FINAL DRAFT

2015 Urban Water Management Plan for Los Angeles County Waterworks District 29, Malibu, and the Marina del Rey Water System

County of Los Angeles

Department of Public Works

Waterworks Division

Los Angeles County Waterworks District No. 29, Malibu, and the Marina del Rey Water System

Alhambra, California

January 2017

This is a draft and is not intended to be a final representation of the work done or recommendations made. It should not be relied upon; consult the final report.

Table of Contents

List of Figures v

List of Tables vi

List of Abbreviations viii

Executive Summary ES-1

Plan Preparation ES-1

District Service Area and Water Use ES-1

Baselines and Targets Water Use ES-2

Water Supply Reliability ES-2

Water Conservation ES-2

1. Introduction 1-1

1.1 Urban Water Management Planning Act 1-1

1.2 Basis for Preparing the Plan 1-1

1.3 Coordination and Outreach 1-2

1.4 Public Participation and UWMP Adoption 1-3

1.5 Plan Organization 1-4

2. System Description 2-1

2.1 Description of Service Area 2-1

2.2 Service Area Climate 2-1

2.3 Service Area Population and Demographics 2-4

3. System Water Use 3-1

3.1 Water Uses by Sector 3-1

3.1.1 Residential Sector 3-2

3.1.2 Commercial/Institutional Sector 3-2

3.1.3 Landscape/Irrigation Sector 3-3

3.2 Distribution System Water Losses 3-4

3.3 Estimating Future Water Savings 3-4

3.4 Water Use for Lower-Income Households 3-5

4. SB X7-7 Baseline and Targets 4-1

4.1 Updated Calculations from 2010 UWMP 4-1

4.2 Baseline Periods 4-1

4.2.1 10- to 15-Year Baseline Period (gpcd) 4-1

4.2.2 5-Year Baseline Period (Target Confirmation) 4-1

4.3 Service Area Population 4-2

4.4 Gross Water Use 4-2

4.5 Per Capita Water Use 4-2

4.5.1 Baseline Daily Per Capita Water Use 4-2

4.5.2 2015 and 2020 Targets (gpcd) 4-2
4.5.3 Adjustments to 2015 Gross Water Use and 2015 Compliance 4-3
4.5.4 West Basin Regional Alliance gpcd Compliance 4-4
5. System Supplies 5-1
5.1 Purchased Water: West Basin Municipal Water District 5-1
5.2 Groundwater 5-1
5.3 Stormwater 5-2
5.4 Wastewater and Recycled Water 5-2
5.4.1 Recycled Water Coordination 5-2
5.4.2 Wastewater Collection, Treatment, and Disposal 5-2
5.4.3 Recycled Water System 5-5
5.4.4 Recycled Water Beneficial Uses 5-5
5.4.5 Actions to Encourage and Optimize Future Recycled Water Use 5-7
5.5 Desalinated Water Opportunities 5-8
5.6 Exchanges or Transfers 5-8
5.7 Future Water Projects 5-8
5.8 Summary of Existing and Planned Sources of Water 5-9
6. Water Supply Reliability Assessment 6-1
6.1 Constraints on Water Sources 6-1
6.2 Reliability by Type of Year 6-1
6.3 Supply and Demand Assessment: Current and Projected Normal Year 6-2
6.4 Regional Supply Reliability 6-3
6.4.1 Metropolitan's Integrated Resources Plan 6-3
6.4.2 Metropolitan's Water Surplus and Drought Management Plan 6-4
6.4.3 Metropolitan's Water Supply Allocation Plan 6-4
6.4.4 West Basin's Water Supply Allocation Plan 6-4
7. Water Shortage Contingency Planning 7-1
7.1 Stages of Action 7-1
7.2 Prohibitions on End Uses 7-2
7.2.1 Water Waste Ordinance 7-2
7.2.2 Landscape Irrigation 7-3
7.2.3 Commercial, Industrial, Institutional 7-3
7.2.4 Water Features and Swimming Pools 7-3
7.2.5 Other 7-3
7.3 Penalties, Charges, Other Enforcement 7-3
7.4 Consumption-Reduction Methods 7-3
7.5 Determining Water Shortage Reductions 7-4
7.6 Revenue and Expenditure Impacts 7-4
7.7 Resolution or Ordinance 7-4
7.8 Catastrophic Supply Interruption Plan 7-4

7.9 3-Year Minimum Water Supply 7-5
8. Demand Management Measures 8-1
8.1 Water Waste Prohibition....8-1
8.2 Metering 8-1
8.3 Conservation Pricing....8-1
8.4 Water Conservation Public Education and Outreach 8-2
8.5 Water Conservation Program Coordination and Staffing Support....8-3
8.6 Programs to Assess and Manage Distribution System Real Loss 8-3
8.7 Other Demand Management Measures....8-3
8.7.1 Water Audits for all Customers....8-3
8.7.2 Rebates....8-3
9. References 9-1
Appendix A: Documentation of City/County Notification A-1
Appendix B: Notice of Public Hearing B-1
Appendix C: Adoption Resolution C-1
Appendix D: DWR UWMP Checklist.... D-1
Appendix E: Distribution System Water Loss Audit....E-1
Appendix F: SB X7-7 gpcd Verification Forms F-1
Appendix G: Agreement with West Basin G-1
Appendix H: Phased Water Conservation Plan.... H-1
Appendix I: CUWCC Online Reports 2013/2014 ....I-1

List of Figures

Figure 2-1. District Service Areas....2-2
Figure 2-2. Historical and Projected Population for the District Service Area 2-4
Figure 5-1. Recycled and Wastewater Service Areas 5-3

List of Tables

Table ES-1. Projected Potable Water Demands (ac-ft/year) ES-1
Table ES-2. 2015 Compliance (DWR Table 5-2) ES-2
Table 1-1. Retail: Public Water Systems (DWR Table 2-1) 1-1
Table 1-2. Plan Identification (DWR Table 2-2) 1-2
Table 1-3. Agency Identification (DWR Table 2-3) 1-2
Table 1-4. Retail: Water Supplier Information Exchange (DWR Table 2-4) 1-3
Table 1-5. Coordination with Appropriate Agencies 1-3
Table 1-6. Retail: Notification to Cities and Counties (DWR Table 10-1) 1-4
Table 2-1. Monthly Average Climate Data Summary 2-3
Table 2-2. Retail: Population - Current and Projected (DWR Table 3-1) 2-5
Table 3-1. Retail: Demands for Potable and Raw Water – Actual (DWR Table 4-1) 3-1
Table 3-2. Projected Potable Water Demands (ac-ft/year) 3-2
Table 3-3. Retail: Demands for Potable and Raw Water – Projected (DWR Table 4-2) 3-3
Table 3-4. Retail: Total Water Demands, ac-ft/yr (DWR Table 4-3) 3-4
Table 3-5. Retail: Water Loss Audit Reporting (DWR Table 4-4) 3-4
Table 3-6. Retail Only: Inclusion in Water Use Projections (DWR Table 4-5) 3-5
Table 4-1. Baselines and Targets Summary *Retail Agency* (DWR Table 5-1) 4-3
Table 4-2. Comparison of 2010 and 2015 Baselines and Targets 4-3
Table 4-3. 2015 Compliance *Retail Agency* (DWR Table 5-2) 4-4
Table 4-4. Baselines and Targets Summary *West Basin Regional Alliance* (DWR Table 5-1) 4-4
Table 4-5. 2015 Compliance *West Basin Regional Alliance* (DWR Table 5-2) 4-4
Table 5-1. Wastewater Collected Within Service Area in 2015, ac-ft/yr (DWR Table 6-2) 5-4
Table 5-2. Retail: Wastewater Treatment and Discharge Within Service Area in 2015, ac-ft/yr (DWR Table 6-3) 5-5
Table 5-3. Retail: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area*, ac-ft (DWR Table 6-4) 5-6
Table 5-4. Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual, ac-ft (DWR Table 6-5) 5-7
Table 5-5. Retail: Methods to Expand Future Recycled Water Use (DWR Table 6-6) 5-7
Table 5-6. Retail: Expected Future Water Supply Projects or Programs (DWR Table 6-7) 5-9
Table 5-7. Water Supplies: Actual, ac-ft/yr (DWR Table 6-8) 5-9
Table 5-8. Water Supplies – Projected, ac-ft/yr (DWR Table 6-9) 5-9
Table 6-1. Retail Basis of Water Year Data – West Basin (DWR Table 7-1) 6-2

Table 6-2. Retail: Normal Year Supply and Demand Comparison, ac-ft/yr (DWR Table 7-2) 6-2
Table 6-3. Single Dry Year Water Supply and Demand Comparison, ac-ft/yr (DWR Table 7-3).....6-2
Table 6-4. Retail: Multiple-Dry Years Supply and Demand Comparison, ac-ft/yr (DWR Table 7-4).....6-3
Table 7-1. Retail: Stages of Drought Contingency Plan (DWR Table 8-1) 7-1
Table 7-2. Restrictions and Prohibitions on End Uses (DWR Table 8-2).....7-2
Table 7-3. Retail Only: Stages of WSCP - Consumption Reduction Methods (DWR Table 8-3) 7-3
Table 7-4. Retail: Three-Year Minimum Water Supply, ac-ft/yr (DWR Table 8-4).....7-5

List of Abbreviations

°F	degree(s) Fahrenheit
ac-ft	acre-foot/feet
ac-ft/yr	acre-feet per year
Act	California Urban Water Management Planning Act of 1983
AWWA	American Water Works Association
BMP	best management practice
CALGreen	California Green Building Standards Code
Census	U.S. Census Bureau
City	City of Malibu
CII	commercial, industrial, and institutional
CIMIS	California Irrigation Management Information System
CIMP	Capital Implementation Master Program
County	County of Los Angeles
CUWCC	California Urban Water Conservation Council
CWC	California Water Code
District	joint reference to Los Angeles County Waterworks District 29, Malibu, and the Marina del Rey Water System
District 29	Los Angeles County Waterworks District 29, Malibu
DMM	demand management measure
DWR	California Department of Water Resources
ERP	Emergency Response Plan
ETo	evapotranspiration
gpcd	gallon(s) per capita per day
gpd	gallon(s) per day
in.	inch(es)
IPR	indirect potable reuse
IRP	Integrated Resources Plan
LADWP	City of Los Angeles Department of Water and Power
LID	low-impact development
LRP	Local Resources Program
MdR	Marina del Rey Water System or area
Metropolitan	Metropolitan Water District of Southern California
N/A	not applicable
OTWS	onsite treatment wastewater system
PWCP	Phased Water Conservation Plan
R-gpcd	Residential gallons per capita demand (residential water demand divided by population)
RUWMP	Regional Urban Water Management Plan
SB X7-7	Water Conservation Act of 2009
SCAG	Southern California Association of Governments
SWRCB	State Water Resources Control Board
UWMP	Urban Water Management Plan
West Basin	West Basin Municipal Water District
WSAP	Water Supply Allocation Plan
WSCP	Water Shortage Contingency Plan
WSDM Plan	Water Surplus and Drought Management Plan
WWTF	wastewater treatment facility
WWTP	wastewater treatment plant

Executive Summary

This 2015 Urban Water Management Plan (UWMP) was prepared for the Los Angeles County Waterworks District 29, Malibu and Marina del Rey Water System (MdR), referred to jointly as the "District." This UWMP includes a description of the water supply sources and projected water use, and a comparison of water supply water demands during normal, single-dry, and multiple-dry years.

Plan Preparation

This 2015 UWMP was prepared in accordance with the California Urban Water Management Planning Act of 1983 (Act). The Act requires every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet (ac-ft) of water annually to adopt and submit a UWMP every 5 years to the California Department of Water Resources (DWR). The purpose of the UWMP is to encourage local water agencies and wholesalers to plan ahead with respect to matching future water supplies and demands and to report on water conservation efforts and the implementation of the Water Conservation Act of 2009 (SB X7-7) to meet the 20 percent water use reduction goal by 2020.

This UWMP requires coordination and outreach with other appropriate water suppliers in the area, suppliers that share a common source, water management agencies, and relevant public agencies. The UWMP requires the local agency to provide opportunities for public review and to conduct a public hearing (currently scheduled for the January 24, 2016, County of Los Angeles Board of Supervisors meeting) prior to adopting the UWMP.

A UWMP that is accepted by DWR is required for a water supplier to be eligible to receive State of California (State) grant and loan funding.

District Service Area and Water Use

The District's water service area consists of the City of Malibu (City) and the unincorporated area of Topanga. The Marina del Rey Water System (MdR) is served directly off the transmission main delivering water to District 29. The population percent growth projections for these three service areas: City, Topanga, and MdR is 4.4, 4.9 and 31 percent, respectively, over the next twenty years. The growth projections are from the City's planning department letter to the Southern California Association of Governments (SCAG), which is similar to historical water service connection growth trends in the City and Topanga areas. The MdR population projections are based on the 2010 reported SCAG data for Census Tract 702901 and the MdR Specific Plan.

Water demand projections are based on historical population trends for each of the three areas and current water use patterns. The projected potable water demand to year 2035 is shown in Table ES-1.

Table ES-1. Projected Potable Water Demands (ac-ft/year)

Area	2020	2025	2030	2035
Malibu	6,750	6,777	6,840	6,830
Topanga	1,600	1,620	1,640	1,640
Marina del Rey	1,780	1,915	2,060	2,130
Total	10,130	10,310	10,540	10,600

Baselines and Targets Water Use

In this UWMP update, DWR is allowing for revisions in the analysis of per capita water use baselines and targets. DWR has implemented a new population tool, which was used to recalculate the historical population. With this tool, historical population estimates changed slightly from the 2010 analysis. The same target method—Method 1, which was used in the 2010 analysis—is used. It provides a year 2020 per capita demand target of 237 gpcd with an interim year 2015 target of 267 gpcd. The District's 2015 per capita demand was 244, meaning the District is in compliance with the conservation requirement of SB X7-7. The verification of compliance is shown in Table ES-2.

Table ES-2. 2015 Compliance (DWR Table 5-2)

Actual 2015 gpcd	2015 Interim Target gpcd	Optional Adjustments to 2015 gpcd Enter "0" for adjustments not used from Methodology 8					2015 gpcd (adjusted if applicable)	Did Supplier Achieve Targeted Reduction for 2015? Y/N
		Extraordinary Events	Economic Adjustment	Weather Normalization	Total Adjustments	Adjusted 2015 gpcd		
244	267	0	0	0	0	244	244	Y

Water Supply Reliability

The District's main water supply is from West Basin Municipal Water District (West Basin). The District previously had a purchase agreement with West Basin for a Tier 1 maximum amount of 10,506 acre-feet per year (ac-ft/yr) that is being continued. Recycled water is currently being used at the Pepperdine University campus. Additional recycled water supply is anticipated with the construction of the City Civic Center Wastewater Treatment Facility (WWTF).

DWR requires an analysis of expected water supply reliability for normal (average) year, single-dry year, and multiple-dry years. West Basin does not anticipate any shortages as it is actively diversifying its water supply portfolio, maintaining imported water reliability, and developing local resources, as well as furthering existing water conservation. Projected water supply from West Basin matches the expected demand.

Water Conservation

In efforts to meet the State of California-mandated water conservation goal in 2015, the District continued to implement creative ways to reach out to customers. The District offers ocean-friendly garden workshops, residential leak detection workshops, cash-for-grass application how to workshops, and weather-based irrigation controller giveaway events.

Public outreach efforts also include print- and Web-based publications, monthly bill inserts, geo-targeted mobile ads, and public outreach events. Details about the number and types of programs can be found in the California Urban Water Conservation Council (CUWCC) BMP Coverage Reports.

A new water conservation outreach campaign was also implemented. This campaign was operated in coordination with the City of Malibu, unincorporated County areas (Topanga and Marina del Rey) and the Board of Supervisors offices. It has been featured in local newspapers, County libraries, radio stations, bus advertisements, shopping cart ads, Regal Malibu Cinema, street pole banners throughout Malibu, banners at County facilities, and the District's and City's websites. The District

also provided two unique Re-Garden Parties in Malibu. These were intended to showcase, in a private local backyard setting, how residents have modified landscaping on their properties to reduce water use and yet provide aesthetically pleasing low water use landscape designs.

The District also heightened its online and digital presence through updating its website to include drought information and water conservation tips. Outreach consisted of posting messages on Twitter, notifications on Next Door social media app, posting bill messages, and sending automated phone messages to customers, and meeting with water partners monthly through the Malibu Area Conservation Coalition (MACC) to discuss collaborative efforts to promote water conservation on a regional level.

In addition to local public education and outreach programs, the District also participates in a regional public education and outreach program through West Basin. West Basin serves as a liaison between Metropolitan and its member agencies, securing funding for rebates and water conservation programs.

The District's public information and school education program is an ongoing, annual program. The District will continue to provide water conservation materials as part of its community and school outreach programs, as well as continue to work cooperatively with West Basin to develop and distribute water conservation information.

This page intentionally left blank.

Section 1

Introduction

This 2015 Urban Water Management Plan (UWMP) for the Los Angeles County Waterworks District 29, Malibu and Marina del Rey Water System (MdR), referred to jointly as the "District," was prepared in accordance with the California Urban Water Management Planning Act of 1983 (Act). This UWMP includes a description of the water supply sources and projected water use, and a comparison of water supply and water demands during normal, single-dry, and multiple-dry years. Also described is the District's phased water conservation program.

The remainder of this section provides an overview of the Act, public participation, agency coordination and outreach, and UWMP organization.

1.1 Urban Water Management Planning Act

The District's UWMP has been prepared in accordance with the Act, as amended, California Water Code (CWC), Division 6, Part 2.6, Sections 10610 through 10656. The Act became part of the CWC with the passage of Assembly Bill 797 during the 1983–84 regular session of the California legislature. The Act was amended in November 2009 with the adoption of the Water Conservation Act of 2009, or Senate Bill (SB) X7-7, and was most recently amended in 2014. The Water Conservation Act is described in Division 6, Part 2.55, Section 10608.

The Act requires every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet (ac-ft) of water annually to adopt and submit a UWMP every 5 years to the California Department of Water Resources (DWR). The Act describes the required contents of the UWMP as well as how urban water suppliers should adopt the UWMP.

1.2 Basis for Preparing the Plan

Table 1-1 presents the public water system name and number as well as the number of connections and amount of water supplied in 2015 in ac-ft.

Table 1-1. Retail: Public Water Systems (DWR Table 2-1)

Public Water System Number	Public Water System Name	Number of Municipal Connections 2015 [a]	Volume of Water Supplied in 2015 [b] (ac-ft)
1910204	Los Angeles County Waterworks District 29 and 80: Malibu (Malibu and Marina del Rey)	7,780	8,428

a. District 29 includes 7,480 connections; Marina del Rey includes 300 connections.

b. Water supplied within retail water system.

The District has selected individual reporting for this UWMP, as identified in Table 1-2, below. This UWMP is reporting on a calendar-year basis using acre-feet as the unit of measure as noted in Table 1-3.

Table 1-2. Plan Identification (DWR Table 2-2)		
Select Only One	Type of Plan	Name of RUWMP or Regional Alliance (if applicable)
✓	Individual UWMP	
	Water supplier is also a member of a RUWMP	
✓	Water supplier is also a member of a regional alliance	West Basin Regional Alliance
	Regional UWMP	

RUWMP = Regional Urban Water Management Plan.

Table 1-3. Agency Identification (DWR Table 2-3)	
Type of Agency (select one or both)	
	Agency is a wholesaler
✓	Agency is a retailer
Fiscal or Calendar Year (select one)	
✓	UWMP tables are in calendar years
	UWMP tables are in fiscal years
If Using Fiscal Years, Provide Month and Day that the Fiscal Year Begins	
[Day]	[Month]
Units of Measure used in UWMP	
Unit	ac-ft

1.3 Coordination and Outreach

The Act requires the District to coordinate the preparation of its UWMP 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 District has provided water supplier information with wholesale water suppliers as listed in Table 1-4. Staff has coordinated this UWMP with other agencies and the community as summarized in Table 1-5.

Table 1-4. Retail: Water Supplier Information Exchange (DWR Table 2-4)	
The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.	
Wholesaler Water Supplier Name	West Basin Municipal Water District

Table 1-5. Coordination with Appropriate Agencies					
Coordinating Agencies	Noticed of UWMP Update at least 60 Days Prior to Public Hearing (cities and counties)	Was Sent a Copy of the Draft Plan	Participated in UWMP Preparation	Retail Agency Provided Wholesale Agency with Retail Agency's Projected Water Use from the Source (retail only)	Was Sent a Final copy
City/County					
City of Malibu	✓	✓	✓		✓
County of Los Angeles Department of Regional Planning	✓	✓	✓		✓
Other					
West Basin	✓	✓	✓	✓	✓

The District's staff have coordinated with the City of Malibu (City) and the County of Los Angeles (County) Department of Regional Planning, and consulted with the Southern California Association of Governments (SCAG) to determine the estimated population growth in the District's service area.

