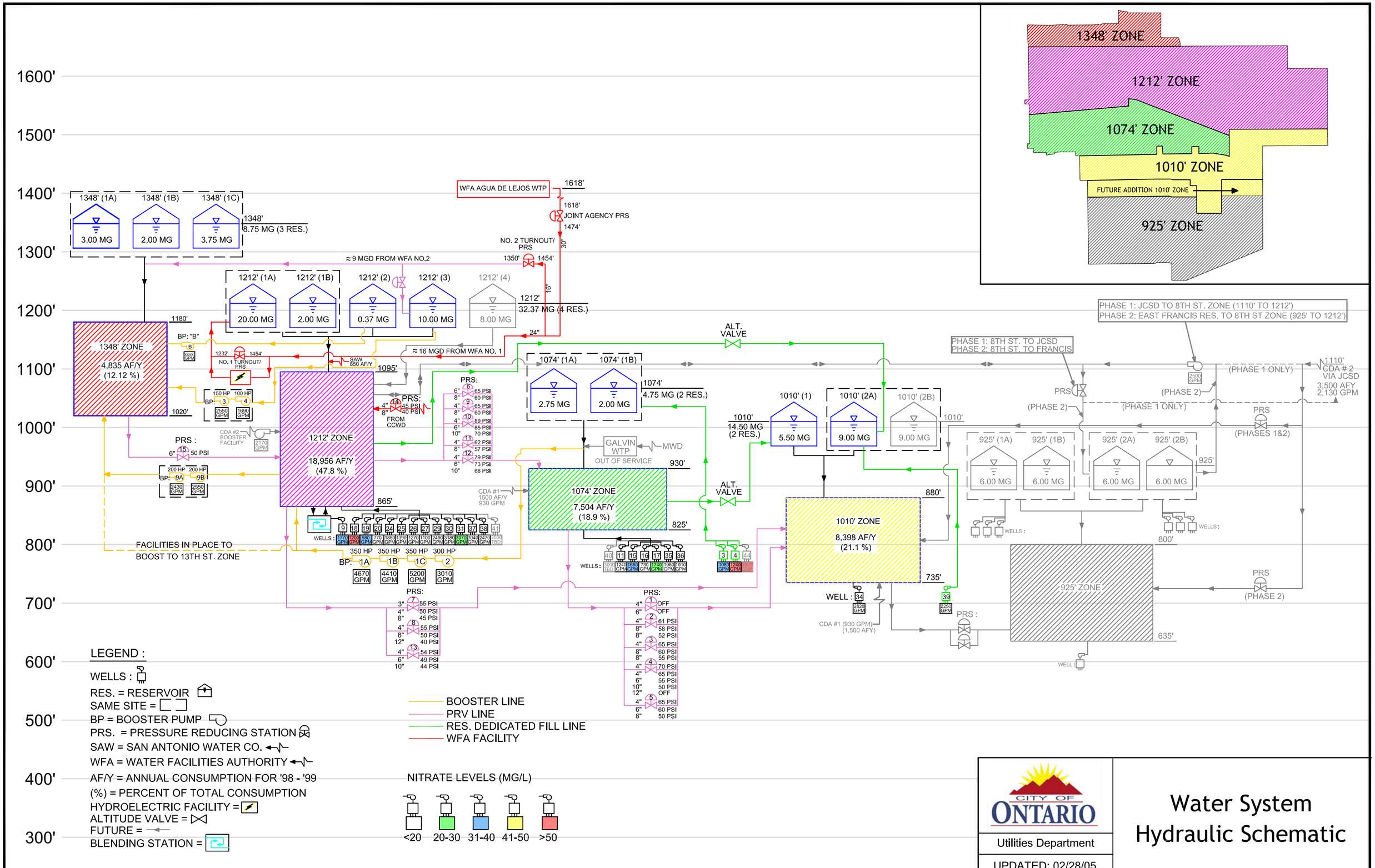
- Hydraulic Schematic of City Water System
- Pressure Zone Boundaries
- Draft NMC Water Supply Phasing Plan
- Draft NMC Phase 1 Potable Water System-1010 (Phillips Street) Zone
- Draft NMC Phase 1 Potable Water System-925 (Francis Street) Zone
- Draft NMC Phase 1 Recycled Water System-IEUA 1050 Zone
- Draft NMC Phase 1 Recycled Water System-IEUA 930 Zone