The District is a retail customer agency within the service area of the West Basin Municipal Water District (West Basin). Staff of the District also coordinated with West Basin's staff to project the supply reliability and describe the various water conservation programs to ensure consistency between District and West Basin plans.

1.4 Public Participation and UWMP Adoption

The Act requires the encouragement of public participation and a public hearing as part of the UWMP development and approval process. As required by the Act, prior to adopting this UWMP, the District made the UWMP available for public inspection, and a public hearing is scheduled on January 24, 2016. The District notified cities and counties within the service area 60 days before the public hearing, as shown in Table 1-6, below. Appendix A provides documentation that the cities and counties within which the District provides water supplies were notified at least 60 days prior to the UWMP public hearing. This hearing provided an opportunity for the District's customers and social, cultural, and economic community groups to learn about the water supply situation and the plans for providing a reliable, safe, high-quality water supply for the future. The hearing was an opportunity for people to ask questions regarding the current situation and the viability of future plans.

Table 1-6. Retail: Notification to Cities and Counties (DWR Table 10-1)		
City/County Name	60-Day Notice	Notice of Public Hearing
City of Malibu	✓	✓
County of Los Angeles Department of Regional Planning	✓	✓

Per the requirements of Government Code Section 6066, a Notice of Public Hearing was published in the *Malibu Times*, *Surfside News*, and *Topanga Messenger* to notify all customers and local governments of the public hearing. Copies of the draft UWMP were made available for public inspection at the District's office, local public libraries, and the District website (www.dpw.lacounty.gov/wwd/web/). A copy of the published Notice of Public Hearing is included in Appendix B. This UWMP was adopted by the County of Los Angeles Board of Supervisors on January 24, 2017. A copy of the adopted resolution is provided in Appendix C. The adopted UWMP will be provided to DWR, the California State Library, and the appropriate cities and counties within 30 days of adoption. The adopted UWMP will also be available for public review during normal business hours at the District's office.

1.5 Plan Organization

A summary of the sections provided in this UWMP is listed below:

- **Section 2** provides a description of the service area, climate, and historical and projected population
- **Section 3** presents historical and projected water demands
- **Section 4** describes the SB X7-7 gallons per capita per day (gpcd) analysis
- **Section 5** describes the water supplies
- **Section 6** describes water supply reliability
- **Section 7** describes the Water Shortage Contingency Plan (WSCP)
- **Section 8** summarizes demand management measures (DMMs)
- **Section 9** provides a list of references
- **Appendices** provide relevant supporting documents

DWR has provided a checklist of the items that must be addressed in each UWMP based upon the Act. This checklist helps identify exactly where in the UWMP each item has been addressed. The checklist has been completed for this UWMP (Appendix D) and references the sections in this UWMP where specific items can be found.

Section 2

System Description

This section contains a description of the service area and its climate, and historical and projected population.

2.1 Description of Service Area

The District's water service area consists of the City of Malibu and the unincorporated area of Topanga. MdR is served directly off the transmission main delivering water to the District. The District service area is shown on Figure 2-1.

Malibu runs along the coastline with several canyons running northward. It is bounded on the north by the steep Santa Monica Mountains, east by Topanga Canyon, west by Ventura County, and south by the Pacific Ocean. The District occupies an area of approximately 47 square miles (30,000 acres) and was created in 1959. The original water system facilities were acquired from various small mutual water companies. The transmission water main was built during the 1960s. District 29 also has seven emergency interconnections: four with the City of Los Angeles Department of Water and Power (LADWP) and three with Las Virgenes Municipal Water District.

As shown in Figure 2-1, the MdR portion of the service area encircles the Marina del Rey Harbor providing service to businesses as well as apartment and condominium complexes through approximately 300 service connections. The existing water system facilities were designed and constructed in the 1960s to accommodate low-density, two-story structure land use. Over time, land use has changed to high-density, high-rise structures. A replacement water system is currently under construction and will be completed in 2017. The MdR *Specific Plan* includes visitor/tourist services such as restaurants and shops (LACDRP 2014).

2.2 Service Area Climate

The District's service area is located along the Pacific Coast. The climate is Mediterranean, characterized by warm, dry summers and wet, cool winters with average precipitation of 14 inches per year. The steady climate and low annual rainfall make the area a popular vacation destination for tourists.

Table 2-1 summarizes the average monthly temperature, rainfall, and evapotranspiration (ETo) rates from the California Irrigation Management Information System (CIMIS) at the Santa Monica station for the Los Angeles region. The period of record is 1993 to 2015.

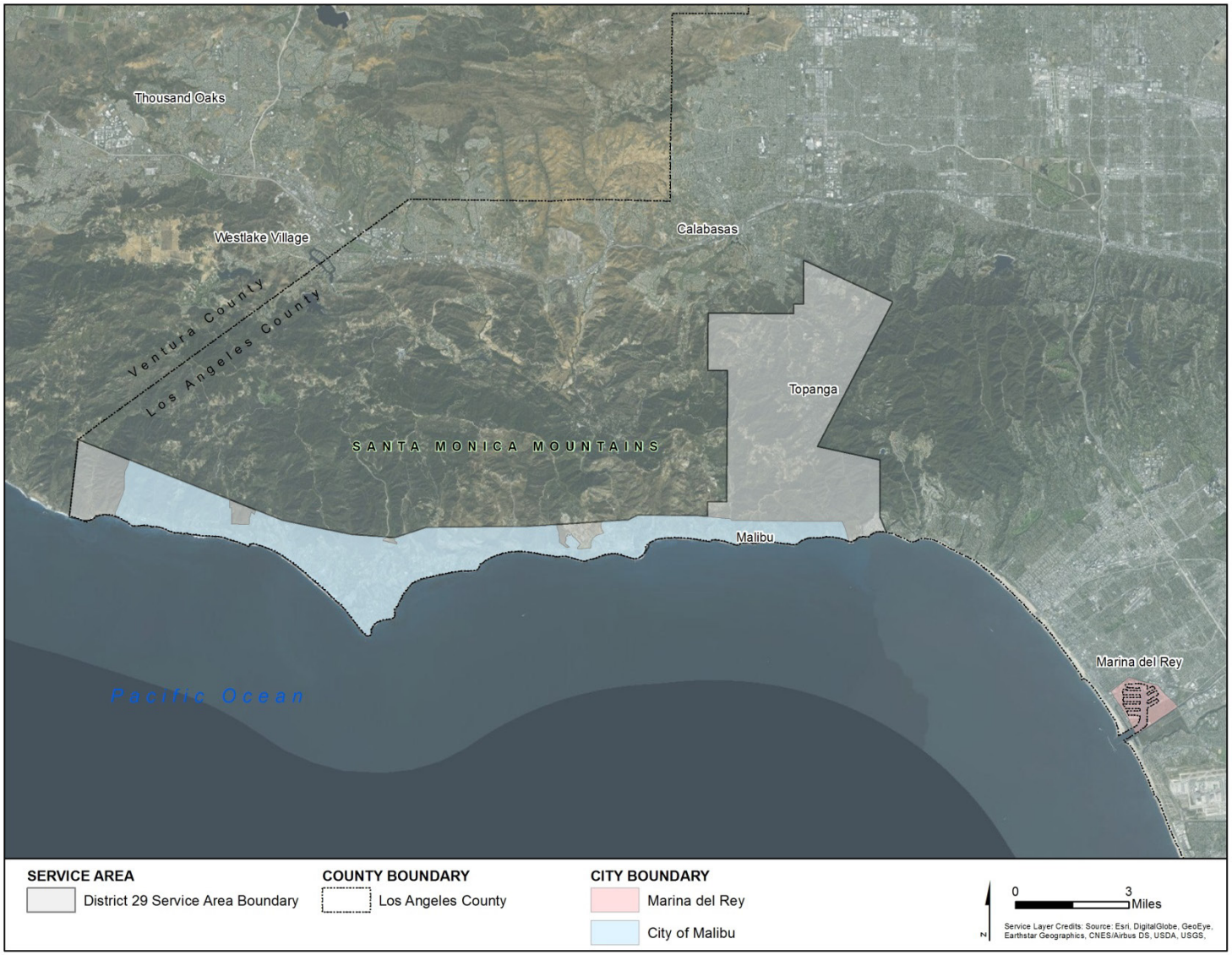

Figure 2-1. District Service Areas

Table 2-1. Monthly Average Climate Data Summary

Weather Category	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Standard average ETo, in.	2.34	2.45	3.74	4.70	5.14	5.20	5.61	5.62	4.36	3.45	2.53	2.18	47.31
Average rainfall, in.	3.37	4.42	1.72	0.71	0.46	0.13	0.06	0.06	0.21	0.37	0.87	2.03	14.42
Average maximum temperature, °F	66.6	64.8	66.2	67.2	68.0	70.8	74.0	76.0	76.2	73.8	69.7	65.7	69.9
Average minimum temperature, °F	49.3	48.3	50.0	51.1	54.7	57.9	60.8	61.1	60.5	56.9	51.9	48.7	54.3

Period of record is 1993 to 2015 from CIMIS Station 099-Santa Monica. Accessed from CIMIS at: www.water.ca.gov.

°F = degrees Fahrenheit.

in. = inch(es).

2.3 Service Area Population and Demographics

The historical population in the District is based on the 1990, 2000, and 2010 data from the U.S. Census Bureau (Census) for the census blocks within the District's service area using the DWR population tool and the District's current boundaries. The District's boundaries have not significantly changed since 1990; therefore, the current service area boundaries are used for the population tool analysis for 1990, 2000, and 2010.

The DWR population tool uses Census data and a digital file of the District's service area boundary to obtain historical population for the census years. Using the number of District residential service connections, the tool calculates the population for the non-census years.

The population for 2015 was quantified using the DWR population tool. The 2015 population within the service area boundary was determined using 2010 census information and the trend of residential connection data. Actual 2015 connection data were used.

Population growth is based on historical population data since 1990 for the three jurisdictions of Malibu, Topanga, and MdR. Malibu's projected growth of 13 households per year is stated in the City's letter to SCAG dated September 26, 2011. The same percent annual growth percentage that the City used was used for projection of Topanga's population. Historically, Topanga's population has grown slowly. The household-to-population ratio of 2.40 is also used for Malibu. The MdR population projections are based on the 2010 reported SCAG data for Census Tract 702901 and the MdR *Specific Plan* (LACDRP 2014b). The MdR community is currently being redeveloped. This UWMP includes coordination with the County Department of Regional Planning for population and water use projections for the MdR area. Population growth over each 5-year period was added to the 2015 population.

A comparison of population trends from 1990 to 2015 and projected populations to 2035 is shown on Figure 2-2, below. Historical population is based on the population tool results for the three areas. Population projections are shown in dashed lines.

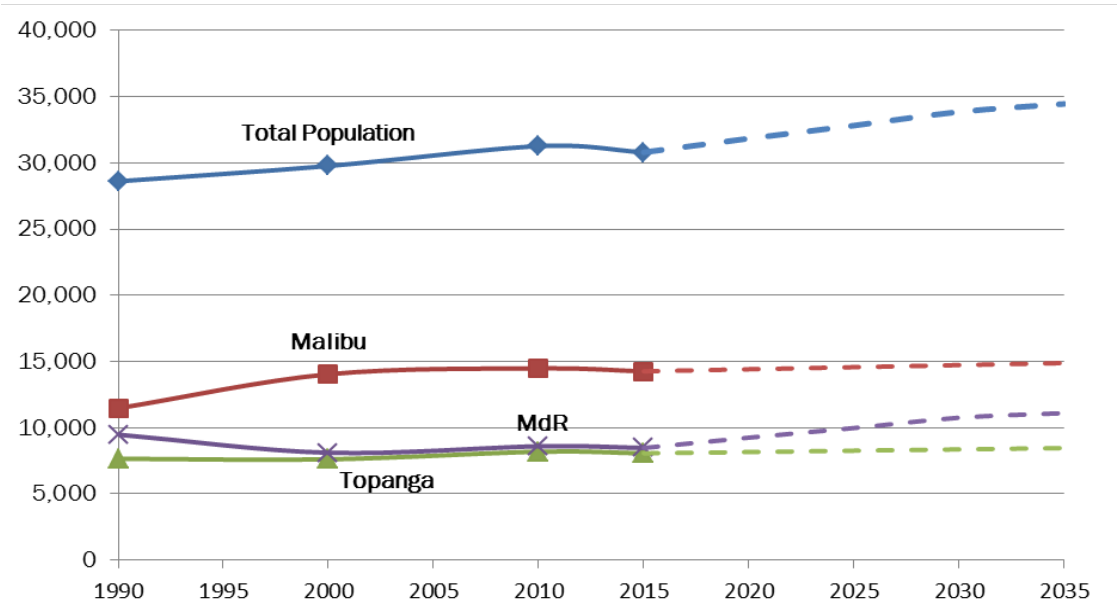

Figure 2-2. Historical and Projected Population for the District Service Area

A summary of current and projected population to 2035 is provided in Table 2-2.

Table 2-2. Retail: Population - Current and Projected (DWR Table 3-1)

Population Served	2015	2020	2025	2030	2035
Malibu	14,265	14,421	14,577	14,733	14,889
Topanga	8,069	8,167	8,267	8,368	8,470
Marina del Rey	8,474	9,257	9,981	10,760	11,106
Total	30,808	31,846	32,825	33,861	34,465

Note: Population growth is based on the City's projection of six new connections per year for the City and a similar growth rate for the unincorporated areas. MdR projection is based on SCAG data.

Other demographic factors include a student population at Pepperdine University and tourist/visitor populations. In 2015, the student population at Pepperdine University was estimated to be 7,600. Malibu beaches, nature reserves, and attractions receive millions of visitors annually. It is unknown the extent to which these populations are counted in the census.

This page intentionally left blank.

Section 3

System Water Use

This section presents the current and projected retail water demands by sector, distribution system water losses, future passive water savings, and low-income household water use.

3.1 Water Uses by Sector

The District's water uses include residential single- and multi-family accounts as well as non-residential, such as commercial, industrial, institutional (CII)/governmental and other accounts. Other accounts include construction water and temporary water use. Based on the total number of accounts, residential users make up about 92 percent of the total customer base. Non-residential customers make up approximately 8 percent of the total number of connections.

Water use by customer sector for 2015 is shown in Table 3-1.

Table 3-1. Retail: Demands for Potable and Raw Water – Actual (DWR Table 4-1)

Use Type	2015 Actual		
	Additional Description	Level of Treatment When Delivered	Volume, ac-ft/yr
Single-family		Drinking water	5,319
Multi-family		Drinking water	471
Commercial		Drinking water	467
Industrial		Drinking water	83
Institutional/governmental		Drinking water	1,424
Losses		Drinking water	630
Other	Construction meters	Drinking water	33
		Total	8,428

Water losses include apparent losses and real losses as described in the American Water Works Association (AWWA) Water Loss Audit Worksheet. Apparent losses are those such as unauthorized consumption, customer metering inaccuracies, and systematic data-handling errors. Real losses include leakage and overflows from water mains, storage tanks, and service connections. Of the 630 ac-ft of water loss, most (70 percent) are due to customer metering inaccuracies. The District is working toward replacing customer meters and is methodically testing customer meters.

A detailed water audit and leak detection program of 47 California water utilities found an average loss of 10 percent and a range of 30 percent to less than 5 percent of the total water supplied by the 47 utilities (DWR 2016c). The District's water loss percentage falls within this range.

Other demographic factors that affect water management planning include the uncertainty in estimating future population growth and per capita water use. Water use declined in 2015 as a

result of the governor's Drought Declaration (DWR, 2016d). In 2014–16, the District reduced monthly water use by 21 percent from 2013 water use levels. It is not known to what extent per capita water use will rebound to pre-drought levels once the drought ends. The District's mandatory conservation plan was suspended June 1, 2016, because of the governor's orders lifting the statewide 25 percent mandatory conservation requirement. However, the District will continue its efforts in water conservation programs. The District's projected water demand is based on the projected population growth.

A summary of demand projections by year is listed in Table 3-2. Demand projections are based on per capita water use and anticipated growth in each of the three areas—Malibu, Topanga, and MdR. Customers with water supply provided from outside the District are excluded. Water uses for customers who may receive recycled water in the future are excluded in the year that recycled water use is anticipated.

Starting in 2025, additional recycled water is anticipated to be used with the construction of the Civic Center Wastewater Treatment Facility (WWTF). The City will collect and treat wastewater to recycled water use quality. It is anticipated that 53 acre-feet per year (ac-ft/yr) of recycled water will be produced starting in 2025, and will then increase to 140 ac-ft/yr by 2035 (ICF 2015). These recycled water demands have been deducted from landscape potable water demands starting in 2025.

Table 3-2. Projected Potable Water Demands (ac-ft/year)

Area	2020	2025	2030	2035
Malibu	6,750	6,777	6,840	6,830
Topanga	1,600	1,620	1,640	1,640
Marina del Rey	1,780	1,915	2,060	2,130
Total [a]	10,130	10,310	10,540	10,600

a. Projected water use based on minimal growth in Malibu and Topanga.

3.1.1 Residential Sector

Single- and multi-family residential customers account for most of the water use within the District. Residential customer connections have increased less than 1 percent since 2011 based on historical connection data. From 2000–08, housing unit growth averaged 0.5 percent per year (City 2013). Over the next 25 years, development in the residential sector will consist of infill growth/addition of second units on existing residential lots and possible rezoning of existing land uses based on the *2008–2014 Housing Element* (City 2013). Development within Malibu is constrained by numerous land features including steep slopes, environmentally sensitive habitat areas, geologic instability, flood hazards, and extreme wildfire hazards.

Medium- and high-density residential units will be added in the MdR area. The MdR *Specific Plan* estimates 1,700 additional residential units (LACDRP 2014). As of February 2014, approximately 1,000 units have been built (personal communication with A. Gutierrez, Los Angeles County Planning).

3.1.2 Commercial/Institutional Sector

The District's service area includes a commercial sector ranging from markets and restaurants to shopping centers. The commercial sector is predominantly within MdR and along the coastline of

Malibu. The commercial connections in Malibu and Topanga are expected to have minimal growth over the next 25 years because of the built-out commercial sector of the District. In MdR, redevelopment is occurring and additional commercial units will be added for tourist services.

The service area has a stable institutional sector within the District, which includes government buildings for Malibu, schools, public facilities, and public hospitals. Growth in this sector is also expected to be minimal for the next 25 years.

3.1.3 Landscape/Irrigation Sector

The landscape/irrigation sector includes golf courses, residential lawns, parks, and schools. All landscape irrigation uses potable water except for landscape within Pepperdine University. All irrigation water use within Pepperdine University is recycled water from the Malibu Mesa Reclamation Plant. The Malibu Mesa Reclamation Plant is operated by Public Works' Sewer Maintenance Division to serve Pepperdine University exclusively; therefore, the recycled water used is included in the District's recycled water demand projection found in Section 5. These irrigation demands are excluded from the estimation of potable water demands.

Starting in 2025, it is anticipated that recycled water will be used for irrigation near the City Civic Center area. Projected potable water demands for irrigation have been decreased and added to recycled water demand.

A summary of potable water demand projections by each water use type is provided in Table 3-3.

Table 3-3. Retail: Demands for Potable and Raw Water – Projected (DWR Table 4-2)

Use Type	Additional Description	Projected Water Use, ac-ft/yr			
		2020	2025	2030	2035
Single-family		6,890	7,050	7,210	7,310
Multi-family		770	790	810	820
Commercial		470	480	490	500
Industrial		30	30	30	30
Institutional/governmental		230	240	240	250
Landscape		200	160	160	80
Other	Private fire protection, construction meters	820	840	860	870
Losses		720	720	740	740
	Total	10,130	10,310	10,540	10,600

Note: Water losses are estimated to be 7.5% of projected total water use. Recycled water projected use is deducted from landscape demand projections. This table shows projected potable water demands (the difference of total and recycled water demands).

Table 3-4 summarizes the current and projected demands for potable, recycled, and raw water usage by the District. The District uses recycled water at the Pepperdine University campus as described in Section 5. The City is planning to provide recycled water. It is assumed that it will be

used to offset landscape demand. Projections are based on the EIR for the Civic Center WWTF (ICF 2015).

Table 3-4. Retail: Total Water Demands, ac-ft/yr (DWR Table 4-3)

Parameter	2015	2020	2025	2030	2035
Potable and raw water (from DWR Tables 4-1 and 4-2)	8,428	10,130	10,310	10,540	10,600
Recycled water demand [a] (from DWR Table 6-4)	163	163	215	215	300
Total water demand	8,591	10,293	10,525	10,755	10,900

a. *Recycled water demand is at Pepperdine University for landscape irrigation and planned recycled water for irrigation from the City of Malibu Civic Center WWTF.*

3.2 Distribution System Water Losses

Water losses in the District's water system for 2015 are presented in Table 3-5. It is approximately 7.5 percent of the District's 2015 water demand. The District's water distribution system consists of 80 miles of distribution pipelines and transmission mains. A detailed water loss analysis following the AWWA method is provided in Appendix E. The water audit is an accounting exercise that tracks all sources and uses of water within a water system during a specified period.

Table 3-5. Retail: Water Loss Audit Reporting (DWR Table 4-4)

Reporting Period Start Date (Month/Year)	Loss [a], ac-ft/yr
1/2015	630

a. *Taken from the field "Water Losses," which is a combination of apparent losses and real losses from the AWWA worksheet provided in Appendix E.*

3.3 Estimating Future Water Savings

Water savings from codes, standards, ordinances, or transportation and land use plans are also known as "passive savings." These various factors generally decrease the water use for new and future customers, compared to historical customers. Because of a low number of new developments in the service area, passive savings are expected to be minimal. Water projections do not include passive savings.

Below is a summary of the applicable State of California codes and ordinances that could reduce the District's water demand in the future based on information provided in the DWR 2015 UWMP Guidebook (DWR 2016b):

- **Model Water Efficient Landscape Ordinance:** Effective on December 1, 2015, this new ordinance is projected to reduce the typical residential outdoor landscape demands for new construction by up to 20 percent from the estimated demand using the prior ordinance

provisions. Commercial landscape for new construction may reduce outdoor water demand by up to 35 percent over the prior ordinance.

- **California Energy Commission Title 20:** Appliance standards for toilets, urinals, faucets, and showerheads; this standard will impact both new construction and replacement fixtures in existing homes. This is included in the California Green Building Standards Code (CALGreen) assumption for new construction described below. Assume up to 5 percent reduction in indoor water use of existing homes.
- **CALGreen Building Standards Code:** Requires residential and non-residential water efficiency and conservation measures for new buildings and structures. It is assumed that this code will reduce residential and non-residential indoor water on new construction by up to 20 percent.

Future water savings are not included in the water demand projections as summarized in Table 3-6.

Table 3-6. Retail Only: Inclusion in Water Use Projections (DWR Table 4-5)

Future water savings included? (Y/N)	N
If "Yes" to above, state the section or page number where citations of the codes, ordinances, etc. utilized in demand projections are found.	Section 3.3
Are lower-income residential demands included in projections? (Y/N)	Y

3.4 Water Use for Lower-Income Households

Section 10631.1 of the CWC requires inclusion of projected water use for lower-income single-family and multi-family residential households as identified in the housing element of any city, county, or city and county in the service area of the water purveyor. Lower income is established by the State of California as 80 percent of the area median income.

The projections are meant to assist water purveyors in complying with the requirements of Government Code Section 65589.7, which requires water purveyors to "grant a priority for the provision of water and sewer services to proposed developments that include housing units affordable to lower income households."

There is minimal low-income population in the service area. The Los Angeles County (County) *Unincorporated Area General Plan* estimates a 41 percent low-income population, but these are not within the service area (LACDRP 2014a). In Malibu, 14 percent of the population is designated as low income. In the MdR *Specific Plan*, 1,711 additional units are built or planned to be built (LACDRP 2014b). Of those, 145 units would be designated for very low- and lower-income populations. This is 8.5 percent of new or recent development. Low-income water use is low and is included in water use projections.

This page intentionally left blank.

Section 4

SB X7-7 Baseline and Targets

This section describes the District's SB X7-7 gpcd baseline and targets as updated from the analysis conducted as part of the 2010 UWMP. Compliance with the 2015 interim target is also discussed.

The District receives wholesale water from West Basin and is part of the West Basin Regional Alliance. A comparison of individual District compliance and the West Basin Regional Alliance compliance is discussed in Section 4.5.4. Additional detail about the West Basin Regional Alliance is found in the 2015 West Basin Draft UWMP (West Basin, 2016).

4.1 Updated Calculations from 2010 UWMP

The District's 2010 UWMP provided calculations and a resulting 2015 and 2020 gpcd target based on the DWR methodology (DWR 2016a). Since the adoption of the 2010 UWMP, the 2010 census data are now available at the census block level of detail. Additionally, since the adoption of the 2010 UWMP, DWR has developed an online population tool and SB X7-7 verification tables that the District is required to complete with the updated Census data to determine the updated SB X7-7 baseline and target gpcd. The District's completed verification tables are provided in Appendix F.

4.2 Baseline Periods

In this 2015 UWMP, the District has changed the years selected for its baseline periods from what was selected in the 2010 UWMP. Two baseline periods must be selected for gpcd calculation.

4.2.1 10- to 15-Year Baseline Period (gpcd)

The District must select either a 10- or 15-year baseline period ending between December 31, 2004, and December 31, 2010, for water use and calculate the average water use—in gpcd—over the selected baseline period. Whether the District uses a 10- or 15-year baseline period is dependent upon the amount of recycled water use in 2008. Only water suppliers that have recycled water use greater than 10 percent of their total demand are allowed to select a 15-year baseline period. Because the District did not use recycled water in 2008, the District must use a 10-year baseline period. The District's selected 10-year baseline period is 1999 to 2008, as shown in SB X7-7 Table 1, located in Appendix F. This is a different 10-year baseline period from that selected in the 2010 UWMP.

4.2.2 5-Year Baseline Period (Target Confirmation)

The District must also calculate water use, in gpcd, for a 5-year baseline period. This is used to confirm that the selected 2020 target meets the minimum water use reduction requirements. This continuous 5-year period ends no earlier than December 31, 2007, and no later than December 31, 2010. This is used as a check against the District's selected gpcd target method. The District's selected 5-year baseline period is 2004–08, as shown in SB X7-7 Table 1, located in Appendix F. This is a different period from that selected in the 2010 UWMP.

4.3 Service Area Population

To calculate the annual baseline gpcd, the District must determine the population that was served for each baseline year for both the baseline periods and the 2015 compliance year. The District conducted this baseline population analysis as part of the 2010 UWMP based on the year 1990 and 2000 census. The year 2010 census data at the block level of detail were not available until after the 2010 UWMP submittal deadline. For this 2015 UWMP, the District is required to recalculate its baseline population using 2010 census data. As a result of this analysis update—described in Section 2.3—the historical population served by the District is shown in SB X7-7 Table 3 located in Appendix F.

4.4 Gross Water Use

Gross water use is the measure of water that enters the District's distribution system over a 12-month period with certain allowable exclusions. These allowable exclusions are recycled water delivered within the service area, indirect recycled water, water placed into long-term storage, water conveyed to another urban supplier, water delivered for agricultural use, and process water. The District's historical gross water use for the baseline years is shown in SB X7-7 Table 4 located in Appendix F.

4.5 Per Capita Water Use

The District's baseline and target per capita water use are described in this section.

Note that per capita water use with units of gpcd as used in the UWMP is different from R-gpcd that is used in drought reporting to the State Water Resources Control Board (SWRCB). Calculation of gpcd uses the total water use within a service area. This includes residential and CII water uses. R-gpcd calculation uses estimated residential water use in a service area divided by population. It is used for drought reporting to comply with the governor's drought declarations and executive orders.

4.5.1 Baseline Daily Per Capita Water Use

Daily per capita water use or gpcd water use—as defined in this UWMP—is the amount of water used per person per day. The daily per capita water use for each year of the two baseline periods is calculated by dividing the gross water use for each year by the service area population for each year. The District's baseline daily per capita use is presented in SB X7-7 Table 5, located in Appendix F. The resulting 5- and 10-year baseline per capita demands are shown in SB X7-7 Table 6 located in Appendix F. The updated 10-year baseline period per capita water use is 297 gpcd. The updated 10-year baseline period per capita water use is less than the 2010 UWMP analysis, which developed a baseline per capita water use of 333 gpcd. The updated 5-year base period per capita water use is 300 gpcd, which is less than the 5-year baseline per capita water use presented in the 2010 UWMP: 333 gpcd.

4.5.2 2015 and 2020 Targets (gpcd)

Per the law as adopted in SB X7-7, the District must establish per capita water use targets using one of four target methods, described as follows:

- Method 1: 80 percent of the urban retail supplier's baseline per capita daily water use
- Method 2: The per capita daily water use that is estimated using the sum of several defined performance standards:
  - 55 gallons per day (gpd) for indoor residential water use

  - Water efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance for landscape irrigated through dedicated or residential meters or connections
  - A 10 percent reduction in CII uses from the baseline CII water use by 2020
- Method 3: 95 percent of the applicable state hydrologic region target, as outlined in the State of California's Methodology document (DWR 2016a)
- Method 4: Calculated water savings based on indoor residential water savings, metering savings, CII savings, and landscape and water loss savings, as outlined in DWR's *Provisional Method 4 for Calculating Urban Water Use Targets* (DWR 2011)

In the 2010 UWMP, the District selected Method 1 to determine its urban water use target. Based on Method 1 in the 2010 UWMP, the District's 2020 target was 257 gpcd with an interim 2015 target of 289 gpcd. In this 2015 UWMP gpcd analysis—with the updated historical population analysis incorporating the 2010 census data described in Section 2—the District has selected to remain with Method 1, which now provides a 2020 target of 237 gpcd with an interim 2015 target of 267 gpcd. The District's interim urban water use target is the value halfway between the 10-year baseline gpcd (from SB X7-7 Table 5 located in Appendix F) and the confirmed 2020 gpcd target (from SB X7-7 Table 7-A located in Appendix F). A summary of the District's baseline periods and targets is provided in Table 4-1. A comparison of target results from the 2015 analysis and the 2010 analysis is provided in Table 4-2.

Table 4-1. Baselines and Targets Summary
Retail Agency
(DWR Table 5-1)

Baseline Period	Start Years	End Years	Average gpcd	2015 Interim Target, gpcd	Confirmed 2020 Target, gpcd
10- to 15-year	1999	2008	297	267	237
5-year	2004	2008	300		

Table 4-2. Comparison of 2010 and 2015 Baselines and Targets

Analysis Year	Target Method to Calculate 2020 Target	2020 Target	2015 Interim Target
2015	1: 80% of baseline use in 10-year period (1999–2008)	237	267
2010	1: 80% of baseline use in 10-year period (2000–09)	257	289

4.5.3 Adjustments to 2015 Gross Water Use and 2015 Compliance

Allowable adjustments can be made to the District's 2015 gross water use for extraordinary events, economic adjustments, or weather normalization. The District did not adjust its 2015 gross water use (Table 4-3, below). As shown in Table 4-2, the District achieved the targeted gpcd value for 2015. It is expected that the District's gpcd will increase from the 2015 actual values in the future assuming drought conditions do not continue.

Table 4-3. 2015 Compliance *Retail Agency* (DWR Table 5-2)								
Actual 2015 gpcd	2015 Interim Target gpcd	Optional Adjustments to 2015 gpcd Enter "0" for adjustments not used from Methodology 8					2015 gpcd (Adjusted if applicable)	Did Supplier Achieve Targeted Reduction for 2015? Y/N
		Extraordinary Events	Economic Adjustment	Weather Normalization	Total Adjustments	Adjusted 2015 gpcd		
244	267	0	0	0	0	244	244	Y

Note: All values are in gpcd.

4.5.4 West Basin Regional Alliance gpcd Compliance

The West Basin Regional Alliance members include the District; California Water Service (Hawthorne region); and the cities of El Segundo, Lomita, and Manhattan Beach. As a regional alliance, these agencies worked with West Basin to establish a regional baseline of water use and conservation targets for 2015 and 2020. They also collaborate on the implementation of recycled water and conservation programs and projects that will be required to meet these targets. From the West Basin Draft UWMP (West Basin 2016), compliance was achieved for 2015. A summary of the West Basin Regional Alliance baselines and targets is provided in Table 4-4.

Table 4-4. Baselines and Targets Summary *West Basin Regional Alliance* (DWR Table 5-1)					
Baseline Period	Start Years	End Years	Average gpcd	2015 Interim Target, gpcd	Confirmed 2020 Target, gpcd
10- to 15-year	Varies	Varies	211	198	175
5-year	Varies	Varies	204		

A summary of compliance for the West Basin Regional Alliance is shown in Table 4-5, below. No adjustments were made.

Table 4-5. 2015 Compliance *West Basin Regional Alliance* (DWR Table 5-2)								
Actual 2015 gpcd	2015 Interim Target gpcd	Optional Adjustments to 2015 gpcd Enter "0" for adjustments not used from Methodology 8					2015 gpcd (adjusted if applicable)	Did Supplier Achieve Targeted Reduction for 2015? Y/N
		Extraordinary Events	Economic Adjustment	Weather Normalization	Total Adjustments	Adjusted 2015 gpcd		
157	198	0	0	0	0	157	157	Yes

To meet the 2020 use targets calculated in Table 4-4, West Basin has collaborated with its Regional Alliance agencies to develop individual water use efficiency master plans. These plans were completed in May 2011. Joint projects were also undertaken with West Basin for public education and water conservation rebates. Details are found in Section 8.

This page intentionally left blank.

Section 5

System Supplies

The District uses solely purchased water as its supply source. This section describes the District's existing and projected water supplies.

5.1 Purchased Water: West Basin Municipal Water District

The District purchases water from West Basin as described in this section.

The District currently has a purchase agreement with West Basin for a maximum of 10,506 ac-ft/yr. A copy of the most recent contract is found in Appendix G. The District has an interconnection with West Basin in Culver City. A 35-mile-long transmission water main along the Pacific Coast Highway conveys water from the interconnection with West Basin to the western boundary of District 29. The water is pumped from the transmission water main into various gravity storage tanks in the cities of Malibu and Topanga.

MdR is served by District 29 and accounts for 17 percent of the water supplied by West Basin. Water to MdR comes directly off the transmission water main. No pump stations or storage tanks are located within MdR. MdR also has two emergency interconnections with LADWP.

Historically, West Basin's primary supply source is imported water from the Metropolitan Water District of Southern California (Metropolitan). Metropolitan is a consortium of 26 member agencies comprising cities and water districts that provide water to nearly 19 million people across Southern California. Its source of water comes from the Colorado River and Northern California via the Colorado River Aqueduct and State Water Project (SWP), respectively. The mission of Metropolitan is to provide its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way.

However, because of concerns regarding the future reliability of these imported supplies, West Basin has been increasing its development of local supplies to reduce future dependence on imported supplies from Metropolitan. West Basin launched a program to help meet these challenges, called the "Water Reliability 2020" Program. The main goal of this program is to increase local water supplies by doubling recycled water production, doubling water conservation savings, and bringing responsible ocean water desalination on line. Since 2001, West Basin has been embarking on an effort to explore the development of a full-scale ocean water desalination facility. In early 2009, West Basin began construction of the Demonstration Facility and Education Center. It is designed to test the viability of a future, full-scale facility capable of providing up to 20,000 ac-ft/yr in the initial phase. Currently, the facility project is undergoing environmental documentation and review.

5.2 Groundwater

The District's service area does not overlie a groundwater basin capable of producing an adequate supply of groundwater. Therefore, no supply from groundwater sources will be used for future water supply within the District. Some residents in the District rely on groundwater from private wells; however, that information is not provided here.

5.3 Stormwater

Stormwater is not currently used as an urban water supply source. There are no plans to divert stormwater runoff as a water source, but it may be a localized source in the future.

Currently, stormwater and urban runoff are used for riparian habitats. The City's Legacy Park includes facilities to collect and treat stormwater and urban runoff for riparian and coastal habitats. Additionally, the County has implemented a low-impact development (LID) ordinance that requires new developments and redevelopment constructed after 2009 to include LID best management practices (BMPs) that may be implementable on particular sites. This program may ultimately result in additional capture and use of stormwater to replace irrigation water (Committee 2014).

5.4 Wastewater and Recycled Water

The purpose of this section is to provide information on recycled water and its potential as a resource for the District. The elements of this section include: (1) the quantity of wastewater generated in the service area; (2) description of the collection, treatment, and disposal/reuse of that wastewater; (3) current water recycling systems; and (4) the potential for water recycling in the service area.

5.4.1 Recycled Water Coordination

Production and use of recycled water is limited in the District because the community is predominantly on individual septic systems. A portion of the wastewater generated in the area is collected and treated by small private and publicly owned wastewater treatment plants (WWTPs) serving individual developments. The LACDPW operates and maintains the collection and treatment systems of three publicly owned WWTPs and collects wastewater from MdR.

5.4.2 Wastewater Collection, Treatment, and Disposal

The three WWTPs (Malibu Mesa Water Reclamation Plant, Malibu Water Pollution Control Plant, and Trancas Water Pollution Control Plant) have a total treatment capacity of approximately 401,000 gpd. Of these plants, only the Malibu Mesa Water Reclamation Plant generates recycled water for irrigation use. The locations of the collection systems of the three WWTPs are shown in relation to the District service area in Figure 5-1.

The Malibu Mesa Water Reclamation Plant treats wastewater for an estimated population of 4,200 persons at Pepperdine University and the Malibu Country Estates. The WWTP treats wastewater to Title 22 standards for landscape irrigation. The treated wastewater is used by Pepperdine University for landscape irrigation of approximately 139 acres.

The City is planning to construct a WWTF at the Malibu Civic Center area. This is in response to the Los Angeles Regional Water Quality Control Board ban of septic tanks in the Malibu Civic Center area in November 2009, and the requirement of the City to construct a WWTF in the near future. The WWTF will replace four wastewater systems: Webster Elementary Onsite Treatment Wastewater System (OTWS), Our Lady of Malibu OWTS, Malibu Colony Shopping Center, and Malibu plant at Vista Pacifica Street. Treated water is planned to be injected into local groundwater basins or used for outdoor irrigation at high-demand periods. The wastewater collection and treatment system is planned to be constructed in phases and is currently not constructed. More information can be found on the City's website (City 2016). The Civic Center WWTF is currently not constructed and is undergoing environmental documentation and ballot approval by impacted property owners (City 2016).

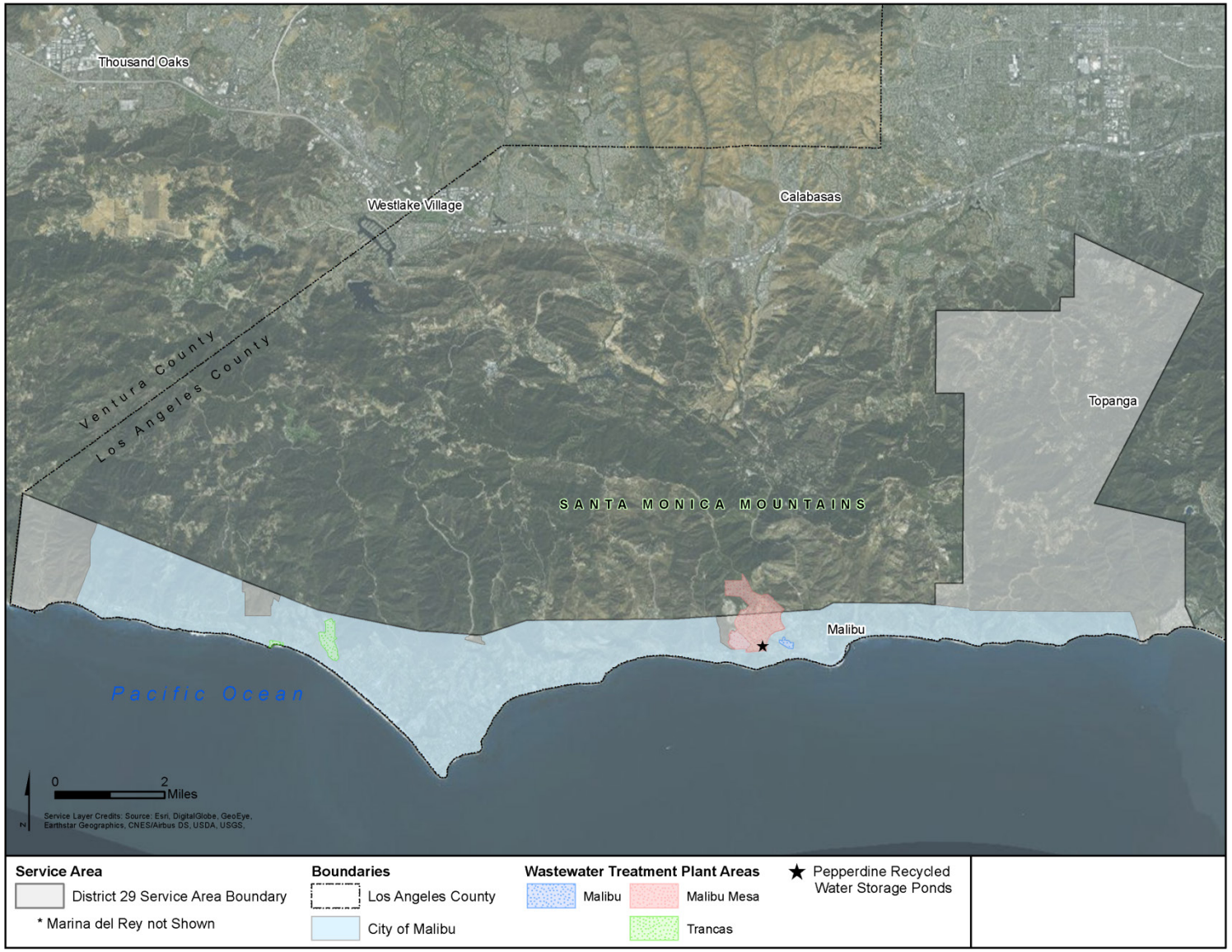

Figure 5-1. Recycled and Wastewater Service Areas

The proposed Civic Center WWTF is estimated to generate and treat buildout flows of 191,000 gpd at Phase 1 to 507,000 gpd at project buildout (ICF 2015). This is equivalent to 1,600 ac-ft/yr at Phase 1 and 4,250 ac-ft/yr at project buildout. Not all flows would be used for water recycling because of the timing of recycled water generation.