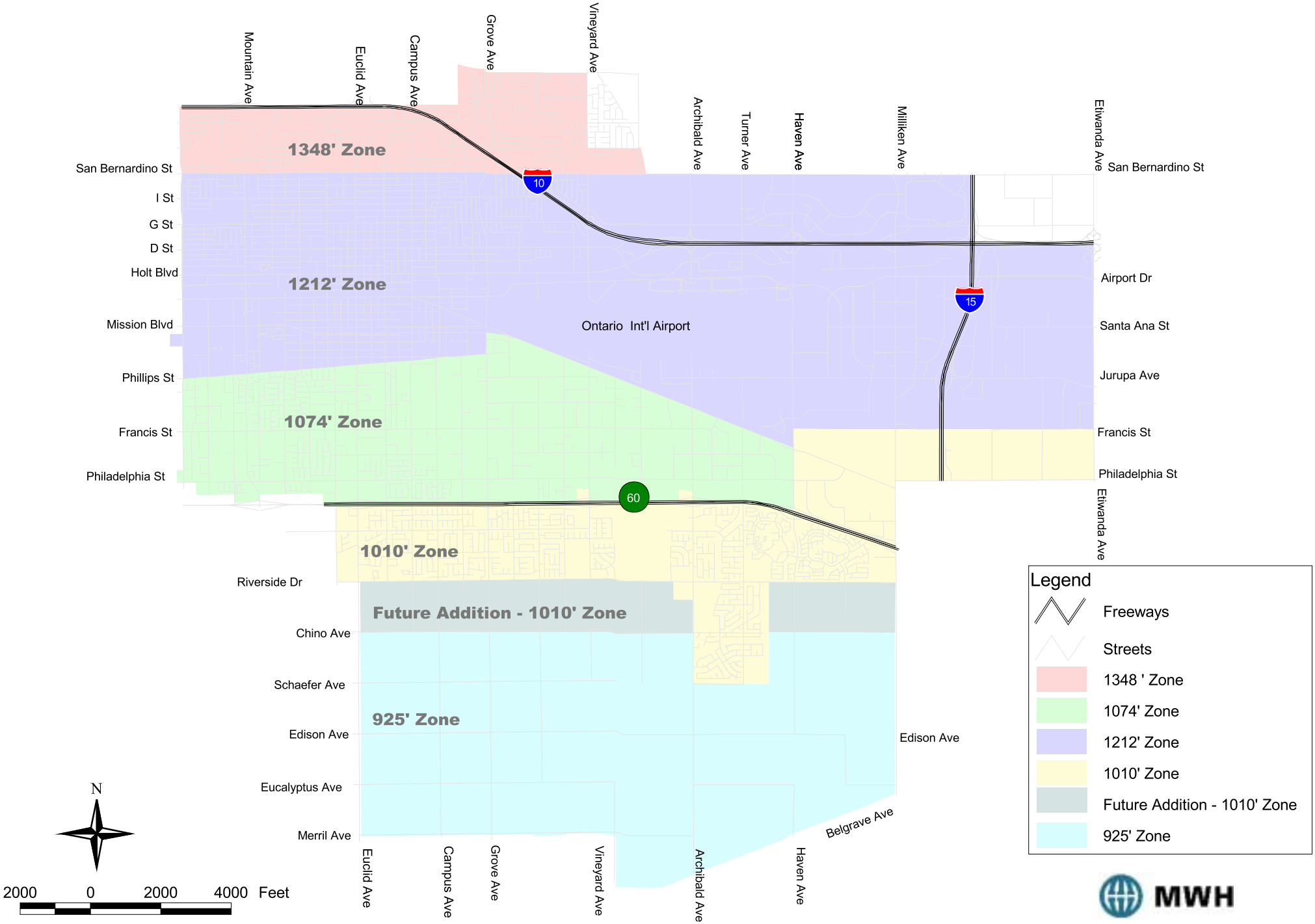
Documentation Requirements

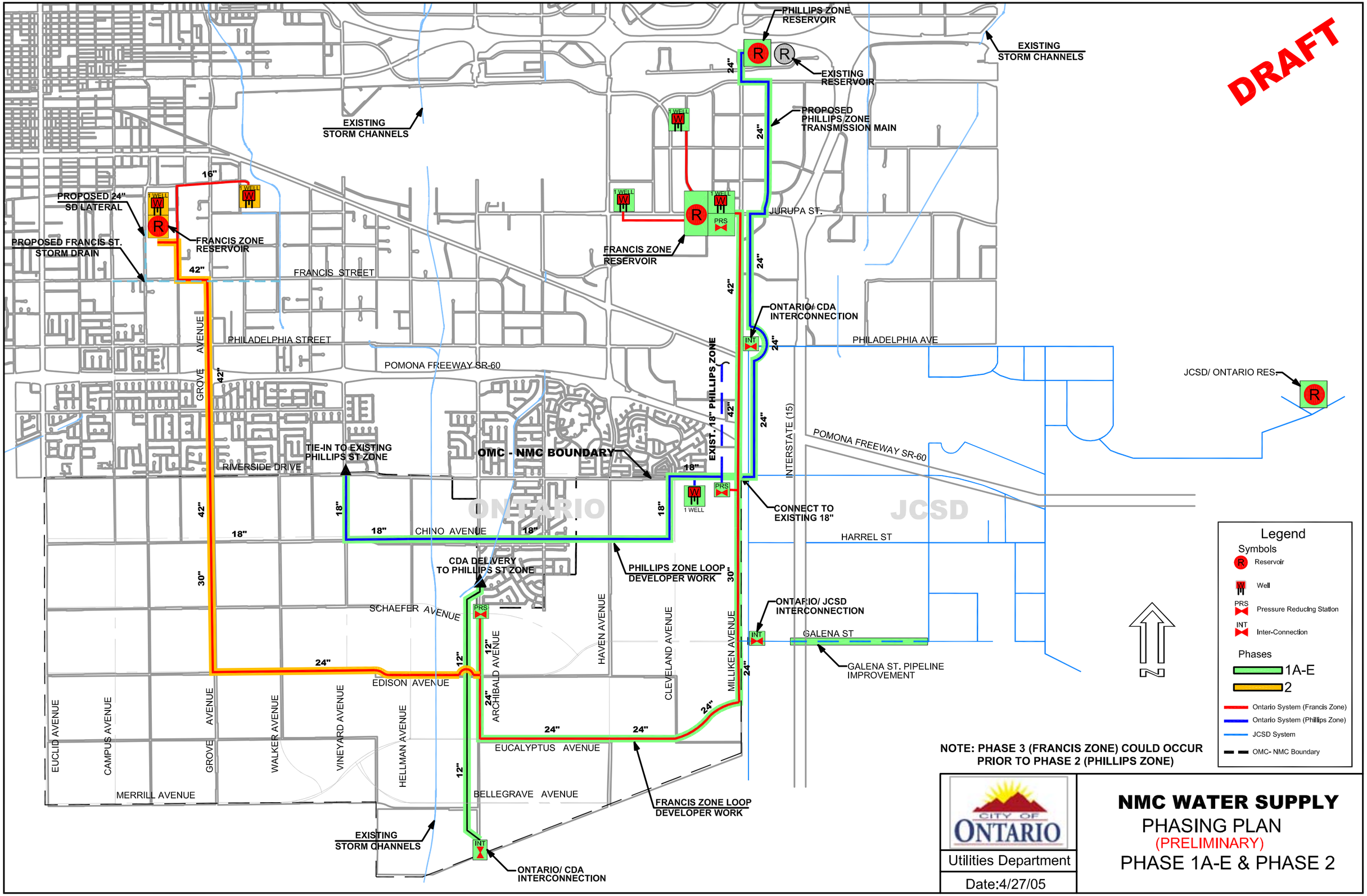
The documentation should include the following as a minimum:

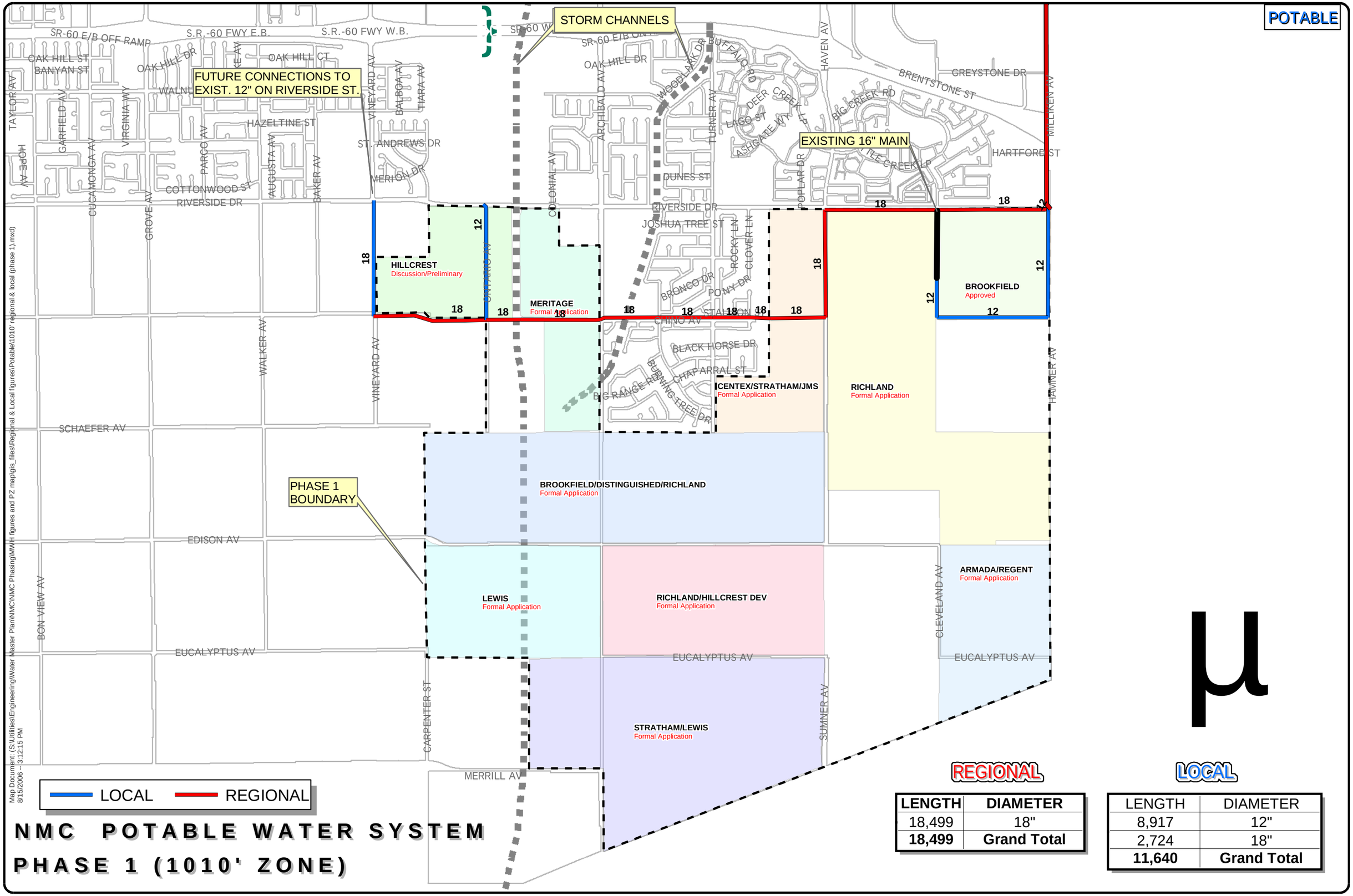
- The document shall be prepared and stamped by a Registered Civil Engineer.
- A figure indicating the location of the proposed development with land use coding
- A table summarizing the areas by land use category and the associated water and recycled water demands
- A table summarizing ADD, MDD, and PHD potable and recycled water demands
- A description of the potable water storage requirements, available storage, and storage surplus/deficit.

- A summary table of the potable water supply requirements and water demand, available supply by source, and supply surplus/deficit. Define which (new) sources are used to meet the supply criteria under the different reliability scenarios.
- A description of the potable water booster pumping stations/pressure reducing station requirements, if applicable.
- A description of the fire flow requirements, indicating the location with the highest fire flow criteria.
- A summary table of the recycled water demand projections. Include a discussion of where the recycled water connects with existing and future IEUA's and/or City's recycled water system.
- Presentation of proposed potable and recycled water distribution systems including the graphics as listed under modeling requirements. Discussion of pressure ranges under MinDD, ADD, and MDD scenarios.
- A description of all assumptions made in preparing and performing the hydraulic analyses.


1348' ZONE
1212' ZONE
1074' ZONE
1010' ZONE
FUTURE ADDITION 1010' ZONE
925' ZONE
1600'
1500'
1400'
1300'
1200'
1100'
1000'
900'
800'
700'
600'
500'
400'
300'
1348' (1A)
1348' (1B)
1348' (1C)
3.00 MG
2.00 MG
3.75 MG
1348'
8.75 MG (3 RES.)
WFA AGUA DE LEJOS WTP
1618'
JOINT AGENCY PRS
1474'
NO. 2 TURNOUT/ PRS
≈ 9 MGD FROM WFA NO.2
1212' (1A)
1212' (1B)
1212' (2)
1212' (3)
1212' (4)
20.00 MG
2.00 MG
0.37 MG
10.00 MG
8.00 MG
1212'
32.37 MG (4 RES.)
≈ 16 MGD FROM WFA NO. 1
1348' ZONE
4,835 AF/Y
(12.12 %)
1180'
BP: "B"
NO. 1 TURNOUT/ PRS
SAW 850 AF/Y
1095'
1020'
1212' ZONE
18,956 AF/Y
(47.8 %)
865'
PRS :
CDA #2 BOOSTER FACILITY
2170 GPM
FROM CCWD
1074' (1A)
1074' (1B)
2.75 MG
2.00 MG
1074'
4.75 MG (2 RES.)
ALT. VALVE
GALVIN WTP
OUT OF SERVICE
MWD
930'
1074' ZONE
7,504 AF/Y
(18.9 %)
825'
CDA #1
1500 AF/Y
930 GPM
FACILITIES IN PLACE TO BOOST TO 13TH ST. ZONE
1010' (1)
1010' (2A)
1010' (2B)
1010'
14.50 MG
(2 RES.)
5.50 MG
9.00 MG
9.00 MG
1010' ZONE
8,398 AF/Y
(21.1 %)
880'
735'
WELL : 34
CDA #1 (930 GPM)
(1,500 AFY)
PHASE 1: JCSD TO 8TH ST. ZONE (1110' TO 1212')
PHASE 2: EAST FRANCIS RES. TO 8TH ST ZONE (925' TO 1212')
PHASE 1: 8TH ST. TO JCSD
PHASE 2: 8TH ST. TO FRANCIS
(PHASE 1 ONLY)
(PHASE 2)
1110'
CDA # 2
VIA JCSD
3,500 AFY
2,130 GPM
(PHASES 1&2)
925' (1A)
925' (1B)
925' (2A)
925' (2B)
6.00 MG
925'
800'
925' ZONE
635'
LEGEND :
WELLS :
RES. = RESERVOIR
SAME SITE =
BP = BOOSTER PUMP
PRS. = PRESSURE REDUCING STATION
SAW = SAN ANTONIO WATER CO.
WFA = WATER FACILITIES AUTHORITY
AF/Y = ANNUAL CONSUMPTION FOR '98 - '99
(%) = PERCENT OF TOTAL CONSUMPTION
HYDROELECTRIC FACILITY =
ALTITUDE VALVE =
FUTURE =
BLENDING STATION =
BOOSTER LINE
PRV LINE
RES. DEDICATED FILL LINE
WFA FACILITY
NITRATE LEVELS (MG/L)
<20
20-30
31-40
41-50
>50
CITY OF ONTARIO
Utilities Department
UPDATED: 02/28/05
Water System
Hydraulic Schematic