West Basin has plans to incorporate the expanded use of recycled water in its service area, outside of the District, to help reduce the demand on imported water.

A summary of the quantities of wastewater received by each facility is provided in Table 5-1.

Table 5-1. Wastewater Collected Within Service Area in 2015, ac-ft/yr (DWR Table 6-2)

☐	There is no wastewater collection system. The supplier will not complete the table below.
--%	Percentage of 2015 service area covered by wastewater collection system (optional).
--%	Percentage of 2015 service area population covered by wastewater collection system (optional).

Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected in 2015, ac-ft/yr	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located within UWMP Area?	Is WWTP Operation Contracted to a Third Party? (optional)
Los Angeles County Department of Public Works	Metered	163	Los Angeles County Department of Public Works	Malibu Mesa Water Reclamation Plant	Yes	No
Los Angeles County Department of Public Works	Metered	32	Los Angeles County Department of Public Works	Malibu Water Pollution Control Plant	Yes	No
Los Angeles County Department of Public Works	Metered	55	Los Angeles County Department of Public Works	Trancas Water Pollution Control Plant	Yes	No
Total wastewater collected from service area			250			

The secondary effluent produced from the WWTPs is disposed of using a seepage pit system or leach field disposal system, or is recycled and used for irrigation.

A summary of wastewater volumes treated, discharged, and recycled by the LACDPW at the three WWTPs in 2015 is provided in Table 5-2, below.

Table 5-2. Retail: Wastewater Treatment and Discharge Within Service Area in 2015, ac-ft/yr (DWR Table 6-3)									
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Method of Disposal	Does this Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2015 volumes (ac-ft)			
						Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
Malibu Mesa Water Reclamation Plant	Pepperdine University	Pepperdine University grounds	Other	No	Tertiary	163	0	163	0
Malibu Water Pollution Control Plant	Malibu Water Pollution Control Plant	Seepage pits	Other	No	Secondary disinfected: 23	32	32	0	0
Trancas Water Pollution Control Plant	Trancas Water Pollution Control Plant	Leach fields	Other	No	Secondary disinfected: 23	55	55	0	0
					Total	250	87	163	0

5.4.3 Recycled Water System

The Malibu Mesa Water Reclamation Plant serves an estimated population of 250 at Malibu Country Estates and 3,952 at Pepperdine University. The wastewater is treated to Title 22 standards for landscape irrigation. Pepperdine University uses the treated wastewater to irrigate approximately 139 acres.

Recycled water is the cornerstone of West Basin's efforts to increase water reliability by augmenting local supplies and reducing dependence on imported water. Since planning and constructing its recycled water system in the early 1990s, West Basin has become an industry leader in water reuse. At this time, the District does not receive recycled water from West Basin because the conveyance and transmission facilities do not exist to serve the District. Although the program does not service the District with recycled water, it does provide an indirect benefit. West Basin's recycled water program reduces demand for potable water and, therefore, increases the availability of imported water for all of West Basin's customers, including the District. West Basin produces five types of designer water for irrigation, cooling tower, seawater intrusion prevention, and two types of boiler feed water.

5.4.4 Recycled Water Beneficial Uses

Potential uses of recycled water in the District are minimal because of significant investments in infrastructure necessary to serve comparatively small demands. Recycled water use is expected to remain consistent at Pepperdine University (see Table 5-3). The amount of recycled water use exceeds the 2015 projections from the 2010 UWMP (see Table 5-4).

Additionally, a significant investment in recycled water conveyance infrastructure throughout the District would be needed to serve the limited potential landscape irrigation areas, such as parks, schools, and commercial centers. The City is planning to use recycled water for irrigation but, because of storage and timing issues, a portion of the recycled water will need to be injected into the groundwater basin. The District is committed to working with the City to identify creative solutions for using recycled water when it becomes available in the area consistent with existing regulations and subject to available funding.

Table 5-3. Retail: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area*, ac-ft (DWR Table 6-4)

☐	Recycled water is not used and is not planned for use within the service area of the supplier. Quantities listed are for outside of the service area.

Name of agency producing (treating) the recycled water	Los Angeles County Department of Public Works, City of Malibu
Name of Agency operating the recycled water distribution system	Pepperdine University, City of Malibu
Supplemental water added in 2015	0
Source of 2015 supplemental water	N/A

Beneficial Use Type	General Description of 2015 Uses	Level of Treatment Drop Down List	2015	2020	2025	2030	2035
Agricultural irrigation							
Landscape irrigation (excludes golf courses)	At Pepperdine University	Tertiary	163	163	163	163	163
Landscape irrigation (excludes golf courses)	Within the city of Malibu	Tertiary			52	52	137
Golf course irrigation							
Commercial use							
Industrial use							
Geothermal and other energy production							
Seawater intrusion barrier							
Recreational impoundment							
Wetlands or wildlife habitat							
Groundwater recharge (IPR)							
Surface water augmentation (IPR)							
Direct potable reuse							
Other							
		Total	163	163	215	215	300

IPR = indirect potable reuse.

Table 5-4. Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual, ac-ft (DWR Table 6-5)		
☐ Recycled water was not used in 2010 nor projected for use in 2015. The supplier will not complete the table below.		
Use Type	2010 Projection for 2015	2015 Actual Use
Agricultural irrigation		
Landscape irrigation (excludes golf courses)	147	163
Golf course irrigation		
Commercial use		
Industrial use		
Geothermal and other energy production		
Seawater intrusion barrier		
Recreational impoundment		
Wetlands or wildlife habitat		
Groundwater recharge (IPR)		
Surface water augmentation (IPR)		
Direct potable reuse		
Other		
Total	147	163

5.4.5 Actions to Encourage and Optimize Future Recycled Water Use

District policy is that recycled water, when determined to be available pursuant to Section 13550 of the CWC, shall be used for non-potable uses wherever its use is financially and technically feasible and consistent with legal requirements. In the event that an existing potable water service customer is required by the District to convert to recycled water service, the customer will pay the reasonable capital costs of retrofitting the onsite water service facilities. Should an existing customer refuse, the District will assess the applicable Outside of District Rate Schedules and Water Service Charges for the customer's potable water service (LACDPW 2016).

Use of recycled water could be optimized by instituting financial incentives, such as lower rates for recycled water than potable water if adequate supplies of recycled water and the necessary infrastructure were available. Instead, the District is working closely with West Basin and Metropolitan to encourage the increased use of recycled water for non-potable uses outside of the District, which increases the reliability of imported water for the District. As shown on Table 5-5 below, the District does not plan to expand recycled water use in the future.

Table 5-5. Retail: Methods to Expand Future Recycled Water Use (DWR Table 6-6)	
✓	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.
Section 5.4.5	Provide page location of narrative in UWMP.

In 2009, West Basin completed a Capital Implementation Master Program (CIMP), which includes all of the planned projects for recycled water and desalination through 2030. It also identifies and prioritizes areas where recycled water has the potential to expand based upon potential future customers. These projects are expected to result in at least an additional 40,900 ac-ft/yr of use within West Basin's service area by 2035, outside of the District's service area.

In addition, Metropolitan invites public and private water utilities within Metropolitan's service area to apply for development of water recycling and groundwater recovery projects under the Local Resources Program (LRP). The LRP provides funding for the development of water recycling and groundwater recovery supplies that replace an existing demand or prevent a new demand on Metropolitan's imported water supplies either through direct replacement of potable water or increased regional groundwater production. Financial incentives between $0 and $250 per ac-ft produced over 25-year terms are recalculated annually based on eligible project costs incurred each year and Metropolitan's applicable water rates. Metropolitan seeks development of 174,000 ac-ft/yr of yield to meet a regional goal of 779,000 ac-ft/yr by 2025.

5.5 Desalinated Water Opportunities

Because the District is located along the coastline, there is potential for development of ocean water desalination in the future. However, ocean water desalination is not an economically feasible supply alternative for the District at this time and would also face significant environmental clearance challenges.The District anticipates sufficient supply from West Basin to meet projected demands through 2035, and its reliability has been guaranteed by Metropolitan.

West Basin, on the other hand, is planning to increase the diversity of its water supply portfolio through further development of alternatives to the more traditional imported water and groundwater supplies.

5.6 Exchanges or Transfers

Water transfers and exchanges are management tools to address increased water needs in areas of limited supply. Although transfers and exchanges of water do not generate new supply, these management tools distribute water from where it is abundant to where it is limited.

Metropolitan has played an active role statewide in securing water transfers and exchanges as part of its planning goals. Although West Basin is a member of Metropolitan, there has not been a compelling reason or opportunity to pursue transfers directly.

Because West Basin anticipates that there will be sufficient supply to meet member agency demands in single- and multiple-dry years from 2010–35, the District has no plans for water supply transfers or exchanges.

5.7 Future Water Projects

The District does not plan to have future projects to increase water supply as shown in Table 5-6. West Basin is actively diversifying its water supply portfolio and increasing reliability of water supply sources. Projects are described in the 2015 West Basin Draft UWMP (West Basin 2016).

Table 5-6. Retail: Expected Future Water Supply Projects or Programs (DWR Table 6-7)	
✓	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.
☐	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.
	Provide page location of narrative in the UWMP.

5.8 Summary of Existing and Planned Sources of Water

A summary of actual supply sources and quantities in 2015 is provided in Table 5-7. The water supplies projected from 2020–40 are provided in Table 5-8, below. The supply projected to be available from each source in normal years is shown.

Table 5-7. Water Supplies: Actual, ac-ft/yr (DWR Table 6-8)

Water Supply	Additional Detail on Water Supply	2015		
		Actual Volume	Water Quality	Total Right or Safe Yield
Purchased water	West Basin	8,428	Drinking water	10,506
Recycled water	Pepperdine University	163	Recycled water	163
	Total	8,591		10,669

Note: A normal year is assumed.

Table 5-8. Water Supplies – Projected, ac-ft/yr (DWR Table 6-9)

Water Supply	Additional Detail on Water Supply	2020		2025		2030		2035	
		Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield
Purchased water	West Basin	10,506		10,506		10,540		10,600	
Recycled water	Includes recycled water use at Pepperdine University	163		215		215		300	
Desalinated water									
Stormwater use									
Transfers									
Exchanges									
Total		10,669		10,721		10,755		10,900	

Note: A normal year is assumed. Water supply is assumed to be the Tier 1 allocation from West Basin.

This page intentionally left blank.

Section 6

Water Supply Reliability Assessment

This section describes factors impacting long-term reliability of water supplies and provides a comparison of projected water supplies and demand projections in normal, single-dry, and multiple-dry years.

6.1 Constraints on Water Sources

The District relies entirely on imported water to meet service area demands and receives 100 percent of its water supply from West Basin. Because West Basin is the sole provider for the District, the available supply from West Basin must be able to accommodate the anticipated water demands in the District for the District's supply to be 100 percent reliable for its customers. Most of West Basin's supply is water imported by Metropolitan. Metropolitan's water is largely from the State Water Project and the Colorado River. Consequently, the District is exposed to the same legal, environmental, water quality, and climatic factors resulting in inconsistency of supply as West Basin.

The State of California and Metropolitan's service area has experienced two severe droughts in the last 7 years. Both droughts resulted in water shortages to Metropolitan and cutbacks in supplies to its member agencies. During this current drought, State Water Project (SWP) Water allocations were at record lows with 5 percent of requested deliveries being met in 2014 and 20 percent of requested deliveries in 2015. With an unprecedented fourth consecutive dry year in 2015, the importance of Metropolitan's stored water to regional reliability has become abundantly apparent. During water shortages, it is important to analyze reliability in the context of Metropolitan's service area's current experience. In analyzing its reliability, West Basin is assuming that in multiple-dry years there will be similar supply availability in the future comparable to what is currently being experienced during this drought. Metropolitan will be allocating water to its member agencies under its Water Supply Allocation Plan (WSAP) and will have 1.7 million ac-ft available; that is the approximate amount of available supplies Metropolitan had to allocate in 2014 and 2015. Because of its robust storage reserves it is assumed that in normal weather years and single-dry years Metropolitan will be able to meet all demands for water (West Basin 2015).

As discussed in Section 5, West Basin is diversifying its water supply portfolio through its "Water Reliability 2020" Program.

6.2 Reliability by Type of Year

The basis of the water year data is provided in Table 6-1 below for West Basin supply. They are based on the West Basin Draft 2015 UWMP and the Metropolitan Draft 2015 UWMP (West Basin 2016; Metropolitan 2016). The District is contracted with West Basin to receive a maximum of 10,506 ac-ft/yr of water. Because West Basin has diversified its water supply portfolio to include recycled water and desalination, it is projected that all wholesale water supplies will be available in all water type years.

Table 6-1. Retail Basis of Water Year Data – West Basin (DWR Table 7-1)			
Year Type	Base Year [a]	Volume Available, ac-ft/yr	Percentage of Average Supply
Average year	2015	10,506	100%
Single-dry year	1977	10,506	100%
Multiple-dry years 1st year	1990	10,506	100%
Multiple-dry years 2nd year	1991	10,506	100%
Multiple-dry years 3rd year	1992	10,506	100%

a. Base years are those used by West Basin in its 2015 UWMP. Volume available is based on the Tier 1 maximum contracted amount.

6.3 Supply and Demand Assessment: Current and Projected Normal Year

This section provides a comparison of normal, single-dry, and multiple-dry water year supply and demand for the District. Water demands were addressed in Section 3 and water supplies were addressed in Section 5.

The normal water year current and projected water supplies are compared to the current and projected demand for the District in Table 6-2. The District may purchase additional water at the Tier 2 Supply Rate from West Basin to meet water demands or implement greater water conservation within the service area or recycled water use.

Table 6-2. Retail: Normal Year Supply and Demand Comparison, ac-ft/yr (DWR Table 7-2)				
Water	2020	2025	2030	2035
Supply [a]	10,669	10,721	10,755	10,900
Demand total [b]	10,293	10,525	10,755	10,900
Difference (supply minus demand)	376	196	0	0

a. From Table 5-8.

b. From Table 3-4.

The current and projected water supplies are compared to the demands for a single-dry year for the District in Table 6-3.

Table 6-3. Single Dry Year Water Supply and Demand Comparison, ac-ft/yr (DWR Table 7-3)				
Water	2020	2025	2030	2035
Supply total	10,669	10,839	11,076	11,230
Demand total [a]	10,602	10,839	11,076	11,230
Difference (supply minus demand)	67	0	0	0

a. The overall demand is estimated to increase by 3% over normal year demand during the single-dry year.

The projected water supplies are compared to the demands for multiple-dry years for the District in Table 6-4. There is a deficit of water supplies.

Table 6-4. Retail: Multiple-Dry Years Supply and Demand Comparison, ac-ft/yr (DWR Table 7-4)

Water		2020	2025	2030	2035
First year	Supply	10,808	11,049	11,291	11,448
	Demand total [a]	10,808	11,049	11,291	11,448
	Difference	0	0	0	0
Second year	Supply	10,808	11,049	11,291	11,448
	Demand total [a]	10,808	11,049	11,291	11,448
	Difference	0	0	0	0
Third year	Supply	10,808	11,049	11,291	11,448
	Demand total [a]	10,808	11,049	11,291	11,448
	Difference	0	0	0	0

a. The overall demand is estimated to increase by 5% over normal year demand during the multiple-dry year.

6.4 Regional Supply Reliability

The District is highly dependent on imported water from other watersheds. Water use efficiency funding from West Basin and collaboration on public-education campaigns have led to greater awareness and water use reductions.

In the Integrated Regional Water Management Plan Update (Committee 2014) for the greater County area, it is noted that the region plans to diversify water supplies by funding projects for brackish water desalination, conjunctive water use, water storage, water recycling, and nonpoint source pollution control and treatment. In the area near the District's service area, water providers such as Los Virgenes Municipal Water District and the City were approved for funding of expansion of recycled water distribution systems.

According to West Basin's 2010 UWMP and Metropolitan's 2015 UWMP, West Basin and Metropolitan have taken important steps to reduce the vulnerability of supplies to extended droughts or other potential threats to reliability. These efforts have included using more recycled water for non-potable uses, expanding the use of local groundwater resources through conjunctive-use programs, developing ocean water desalination, and searching for potential water transfers and exchanges for imported water sources other than those already available to Metropolitan.

6.4.1 Metropolitan's Integrated Resources Plan

In 2010, Metropolitan adopted an updated Integrated Resources Plan (IRP) that assessed potential future regional demand projections as well as conservation potential. The IRP includes regional supply strategies and implementation plans to better manage resources, meet anticipated demand, and increase overall system reliability. Metropolitan's 2010 IRP establishes water supply targets for Southern California through 2035, specifically a conservation target of 1.7 million ac-ft/yr. This target represents Metropolitan's goal of achieving a 20 percent reduction in per capita water use across its service area.

6.4.2 Metropolitan's Water Surplus and Drought Management Plan

In April 1999, Metropolitan's board of directors adopted the Water Surplus and Drought Management (WSDM) Plan to guide the management of regional water supplies to achieve the reliability goals of its IRP, which provides a long-term conservation plan for its service area. Through the effective management of its water supply, Metropolitan expects to be able to meet demand for the next 25 years.

The guiding principle of the WSDM Plan is to minimize the adverse impacts of water shortages to retail customers.

The 10-year WSDM Plan will be used to direct Metropolitan's resources to help attain the region's 100 percent reliability goal. The WSDM Plan outlines Metropolitan's strategy to store water during periods of surplus and work with member agencies, such as West Basin, to minimize the impacts of water shortages on the region's retail customers. The overall objective of the WSDM Plan is to ensure that shortage allocation of Metropolitan's imported water supplies is not required.

6.4.3 Metropolitan's Water Supply Allocation Plan

The Water Supply Allocation Plan (WSAP) includes the specific formula for calculating member agency supply allocations and the key implementation elements needed for administering the allocation in times of water shortage. The WSAP was approved by Metropolitan's board in February 2008 and has since been implemented three times, most recently in April 2015. The WSAP was developed in consideration of the principles and guidelines described in the WSDM Plan.

6.4.4 West Basin's Water Supply Allocation Plan

The West Basin WSAP was in effect from 2009–11 as well as 2014–15. The purpose of West Basin's WSAP was to provide a method for determining allocations for its member agencies relative to the amount of supplies available when Metropolitan has implemented its WSAP to determine West Basin's imported supply allocation.

West Basin points to Metropolitan's WSDM and its strategy for managing supply and demand, including surplus storage withdrawals and contingency planning under Metropolitan's WSAP. In addition, West Basin will be doing its part to gradually decrease dependence on imported supplies from Metropolitan by developing drought-resistant local resources, such as recycled water and ocean water desalination.

Section 7

Water Shortage Contingency Planning

This section describes the District's water shortage contingency planning process and responses to water shortages. The District's Phased Water Conservation Plan (PWCP) is Part 5 of the Rules and Regulations of the LACDPW Waterworks Districts and MdR, and a copy is provided in Appendix H. It was adopted in May 1991 and most recently amended in June 2015.

7.1 Stages of Action

The District will implement an appropriate water shortage contingency stage based on the District's current water supply conditions, as listed for the 10 stages defined in Table 7-1. The County Board of Supervisors as the Board of Directors for the District may determine the appropriate stage and implement rate changes and conservation surcharges. Regardless of the water supply availability or service conditions within the District, the Board of Directors may set water conservation goals and modify stage declarations as necessary to align with regional or state water conservation policies, agreements or declarations, or legal requirements.

Table 7-1. Retail: Stages of Drought Contingency Plan (DWR Table 8-1)

Stage	Percent Supply Reduction (numerical value as a percentage)	Water Supply Condition [a] (narrative description)
Phase I shortage	5%	District engineer determines over consumption of water, loss of pressure in a system, breakdown, drought conditions or any similar occurrence
Phase II shortage	10%	Board of directors determines that the District will suffer a 10% shortage of supplies
Phase III shortage	15%	Board of directors determines that the District will suffer a 10%–15% shortage of supplies
Phase IV shortage	20%	Board of directors determines that the District will suffer a 15%–20% shortage of supplies
Phase V shortage	25%	Board of directors determines that the District will suffer a 20%–25% shortage of supplies
Phase VI shortage	30%	Board of directors determines that the District will suffer a 25%–30% shortage of supplies
Phase VII shortage	35%	Board of directors determines that the District will suffer a 30%–35% shortage of supplies
Phase VIII shortage	40%	Board of directors determines that the District will suffer a 35%–40% shortage of supplies
Phase IX shortage	45%	Board of directors determines that the District will suffer a 40%–45% shortage of supplies
Phase X shortage	50%	Board of directors determines that the District will suffer a 45%–50% shortage of supplies

a. Water supply condition shortage as percent of current normal year supplies.

7.2 Prohibitions on End Uses

The District's Phased Water Conservation Plan (PWCP) includes mandatory prohibitions on water uses.

DWR categorizes the types of restrictions and prohibitions as landscape irrigation, CII, water features and swimming pools, and other. A summary of the District's restrictions and prohibitions is provided in Table 7-2. The City and the County Department of Public Health are the designated enforcement arm for the District's rules and regulations regarding water-wasting provisions and County ordinances prohibiting water waste.

Table 7-2. Restrictions and Prohibitions on End Uses (DWR Table 8-2)

Stage [a]	Restrictions and Prohibitions on End Users (from drop down list)	Additional Explanation	Penalty, Charge, or Other Enforcement? [b]
Normal	Other: prohibit use of potable water for washing hard surfaces	Exception for benefit of public health and safety	Yes
Normal	Landscape: limit landscape irrigation to specific times	Prohibition from 10 a.m.–5 p.m.	Yes
Normal	Landscape: other landscape restriction or prohibition	Prohibit lawn watering more than once a day, and irrigation causing runoff	Yes
Normal	Other: customers must repair leaks, breaks, and malfunctions in a timely manner	Required for renters and owners	Yes
Normal	Other: require automatic shutoff hoses	For car washing	Yes
Normal	CII: restaurants may only serve water upon request		Yes
Normal	Water features: restrict water use for decorative water features, such as fountains	Prohibit cleaning, filling, or maintaining levels	Yes
1	Other: prohibit use of potable water for construction and dust control	New meters for construction water service to be removed, no new meters installed	Yes
1	Landscape: limit landscape irrigation to specific days	Irrigation to occur every other day	Yes
1	Landscape: limit landscape irrigation to specific days	Irrigation to occur 3 times per week in the summer, 2 times per week in the winter	Yes
1	CII: lodging establishment must offer opt out of linen service		Yes

a. Items at the Normal stage are included in the Water Waste Ordinance.

b. Enforcement is not by District but by the County Department of Public Health or city of jurisdiction.

7.2.1 Water Waste Ordinance

The Water Waste Ordinance found in Title 11 of the Code of Ordinances for Los Angeles County, Part 4- Water Conservation Requirements for the Unincorporated Los Angeles County Area (11.38) outlines hose water prohibitions, irrigation prohibitions, leak prohibitions, prohibitions for car wash facilities and public eateries, and decorative fountains (LACDPW 2016).

7.2.2 Landscape Irrigation

Landscape irrigation prohibitions are enforced in all stages and become progressively restrictive in terms of allowable watering times, then days, then types of plant allowed. Runoff and water waste are always prohibited under the Water Waste Ordinance.

7.2.3 Commercial, Industrial, Institutional

Commercial, Industrial, Institutional (CII) water use prohibitions are enforced with the Water Waste Ordinance. Eating establishments may serve drinking water only at customer request. Lodging establishments should wash linens daily only upon customer request.

7.2.4 Water Features and Swimming Pools

Use of water in ornamental fountains, ponds, lakes, or other similar-aesthetic features shall be prohibited unless the water is recirculated. This is outlined in the Water Waste Ordinance.

7.2.5 Other

At Phase I, existing meters for construction water service are removed, and no new permanent meters are installed.

7.3 Penalties, Charges, Other Enforcement

The Water Waste Ordinance specifies a fine of $500 each day the violation occurs. The Phased Water Conservation Plan (PWCP) outlines the procedure to enforce any violation of the water conservation requirements. Enforcement of the requirements of each water conservation stage is conducted in a progressive manner and could lead to placement of a flow-restricting device where the violator refuses to continue activities constituting water waste. Up to a third violation may be issued. The PWCP sets a conservation surcharge for water use exceeding a percentage of the base monthly water use based on the phase of shortage determined.

7.4 Consumption-Reduction Methods

Consumption-reduction methods are actions taken by the District to reduce water demand within the service area, whereas prohibitions addressed in Section 7.2 limit specific uses of water. Table 7-3 below summarizes the District's consumption-reduction methods to reduce water demand in the service area.

The District in conjunction with West Basin greatly expanded public information and water conservation kits. More information is found in Section 8.

Table 7-3. Retail Only: Stages of WSCP - Consumption Reduction Methods (DWR Table 8-3)

Phase	Consumption Reduction Methods by Water Supplier	Additional Explanation or Reference
1-10	Expand public information campaign	See Section 8
1-10	Provide rebates on plumbing fixtures and devices	Fixtures rebates
1-10	Provide rebates for landscape irrigation efficiency	"Cash for Grass" Program, "Drop Your Water Weight" Program
1-10	Provide rebates for turf replacement	
1-10	Implement or modify drought rate structure or surcharge	

Penalties imposed for the various stages are as described in the PWCP. The conservation target is a percentage of the quantity used during a "base" billing period set by the board of supervisors. Water use up to the target quantities shall be billed at the established quantity charge or normal charge. Water use exceeding aforementioned target quantities shall be subject to the following conservation surcharges in addition to the established quantity charge or normal charge:

- For all customers within LACDPW Waterworks' districts, an additional conservation surcharge of 1 times the established quantity charge or normal charge will be assessed for water use exceeding the target quantity, up to 115 percent of the target quantity
- For all customers within LAC waterworks districts, an additional conservation surcharge of 2 times the established quantity charge or normal charge will be assessed for water use exceeding 115 percent of the target quantity

7.5 Determining Water Shortage Reductions

To monitor the reduction in water use during a water shortage stage, supply and demand data are reported on a monthly basis. Bimonthly water meter readings are collected and compiled to determine if the water usage meets the target goal.

7.6 Revenue and Expenditure Impacts

The implementation of the PWCP could potentially result in revenue losses ranging between 10 and 50 percent. Four sources of funding are available to the District to cover these losses: service charge, facility surcharge, water quantity charge, and standby charges. The service charge is a fixed connection charge based on the size of the meter. The facility surcharge and water quantity charge are based on the actual quantity of water used each month. Standby charges are assessed on all properties. Thus, a reduction in water use will affect only the facility surcharge and water quantity charges. To reduce the impact of these losses, the District can use the following measures: use extra revenues contributed by the conservation surcharge, delay capital improvement projects, and increase water rates. The current PWCP includes a water quantity surcharge as a penalty for excess water usage. In June 2015, the Board of Supervisors lowered the conservation surcharges by half for the first year that the PWCP was implemented. In June 2016, the governor removed the statewide 25 percent conservation requirement for the District and the PWCP was suspended.

7.7 Resolution or Ordinance

The Water Conservation Regulation is found in Part 5 of the Rules and Regulations of the Los Angeles County Waterworks Districts and MdR. The Water Waste Ordinance is found in Part 4 of Chapter 11 of the Code of Ordinances for Los Angeles County.

7.8 Catastrophic Supply Interruption Plan

In the event of a catastrophe (earthquake, regional power outage, or any other emergency that results in a water supply interruption), the District will take the following measures to prevent water shortages: (1) use the emergency interconnections with Las Virgenes Municipal Water District and LADWP, (2) implement the PWCP, and (3) enforce the "No Waste" Ordinance. The District has also prepared a 2015 update to the Emergency Response Plan (ERP) that includes response procedures for any foreseeable emergency.

7.9 3-Year Minimum Water Supply

An estimate of the minimum water supply for 2016, 2017, and 2018 is based on the combined availability of all water sources available during the District's historical multiple-dry year sequence 2013, 2014, and 2015 and is reflected in Table 7-4.

Table 7-4. Retail: Three-Year Minimum Water Supply, ac-ft/yr (DWR Table 8-4)

	2016	2017	2018
Available water supply	9,090	9,090	9,090

This page intentionally left blank.

Section 8

Demand Management Measures

The District conducts an ongoing water conservation program and is committed to implementing water conservation measures for all customer sectors. This section provides narrative descriptions addressing the nature and extent of each Demand Management Measure (DMM) implemented over the past 5 years, from 2010–15, as well as the District's planned implementation of each conservation measure. The District is a signatory to the California Urban Water Conservation Council (CUWCC) Memorandum of Understanding. The District is on track for all DMMs except for biennial gpcd compliance. The District has met the 2015 gpcd target, but was not on track to meet biennial gpcd targets set by the CUWCC in the 2014 BMP report. The District's most recent conservation reports to CUWCC for 2013–14 implementation are provided in Appendix I.

8.1 Water Waste Prohibition

The District's Rules and Regulations, Part 5, is the Phased Water Conservation Plan. Under normal water supply conditions, a Water Waste Ordinance is in effect unless the board modifies or adds to these restrictions. The Water Waste Ordinance is part of the LAC Water Conservation Ordinance 2008-0052U. The City also has an emergency water conservation ordinance. These three documents are located in Appendix G.

The District has set up an online form and phone number to report water waste. Enforcement of water waste is conducted in the manner of two site visits to the documented location and then a referral to the jurisdictional agency for enforcement, with the potential for applying fines to the party wasting water. Additionally, a flow restricting device may be installed for customers repeatedly violating the water wasting prohibitions.

Planned Implementation. The District in in compliance with this DMM. The implementation of this DMM is ongoing. The District will continue to enforce this regulation.

Method to Estimate Expected Water Savings. Water savings from this program cannot be directly quantified. Water waste complaints and violations are received and investigated by District staff and addressed via door hangers and/or letter to the billing address as well as fines.

8.2 Metering

The District is fully metered. The District has conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use or commercial accounts to dedicated landscape meters. As discussed in Section 3, most of the accounts are residential uses.

Planned Implementation. This DMM is on track.

8.3 Conservation Pricing

The District currently implements conservation pricing for all its metered customers. An increasing block seasonal charge is charged for all customer classes. Both commodity charges and fixed charges are used.

Planned Implementation. The District is in compliance with this DMM. The implementation of this DMM is ongoing. The District plans to continue implementing its increasing block seasonal charge for all customer types.

8.4 Water Conservation Public Education and Outreach

The current annual budget for the District's public information programs is $75,000. The public information program includes print- and Web-based publications, monthly bill inserts, and public outreach events. Details about the number and types of programs can be found in the California Urban Water Conservation Council (CUWCC) BMP Coverage Reports.

In an effort to meet the State of California-mandated water conservation goal of 2015, the District continued to implement creative outreach methods. The District offers ocean-friendly garden workshops and weather-based irrigation controller giveaway events. A new water conservation outreach campaign was implemented called "Drop Your Water Weight: Put Your Lawn on a Drought Diet." This campaign was operated in coordination with the City of Malibu, unincorporated County areas (Topanga and Marina del Rey), and the Board of Supervisors Office. It has been featured in local newspapers, radio stations, bus advertisements, and the District's website. A grocery shopping cart advertisement promoting water conservation launched in January 2016 and will run through June 2016 at the Ralphs grocery store located at 23841 Malibu Road.

Additionally, a conservation radio advertisement on a local radio station, KBUU, played from December 2015 to April 2016, and will continue through April 2016. The District also purchased an advertising spot to promote water conservation in the Regal Malibu Cinemas. This advertisement started running on January 1, 2016, and continued for 26 weeks. Forty 6-foot-tall banners were displayed at Point Dume Shopping Center and along Malibu Canyon Road between October 2015 and January 2016. The 10-foot "Drop Your Water Weight" banner was displayed outside the Topanga Beach Pump Station to reach out to commuters traveling on Topanga Canyon Boulevard. Additionally, the Malibu Library runs water conservation advertisements on its digital billboard.

The District also heightened its online and digital presence through updating its website to include drought information and water conservation tips, posting daily messages on Twitter, providing information to all of its customer service representatives regarding the drought and its call to conserve, posting bill messages and sending automated phone messages to customers, and meeting with water partners to discuss collaborative efforts to promote water conservation on a regional level.

In addition to local public education and outreach programs, the District also participates in a regional public education and outreach program through West Basin. West Basin serves as a liaison between Metropolitan and its member agencies, securing funding for rebates and water conservation programs. A free school assembly is offered to fifth graders and presentations are given at community meetings.

Planned Implementation. The District is in compliance with this DMM. The District's public information and school education program is an ongoing, annual program. The District will continue to provide water conservation materials as part of its community and school outreach programs, as well as continue to work cooperatively with West Basin to develop and distribute water conservation information.

Methods to Estimate Expected Water Savings. The District has no method to quantify water conservation savings directly as a result of this DMM.

8.5 Water Conservation Program Coordination and Staffing Support

The District has the equivalent of one full-time water conservation coordinator. The water conservation coordinator establishes an annual program budget based on available funding and resources. Program accomplishments are highlighted and corresponding goals are established for the upcoming year. The District also hires part-time staff, as needed, to aid in water conservation program implementation activities.

The contact information for the Water Conservation Coordinator is provided below:

- Phone number: 626.458.5100
  Email: info@dpw.lacounty.gov

Planned Implementation. The District is in compliance with this DMM. The implementation of this DMM is ongoing.

Methods to Estimate Expected Water Savings. Water savings from this DMM cannot be directly quantified. Effectiveness of this DMM will be evaluated by the success of the District's water conservation program.

8.6 Programs to Assess and Manage Distribution System Real Loss

The District's program to assess and manage the system's real losses consists of ongoing leak detection and repair within the system, focusing on the high-probability leak areas.

The District conducts water audits and leak detection and repair on an ongoing basis. The District conducted a water loss audit (Appendix E) for 2015 as described in Section 3.2. The District maintains records on all leaks repaired on its treated water system. The information is reviewed each year to determine which pipelines should be considered for replacement as part of the annual budgeted project list.

Planned Implementation. The District is in compliance with this DMM. This DMM is currently being implemented and will continue to be implemented as part of the District's ongoing operations and maintenance program.

Methods to Estimate Expected Water Savings. The total amount of water conserved over the 5-year period by implementing this DMM is directly related to the percentage of system water losses.

8.7 Other Demand Management Measures

The District implements other residential and non-residential DMMs as described in this section.

8.7.1 Water Audits for all Customers

The District provides water audits, or surveys, for customers who request it and for customers who have received a notice of violation. As part of the audits, indoor and outdoor water efficiency checks will be made for fixtures and an efficient, custom irrigation-watering schedule will be created.

8.7.2 Rebates

The District also provides a menu of rebate options including rebates for replacement of toilets, recirculating hot water pumps, clothes washers, turf grass, irrigation controllers, pool covers, weather-based irrigation controllers, and rain sensors. These rebates are offered through SoCal WaterSmart, which receives funding from a partnership between Metropolitan and its 26 member agencies throughout Southern California.

Other DMMs implemented in conjunction with West Basin are summarized in its 2015 UWMP.

This page intentionally left blank.

Section 9

References

American Water Works Association (AWWA). 2016. AWWA Free Water Audit Software Version 5. February.

California Irrigation Management Information System (CIMIS). 2015. Website, accessed at: www.cimis.water.ca.gov/cimis/welcome.jsp. 2015

City of Malibu (City). 2013. *2008–2014 Housing Element*. City Council Resolution Number 13-34. August.

City. 2016. Civic Center Wastewater Treatment Facility website. Accessed at: http://www.malibucity.org/ccwtf

Department of Water Resources (DWR). 2011. *Provisional Method 4 for Calculating Urban Water Use Targets.* February.

DWR. 2016a. *Methodology for Calculating Baseline and Compliance Urban Per Capita Water Use*. March.

DWR. 2016b. *2015 Urban Water Management Plans Guidebook for Urban Water Suppliers*. March.

DWR. 2016c. Leak Detection website. Accessed at: http://www.water.ca.gov/wateruseefficiency/leak/

DWR. 2016 d. Governor's Drought Declaration. Accessed at: http://www.water.ca.gov/waterconditions/declaration.cfm

ICF International. 2015. *Environmental Impact Report for the Civic Center Wastewater Treatment Facility*.

Leadership Committee of the Greater Los Angeles County Integrated Regional Water Management Region (Committee). 2014. *The Greater Los Angeles County Integrated Regional Water Management Plan, 2013 Update*, Approved February 2014.

Los Angeles County, Department of Regional Planning (LACDRP). 2014. *Housing Element, 2014–2021*. February.

LACDRP. 2014a. *Unincorporated Area General Plan*.

LACDRP. 2014b. *Marina del Rey Specific Plan*.

Los Angeles County, Department of Public Works, Waterworks. (LACDPW) 2016. Municipal Code for Los Angeles County, Title 11, Part 4: Water Conservation Requirements for the Unincorporated Los Angeles County Area (11.38). Accessed at: https://www.municode.com/library/ca/los_angeles_county/codes/code_of_ordinances

Los Angeles County Waterworks District 29, Malibu, and the Marina del Rey Water System (District). 2016. *Rate Schedules and Service Charges of Water Use*. January.

Metropolitan Water Company of Southern California (Metropolitan). 2016. *2015 Draft Urban Water Management Plan*. Accessed May 2016 at: http://www.mwdh2o.com/

West Basin Municipal Water District and Arcadis (West Basin). 2016. *2015 Draft Urban Water Management Plan*. Accessed May 2016 at: www.Westbasin.org

This page intentionally left blank.

Appendix A: Documentation of City/County Notification

This page intentionally left blank.

Kirk Allen

From: Kirk Allen
Sent: Thursday, April 28, 2016 10:50 AM
To: Jennifer Brown; Patricia Hachiya; leighannek@westbasin.org
Cc: Skutecki, Lisa
Subject: Notice of Preparation of Los Angeles County Waterworks District No. 29, Malibu and Marina del Rey Water System's 2015 Urban Water Management Plan

Tracking:

Recipient	Delivery	Read
Jennifer Brown		
Patricia Hachiya	Delivered: 4/28/2016 10:50 AM	Read: 4/28/2016 10:50 AM
leighannek@westbasin.org		
Skutecki, Lisa		
Carolina Hernandez		
Tim Chen		
CHERNANDEZ@dpw.lacounty.gov	Delivered: 4/28/2016 10:50 AM	
TCHEN@dpw.lacounty.gov	Delivered: 4/28/2016 10:50 AM	

To: City of Malibu, Attn. Jennifer Brown
To: Regional Planning – Impact Analysis Section, Attn. Patricia Hachiya
To: West Basin Municipal Water District, Attn. Leighanne Kirk

Notice of Preparation of
Los Angeles County Waterworks District No. 29, Malibu, and Marina del Rey Water System's
2015 Urban Water Management Plan

Los Angeles County Waterworks District No. 29, Malibu, and Marina del Rey Water System is in the process of preparing the 2015 Urban Water Management Plan (UWMP) update. UWMPs are prepared by California urban water suppliers to support their long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands. Every urban water supplier that either provides over 3,000 acre-feet of water annually or serves 3,000 or more connections is required to prepare an UWMP every five years.

As an urban water supplier, the Waterworks District is required, pursuant to Section 10620(d)(2) of the UWMP Act, to coordinate with water management agencies, relevant public agencies and other water suppliers on the preparation of the UWMPs. The Waterworks Districts invites you to submit comments in anticipation of the development of the 2015 UWMP. We anticipate that the draft UWMP will be available for review in late May. Copies of the plan will be made available in all Public Libraries in the District's service areas and on the District website prior to the public hearing which is tentatively scheduled for Tuesday, June 28,

2016 at 9:30 A.M. at the Kenneth Hahn Hall of Administration, 500 West Temple Street, Los Angeles California 90012. Subsequent to the Public Hearing, the Board of Supervisors will consider adoption of the UWMP.

If you have questions regarding this notification or about the Waterworks District's 2015 UWMP, please contact Kirk Allen, Associate Civil Engineer, at (626) 300-3389 or via email kallen@dpw.lacounty.gov

Thank you for your assistance in this process.