1348' Zone
1212' Zone
1074' Zone
1010' Zone
Future Addition - 1010' Zone
925' Zone
Ontario Int'l Airport
Mountain Ave
Euclid Ave
Campus Ave
Grove Ave
Vineyard Ave
Archibald Ave
Turner Ave
Haven Ave
Milliken Ave
Etiwanda Ave
San Bernardino St
I St
G St
D St
Holt Blvd
Mission Blvd
Phillips St
Francis St
Philadelphia St
Airport Dr
Santa Ana St
Jurupa Ave
Riverside Dr
Chino Ave
Schaefer Ave
Edison Ave
Eucalyptus Ave
Merril Ave
Belgrave Ave
10
15
60
Legend
Freeways
Streets
1348 ' Zone
1074' Zone
1212' Zone
1010' Zone
Future Addition - 1010' Zone
925' Zone
N
2000 0 2000 4000 Feet
MWH


DRAFT
PHILLIPS ZONE RESERVOIR
EXISTING RESERVOIR
EXISTING STORM CHANNELS
PROPOSED PHILLIPS ZONE TRANSMISSION MAIN
EXISTING STORM CHANNELS
PROPOSED 24" SD LATERAL
PROPOSED FRANCIS ST. STORM DRAIN
FRANCIS ZONE RESERVOIR
FRANCIS ZONE RESERVOIR
JURUPA ST.
FRANCIS STREET
PHILADELPHIA STREET
PHILADELPHIA AVE
ONTARIO/ CDA INTERCONNECTION
POMONA FREEWAY SR-60
POMONA FREEWAY SR-60
JCSD/ ONTARIO RES.
EXIST. 18" PHILLIPS ZONE
INTERSTATE (15)
GROVE AVENUE
TIE-IN TO EXISTING PHILLIPS ST ZONE
OMC - NMC BOUNDARY
RIVERSIDE DRIVE
CONNECT TO EXISTING 18"
ONTARIO
JCSD
CHINO AVENUE
HARREL ST
CDA DELIVERY TO PHILLIPS ST ZONE
PHILLIPS ZONE LOOP DEVELOPER WORK
SCHAEFER AVENUE
ONTARIO/ JCSD INTERCONNECTION
GALENA ST
GALENA ST. PIPELINE IMPROVEMENT
EDISON AVENUE
HAVEN AVENUE
CLEVELAND AVENUE
MILLIKEN AVENUE
ARCHIBALD AVENUE
EUCALYPTUS AVENUE
BELLEGRAVE AVENUE
MERRILL AVENUE
EUCLID AVENUE
CAMPUS AVENUE
GROVE AVENUE
WALKER AVENUE
VINEYARD AVENUE
HELLMAN AVENUE
FRANCIS ZONE LOOP DEVELOPER WORK
EXISTING STORM CHANNELS
ONTARIO/ CDA INTERCONNECTION
NOTE: PHASE 3 (FRANCIS ZONE) COULD OCCUR PRIOR TO PHASE 2 (PHILLIPS ZONE)
Legend
Symbols
Reservoir
Well
Pressure Reducing Station
Inter-Connection
Phases
1A-E
2
Ontario System (Francis Zone)
Ontario System (Phillips Zone)
JCSD System
OMC- NMC Boundary
CITY OF ONTARIO
Utilities Department
Date:4/27/05
NMC WATER SUPPLY
PHASING PLAN
(PRELIMINARY)
PHASE 1A-E & PHASE 2



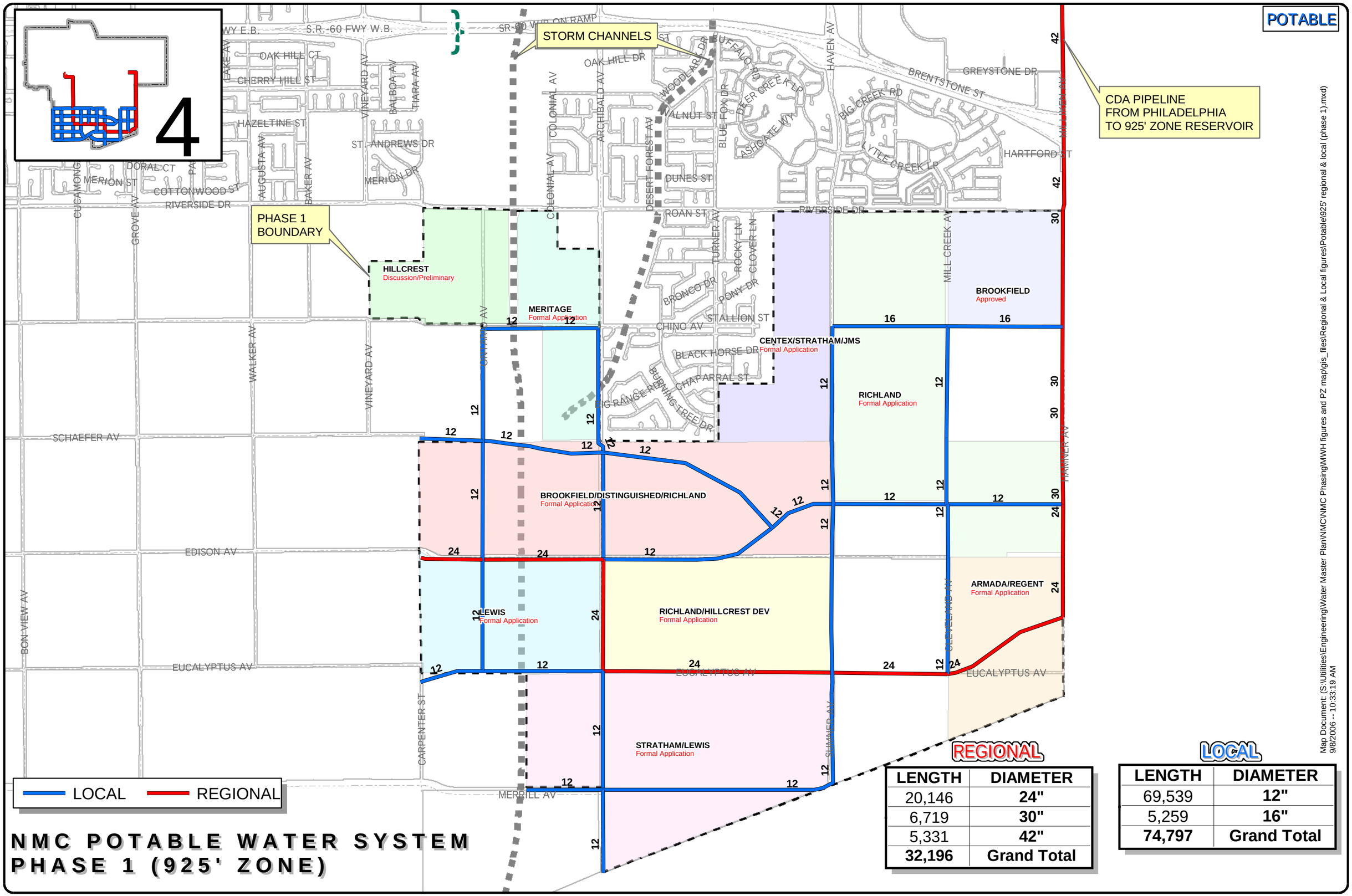
NMC POTABLE WATER SYSTEM
PHASE 1 (1010' ZONE)

REGIONAL

LENGTH	DIAMETER
18,499	18"
18,499	**Grand Total**

LOCAL

LENGTH	DIAMETER
8,917	12"
2,724	18"
11,640	**Grand Total**



NMC POTABLE WATER SYSTEM PHASE 1 (925' ZONE)

REGIONAL

LENGTH	DIAMETER
20,146	24"
6,719	30"
5,331	42"
32,196	Grand Total

LOCAL

LENGTH	DIAMETER
69,539	12"
5,259	16"
74,797	Grand Total

Map Document: (S:\Utilities\Engineering\Water Master Plan\NMC\NMC Phasing\MWH figures and PZ map\gis_files\Regional & Local figures\Potable\925' regional & local (phase 1).mxd)
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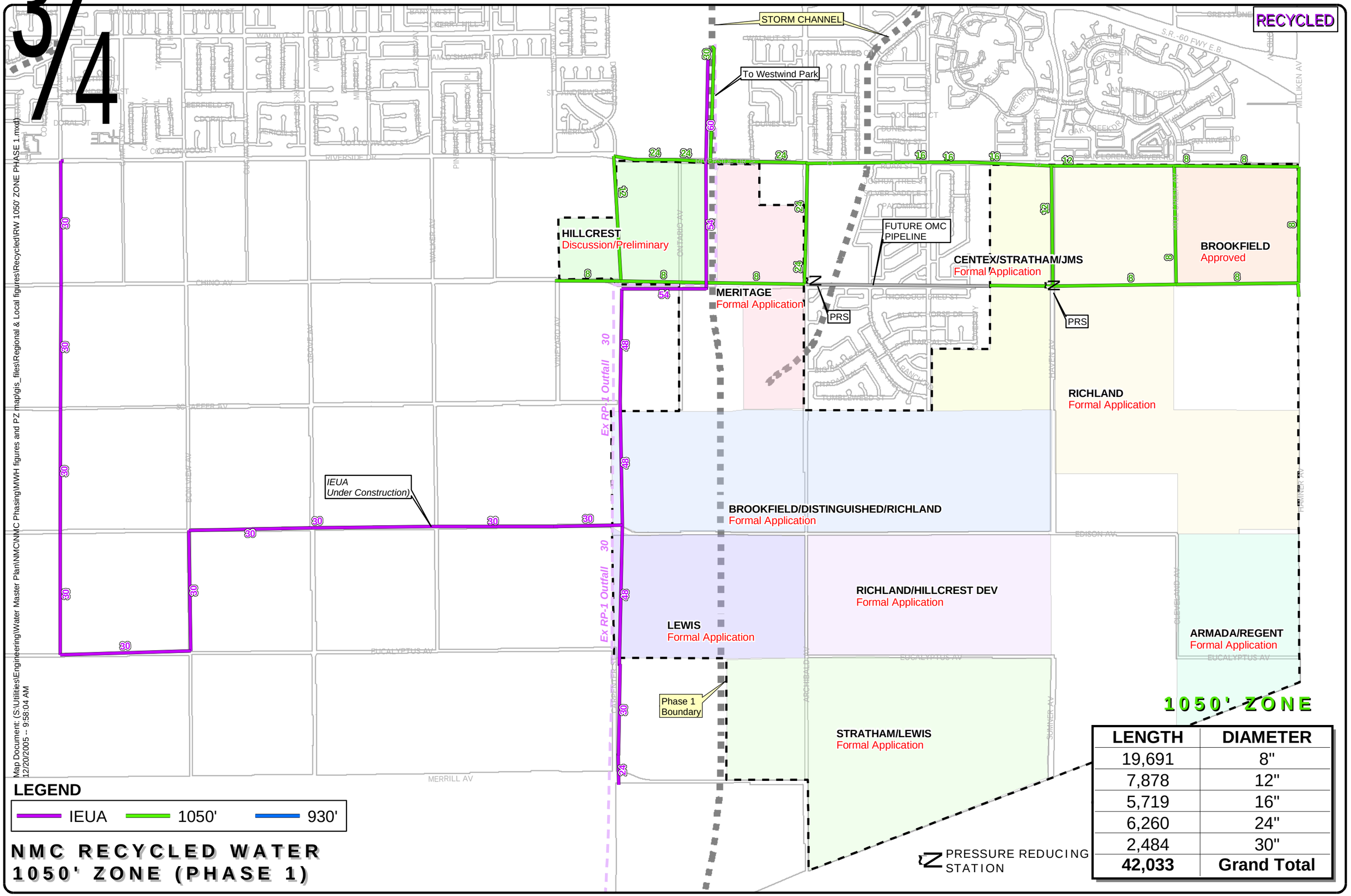
3/4

RECYCLED



LENGTH	DIAMETER
19,691	8"
7,878	12"
5,719	16"
6,260	24"
2,484	30"
42,033	**Grand Total**

3/4

RECYCLED

DRAFT

STORM CHANNELS

To Westwind Park

HILLCREST
Discussion/Preliminary

PHASE 1

MERITAGE
Formal Application

CENTEX/STRATHAM/JMS
Formal Application

BROOKFIELD
Approved

PRS

PRS

RICHLAND
Formal Application

Ex RP-1 Outfall 30

BROOKFIELD/DISTINGUISHED/RICHLAND
Formal Application

ARMADA/REGENT
Formal Application

All connections must be made to ex.30" RP-1

LEWIS
Formal Application
PHASE 1

RICHLAND/HILLCREST DEV
Formal Application

STRATHAM/LEWIS
Formal Application

Phase 1 Boundary

Map Document: (S:\Utilities\Engineering\Water Master Plan\NMC\NMC Phasing\MWH figures and PZ maps\gis_files\Regional & Local figures\Recycled\RW 930' ZONE PHASE 1.mxd)
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LEGEND

IEUA | 1050' | 930'

NMC RECYCLED WATER 930' ZONE (PHASE 1)

PRESSURE REDUCING STATION

930' ZONE
(PHASE 1 ONLY)

LENGTH	DIAMETER
18,507	8"
36,364	12"
28,902	16"
7,744	24"
6,768	30"
2,344	36"
100,630	Grand Total

ORDINANCE NO. 2689
AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF ONTARIO, CALIFORNIA, ADDING CHAPTER 8C TO THE ONTARIO MUNICIPAL CODE TO PROVIDE FOR THE REGULATION AND USE OF RECYCLED WATER

THE CITY COUNCIL OF THE CITY OF ONTARIO, CALIFORNIA, DOES ORDAIN AS FOLLOWS:

SECTION 1: Chapter 8C is hereby added to Title 6 of the Ontario Municipal Code as follows:

CHAPTER 8C
RECYCLED WATER USE

Section

6-8.700	Authority
6-8.701	Purpose
6-8.702	Goals
6-8.703	Policy
6-8.704	Priority
6-8.705	Definitions
6-8.706	Administration
6-8.707	Validity
6-8.708	Service Area
6-8.709	Determination of recycled Area
6-8.710	Authorized uses
6-8.711	Conditions of service
6-8.712	Other applicable rules and codes
6-8.713	Recycled water service application
6-8.714	Recycled Water Use Agreement
6-8.715	Rates, fees, charges and deposits
6-8.716	Size, location and installation of service line
6-8.717	Service connection limitations
6-8.718	Service pressure
6-8.719	Relocation of recycled water service lines
6-8.720	Protective measures
6-8.721	Types of protection
6-8.722	Testing and maintenance of backflow prevention devices
6-8.723	Facilities design
6-8.724	Construction
6-8.725	Emergency connection to the recycled water system
6-8.726	Off-site facilities
6-8.727	On-site facilities
6-8.728	Monitoring and inspection
6-8.729	Maintenance responsibility

Sec. 6-8.700. Authority. Recycled water use is regulated by the California Regional Water Quality Control Board, Santa Ana Region (RWQCB). In accordance with waste discharge requirements for water reclamation projects, the RWQCB requires control mechanisms to regulate facilities distributing recycled water. Article 2 of Chapter 7 of Division 7 of the California Water Code establishes a State policy to encourage the use of recycled water. Permission to use recycled water is based on Inland Empire Utilities Agency's ability to adequately treat domestic wastewater to the point that the recycled water (effluent) meets the requirements of existing Title 22, Chapter 3 regulations of the California Code of Regulations. These regulations were adopted to ensure proper health protection and specify the treatment degree to meet the needs of the intended applications.

Sec. 6-8.701. Purpose. The purpose of this Chapter is to establish procedures, specifications, and limitations for the safe and orderly development and operation of recycled water facilities and systems within the City's service area, and adopt rules and regulations controlling such use.

Sec. 6-8.702. Goals. The goals of this Chapter are as follows:

(a) Achieve conservation of potable water supplies by using recycled water for current and future demands. Recycled water uses may include:

(1) Agricultural irrigation.

(2) Commercial uses (including flushing toilets and urinals).

(3) Construction use.

(4) Industrial processes.

(5) Landscape irrigation.

(6) Landscape and/or recreational impoundments.

(7) Wildlife habitat.

(b) Maintain recycled water quality through a stringent pretreatment program for industrial wastewater.

(c) Prevent direct human consumption of recycled water through:

(1) Adherence to all applicable rules and regulations.

(2) Posting of warning signs by the user.

(3) Cross-connection/backflow prevention program.

(d) Control runoff of recycled water through monitoring of the installation and operation of all recycled water facilities and use areas.

(e) Monitor recycled water quality.

Sec. 6-8.703. Policy. It is the policy of the City that recycled water be used for any purposes approved for recycled water use, when it is economically, technically, and institutionally feasible. Recycled water shall be the primary source of supply for commercial and industrial uses, whenever available and/or feasible. Use of potable water for commercial and industrial uses shall be contrary to City policy; shall not be considered the most beneficial use of a natural resource; and shall be avoided to the maximum extent feasible.

Sec. 6-8.704. Priority. Connection to the Recycled Water System shall be provided on a first-come, first-served basis, as long as infrastructure and recycled water supplies are available.

Sec. 6-8.705. Definitions. Unless the context specifically indicates otherwise, the following terms and phrases, as used in this Chapter, in addition to the definitions set forth in Title 22, Division 4, Chapter 3, Regulations of the California Code of Regulations, shall have the meanings hereinafter designated.

(a) "Agency" shall mean the Inland Empire Utilities Agency (IEUA).

(b) "Agricultural Use" shall mean water used for the production of crops and/or livestock.