Regards,

Kirk Allen, P.E.
County of Los Angeles - Department of Public Works
Waterworks Division - Water Resources Unit
1000 South Fremont Avenue
Suite A-9 East, 4th Floor
Alhambra, CA 91803
(t) 626-300-3389
(f) 626-300-3385
kallen@dpw.lacounty.gov
www.lacwaterworks.org

May Huang

From: Kirk Allen <KALLEN@dpw.lacounty.gov>
Sent: Monday, November 21, 2016 2:03 PM
To: 'Jennifer Brown'; Patricia Hachiya; 'leighannek@westbasin.org'
Cc: Lisa Skutecki; Nikolaus Reppuhn; May Huang
Subject: RE: Notice of Preparation of Los Angeles County Waterworks District No. 29, Malibu and Marina del Rey Water System's 2015 Urban Water Management Plan

Good afternoon, all-

The Public Hearing regarding the 2015 UWMP has been rescheduled for January 24, 2017 at 9:30 a.m., at the Kenneth Hahn Hall of Administration, 500 West Temple Street, Los Angeles, California, 90012. This will serve as an updated 60-day notice of Public Hearing to the City and County. Subsequent to the Public Hearing, the Board of Supervisors will consider adoption of the 2015 UWMP.

Should you have any questions or comments please contact Nikolaus Reppuhn, Associate Civil Engineer, at 626-300-4681 or via email NReppuhn@dpw.lacounty.gov

Thank you,

Kirk Allen, P.E.
County of Los Angeles - Department of Public Works
Waterworks Division - Water Resources Unit
1000 South Fremont Avenue
Suite A-9 East, 4th Floor
Alhambra, CA 91803
(t) 626-300-3389
(f) 626-300-3385
kallen@dpw.lacounty.gov

□□□

http://dpw.lacounty.gov/wwd/web/Publications/WMP.aspx

Should you have any questions or comments please contact Nikolaus Reppuhn, Associate Civil Engineer, at 626-300-4681 or via email NReppuhn@dpw.lacounty.gov

Thank you,

Kirk Allen, P.E.
County of Los Angeles - Department of Public Works
Waterworks Division - Water Resources Unit
1000 South Fremont Avenue
Suite A-9 East, 4th Floor
Alhambra, CA 91803
(t) 626-300-3389
(f) 626-300-3385
kallen@dpw.lacounty.gov

From: Kirk Allen
Sent: Thursday, April 28, 2016 10:50 AM
To: Jennifer Brown; Patricia Hachiya; leighannek westbasin.org
Cc: Skutecki, Lisa
Subject: Notice of Preparation of Los Angeles County Waterworks District No. 29, Malibu and Marina del Rey Water System s 2015 Urban Water Management Plan

To: City of Malibu, Attn. Jennifer Brown
To: Regional Planning – Impact Analysis Section, Attn. Patricia Hachiya
To: West Basin Municipal Water District, Attn. Leighanne Kirk

Notice of Preparation of
Los Angeles County Waterworks District No. 29, Malibu, and Marina del Rey Water System's
2015 Urban Water Management Plan

Los Angeles County Waterworks District No. 29, Malibu, and Marina del Rey Water System is in the process of preparing the 2015 Urban Water Management Plan (UWMP) update. UWMPs are prepared by California urban water suppliers to support their long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands. Every urban water supplier that either provides over 3,000 acre-feet of water annually or serves 3,000 or more connections is required to prepare an UWMP every five years.

As an urban water supplier, the Waterworks District is required, pursuant to Section 10620(d)(2) of the UWMP Act, to coordinate with water management agencies, relevant public agencies and other water suppliers on the preparation of the UWMPs. The Waterworks Districts invites you to submit comments in anticipation of the development of the 2015 UWMP. We anticipate that the draft UWMP will be available for review in late May. Copies of

the plan will be made available in all Public Libraries in the District's service areas and on the District website prior to the public hearing which is tentatively scheduled for Tuesday, June 28, 2016 at 9:30 A.M. at the Kenneth Hahn Hall of Administration, 500 West Temple Street, Los Angeles California 90012. Subsequent to the Public Hearing, the Board of Supervisors will consider adoption of the UWMP.

If you have questions regarding this notification or about the Waterworks District's 2015 UWMP, please contact Kirk Allen, Associate Civil Engineer, at (626) 300-3389 or via email kallen@dpw.lacounty.gov

Thank you for your assistance in this process.

Regards,

Kirk Allen, P.E.
County of Los Angeles - Department of Public Works
Waterworks Division - Water Resources Unit
1000 South Fremont Avenue
Suite A-9 East, 4th Floor
Alhambra, CA 91803
(t) 626-300-3389
(f) 626-300-3385
kallen@dpw.lacounty.gov
www.lacwaterworks.org

This page intentionally left blank.

Appendix B: Notice of Public Hearing

(To be provided in final document)

This page intentionally left blank.

Appendix C: Adoption Resolution

(To be provided in final document)

This page intentionally left blank.

Appendix D: DWR UWMP Checklist

This page intentionally left blank.

Checklist Arranged by Water Code Section

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location *(Optional Column for Agency Use)*
10608.20(b)	Retail suppliers shall adopt a 2020 water use target using one of four methods.	Baselines and Targets	Section 5.7 and App E	**Section 4.5.2 and App F**
10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	Baselines and Targets	Chapter 5 and App E	**Section 4 and App F**
10608.22	Retail suppliers per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Section 5.7.2	**Section 4.5.2 and App F**
10608.24(a)	Retail suppliers shall meet their interim target by December 31, 2015.	Baselines and Targets	Section 5.8 and App E	**Section 4.5.2 and App F**
10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	Section 5.8.2	**Not applicable**
10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets.	Plan Adoption, Submittal, and Implementation	Section 10.3	**Section 1.4**
10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	Section 5.1	**Not applicable**
10608.40	Retail suppliers shall report on their progress in meeting their water use targets. The data shall be reported using a standardized form.	Baselines and Targets	Section 5.8 and App E	**Section 4.5.3 and App F**
10620(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.	Plan Preparation	Section 2.1	**Section 1.1**
10620(d)(2)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management	Plan Preparation	Section 2.5.2	**Section 1.3**

	agencies, and relevant public agencies, to the extent practicable.			
10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Section 7.4	**Section 6.1 and 6.4**
10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.	Plan Adoption, Submittal, and Implementation	Section 10.2.1	**Section 1.4**
10621(d)	Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.	Plan Adoption, Submittal, and Implementation	Sections 10.3.1 and 10.4	**Section 1.4**
10631(a)	Describe the water supplier service area.	System Description	Section 3.1	**Section 2.1**
10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 3.3	**Section 2.2**
10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Sections 3.4 and 5.4	**Section 2.3**
10631(a)	Provide population projections for 2020, 2025, 2030, and 2035.	System Description	Section 3.4	**Section 2.3**
10631(a)	Describe other demographic factors affecting the supplier s water management planning.	System Description	Section 3.4	**Section 2.3**
10631(b)	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, 2030, and 2035.	System Supplies	Chapter 6	**Section 5**
10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6.2	**Section 5.2**
10631(b)(1)	Indicate whether a groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	Section 6.2.2	**Not applicable**
10631(b)(2)	Describe the groundwater basin.	System Supplies	Section 6.2.1	**Not applicable**
10631(b)(2)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	Section 6.2.2	**Not applicable**
10631(b)(2)	For unadjudicated basins, indicate whether or not the department has identified the basin as overdrafted, or projected to become overdrafted. Describe efforts by the supplier to eliminate the long-term overdraft	System Supplies	Section 6.2.3	**Not applicable**

	condition.			
10631(b)(3)	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	System Supplies	Section 6.2.4	**Not applicable**
10631(b)(4)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Sections 6.2 and 6.9	**Not applicable**
10631(c)(1)	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage.	Water Supply Reliability Assessment	Section 7.1	**Sections 6.1 and 6.2**
10631(c)(1)	Provide data for an average water year, a single dry water year, and multiple dry water years	Water Supply Reliability Assessment	Section 7.2	**Section 6.2**
10631(c)(2)	For any water source that may not be available at a consistent level of use, describe plans to supplement or replace that source.	Water Supply Reliability Assessment	Section 7.1	**Section 6.1**
10631(d)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System Supplies	Section 6.7	**Section 5.6**
10631(e)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4.2	**Section 3**
10631(e)(3)(A)	Report the distribution system water loss for the most recent 12-month period available.	System Water Use	Section 4.3	**Section 3.2**
10631(f)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	Sections 9.2 and 9.3	**Section 8**
10631(f)(2)	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	Sections 9.1 and 9.3	**Not applicable**
10631(g)	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years.	System Supplies	Section 6.8	**Sections 5.7 and 5.8**
10631(h)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.6	**Section 5.5**
10631(i)	CUWCC members may submit their 2013-2014 CUWCC BMP annual reports in lieu of, or in addition to, describing the DMM implementation in their UWMPs. This option is only allowable if the supplier has been found to be in full compliance with the CUWCC MOU.	Demand Management Measures	Section 9.5	**Section 8.1, Appendix I**

10631(j)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) if any - with water use projections from that source.	System Supplies	Section 2.5.1	**Table 1-4**
10631(j)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	Section 2.5.1	**Not applicable**
10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Section 4.5	**Section 3.4**
10632(a) and 10632(a)(1)	Provide an urban water shortage contingency analysis that specifies stages of action and an outline of specific water supply conditions at each stage.	Water Shortage Contingency Planning	Section 8.1	**Section 7.1**
10632(a)(2)	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency.	Water Shortage Contingency Planning	Section 8.9	**Section 7.9**
10632(a)(3)	Identify actions to be undertaken by the urban water supplier in case of a catastrophic interruption of water supplies.	Water Shortage Contingency Planning	Section 8.8	**Section 7.8**
10632(a)(4)	Identify mandatory prohibitions against specific water use practices during water shortages.	Water Shortage Contingency Planning	Section 8.2	**Section 7.2**
10632(a)(5)	Specify consumption reduction methods in the most restrictive stages.	Water Shortage Contingency Planning	Section 8.4	**Section 7.4**
10632(a)(6)	Indicated penalties or charges for excessive use, where applicable.	Water Shortage Contingency Planning	Section 8.3	**Section 7.3**
10632(a)(7)	Provide an analysis of the impacts of each of the actions and conditions in the water shortage contingency analysis on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts.	Water Shortage Contingency Planning	Section 8.6	**Section 7.6**
10632(a)(8)	Provide a draft water shortage contingency resolution or ordinance.	Water Shortage Contingency Planning	Section 8.7	**Section 7.7, Appendix H**
10632(a)(9)	Indicate a mechanism for determining actual reductions in water use pursuant to the water shortage contingency analysis.	Water Shortage Contingency Planning	Section 8.5	**Section 7.5**
10633	For wastewater and recycled water, coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.1	**Section 5.4.1**

10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area. Include quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	System Supplies (Recycled Water)	Section 6.5.2	**Section 5.4.2**
10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System Supplies (Recycled Water)	Section 6.5.2.2	**Section 5.4.2 and Table 5-5**
10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.3 and 6.5.4	**Section 5.4.3**
10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Section 6.5.4	**Section 5.4.4**
10633(e)	Describe 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.	System Supplies (Recycled Water)	Section 6.5.4	**Section 5.4.5**
10633(f)	Describe the actions 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.	System Supplies (Recycled Water)	Section 6.5.5	**Section 5.4.5**
10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.5	**Section 5.4.5**
10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	Section 7.1	**Section 6.1**
10635(a)	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Section 7.3	**Section 6.3**
10635(b)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 60 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	**Section 1.4**
10642	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	Plan Preparation	Section 2.5.2	**Section 1.4**

10642	Provide supporting documentation that the urban water supplier made the plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan.	Plan Adoption, Submittal, and Implementation	Sections 10.2.2, 10.3, and 10.5	**Section 1.4**
10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Sections 10.2.1	**Section 1.4**
10642	Provide supporting documentation that the plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Section 10.3.1	**Section 1.4, Appendix C**
10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	Section 10.4.3	**Section 1.4, Appendix C**
10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	**Section 1.3**
10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Sections 10.4.1 and 10.4.2	**Section 1.4**
10645	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5	**Section 1.4**

Appendix E: Distribution System Water Loss Audit

This page intentionally left blank.

AWWA WLCC Free Water Audit Software: Reporting Worksheet

Copyright © 2010, American Water Works Association. All Rights Reserved.

WAS v4.1

Back to Instructions

? Click to access definition

Water Audit Report for: Los Angeles County Waterworks District No. 29
Reporting Year: 2015 | 1/2015 - 12/2015

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

WATER SUPPLIED

<< Enter grading in column 'E'

Volume from own sources:	n/a		acre-ft/yr	
Master meter error adjustment (enter positive value):			acre-ft/yr	acre-ft/yr
Water imported:	10	8,427.780	acre-ft/yr	
Water exported:	n/a		acre-ft/yr	
WATER SUPPLIED:		8,427.780	acre-ft/yr	

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:
Billed metered:	10	7,787.280	acre-ft/yr		
Billed unmetered:			acre-ft/yr		
Unbilled metered:			acre-ft/yr		
Unbilled unmetered:	3	10.535	acre-ft/yr		10.535
AUTHORIZED CONSUMPTION:		7,797.815	acre-ft/yr		

Use buttons to select percentage of water supplied **OR** value

WATER LOSSES (Water Supplied - Authorized Consumption)

629.965 acre-ft/yr

Apparent Losses

				Pcnt:	Value:
Unauthorized consumption:		21.069	acre-ft/yr	0.25%	
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed					
Customer metering inaccuracies:	6	436.088	acre-ft/yr		436.088
Systematic data handling errors:	5		acre-ft/yr		
Systematic data handling errors are likely, please enter a non-zero value; otherwise grade = 5					
Apparent Losses:		457.157			

Choose this option to enter a percentage of billed metered consumption. This is NOT a default value

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses:		172.808	acre-ft/yr
WATER LOSSES:		629.965	acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER:		640.500	acre-ft/yr

= Total Water Loss + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	9	78.3	miles
Number of active AND inactive service connections:	10	7,488	
Connection density:		96	conn./mile main
Average length of customer service line:	8	15.0	ft (pipe length between curbstop and customer meter or property boundary)
Average operating pressure:	3	77.5	psi

COST DATA

Total annual cost of operating water system:	9	$27,711,460	$/Year
Customer retail unit cost (applied to Apparent Losses):	10	$6.75	$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	10	$1,204.00	$/acre-ft/yr

PERFORMANCE INDICATORS

Financial Indicators

Non-revenue water as percent by volume of Water Supplied:	7.6%
Non-revenue water as percent by cost of operating system:	5.6%
Annual cost of Apparent Losses:	$1,343,183
Annual cost of Real Losses:	$208,061

Operational Efficiency Indicators

Apparent Losses per service connection per day:	54.50	gallons/connection/day
Real Losses per service connection per day*:	20.60	gallons/connection/day
Real Losses per length of main per day*:	N/A	
Real Losses per service connection per day per psi pressure:	0.27	gallons/connection/day/psi
Unavoidable Annual Real Losses (UARL):	48.27	million gallons/year
From Above, Real Losses = Current Annual Real Losses (CARL):	172.81	million gallons/year
Infrastructure Leakage Index (ILI) [CARL/UARL]:	1.17	

* only the most applicable of these two indicators will be calculated

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 87 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Customer metering inaccuracies
2: Unauthorized consumption
3: Systematic data handling errors

For more information, click here to see the Grading Matrix worksheet

AWWA WLCC Free Water Audit Software: Water Balance

Copyright © 2010, American Water Works Association. All Rights Reserved.

WAS v4.1

Water Audit Report For:	Report Yr:
District No. 29	2015

Own Sources (Adjusted for known errors) 0.000	Water Exported 0.000	Billed Water Exported			
	Water Supplied 8,427.780	Authorized Consumption 7,797.815	Billed Authorized Consumption 7,787.280	Billed Metered Consumption (inc. water exported) 7,787.280	Revenue Water 7,787.280
				Billed Unmetered Consumption 0.000	
			Unbilled Authorized Consumption 10.535	Unbilled Metered Consumption 0.000	Non-Revenue Water (NRW) 640.500
				Unbilled Unmetered Consumption 10.535	
		Water Losses 629.965	Apparent Losses 457.157	Unauthorized Consumption 21.069	
				Customer Metering Inaccuracies 436.088	
				Systematic Data Handling Errors 0.000	
Water Imported 8,427.780			Real Losses 172.808	Leakage on Transmission and/or Distribution Mains Not broken down	
				Leakage and Overflows at Utility's Storage Tanks Not broken down	
				Leakage on Service Connections Not broken down	

AWWA WLCC Free Water Audit Software: Grading Matrix

Copyright □ 2010, American Water Works Association. All Rights Reserved.

WASv 4.1

Back to Instructions

In the Reporting Worksheet, grades were assigned to each component of the audit to describe the confidence and accuracy of the input data. The grading assigned to each audit component and the corresponding recommended improvements and actions are highlighted in yellow. Audit accuracy is likely to be improved by prioritizing those items shown in red

Grading

	n/a	1	2	3	4	5	6	7	8	9	10
Volume from own sources:	Select this grading only if the water utility purchases/imports all of its water resources (i.e. has no sources of its own)	Less than 25□ of water production sources are metered, remaining sources are estimated. No regular meter accuracy testing.	25□ - 50□ of treated water production sources are metered; other sources estimated. No regular meter accuracy testing.	Conditions between 2 and 4	50□ - 75□ of treated water production sources are metered, other sources estimated. Occasional meter accuracy testing	Conditions between 4 and 6	At least 75□ of treated water production sources are metered, or at least 90□ of the source flow is derived from metered sources. Meter accuracy testing and/or electronic calibration conducted annually. Less than 25□ of tested meters are found outside of □±6□ accuracy.	Conditions between 6 and 8	100□ of treated water production sources are metered, meter accuracy testing and electronic calibration conducted annually, less than 10□ of meters are found outside of □±6□ accuracy	Conditions between 8 and 10	100□ of treated water production sources are metered, meter accuracy testing and electronic calibration conducted semi-annually, with less than 10□ found outside of □±3□ accuracy.
Improvements to attain higher data grading for "Volume from own Sources" component:		to qualify for 2: Organize efforts to begin to collect data for determining volume from own sources	to qualify for 4: Locate all water production sources on maps and in field, launch meter accuracy testing for existing meters, begin to install meters on unmetered water production sources and replace any obsolete/defective meters		to qualify for 6: Formalize annual meter accuracy testing for all source meters. Complete installation of meters on unmetered water production sources and complete replacement of all obsolete/defective meters.		to qualify for 8: Conduct annual meter accuracy testing on all meters. Complete project to install new, or replace defective existing, meters so that entire production meter population is metered. Repair or replace meters outside of □±6□ accuracy.		to qualify for 10: Maintain annual meter accuracy testing for all meters. Repair or replace meters outside of □±6□ accuracy. Investigate new meter technology; pilot one or more replacements with innovative meters in attempt to improve meter accuracy.		to maintain 10: Standardize meter accuracy test frequency to semi-annual, or more frequent, for all meters. Repair or replace meters outside of □±3□ accuracy. Continually investigate/pilot improving metering technology.
Master meter error adjustment:	Select n/a only if the water utility fails to have meters on its sources of supply, either its own source, and/or imported (purchased) water sources	Inventory information on meters and paper records of measured volumes in crude condition; data error cannot be determined	No automatic datalogging of production volumes; daily readings are scribed on paper records. Tank/storage elevation changes are not employed in calculating "Volume from own sources" component. Data is adjusted only when grossly evident data error occurs.	Conditions between 2 and 4	Production meter data is logged automatically in electronic format and reviewed at least on a monthly basis. "Volume from own sources" tabulations include estimate of daily changes in tanks/storage facilities. Meter data is adjusted when gross data errors occur, or occasional meter testing deems this necessary.	Conditions between 4 and 6	Hourly production meter data logged automatically □ reviewed on at least a weekly basis. Data adjusted to correct gross error from equipment malfunction and error confirmed by meter accuracy testing. Tank/storage facility elevation changes are automatically used in calculating a balanced "Volume from own sources" component.	Conditions between 6 and 8	Continuous production meter data logged automatically □ reviewed daily. Data adjusted to correct gross error from equipment malfunction □ results of meter accuracy testing. Tank/storage facility elevation changes are automatically used in "Volume from own sources" tabulations.	Conditions between 8 and 10	Computerized system (SCADA or similar) automatically balances flows from all sources and storages; results reviewed daily. Mass balance technique compares production meter data to raw (untreated) water and treatment volumes to detect anomalies. Regular calibrations between SCADA and sources meters ensures minimal data transfer error.
Improvements to attain higher data grading for "Master meter error adjustment" component:		to qualify for 2: Develop plan to restructure recordkeeping system to capture all flow data; set procedure to review data daily to detect input errors	to qualify for 4: Install automatic datalogging equipment on production meters. Identify tanks/storage facilities and include estimated daily volume of water added to, or subtracted from, "Water Supplied" volume based upon changes in storage		to qualify for 6: Review hourly production meter data for gross error on, at least, a weekly basis. Begin to install instrumentation on tanks/storage facilities to record elevation changes. Use daily net storage change to balance flows in calculating "Water Supplied" volume.		to qualify for 8: Complete installation of elevation instrumentation on all tanks/storage facilities. Continue to use daily net storage change in calculating balanced "Volume from own sources" component. Adjust production meter data for gross error and inaccuracy confirmed by testing.		to qualify for 10: Link all production and tank/storage facility elevation change data to a Supervisory Control □ Data Acquisition (SCADA) System, or similar computerized monitoring/control system, and establish automatic flow balancing algorithm and regularly calibrate between SCADA and source meters.		to maintain 10: Monitor meter innovations for development of more accurate and less expensive flowmeters. Continue to replace or repair meters as they perform outside of desired accuracy limits.
Water Imported:	Select n/a if the water utility's supply is exclusively from its own water resources (no bulk purchased□ imported water)	Less than 25□ of imported water sources are metered, remaining sources are estimated. No regular meter accuracy testing.	25□ - 50□ of imported water sources are metered; other sources estimated. No regular meter accuracy testing.	Conditions between 2 and 4	50□ - 75□ of imported water sources are metered, other sources estimated. Occasional meter accuracy testing	Conditions between 4 and 6	At least 75□ of imported water sources are metered, meter accuracy testing and/or electronic calibration conducted annually. Less than 25□ of tested meters are found outside of □±6□ accuracy.	Conditions between 6 and 8	100□ of imported water sources are metered, meter accuracy testing and/or electronic calibration conducted annually, less than 10□ of meters are found outside of □±6□ accuracy	Conditions between 8 and 10	100□ of imported water sources are metered, meter accuracy testing and/or electronic calibration conducted semi-annually, with less than 10□ found outside of □±3□ accuracy.
Improvements to attain higher data grading for "Water Imported Volume" component:		to qualify for 2: Review bulk water purchase agreements with partner suppliers; confirm requirements for use and maintenance of accurate metering. Identify needs for new or replacement meters with goal to meter all imported water sources.	To qualify for 4: Locate all imported water sources on maps and in field, launch meter accuracy testing for existing meters, begin to install meters on unmetered imported water interconnections and replace obsolete/defective meters		to qualify for 6: Formalize annual meter accuracy testing for all imported water meters. Continue installation of meters on unmetered exported water interconnections and replacement of obsolete/defective meters.		to qualify for 8: Complete project to install new, or replace defective, meters on all imported water interconnections. Maintain annual meter accuracy testing for all imported water meters. Repair or replace meters outside of □±6□ accuracy.		to qualify for 10: Maintain annual meter accuracy testing for all meters. Repair or replace meters outside of □±6□ accuracy. Investigate new meter technology; pilot one or more replacements with innovative meters in attempt to improve meter accuracy.		to maintain 10: Standardize meter accuracy test frequency to semi-annual, or more frequent, for all meters. Repair or replace meters outside of □±3□ accuracy. Continually investigate/pilot improving metering technology.