(c) "Air-Gap Separation" shall mean a physical break between a supply pipe and a receiving vessel. The air gap shall be at least double the diameter of the supply pipe, measured vertically from the flood rim of the receiving vessel to the supply pipe; however, in no case shall this separation be less than one (1) inch.

(d) "Applicant" shall mean any person, group, firm, partnership, corporation, association, or agency that applies for recycled water service.

(e) "Application Rate" shall mean the rate at which irrigation water is applied to a design or use area, expressed in gallons per minute.

(f) "Approved Use" shall mean an application of recycled water in a manner, and for a purpose, designated in a Recycled Water Use Agreement in compliance with applicable State and local rules and regulations.

(g) "Approved Use Area" shall mean a site with well-defined boundaries designated in a Recycled Water Use Agreement in compliance with applicable rules and regulations.

(h) "As-built Drawings" shall mean the record drawings that show the completed facilities as constructed or modified.

(i) "Automatic System" shall mean the electronically actuated controllers, valves, and associated equipment used to program and operate irrigation systems for the efficient application of recycled water.

(j) "Auxiliary Water Supply" shall mean any water supply on or available to the premises other than the City's potable water.

(k) "AWWA" shall mean the American Water Works Association.

(l) "City Council" shall mean the City Council of the City of Ontario.

(m) "Commercial/Industrial Use" shall mean the water used for toilets, urinals, decorative fountains, decorative indoor and outdoor landscape, industrial process such as rinsing, washing, cooling, flushing, circulation, or construction; and other uses approved by the City.

(n) "Commodity Charge" shall mean a charge imposed by the City for all metered, recycled water used.

(o) "Cross-Connection" shall mean any unapproved and/or unprotected, actual or potential, connection between any part of a potable water system and any equipment, source, or system containing water or other substances not approved as safe and potable for human consumption.

(p) "Direct Beneficial Use" shall mean the use of recycled water which has been transported from the point of production to the point of use, without an intervening discharge to waters of the State.

(q) "Administrator" shall mean the City Manager of the City of Ontario or his authorized representative.

(r) "Discharge" shall mean any release or distribution of recycled water to a use area or disposal site/mechanism. Such discharges are subject to approval by the City.

(s) "DHS" shall mean the California Department of Health Services.

(t) "Double Check Valve Assembly" shall mean a double check valve (DC) that as a minimum, conform to the AWWA Standard C506-78 (R83) adopted on January 28, 1978 for Double Check Valve Type Backflow Prevention Devices which is herein incorporated by reference.

(u) "Greenbelt Areas" shall mean those areas including, but not limited to, parkways, parks, right-of-ways, and landscaping within and/or surrounding a community.

(v) "HCF" shall mean a unit of measure equaling one hundred (100) cubic feet or 748 gallons.

(w) "Industrial Process Water" shall mean the water used in industrial facilities for blending, rinsing, washing, or cooling.

(x) "Infiltration Rate" shall mean the rate at which water penetrates the soil surface and enters the soil profile.

(y) "Landscape Impoundment" shall mean a body of water containing recycled water, which is used for aesthetic or irrigation purposes and which is not intended for public contact or ingestion.

(z) "Landscape Irrigation/Use" shall mean recycled water used for the propagation and maintenance of trees, shrubs, ground cover and turf used for erosion control and aesthetic value, not for resale/profit purposes.

(aa) "Non-potable Water" shall mean water that has not been treated for, or is not acceptable for human consumption, in conformance with Federal, State and local water standards. Non-potable water includes recycled water.

(ab) "Off-site Facilities" shall mean all existing or proposed facilities under the control of the IEUA or the City, from the source of supply to the point of connection with the customer's on-site facilities, up to and including the City's recycled water meter and meter box.

(ac) "On-site Facilities" shall mean all existing or proposed facilities within property under the control of the customer, normally downstream of the City's recycled water meter and meter box.

(ad) "On-site Recycled Water Supervisor" shall mean a qualified person designated by a recycled water user and approved by the City to be responsible for the safe and efficient operation of the user's recycled water system. This person shall be knowledgeable in the operation of the recycled water system and in the application of Federal, State and local guidelines, criteria, standards, and rules and regulations governing the use of recycled water.

(ae) "Open Space" shall mean land that has been designated to remain undeveloped. These areas may receive recycled water service for agricultural or landscape irrigation, or other approved uses.

(af) "POC" shall mean the point of connection at the recycled water service meter.

(ag) "Ponding" shall mean the retention of recycled water on the ground surface or manmade surface for a period of time following the cessation of an approved recycled water use activity, such that potential hazard to the public health may result, as determined by regulatory agencies.

(ah) "Potable Water" shall mean water which conforms to the latest Federal, State and local drinking water standards.

(ai) "PSI" shall mean Pounds per Square Inch. This is a common unit expression of pressure measurement.

(aj) "Recycled Water" shall mean water, which as a result of treatment of wastewater, is suitable for direct beneficial use or a controlled use that otherwise would not occur. The treatment of wastewater is accomplished in accordance with the criteria set forth in Title 22, Division 4, of the California Code of Regulations.

(ak) "Recycled Water Facilities" shall mean the systems, structures, etc, used in the treatment, storage, pumping, transmission and distribution of recycled water.

(al) "Recycled Water Use Agreement" shall mean an agreement between the user and the City to use recycled water in compliance with all applicable rules and regulations

(am) "Recreational Impoundment" shall mean a body of recycled water used for recreational activities including, but not limited to, fishing, boating, and/or swimming. Allowable uses will depend on treatment level of the recycled water.

(an) "Reduced Pressure Principle Backflow Prevention Device" shall mean a reduced pressure principle backflow prevention device (RP) that as a minimum, conform to the AWWA Standard C506-78 (R83) adopted on January 28, 1978 for Reduced Pressure Principle Type Backflow Prevention Devices which is herein incorporated by reference.

(ao) "Regulatory Agency" shall mean any public entity legally constituted by Federal, State and local statutes to protect health and water quality.

(ap) "Runoff" shall mean the flow of water along natural or manmade surfaces away from the designated use area..

(aq) "RWQCB" shall mean the California Regional Water Quality Control Board, Santa Ana Region.

(ar) "Secondary Effluent" shall mean any oxidized wastewater that has been treated by gravity sedimentation to remove settled solids remaining after the primary biological treatment process.

(as) "Service" shall mean the delivery of recycled water to a user.

(at) "Service Connection" shall mean City facilities between the City recycled water distribution system and the customer's meter, including, but not limited to, the meter, meter box, valves, and piping equipment.

(au) "Standard Specifications" shall mean the specifications approved by the City for construction of recycled water facilities.

(av) "Tertiary Effluent" shall mean any secondary effluent which has been filtered and disinfected, and meets all applicable requirements under Title 22. Allowable uses for tertiary effluent shall include body contact and irrigation of human food crops.

(aw) "Unauthorized Discharge" shall mean any release of recycled water that violates any applicable Federal, State, or local statutes, regulations, Chapters, contracts or other requirements.

(ax) "Use Area" shall mean the specific area designated to be served with recycled water through on-site recycled water facilities.

(ay) "User" shall mean any person, group, firm, partnership, corporation, association or agency accepting recycled water from the City's recycled water facilities for use in accordance with this Chapter. "Applicant," "Owner," or "Customer" are terms that are to be considered as users.

(az) "Windblown Spray" shall mean any dispersed, airborne particles of recycled water capable of being transmitted through the air to a location other than that for which the direct application of recycled water is approved.

Sec. 6-8.706. Administrator. Except as otherwise provided herein, the City Manager shall administer, implement, and enforce the provisions of this Chapter. The City Manager may, at his discretion, delegate any or all of these powers and duties.

Sec. 6-8.707. Validity. If any section, subsection, sentence, clause or phrase of this Chapter establishing rules and regulations for the use of recycled water is for any reason found to be invalid or unconstitutional, such decision shall not affect the remaining portions of this Chapter. The City Council declares that it would have approved this Chapter by section, subsection, sentence, clause, or phrase irrespective of the fact that any one or more of the sections, subsections, sentences, clauses or phrases be declared invalid or unconstitutional.

Sec. 6-8.708. Service area. The rules and regulations contained in this Chapter apply to recycled water service to lands and/or improvements lying within the legal boundaries of the City, to properties contiguous to the City under the same ownership as abutting lands within the City or its designated service boundary. Recycled water service shall be provided to a specific service area when related distribution facilities are completed and service becomes available.

Sec. 6-8.709. Determination of recycled use area.

(a) General

(1) The City Council may adopt a Recycled Water Master Plan or utilize the Inland Empire Utilities Agency Recycled Water Master Plan designating current and potential areas for recycled water use. The Master Plan shall be in accordance with the requirements of all DHS and RWQCB, and shall encourage recycled water use. The Master Plan shall be reviewed and updated as needed.

(2) The City Council may review the Recycled Water Master Plan and recommend where water service should be made with recycled water in place of potable water. Where it is determined recycled water is, or will be available within five (5) years, the City may request modifications to existing on-site water facilities and require construction of recycled water systems in new developments.

(3) The City Council may enter into agreements with surrounding cities and/or other agencies to determine recycled water use service areas within the City and jurisdiction of those entities.

(b) Existing potable water service

(1) The City Council may make determinations of areas where existing potable water use should be replaced with recycled water use.

(2) A notice of the determination to use recycled water shall be mailed to the current owner, explaining the reasons for use and resultant procedures needed to facilitate recycled water use.

(c) New recycled water service

(1) On submittal by applicant of a tentative map, land use permit, other proposed land development/land use, or request for recycled water service, the Administrator shall make preliminary determinations if recycled water service can be provided to the area in question.

(2) The Administrator may require the use of recycled water for approved uses, and refuse or otherwise restrict potable water service when recycled water is available and approved for use.

Sec. 6-8.710. Authorized uses. Uses of recycled water include only those uses approved by the California State Department of Health Services (DHS) and for which Title 22 of the California Code of Regulations provides treatment requirements. Each such use will be considered for approval on case-by-case basis. Prior to approval, the user must comply with the requirements established by this Chapter and any other requirements imposed by the Inland Empire Utilities Agency, DHS, or any other regulatory agencies that have jurisdiction over such use.

Sec. 6-8.711. Conditions of service.

(a) Prior to obtaining recycled water service, the user must enter into a Recycled Water Use Agreement with the City. Recycled water use shall be subject to terms and conditions established in the agreement, and in accordance with this Chapter, and other applicable codes, rules, and regulations. If any of the conditions of service are not satisfied at all times, the Recycled Water Use Agreement may be revoked by the Administrator after which all recycled water service shall cease.

(b) The City shall not be liable for any damage by recycled water or resulting from:

(1) Defective plumbing.

(2) Broken or faulty services or recycled water mains.

(3) On-site facilities failures.

(4) High or low pressure conditions.

(5) Interruptions of service.

(6) Any inappropriate or illegal use or management practices.

(c) All recycled water will be provided to the user in the conditions and quantity specified in the Recycled Water Use Agreement.

(d) Recycled water use will not be subject to the same restrictions as potable water during drought conditions and will be supplied as available.

(e) Recycled water service may be terminated whenever the quality of the recycled water does not comply with the requirements of the regulatory agencies, or at any time the provisions of this Chapter, or the conditions specified in the Recycled Water Use Agreement are violated.

Sec. 6-8.712. Other applicable rules and codes. Other guidelines, rules and regulations, ordinances, specifications that may be applied by the City Manager to govern the use of recycled water within the City include:

(a) Regulations that deal with backflow prevention, billing, deposits, penalties, delinquencies, and metering for potable water as established in Sections 6-8.50 to 6-8.64 of the Municipal Code.

(b) Regional Recycled Water Distribution System Ordinance (Ordinance No. 63, Inland Empire Utilities Agency.)

(c) Water Reclamation (Title 22, Division 4 of the California Code of Regulations.)

(d) Regulations Relating to Cross-Connections (Title 17 of the California Code of Regulations.)

(e) Guidelines for Distribution Of Non-potable Water (California-Nevada Section AWWA.)

Sec. 6-8.713. Recycled water service application. The steps for obtaining recycled water service are as follows:

(a) The user completes and submits a recycled water service application, including existing facility "as-built" drawings or proposed facility plans as appropriate, description of where and how recycled water use is proposed, and any other information pertinent to the use of recycled water as requested by the Administrator.

(b) The user prepares an Engineering Report describing proposed/requested recycled water use(s). The City may prepare the report on behalf of the user, provided that the user pays all costs associated with the preparation of the report. The Engineering Report shall be consistent with DHS guidelines.

(c) The completed Engineering Report will be forwarded to the State Department of Health Services (DHS) for review and approval.

(d) The user and the City will address any concerns that the DHS may have regarding the Engineering Report and revise the report accordingly.

(e) Once the DHS approves the Engineering Report, the applicant will enter into a Recycled Water Use Agreement with the City, and pay any applicable fees.

(f) The Administrator will schedule a start-up test of on-site recycled water system to ensure that cross-connections do not exist.

(g) Upon the successful completion of the test, the Administrator may authorize recycled water service to begin.

Sec. 6-8.714. Recycled Water Use Agreement. Recycled Water Use Agreement shall be subject to the following conditions:

(a) The applicant shall pay any specified connection fees, service line charges and other charges, and adhere to the requirements prescribed by this Chapter and to any additional requirements required by other agencies governing recycled water use.

(b) In order to maintain acceptable operating conditions throughout the recycled water system, the Administrator may schedule recycled water use for specific applications. Such scheduling may involve programming deliveries to different users and/or to various portions of a single users on-site system. Any scheduling shall consider the operating constraints of the affected users.

(c) The Administrator may temporarily terminate recycled water service at any time recycled water produced by the Inland Empire Utilities Agency reclamation plant does not meet the requirements of the regulatory agencies. Recycled water service would, in such case, be restored when the recycled water meets the governing requirements.

(d) At a minimum, the Recycled Water Use Agreement shall include the following:

(1) Names and addresses of owner the property and user of the recycled water.

(2) A statement that no changes in the proposed system will be undertaken without amending the Agreement.

(3) A statement that the applicant recognizes potential penalties for violation of this Chapter and any regulatory agencies.

(4) A copy of the DHS approved Engineering Report.

(5) Specific quantity of recycled water to be used, including estimated average annual use in acre-feet, and the maximum gallons per minutes (GPM) needed at the point of connection (POC) as shown on the plans.

(6) Approved uses.

(7) A statement that the Agreement shall be cancelled or amended if:

(i) A change of recycled water use occurs.

(ii) A change in the piping system has been implemented without prior approval.

(iii) A violation of these rules and regulations occurs and results in a system turn-off.

Sec. 6-8.715. Rates, fees, charges and deposits.

(a) All rates and fees regarding recycled water service and their administrative costs shall be established by the City Council and incorporated into Title 6, Chapter 8B of the Ontario Municipal Code. Any changes in fee and rate schedules shall be automatically adopted into this Chapter.

(b) Applicants for recycled water service shall pay their fair share for the construction of facilities needed to deliver recycled water to the applicant's property. All fees and estimated construction costs shall be paid prior to construction; however, the City may reimburse the applicant for a portion of the cost of such facilities as described in Subsection (c) of this Section.

(c) Under certain circumstances, the City may contribute to the cost of designing and/or constructing the facilities needed to deliver recycled water to an applicant's property. Subject to the availability of funds, the City may:

(1) Reimburse an applicant for costs incurred to install oversized facilities in the public right-of-way.

(2) Elect to participate in or construct pipelines, reservoirs, pumping stations or other facilities, as it determines necessary, and/or as funds are available.

Sec. 6-8.716. Size, location, and installation of service line. Recycled water service lines shall be extended by the property owner/developer to a curb line or property line of the customer's property, abutting on a public street, highway, road or City easement in which recycled water mains are installed. The size and location and/or type of recycled water service lines, service connections, meters, backflow protection devices, and any/all other appurtenances are subject to review and approval by the City:

Sec. 6-8.717. Service connection limitations. Recycled water service shall be subject to the following conditions:

(a) A recycled water service connection and its corresponding meter shall not be used to supply adjoining property of a different owner, or to supply property of the same owner across a road, street or other public right-of-way. When a property provided with a recycled water connection and corresponding meter is subdivided, such connection and meter shall be considered as serving the lot or

parcel of land on which the meter is located. Additional recycled water mains and/or recycled water service lines will be required for all subdivided areas in accordance with this Chapter.

(b) Private irrigation systems for homeowner's associations and other developments where landscaping around homes and in common areas are served with one meter, shall not be allowed to cross public roads, easements, or other public rights-of-way without City approval.

(c) All recycled water used on any property where a meter is installed must pass through the meter. Customers shall be held responsible and charged for all recycled water passing through their meters.

Sec. 6-8.718. Service pressure. Whenever possible, the City will operate the recycled water system at a slightly lower pressure than the potable water system. This will cause potable water to flow in the recycled water system in the event of a cross-connection.

Sec. 6-8.719. Relocation of recycled water service lines. Should a recycled water service line installed according to the directions of the owner or user be of the wrong size, or installed at a wrong location or depth, the cost of relocation or removal shall be paid for by the user.

Sec. 6-8.720. Protective measures. The following provisions are intended to protect the City's potable water supplies against actual, undiscovered, unauthorized, or potential cross-connections to the user's recycled water system. These provisions are in addition to, not in lieu of, the controls and requirements of other regulatory agencies. These provisions are in accordance with Title 17 (Public Health) of the California Code of Regulations.

(a) Approved backflow prevention devices on the City's potable water services to the property as required in these provisions, shall be provided, installed, tested, and maintained according to Section 6-8.722. These devices shall be located on the property served immediately downstream of the meter. All devices shall be readily accessible for testing and maintenance and no device shall be submerged at any time.

(b) When a request for recycled water service is initiated, the applicant must provide sufficient information, including plumbing and building plans, to enable the Administrator and other regulatory agencies to determine the level of backflow protection required. The proper backflow protection, as determined by the Administrator and other regulatory agencies, shall then be installed and tested according to Section 6-8.722 before recycled water service is provided.

(c) Each time there is a change of tenant on any commercial or industrial premise, the owner or user shall notify the Administrator immediately. The Administrator will then reassess the level of protection required. In addition, any alterations to existing on-site facilities that may affect required protection level must be reported immediately to the Administrator.

(d) At their discretion, representatives of any health agency having jurisdiction, and the Administrator, may inspect any property provided recycled water service by the City. The inspection shall serve to determine if any actual or potential cross-connections exist. The owner or user shall provide full cooperation in facilitating the inspection.

(e) Where protection is required, an approved backflow protection device for potable water supplies shall be provided as follows:

(1) Each City water service connection that supplies potable water to a premises having an auxiliary water supply (including recycled water) that is not accepted as a potable source by the Administrator, and/or is not approved for potable use by the DHS, shall be protected against backflow from the premises into the City potable water system.