Grading											
	n/a	1	2	3	4	5	6	7	8	9	10
Water Exported:	Select n/a if the water utility sells no bulk water to neighboring water utilities (no exported water sales)	Less than 25% of exported water sources are metered, remaining sources are estimated. No regular meter accuracy testing.	25% - 50% of exported water sources are metered; other sources estimated. No regular meter accuracy testing.	Conditions between 2 and 4	50% - 75% of exported water sources are metered, other sources estimated. Occasional meter accuracy testing	Conditions between 4 and 6	At least 75% of exported water sources are metered, meter accuracy testing and/or electronic calibration conducted annually. Less than 25% of tested meters are found outside of ±6% accuracy.	Conditions between 6 and 8	100% of exported water sources are metered, meter accuracy testing and/or electronic calibration conducted annually, less than 10% of meters are found outside of ±6% accuracy	Conditions between 8 and 10	100% of exported water sources are metered, meter accuracy testing and/or electronic calibration conducted semi-annually, with less than 10% found outside of ±3% accuracy.
Improvements to attain higher data grading for "Water Exported Volume" component:		to qualify for 2: Review bulk water sales agreements with partner suppliers; confirm requirements for use/upkeep of accurate metering. Identify needs to install new, or replace defective meters as needed.	To qualify for 4: Locate all exported water sources on maps and in field, launch meter accuracy testing for existing meters, begin to install meters on unmetered exported water interconnections and replace obsolete/defective meters		to qualify for 6: Formalize annual meter accuracy testing for all exported water meters. Continue installation of meters on unmetered exported water interconnections and replacement of obsolete/defective meters.		to qualify for 8: Complete project to install new, or replace defective, meters on all exported water interconnections. Maintain annual meter accuracy testing for all imported water meters. Repair or replace meters outside of ±6% accuracy.		to qualify for 10: Maintain annual meter accuracy testing for all meters. Repair or replace meters outside of ±6% accuracy. Investigate new meter technology; pilot one or more replacements with innovative meters in attempt to improve meter accuracy.		to maintain 10: Standardize meter accuracy test frequency to semi-annual, or more frequent, for all meters. Repair or replace meters outside of ±3% accuracy. Continually investigate/pilot improving metering technology.
AUTHORIZED CONSUMPTION											
Billed metered:	n/a (not applicable). Select n/a only if the entire customer population is not metered and is billed for water service on a flat or fixed rate basis. In such a case the volume entered must be zero.	Less than 50% of customers with volume-based billings from meter readings; flat or fixed rate billed for the majority of the customer population	At least 50% of customers with volume-based billing from meter reads; flat rate billed for others. Manual meter reading, under 50% read success rate, remainder estimated. Limited meter records, no regular meter testing or replacement. Billing data maintained on paper records, with no auditing.	Conditions between 2 and 4	At least 75% of customers with volume-based billing from meter reads; flat or fixed rate billed for remainder. Manual meter reading used, at least 50% meter read success rate, failed reads are estimated. Purchase records verify age of customer meters; only very limited meter accuracy testing is conducted. Customer meters replaced only upon complete failure. Computerized billing records, but only periodic internal auditing conducted.	Conditions between 4 and 6	At least 90% of customers with volume-based billing from meter reads; remaining accounts are estimated. Manual customer meter reading gives at least 80% customer meter reading success rate, failed reads are estimated. Good customer meter records, limited meter accuracy testing, regular replacement of oldest meters. Computerized billing records with routine auditing of global statistics.	Conditions between 6 and 8	At least 97% of customers with volume-based billing from meter reads. At least 90% customer meter read success rate; or minimum 80% read success rate with planning and budgeting for trials of Automatic Metering Reading (AMR) in one or more pilot areas. Good customer meter records. Regular meter accuracy testing guides replacement of statistically significant number of meters each year. Routine auditing of computerized billing records for global and detailed statistics; verified periodically by third party.	Conditions between 8 and 10	At least 99% of customers with volume-based billing from meter reads. At least 95% customer meter reading success rate; or minimum 80% meter reading success rate, with Automatic Meter Reading (AMR) trials underway. Statistically significant customer meter testing and replacement program in place. Computerized billing with routine, detailed auditing, including field investigation of representative sample of accounts. Annual audit verification by third party.
Improvements to attain higher data grading for "Billed Metered Consumption" component:	If n/a is selected because the customer meter population is unmetered, consider establishing a new policy to meter the customer population and employ water rates based upon metered volumes.	to qualify for 2: Conduct investigations or trials of customer meters to select appropriate meter models. Budget funding for meter installations. Investigate volume based water rate structures.	to qualify for 4: Purchase and install meters on unmetered accounts. Implement policies to improve meter reading success. Catalog meter information during meter read visits to identify age/model of existing meters. Test a minimal number of meters for accuracy. Install computerized billing system.		to qualify for 6: Purchase and install meters on unmetered accounts. Eliminate flat fee billing and establish appropriate water rate structure based upon measured consumption. Continue to achieve verifiable success in removing manual meter reading barriers. Expand meter accuracy testing. Launch regular meter replacement program. Conduct routine audit of global statistics.		to qualify for 8: Purchase and install meters on unmetered accounts. Assess cost-effectiveness of Automatic Meter Reading (AMR) system for portion or entire system; or achieve ongoing improvements in manual meter reading success rate. Refine meter accuracy testing program. Set meter replacement goals based upon accuracy test results. Refine routine auditing procedures based upon third party guidance.		to qualify for 10: Purchase and install meters on unmetered accounts. Launch Automatic Meter Reading (AMR) system trials if manual meter reading success rate of at least 95% is not achieved within a five-year program. Continue meter accuracy testing program. Conduct planning and budgeting for large scale meter replacement based upon meter life cycle analysis using cumulative flow target. Continue routine auditing and require annual third party review.		to maintain 10: Regular internal and third party auditing, and meter accuracy testing ensures that accurate customer meter readings are obtained and entered as the basis for volume based billing. Stay abreast of improvements in Advanced Metering Infrastructure (AMI) and information management. Plan and budget for justified upgrades in metering, meter reading and billing data management.
Billed unmetered:	Select n/a if it is the policy of the water utility to meter all customer connections and it has been confirmed by detailed auditing that all customers do indeed have a water meter; i.e. no unmetered accounts exist	Water utility policy does not require customer metering; flat or fixed fee billed. No data collected on customer consumption. Only estimates available are derived from data estimation methods using average fixture count multiplied by number of connections, or similar approach.	Water utility policy does not require customer metering; flat or fixed fee billed. Some metered accounts exist in parts of the system (pilot areas or District Metered Areas) with consumption recorded on portable dataloggers. Data from these sample meters are used to infer consumption for the total customer population. Site specific estimation methods are used for unusual buildings/water uses.	Conditions between 2 and 4	Water utility policy does require metering and volume based billing but lacks written procedures and employs casual oversight, resulting in up to 20% of billed accounts believed to be unmetered. A rough estimate of the annual consumption for all unmetered accounts is included in the annual water audit, with no inspection of individual unmetered accounts.	Conditions between 4 and 6	Water utility policy does require metering and volume based billing but exemption exist for a portion of accounts such as municipal buildings. As many as 15% of billed accounts are unmetered due to this exemption or meter installation difficulties. Only a group estimate of annual consumption for all unmetered accounts is included in the annual water audit, with no inspection of individual unmetered accounts.	Conditions between 6 and 8	Water utility policy requires metering and volume based billing for all customer accounts. However, less than 5% of billed accounts remain unmetered because because installation is hindered by unusual circumstances. The goal is to minimize the number of unmetered accounts. Reliable estimates of consumption are obtained for unmetered accounts via site specific estimation methods.	Conditions between 8 and 10	Water utility policy requires metering and volume based billing for all customer accounts. Less than 2% of billed accounts are unmetered and exist because meter installation is hindered by unusual circumstances. The goal exists to minimize the number of unmetered accounts to the extent that is economical. Reliable estimates of consumption are obtained at these accounts via site specific estimation methods.

Grading											
	n/a	1	2	3	4	5	6	7	8	9	10
Improvements to attain higher data grading for "Billed Unmetered Consumption" component:		to qualify for 2: Investigate a new water utility policy to require metering of the customer population, and a reduction of unmetered accounts. Conduct pilot metering project by installing water meters in small sample of customer accounts and datalogging the water consumption.	to qualify for 4: Implement a new water utility policy requiring customer metering. Expand pilot metering study to include several different meter types, which will provide data for economic assessment of full scale metering options. Assess sites with access difficulties to devise means to obtain water consumption volumes.		to qualify for 6: Budget for staff resources to review billing records to identify unmetered properties. Specify metering needs and funding requirements to install sufficient meters to significant reduce the number of unmetered accounts		to qualify for 8: Install customer meters on a full scale basis. Refine metering policy and procedures to ensure that all accounts, including municipal properties, are designated for meters. Implement procedures to obtain reliable consumption estimate for unmetered accounts awaiting meter installation.		to qualify for 10: Continue customer meter installation throughout the service area, with a goal to minimize unmetered accounts. Sustain the effort to investigate accounts with access difficulties to devise means to install water meters or otherwise measure water consumption.		to maintain 10: Continue to refine estimation methods for unmetered consumption and explore means to establish metering, for as many billed unmetered accounts as is economically feasible.
Unbilled metered:	select n/a if all billing-exempt consumption is unmetered.	Billing practices exempt certain accounts, such as municipal buildings, but written policies do not exist; and a reliable count of unbilled metered accounts is unavailable. Meter upkeep and meter reading on these accounts is rare and not considered a priority. Due to poor recordkeeping and lack of auditing, water consumption for all such accounts is purely guesstimated.	Billing practices exempt certain accounts, such as municipal buildings, but only scattered, dated written directives exist to justify this practice. A reliable count of unbilled metered accounts is unavailable. Sporadic meter replacement and meter reading occurs on an as-needed basis. The total annual water consumption for all unbilled, metered accounts is estimated based upon approximating the number of accounts and assigning consumption from actively billed accounts of same meter size.	Conditions between 2 and 4	Dated written procedures permit billing exemption for specific accounts, such as municipal properties, but are unclear regarding certain other types of accounts. Meter reading is given low priority and is sporadic. Consumption is quantified from meter readings where available. The total number of unbilled, unmetered accounts must be estimated along with consumption volumes.	Conditions between 4 and 6	Written policies regarding billing exemptions exist but adherence in practice is questionable. Metering and meter reading for municipal buildings is reliable but sporadic for other unbilled metered accounts. Periodic auditing of such accounts is conducted. Water consumption is quantified directly from meter readings where available, but the majority of the consumption is estimated.	Conditions between 6 and 8	Written policy identifies the types of accounts granted a billing exemption. Customer meter management and meter reading are considered secondary priorities, but meter reading is conducted at least annually to obtain consumption volumes for the annual water audit. High level auditing of billing records ensures that a reliable census of such accounts exists.	Conditions between 8 and 10	Clearly written policy identifies the types of accounts given a billing exemption, with emphasis on keeping such accounts to a minimum. Customer meter management and meter reading for these accounts is given proper priority and is reliably conducted. Regular auditing confirms this. Total water consumption for these accounts is taken from reliable readings from accurate meters.
Improvements to attain higher data grading for "Unbilled metered Consumption" component:		to qualify for 2: Reassess the water utility's policy allowing certain accounts to be granted a billing exemption. Draft an outline of a new written policy for billing exemptions, with clear justification as to why any accounts should be exempt from billing, and with the intention to keep the number of such accounts to a minimum.	to qualify for 4: Review historic written directives and policy documents allowing certain accounts to be billing-exempt. Draft an outline of a written policy for billing exemptions, identify criteria that grants an exemption, with a goal of keeping this number of accounts to a minimum.		to qualify for 6: Draft a new written policy regarding billing exemptions based upon consensus criteria allowing this occurrence. Assign resources to audit meter records and billing records to obtain census of unbilled metered accounts.		to qualify for 8: Communicate billing exemption policy throughout the organization and implement procedures that ensure proper account management. Conduct inspections of accounts confirmed in unbilled metered status and verify that accurate meters exist and are scheduled for routine meter readings.		to qualify for 10: Ensure that meter management (meter accuracy testing, meter replacement) and meter reading activities are accorded the same priority as billed accounts. Establish ongoing annual auditing process to ensure that water consumption is reliably collected and provided to the annual water audit process.		to maintain 10: Reassess philosophy in allowing any water uses to go "unbilled". It is possible to meter and bill all accounts, even if the fee charged for water consumption is discounted or waived. Metering and billing all accounts ensures that water consumption is tracked and water waste from plumbing leaks is detected and minimized.
Unbilled unmetered:		Extent of unbilled, unmetered consumption is unknown due to unclear policies and poor recordkeeping. Total consumption is quantified based upon a purely subjective estimate.	Clear extent of unbilled, unmetered consumption is unknown, but a number of events are randomly documented each year, confirming existence of such consumption, but without sufficient documentation to quantify an accurate estimate of the annual volume consumed.	Conditions between 2 and 4	Extent of unbilled, unmetered consumption is partially known, and procedures exist to document certain events such as miscellaneous fire hydrant uses. Formulae is used to quantify the consumption from such events (time running x typical flowrate x number of events).	Default value of 1.25% of system input volume is employed	Coherent policies exist for some forms of unbilled, unmetered consumption but others await closer evaluation. Reasonable recordkeeping for the managed uses exists and allows for annual volumes to be quantified by inference, but unsupervised uses are guesstimated.	Conditions between 6 and 8	Clear policies and good recordkeeping exist for some uses (ex: unmetered fire connections registering consumption), but other uses (ex: miscellaneous uses of fire hydrants) have limited oversight. Total consumption is a mix of well quantified use such as from formulae (time x typical flow) or temporary meters, and relatively subjective estimates of less regulated use.	Conditions between 8 and 10	Clear policies exist to identify permitted use of water in unbilled, unmetered fashion, with the intention of minimizing this type of consumption. Good records document each occurrence and consumption is quantified via formulae (time x typical flow) or use of temporary meters.

Grading											
	n/a	1	2	3	4	5	6	7	8	9	10
Improvements to attain higher data grading for "Unbilled Unmetered Consumption" component:		to qualify for 5: Utilize accepted default value of 1.25% of system input volume as an expedient means to gain a reasonable quantification of this use. to qualify for 2: Establish a policy regarding what water uses should be allowed as unbilled and unmetered. Consider tracking a small sample of one such use (ex: fire hydrant flushings).	to qualify for 5: Utilize accepted default value of 1.25% of system input volume as an expedient means to gain a reasonable quantification of this use. to qualify for 4: Evaluate the documentation of events that have been observed. Meet with user groups (ex: for fire hydrants - fire departments, contractors to ascertain their need for water from fire hydrants).		to qualify for 5: Utilize accepted default value of 1.25% of system input volume as expedient means to gain a reasonable quantification of all such use. This is particularly appropriate for water utilities who are in the early stages of the water auditing process.	to qualify for 6 or greater: Finalize policy and do field checks. Proceed if top-down audit exists and/or a great volume of such use is suspected.	to qualify for 8: Assess water utility policy and procedures to ensure that fire hydrant permits are issued for use by persons outside of the utility. Create written procedures for use and documentation of fire hydrants by water utility personnel.		to qualify for 10: Refine written procedures to ensure that all uses of unbilled, unmetered water are overseen by a structured permitting process managed by water utility personnel. Reassess policy to determine if some of these uses have value in being converted to billed and/or metered status.		to maintain 10: Continue to refine policy and procedures with intention of reducing the number of allowable uses of water in unbilled and unmetered fashion. Any uses that can feasibly become billed and metered should be converted eventually.
APPARENT LOSSES											
Unauthorized consumption:		Extent of unauthorized consumption is unknown due to unclear policies and poor recordkeeping. Total unauthorized consumption is guesstimated.	Unauthorized consumption is a known occurrence, but its extent is a mystery. There are no requirements to document observed events, but periodic field reports capture some of these occurrences. Total unauthorized consumption is approximated from this limited data.	conditions between 2 and 4	Procedures exist to document some unauthorized consumption such as observed unauthorized fire hydrant openings. Use formulae to quantify this consumption (time running x typical flowrate x number of events).	Default value of 0.25% of system input volume is employed	Coherent policies exist for some forms of unauthorized consumption but others await closer evaluation. Reasonable surveillance and recordkeeping exist for occurrences that fall under the policy. Volumes quantified by inference from these records. Unsupervised uses are guesstimated.	Conditions between 6 and 8	Clear policies and good recordkeeping exist for certain events (ex: tampering with water meters); other occurrences have limited oversight. Total consumption is a combination of volumes from formulae (time x typical flow) and subjective estimates of unconfirmed consumption.	Conditions between 8 and 10	Clear policies exist to identify all known unauthorized uses of water. Staff and procedures exist to provide enforcement of policies and detect violations. Each occurrence is quantified via formulae (time x typical flow) or similar methods.
Improvements to attain higher data grading for "Unauthorized Consumption" component:		to qualify for 5: Use accepted default of 0.25% of system input volume. to qualify for 2: Review utility policy regarding what water uses are considered unauthorized, and consider tracking a small sample of one such occurrence (ex: unauthorized fire hydrant openings)	to qualify for 5: Use accepted default of 0.25% of system input volume to qualify for 4: Review utility policy regarding what water uses are considered unauthorized, and consider tracking a small sample of one such occurrence (ex: unauthorized fire hydrant openings)		to qualify for 5: Utilize accepted default value of 0.25% of system input volume as expedient means to gain a reasonable quantification of all such use. This is particularly appropriate for water utilities who are in the early stages of the water auditing process.	to qualify for 6 or greater: Finalize policy and do field checks. Proceed if top-down audit exists and/or a great volume of such use is suspected.	to quality for 8: Assess water utility policies to ensure that all known occurrences of unauthorized consumption are outlawed, and that appropriate penalties are prescribed. Create written procedures for use and documentation of various occurrences of unauthorized consumption as they are uncovered.		to qualify for 10: Refine written procedures and assign staff to seek out likely occurrences of unauthorized consumption. Explore new locking devices, monitors and other technologies designed to detect and thwart unauthorized consumption.		to maintain 10: Continue to refine policy and procedures to eliminate any loopholes that allow or tacitly encourage unauthorized consumption. Continue to be vigilant in documentation and enforcement efforts.
Customer metering inaccuracies:	select n/a only if the entire customer population is unmetered. In such a case the volume entered must be zero.	Customer meters exist, but with unorganized paper records on meters; no meter accuracy testing or meter replacement program. Workflow is driven chaotically by customer complaints with no proactive management. Loss volume due to aggregate meter inaccuracy is guesstimated.	Poor recordkeeping and meter oversight is recognized by water utility management who has allotted staff and funding resources to organize improved recordkeeping and start meter accuracy testing. Existing paper records gathered and organized to provide cursory disposition of meter population.	Conditions between 2 and 4	Reliable recordkeeping exists; meter information is improving as meters are replaced. Meter accuracy testing is conducted annually for a small number of meters. Limited number of oldest meters replaced each year. Inaccuracy volume is largely an estimate, but refined based upon limited testing data.	Conditions between 4 and 6	A reliable electronic recordkeeping system for meters exists. Population includes a mix of new high performing meters and dated meters with suspect accuracy. Routine, but limited, meter accuracy testing and meter replacement occur. Inaccuracy volume is quantified using a mix of reliable and less certain data.	Conditions between 6 and 8	Ongoing meter replacement and accuracy testing result in highly accurate customer meter population. Testing is conducted on samples of meters at varying lifespans to determine optimum replacement time for various types of meters.	Conditions between 8 and 10	Good records of number, type and size of customer meters; ongoing meter replacement occurs. Regular meter accuracy testing gives reliable measure of composite inaccuracy volume for the system. New metering technology is embraced to keep overall accuracy improving.
Improvements to attain higher data grading for "Customer meter inaccuracy volume" component:	If n/a is selected because the customer meter population is unmetered, consider establishing a new policy to meter the customer population and employ water rates based upon metered volumes.	to qualify for 2: Gather available meter purchase records. Conduct testing on a small number of meters believed to be the most inaccurate. Review staffing needs of metering group and budget for necessary resources to better organize meter management.	to qualify for 4: Implement a reliable record keeping system for customer meter histories, preferably using electronic methods typically linked to, or part of, the Customer Billing System or Customer Information System. Expand meter accuracy testing to a larger group of meters.		to qualify for 6: Standardize procedures for meter recordkeeping with the electronic information system. Accelerate meter accuracy testing and meter replacements guided by testing results.		to qualify for 8: Expand annual meter accuracy testing to evaluate a statistically significant number of meter makes/models. Expand meter replacement program to replace statistically significant number of poor performing meters each year.		to qualify for 10: Continue efforts to manage meter population with reliable recordkeeping, meter testing and replacement. Evaluate new meter types and install one or more types in 5-10 customer accounts each year in order to pilot improving metering technology.		to maintain 10: Increase the number of meters tested and replaced as justified by meter accuracy test data. Continually monitor development of new technology in Advanced Metering Infrastructure (AMI) to grasp opportunities for greater accuracy in metering and customer consumption data.