(2) Each City water service connection supplying potable or recycled water to a premises on which any substance is handled in such a fashion as to permit entry into the City water systems (potable or recycled) from the premises shall be protected against backflow. This shall include, but not limited to, the handling of fertilizers, process waters, waters originating from any of the City water systems that have been subject to deterioration in quality, and agricultural use.

(3) Approved backflow devices shall be installed where premises have intricate plumbing and piping arrangements or where not all portions of the premises are readily accessible for inspection.

(4) Appropriate backflow protection may be required at premises where there has been a history of cross-connections being re-established.

(f) Other Measures

(1) Water meters used for recycled water service shall be tagged or color-coded purple, color pantone 512 or 522, or otherwise distinguished as such per AWWA standards. These meters shall not be interchanged or used for potable water service after repairs and/or meter testing have been performed.

(2) Periodic inspection by the City of the recycled water facilities will determine if all identifying items are still clearly discernable. If not, they shall be replaced, repaired or refurbished as needed, by the user. These items include:

(i) Warning tags

(ii) Painted surfaces

(iii) Warning tape

(iv) Identification tape

(v) Covers, caps, signs

(vi) Other items that indicate recycled water is being used.

(3) To determine the existence of any cross-connections or backflow conditions into the potable water system, periodic testing by DHS approved methods will be performed by the Administrator and/or other regulatory agencies.

(4) In the event of contamination or pollution of a City potable water system due to a cross-connection or other failure, the DHS, the Administrator, and the IEUA shall be promptly notified by telephone so that appropriate and immediate measures may be taken to correct the problem.

(5) The State and County health departments, the Administrator, and the IEUA shall be kept informed by written document of the identity of the person responsible for the user's recycled water system on all premises concerned with these rules and regulations. At each authorized use area, an 'On-site' Recycled Water Supervisor shall be designated. This supervisor shall be responsible for:

(i) The installation and use of all components of the on-site recycled water system(s).

(ii) Prevention of cross-connections.

(iii) Change in use of recycled water.

(g) When the recycled water uses or conditions, as determined by the Administrator or other regulatory agency, represent a clear and immediate hazard to the City potable and/or recycled water supply that cannot be immediately removed or corrected, the Administrator shall terminate recycled water use. Conditions or uses that create a basis for termination include, but are not limited to, refusal to install, test or repair a required backflow prevention device.

Sec. 6-8.721. Types of protection. The level of protection required shall be related to the degree of potential hazard that exists on the premises served, and will be determined by the Administrator.

Sec. 6-8.722. Testing and maintenance of backflow prevention devices. The user is responsible for testing all backflow prevention devices and maintaining these devices in a satisfactory operating condition. Testing shall be done at least once a year by a San Bernardino County certified backflow prevention tester. More frequent testing may be required if successive inspections indicate repeated failures. The backflow prevention devices shall be repaired, overhauled and/or replaced whenever they are found to be defective. These devices shall also be tested immediately after they are installed, relocated or repaired. All inspections, tests and repairs shall be performed at the user's expense. The user shall maintain records of all such tests, repairs and overhauls. These records shall be submitted to the Administrator, annually, and made available to the DHS, on request.

Sec. 6-8.723. Facilities design.

(a) The design of off-site facilities, including the preparation of plans and construction specifications shall be under the responsibility of an engineer registered in the State of California. The design of customer (on-site) facilities that will use recycled water, and preparations of plans and construction specifications, shall be stamped and signed by a State of California Registered Landscape Architect or Civil Engineer, unless otherwise approved by the Administrator.

(b) Before the Administrator grants final acceptance of any system using recycled water, as-built drawings of the system shall be provided. The installed system shall be tested in accordance with the City Standard Specifications to ensure that the system is in full compliance with these rules and regulations.

(c) All off-site and on-site recycled water facilities shall be designed and constructed according to the requirements, conditions, and standards as adopted in the City Standard Specifications to ensure that this system is in full compliance with this Chapter. Recycled water systems, both on-site and off-site, shall be separate and independent of any potable water systems.

(d) Where the premises contain dual or multiple water systems, the exposed portions of pipelines shall be identified at sufficient intervals.

(e) Areas irrigated with recycled water must be kept completely separated from domestic water wells and reservoirs. Recycled water shall not be applied or allowed to migrate to within fifty (50) feet of any well used for domestic supply. No impoundment of recycled water shall be located within hundred (100) feet of any domestic water well, unless it can be demonstrated that special circumstances justify lesser distances to be acceptable.

(f) Adequate means of notification should be provided to inform the public, employees and others that recycled water is being used. Conspicuous signs with appropriate wording that can be clearly read should be placed at adequate intervals around the authorized use area.

(1) Golf courses should print messages on score cards in a different color indicating recycled water is being used. Water hazards containing recycled water should be posted with appropriate signs.

(2) Languages in addition to English should be used on signs where appropriate.

(g) Off-site Facilities

(1) Any off-site recycled water distribution facilities required to serve existing or new developments of the property within the City, as determined by the Administrator, shall be provided by the applicant, owner, or customer at their expense, unless the Administrator determines it is a City benefit to construct these capital facilities.

(2) Plans and specifications for all recycled water distribution facilities shall be submitted to and approved by the Administrator, and other regulatory agencies, in advance of construction.

(3) The City will assume responsibility for providing recycled water service to the point of connection of such development on transfer, to the City, title to all off-site recycled water systems and any necessary easements. All easements shall be in a form acceptable to the Administrator, and not subject to outstanding obligations to relocate such facilities or any deeds of trust, except in instances where such is determined by the Administrator to be in the best interest of the City.

(4) The City and the property owner or developer may enter into a reimbursement agreement for the portions of a recycled water system that are required to be oversized with capacity to supply more recycled water than the property owner or developer requires. The determination to

enter into a reimbursement agreement, and the specific items that are the subject of reimbursement, will be made by the City.

(h) On-site facilities

(1) The user or the owner of the property shall be responsible for all costs associated with on-site recycled water facilities.

(2) When City Standards and Specifications require a higher quality material, equipment, design or construction method than that required by other governing codes, rules and regulations, the City Standards and Specifications shall take precedence.

(i) In areas where recycled water is not immediately available when the use area is ready for construction, and if the City has determined that recycled water will be supplied in the future, on-site facilities shall be designed to use recycled water. Provisions shall be made to allow for connection to the City off-site recycled water facilities, when available. In the interim, potable or other suitable water may be supplied to the on-site facilities through an "interim service connection."

(j) Conditions of interim service are:

(1) The City anticipates recycled water will be available to the site within 5 years of the time interim service is initiated.

(2) The user or the owner of the property must sign a Recycled Water Use Agreement.

(3) The user or the owner of the property must agree to perform or pay for all work necessary to remove the interim connection and make connections to the permanent recycled water system at the time the recycled water system is installed.

(4) An approved backflow prevention device is required on the interim service. The backflow prevention device shall be at the point of connection with the interim supply system and a part of the on-site recycled water facilities.

(5) Future recycled water users will pay for the following:

(i) Cost of constructing and abandoning the interim service and cost of constructing the recycled water service.

(ii) Applicable recycled water fees at the time service becomes available.

(iii) Applicable interim water rates for the type of water delivered through the interim service.

(6) When recycled water is available to the site, an inspection of the on-site facilities will be conducted by the Administrator to verify that the facilities are still in compliance with the Recycled Water Use Agreement. Recycled water service shall be provided on verification of compliance.

If the facilities are not in compliance, the Administrator shall notify the user to make any necessary corrections.

Sec. 6-8.724. Construction.

(a) Construction of all new recycled water facilities will follow City Standards and Specifications and the American Water Works Association Construction Guidelines for Recycled Water Facilities.

(b) Where it is planned that an existing non-recycled water system shall be converted to a recycled water facility, the facilities to be converted to recycled water shall be investigated in detail at the user's expense, to determine the measures required to bring the system into full compliance with this Chapter. No existing potable water facilities shall be connected to or incorporated into the recycled water system without City and DHS approvals.

(c) If, due to on-site failure of the recycled water system, the Administrator determines that it is necessary to convert on-site facilities from a recycled water supply to a potable water supply, it shall be the responsibility of the user to pay all costs for such conversion. Conversion costs may include, but not be limited to, the following:

(1) Isolation of the recycled water supply. Service shall be removed and plugged at the City main or abandoned in a manner approved by the Administrator.

(2) Installation of approved backflow prevention devices, as determined by the Administrator, on all potable, and/or other water meter connections.

(3) Removal of any/all special recycled water quick couplers. The user shall be responsible for replacement with quick couplers approved for potable water systems.

(4) Notification to all on-site personnel involved.

(5) Removal of all warning labels/signs.

(6) Installation of any/all potable water facilities and payment of any associated capacity fees, as established in Title 6, Chapter 8B, of the Municipal Code.

(7) System flushing, disinfecting, decontamination, and water quality analyses, as required by the City and/or other regulatory agencies.

Sec. 6-8.725. Emergency connection of the recycled water system to the potable water system. If the Administrator determines an emergency exists where all or parts of the recycled water system are unable to provide recycled water, the Administrator may approve an emergency temporary connection to the potable water system. Before such emergency temporary connection is made, the portion without recycled water shall be isolated by an air gap separation from the remainder of the recycled water system. This isolation shall occur at either individual services or on the off-site system, as determined by the Administrator. An approved backflow prevention device shall be installed on the potable water lines in

accordance with this Chapter. The emergency temporary connection shall be removed before connection to the recycled water system is re-established. Re-establishment of recycled water service must be inspected and approved by the Administrator prior to resuming delivery of recycled water.

Sec. 6-8.726. Off-site facilities. The City and/or the Inland Empire Utilities Agency shall be responsible for the operation, maintenance and surveillance of all off-site recycled water systems. This includes but is not limited to recycled water pipelines, valves, connections, storage facilities, and other related equipment and property up to and including the meter. Only City and/or the Inland Empire Utilities Agency personnel and their representatives shall operate, adjust, change, alter, move or relocate any portion of their respective off-site recycled water facilities.

Sec. 6-8.727. On-site facilities.

(a) General

(1) The operation, surveillance, repair, and maintenance of all customer recycled water facilities are the responsibility of the user and his designated "On-site" Recycled Water Supervisor.

(2) The Administrator shall have the right to enter the user's premises to monitor and inspect all on-site recycled water facilities. Where necessary, keys and/or lock combinations shall be issued to the Administrator to provide such access during hours of recycled water system operation.

(b) The user shall have the following responsibilities pertaining to operation of on-site facilities:

(1) Ensure that all operations personnel are trained and familiarized with the use of recycled water.

(2) Furnish their operations personnel with maintenance instructions, irrigation schedules, controller charts, and as-built drawings to ensure proper operation in accordance with the on-site facilities design and these rules and regulations.

(3) Prepare and submit to the Administrator one reproducible set of as-built drawings.

(4) Notify the Administrator of all updates or proposed changes, modifications, or additions to the on-site facilities and operations for review and approval prior to construction or implementation. All updates and proposed changes shall comply with this Chapter, the Recycled Water Use Agreement and any other applicable rules and regulations.

(5) Ensure that the operation and maintenance of all recycled water facilities remain in accordance with this Chapter, the Recycled Water Use Agreement and any other applicable rules and regulations.

(6) Operate and control the system in order to prevent direct human consumption of recycled water and to control and limit runoff. The user or the owner of the property shall

be responsible for any and all subsequent uses of the recycled water. Operation and control measures to be utilized in this regard shall include where appropriate, but not limited to:

(i) Minimizing discharge onto areas not under control of the user so as to minimize public contact. Full circle sprinklers shall not be used adjacent to sidewalks, roadways, and property lines in order to confine the discharge to the use area.

(ii) Operating the on-site recycled water facilities during periods of minimal human use of the service area, and allowing a maximum dry-out time before the irrigated area will be used by the public.

(iii) Providing adequate first aid kits on the premises, and promptly treating all cuts and abrasions to prevent infection. If infection is likely, a physician should be consulted.

(iv) Taking any other precautionary measures to minimize direct contact with recycled water. User's employees, residents, and the public should not be subjected to recycled water sprays.

(v) Applying recycled water at a rate that does not exceed the infiltration rate of the soil. Where varying soil types are present, the design and operation of the recycled water facilities shall be compatible with the lowest infiltration rate of the soils present.

(vi) Reporting to the Administrator any/all failures in the recycled water system that cause an unauthorized discharge of recycled water.

(vii) Protecting all drinking fountains located within the approved use area, by location and/or a structure from contact with recycled water to the maximum extent possible. Windblown spray, direct application through irrigation or other approved uses are considered sources of recycled water. Protection shall be by design, construction practice, or system operation.

(viii) Protecting facilities that may be used by the public, including but not limited to, eating surfaces and playground equipment located within the approved use areas, by seating and/or structure from contact with recycled water to the maximum extent possible. Windblown spray, direct contact by irrigation application, or other approved uses are considered sources of recycled water. Protection shall be by design, construction practice, or system operation.

(c) The user shall enforce the following prohibitions:

(1) Cross-connections, as defined by the California Code of Regulations, Title 17, resulting from the use of recycled water or from the physical presence of a recycled water service, whether by design, construction practice, or system operation, are prohibited.

(2) Discharge of recycled water for any purposes, in areas other than those specifically approved in the Recycled Water Use Agreement, and without the prior approval of the Administrator, is prohibited.

(3) Use or installation of permanent hose bibs on any customer water system that presently operates or is designed to operate with recycled water is prohibited.

(4) Conditions that directly or indirectly cause recycled water to pond either within or outside of the approved use area, whether by design, construction practice, or system operation are prohibited, unless designed specifically for ponding and approved by Administrator.

(5) Conditions that directly or indirectly cause runoff of recycled water onto areas outside of approved use areas, whether by design, construction practice, or system operation, are prohibited.

(6) Use of recycled water for any purposes other than those specifically approved in the Recycled Water Use Agreement, and without the prior approval of the Administrator, is prohibited.

(7) Conditions that directly or indirectly permit windblown spray to pass outside of the approved use area, whether by design, construction practice, or system operation, are prohibited.

Sec. 6-8.728. Monitoring and inspection. The Administrator will monitor and inspect the entire recycled distribution facility, including both off-site and on-site facilities. The Administrator will conduct monitoring programs, maintain records as deemed necessary, inspect on-site facilities for compliance with these rules and regulations, and provide reports as requested by DHS. For these purposes, the Administrator will have the right to enter the user's premises during hours of recycled water system operation to inspect on-site recycled water facilities and approved use areas, to verify that the user's irrigation practices conform with this Chapter and the Recycled Water Use Agreement.

Sec. 6-8.729. Maintenance responsibility.

(a) The user or owner is responsible for maintaining all on-site facilities that are under the ownership of parties other than the City.

(b) No person shall place, dispose, deposit or permit the placement, disposal, deposit of oil, toxic, hazardous or contaminated liquid or waste, trash, soil, building materials or any other substances, objects, or obstructions in, on, or around meter boxes or other City facilities. No person shall allow or permit meter boxes or other City facilities from becoming obstructed or obscured by trees, shrubs, plants or in any other manner so as to impede their use or access or make their location difficult to determine. If such substances, objects, or obstructions are not cleaned and removed or are permitted to obscure or impede use or access to such facilities, the City may accomplish the cleaning and removal at the user's expense. The Administrator will provide reasonable notice to the user before assessing the charge.

SECTION 2: The Mayor shall sign this Chapter and the City Clerk shall cause the same to be published within fifteen (15) days after its passage, at least once, in the Inland Valley Daily Bulletin, a newspaper of general circulation, published and circulated in the City of Ontario, California.

APPROVED AND ADOPTED this 18th day of May, 1999, by the following vote:

AYES: Council Members Du Bois, King, Leon, Wapner; Mayor Ovitt

NOES: None

ABSENT: None

Gary C. Ovitt, Mayor of the City of Ontario

ATTEST:

Mary Wirtes, City Clerk

for Mary Wirtes

APPROVED AS TO FORM:

City Attorney

CITY OF ONTARIO INCORPORATED DECEMBER 1891 CALIFORNIA

SB 221

Law

(c) A development agreement that includes a subdivision, as defined in Section 66473.7, shall not be approved unless the agreement provides that any tentative map prepared for the subdivision will comply with the provisions of Section 66473.7.

66473.7 (a) For the purposes of this section, the following definitions apply:

(1) "Subdivision" means a proposed residential development of more than 500 dwelling units, except that for a public water system that has fewer than 5,000 service connections, "subdivision" means any proposed residential development that would account for an increase of 10 percent or more in the number of the public water system's existing service connections.

(i) This section shall not apply to any residential project proposed for a site that is within an urbanized area and has been previously developed for urban uses, or where the immediate contiguous properties surrounding the residential project site are, or previously have been, developed for urban uses, or housing projects that are exclusively for very low and low-income households.

SB 610

Law

[SB 610 requires] a city or county that determines a project is subject to the California Environmental Quality Act to identify any public water system that may supply water for the project and to request those public water systems to prepare a specified water supply assessment, except as otherwise specified. The bill would require the assessment to include, among other information, an identification of existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project and water received in prior years pursuant to those entitlements, rights, and contracts. The bill would require the city or county, if it is not able to identify any public water system that may supply water for the project, to prepare the water supply assessment after a prescribed consultation. The bill would revise the definition of "project", for the purposes of these provisions, and make related changes.

The bill would prescribe a timeframe within which a public water system is required to submit the assessment to the city or county and would authorize the city or county to seek a writ of mandamus to compel the public water system to comply with requirements relating to the submission of the assessment.

The bill would require the public water system, or the city or county, as applicable, if that entity concludes that water supplies are, or will be, insufficient, to submit the plans for acquiring additional water supplies.

The bill would require the city or county to include the water supply assessment and certain other information in any environmental document prepared for the project pursuant to the act. By establishing duties for counties and cities, the bill would impose a state-mandated local program.

CITY OF ONTARIO

303 EAST "B" STREET, CIVIC CENTER ONTARIO CALIFORNIA 91764-4105

(909) 395-2000
FAX (909) 395-2070

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PAUL S. LEON
MAYOR

JASON ANDERSON
MAYOR PRO TEM

ALAN D. WAPNER
SHEILA MAUTZ
JIM W. BOWMAN
COUNCIL MEMBERS

GREGORY C. DEVEREAUX
CITY MANAGER

MARY E. WIRTES, MMC
CITY CLERK

JAMES R. MILHISER
TREASURER

January 23, 2007

Derek Wyss
David Evans and Associates
9635 Granite Ridge Drive, Suite 300
San Diego, CA 92123

RE: Public Records Request #07-PR0021
Water Well at 5th Street North East of Munoz Park

Dear Mr. Wyss:

In response to your Public Records Request dated January 16, 2007, the Department advises that the above noted water well has been destroyed, therefore there is no information regarding current production or depth to groundwater at this location.

Should you have any questions or need further assistance, please call the Records Management Department at (909) 395-2009.

Sincerely,

Traci R. McGinley
Records Management Director
Assistant City Clerk

tf

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