Grading											
	n/a	1	2	3	4	5	6	7	8	9	10
Systematic Data Handling Error:	Note: all water utilities incur some amount of this error. Even in water utilities with unmetered customer populations and fixed rate billing, errors occur in annual billing tabulations. Enter a positive value for the volume and select a grading.	Vague policy for permitting (creating new customer accounts) and billing. Billing data maintained on paper records which are in disarray. No audits conducted to confirm billing data handling efficiency. Unknown number of customers escape routine billing due to lack of billing process oversight.	Policy for permitting and billing exists but needs refinement. Billing data maintained on paper records or insufficiently capable electronic database. Only periodic unstructured auditing work conducted to confirm billing data handling efficiency. Volume of unbilled water due to billing lapses is a guess.	Conditions between 2 and 4	Policy and procedures for permitting and billing exist but needs refinement. Computerized billing system exists, but is dated or lacks needed functionality. Periodic, limited internal audits conducted and confirm with approximate accuracy the consumption volumes lost to billing lapses.	Conditions between 4 and 6	Policy for permitting and billing is adequate and reviewed periodically. Computerized billing system in use with basic reporting available. Any effect of billing adjustments on measured consumption volumes is well understood. Internal checks of billing data error conducted annually. Reasonably accurate quantification of consumption volume lost to billing lapses is obtained.	Conditions between 6 and 8	Permitting and billing policy reviewed at least biannually. Computerized billing system includes an array of reports to confirm billing data and system functionality. Annual internal checks conducted with periodic third party audit. Accountability checks flag billing lapses. Consumption lost to billing lapses is well quantified and reducing year-by-year.	Conditions between 8 and 10	Sound policy exists for permitting of all customer billing accounts. Robust computerized billing system gives high functionality and reporting capabilities. Assessment of policy and data handling errors conducted internally and audited by third party annually, ensuring consumption lost to billing lapses is minimized and detected as it occurs.
Improvements to attain higher data grading for "Systematic Data Handling Error volume" component:		to qualify for 2: Draft written policy for permitting and billing. Investigate and budget for computerized customer billing system. Conduct initial audit of billing records by flow-charting the basic business processes of the customer account/billing function.	to qualify for 4: Finalize written policy for permitting and billing. Implement a computerized customer billing system. Conduct initial audit of billing records as part of this process.		to qualify for 6: Refine permitting and billing procedures and ensure consistency with the utility policy regarding billing, and minimize opportunity for missed billings. Upgrade or replace customer billing system for needed functionality - ensure that billing adjustments don't corrupt the value of consumption volumes. Procedurize internal annual audit process.		to qualify for 8: Formalize regular review of permitting and billing practices. Enhance reporting capability of computerized billing system. Formalize regular auditing process to reveal scope of data handling error.		to qualify for 10: Close policy/procedure loopholes that allow some customer accounts to go unbilled, or data handling errors to exist. Ensure that internal and third party audits are conducted annually.		to maintain 10: Stay abreast of customer information management developments and innovations. Monitor developments of Advanced Metering Infrastructure (AMI) and integrate technology to ensure that customer endpoint information is well-monitored and errors/lapses are at an economic minimum.
SYSTEM DATA											
Length of mains:		Poorly assembled and maintained paper as-built records of existing water main installations makes accurate determination of system pipe length impossible. Length of mains is guesstimated.	Paper records in poor condition (no annual tracking of installations/ abandonments). Poor procedures to ensure that new water mains installed by developers are accurately documented.	Conditions between 2 and 4	Sound policy and procedures for permitting and documenting new water main installations, but gaps in management result in a uncertain degree of error in tabulation of mains length.	Conditions between 4 and 6	Sound policy and procedures exist for permitting and commissioning new water mains. Highly accurate paper records with regular field validation; or electronic records and asset management system in good condition. Includes system backup.	Conditions between 6 and 8	Sound policy and procedures exist for permitting and commissioning new water mains. Electronic recordkeeping and asset management system are used to store and manage data.	Conditions between 8 and 10	Sound policy exists for managing water mains extensions and replacements. Geographic Information System (GIS) data and asset management database agree and random field validation proves truth of databases.
Improvements to attain higher data grading for "Length of Water Mains" component:		to qualify for 2: Assign personnel to inventory current as-built records and compare with customer billing system records and highway plans. Assemble policy documents regarding permitting and documentation of water main installations by the utility and building developers; identify gaps in procedure that result in poor documentation.	to qualify for 4: Complete inventory of paper records of water main installations/ abandonments for a number of years prior to audit year. Review policy and procedures for commissioning and documenting new water main installation and abandonments.		to qualify for 6: Finalize updates/improvements to policy and procedures for permitting/commissioning new main installations. Confirm inventory of records for five years prior to audit year; correct any errors or omissions.		to qualify for 8: Launch random field checks of limited number of locations. Convert to electronic databases with backup as justified.		to qualify for 10: Link Geographic Information System (GIS) and asset management databases, conduct field verification of data.		to maintain 10: Continue with standardization and random field validation to improve knowledge of system.
Number of active AND inactive service connections:		Vague permitting (of new service connections) policy and poor paper recordkeeping of customer connections/billings result in suspect determination of the number of service connections, which may be 10-15% in error from actual count.	General permitting policy exists but paper records, procedural gaps, and weak oversight result in questionable total for number of connections, which may vary 5-10% of actual count.	Conditions between 2 and 4	Permitting policy and procedures exist, but with some gaps in performance and oversight. Computerized information management system is being brought online to replace dated paper recordkeeping system. Reasonably accurate tracking of service connection installations/ abandonments; but count can be up to 5% in error from actual total.	Conditions between 4 and 6	Permitting policy and procedures are adequate and reviewed periodically. Computerized information management system is in use with annual installations/ abandonments totaled. Very limited field verifications and audits. Error in count of number of service connections is believed to be no more that 3%.	Conditions between 6 and 8	Permitting policy and procedures reviewed at least biannually. Well-managed computerized information management system and routine, periodic field checks and internal system audits allows counts of connections that is no more than 2% in error.	Conditions between 8 and 10	Sound permitting policy and well managed and audited procedures ensure reliable management of service connection population. Computerized information management system and Geographic Information System (GIS) information agree; field validation proves truth of databases. Count of connections believed to be in error by less than 1%.

Grading											
	n/a	1	2	3	4	5	6	7	8	9	10
Improvements to attain higher data grading for "Number of Active and Inactive customer service connections" component:		to qualify for 2: Draft new policy and procedures for permitting and billing. Research and collect paper records of installations/abandonments for several years prior to audit year.	to qualify for 4: Refine policy and procedures for permitting and billing. Research computerized recordkeeping system (Customer Information System or Customer Billing System) to improve documentation format for service connections.		to qualify for 6: Refine procedures to ensure consistency with permitting policy to establish new service connections or decommission existing connections. Improve process to include all totals for at least five years prior to audit year.		to qualify for 8: Formalize regular review of permitting policy and procedures. Launch random field checks of limited number of locations. Develop reports and auditing mechanisms for computerized information management system.		to qualify for 10: Close any procedural loopholes that allow installations to go undocumented. Link computerized information management system with Geographic Information System (GIS) and formalize field inspection and information system auditing processes. Documentation of new or decommissioned service connections encounters several levels of checks and balances.		to maintain 10: Continue with standardization and random field validation to improve knowledge of system.
Average length of customer service line:	Note: if customer water meters are located outside of the customer building next to the curbstop or boundary separating utility/customer responsibility, follow the grading description for 10(a). Also see the Service Connection Diagram worksheet.	Gradings 1-9 apply if customer properties are **unmetered**, if customer meters exist and are located **inside the customer building premises, or if the water utility owns and is responsible for the entire service connection piping from the water main to the customer building**. In any of these cases the average distance between the curbstop or boundary separating utility/customer responsibility for service connection piping, and the typical first point of use (ex: faucet) or the customer meter must be quantified. Gradings of 1-9 are used to grade the validity of the means to quantify this value. (See the "Service Connection Diagram" worksheet)									Either of two conditions can be met to obtain a grading of 10: a) The customer water meter is located outside of the customer building adjacent to the curbstop or boundary separating utility/customer responsibility for the service connection piping. In this case enter a value of zero in the Reporting Worksheet with a grading of 10. b). Customer water meters are located inside customer buildings, or the properties are unmetered. In either case the distance is highly reliable since data is drawn from a Geographic Information System (GIS) and confirmed by routine field checks.
		Vague policy exists to define the delineation of water utility ownership and customer ownership of the service connection piping. Curbstops are perceived as the breakpoint but these have not been well-maintained or documented. Most are buried or obscured. Their location varies widely from site-to-site, and estimating this distance is arbitrary due to the unknown location of many curbstops.	Policy requires that the curbstop serves as the delineation point between water utility ownership and customer ownership of the service connection piping. The piping from the water main to the curbstop is the property of the water utility; and the piping from the curbstop to the customer building is owned by the customer. Curbstop locations are not well documented and the average distance is based upon a limited number of locations measured in the field.	Conditions between 2 and 4	Good policy requires that the curbstop serves as the delineation point between water utility ownership and customer ownership of the service connection piping. Curbstops are generally installed as needed and are reasonably documented. Their location varies widely from site-to-site, and an estimate of this distance is hindered by the availability of paper records.	Conditions between 4 and 6	Clear policy exists to define utility/customer responsibility for service connection piping. Accurate, well-maintained paper or basic electronic recordkeeping system exists. Periodic field checks confirm piping lengths for a sample of customer properties.	Conditions between 6 and 8	Clearly worded policy standardizes the location of curbstops and meters, which are inspected upon installation. Accurate and well maintained electronic records exist with periodic field checks to confirm locations of service lines, curbstops and customer meter pits. An accurate number of customer properties from the customer billing system allows for reliable averaging of this length.	Conditions between 8 and 10	
Improvements to attain higher data grading for "Average Length of Customer Service Line" component:		to qualify for 2: Research and collect paper records of service line installations. Inspect several sites in the field using pipe locators to locate curbstops. Obtain the length of this small sample of connections in this manner.	to qualify for 4: Formalize and communicate policy delineating utility/customer responsibilities for service connection piping. Assess accuracy of paper records by field inspection of a small sample of service connections using pipe locators as needed. Research the potential migration to a computerized information management system to store service connection data.		to qualify for 6: Establish coherent procedures to ensure that policy for curbstop, meter installation and documentation is followed. Gain consensus within the water utility for the establishment of a computerized information management system.		to qualify for 8: Implement an electronic means of recordkeeping, typically via a customer information system or customer billing system. Standardize the process to conduct field checks of limited number of locations.		to qualify for 10: Link customer information management system and Geographic Information System (GIS), standardize process for field verification of data.		to maintain 10: Continue with standardization and random field validation to improve knowledge of system.
Average operating pressure:		Available records are poorly assembled and maintained paper records of supply pump characteristics and water distribution system operating conditions. Average pressure is guesstimated based upon this information and ground elevations from crude topographical maps. Widely varying distribution system pressures due to undulating terrain, high system head loss and weak/erratic pressure controls further compromise the validity of the average pressure calculation.	Limited telemetry monitoring of scattered sites provides some static pressure data, which is recorded in handwritten logbooks. Pressure data is gathered at individual sites only when low pressure complaints arise. Average pressure is determined by averaging relatively crude data, and is affected by significant variation in ground elevations, system head loss and gaps in pressure controls in the distribution system.	Conditions between 2 and 4	Effective pressure controls separate different pressure zones; moderate pressure variation across the system, occasional open boundary valves are discovered that breech pressure zones. Basic telemetry monitoring of the distribution system logs pressure data electronically. Pressure data gathered by gauges or dataloggers at fire hydrants or buildings when low pressure complaints arise, and during fire flow tests and system flushing. Reliable topographical data exists. Average pressure is calculated using this mix of data.	Conditions between 4 and 6	Reliable pressure controls separate distinct pressure zones; only very occasional open boundary valves are encountered that breech pressure zones. Well-covered telemetry monitoring of the distribution system logs extensive pressure data electronically. Pressure gathered by gauges/dataloggers at fire hydrants and buildings when low pressure complaints arise, and during fire flow tests and system flushing. Average pressure is determined by using this mix of reliable data.	Conditions between 6 and 8	Well-managed, discrete pressure zones exist with generally predictable pressure fluctuations. A current full-scale SCADA System exists to monitor the water distribution system and collect data, including real time pressure readings at representative sites across the system. The average system pressure is determined from reliable SCADA System data.	Conditions between 8 and 10	Well-managed pressure districts/zones, SCADA System and hydraulic model exist to give very precise pressure data across the water distribution system. Average system pressure is reliably calculated from extensive, reliable, and cross-checked data.

Grading											
	n/a	1	2	3	4	5	6	7	8	9	10
Improvements to attain higher data grading for "Average Operating Pressure" component:		to qualify for 2: Employ pressure gauging and/or datalogging equipment to obtain pressure measurements from fire hydrants. Locate accurate topographical maps of service area in order to confirm ground elevations. Research pump data sheets to find pump pressure/flow characteristics	to qualify for 4: Formalize a procedure to use pressure gauging/datalogging equipment to gather pressure data during various system events such as low pressure complaints, or operational testing. Gather pump pressure and flow data at different flow regimes. Identify faulty pressure controls (pressure reducing valves, altitude valves, partially open boundary valves) and plan to properly configure pressure zones. Make all pressure data from these efforts available to generate system-wide average pressure.		to qualify for 6: Expand the use of pressure gauging/datalogging equipment to gather scattered pressure data at a representative set of sites, based upon pressure zones or areas. Utilize pump pressure and flow data to determine supply head entering each pressure zone or district. Correct any faulty pressure controls (pressure reducing valves, altitude valves, partially open boundary valves) to ensure properly configured pressure zones. Use expanded pressure dataset from these activities to generate system-wide average pressure.		to qualify for 8: Install a Supervisory Control and Data Acquisition (SCADA) System to monitor system parameters and control operations. Set regular calibration schedule for instrumentation to insure data accuracy. Obtain accurate topographical data and utilize pressure data gathered from field surveys to provide extensive, reliable data for pressure averaging.		to qualify for 10: Obtain average pressure data from hydraulic model of the distribution system that has been calibrated via field measurements in the water distribution system and confirmed in comparisons with SCADA System data.		to maintain 10: Continue to refine the hydraulic model of the distribution system and consider linking it with SCADA System for real-time pressure data calibration, and averaging.

Grading											
	n/a	1	2	3	4	5	6	7	8	9	10
COST DATA											
Total annual cost of operating water system:		Incomplete paper records and lack of documentation on many operating functions making calculation of water system operating costs a pure guesstimate	Reasonably maintained, but incomplete, paper or electronic accounting provides data to estimate the major portion of water system operating costs.	Conditions between 2 and 4	Electronic, industry-standard cost accounting system in place. Gaps in data known to exist, periodic internal reviews conducted but not a structured audit.	Conditions between 4 and 6	Reliable electronic, industry-standard cost accounting system in place, with all pertinent water system operating costs tracked. Data audited periodically by utility personnel, not a Certified Public Accountant (CPA).	Conditions between 6 and 8	Reliable electronic, industry-standard cost accounting system in place, with all pertinent water system operating costs tracked. Data audited at least annually by utility personnel, and periodically by third-party CPA.	Conditions between 8 and 10	Reliable electronic, industry-standard cost accounting system in place, with all pertinent water system operating costs tracked. Data audited annually by utility personnel and by third-party CPA.
Improvements to attain higher data grading for "Total Annual Cost of Operating the Water System" component:		to qualify for 2: Gather available records, institute new procedures to regularly collect and audit basic cost data of most important operations functions.	to qualify for 4: Implement an electronic cost accounting system, structured according to accounting standards for water utilities		to qualify for 6: Establish process for periodic internal audit of water system operating costs; identify cost data gaps and institute procedures for tracking these outstanding costs.		to qualify for 8: Standardize the process to conduct routine financial audit on an annual basis.		to qualify for 10: Standardize the process to conduct a third-party financial audit by a CPA on an annual basis.		to maintain 10: Maintain program, stay abreast of expenses subject to erratic cost changes and budget track costs proactively
Customer retail unit cost (applied to Apparent Losses):		Antiquated, cumbersome water rate structure is use, with periodic historic amendments that were poorly documented and implemented; resulting in classes of customers being billed inconsistent charges. The actual composite billing rate likely differs significantly from the published water rate structure, but a lack of auditing leaves the degree of error indeterminate.	Dated, cumbersome water rate structure, not always employed consistently in actual billing operations. The actual composite billing rate is known to differ from the published water rate structure, and a reasonably accurate estimate of the degree of error is determined, allowing a composite billing rate to be quantified.	Conditions between 2 and 4	Straight-forward water rate structure in use, but not updated in several years. Billing operations reliably employ the rate structure. The composite billing rate is derived from a single customer class such as residential customer accounts, neglecting the effect of different rates from varying customer classes.	Customer population unmetered. Fixed fee charged; single composite number derived from multiple customer classes.	Clearly written, up-to-date water rate structure is in force and is applied reliably in billing operations. Composite customer rate is determined using a weighted average residential rate using volumes of water in each rate block.	Conditions between 6 and 8	Effective water rate structure is in force and is applied reliably in billing operations. Composite customer rate is determined using a weighted average composite consumption rate, including residential, commercial, industrial and any other customer classes within the water rate structure.	Conditions between 8 and 10	Third party reviewed weighted average composite consumption rate (includes residential, commercial, industrial, etc.)
Improvements to attain higher data grading for "Customer Retail Unit Cost" component:		to qualify for 2: Formalize the process to implement water rates, including a secure documentation procedure. Create a current, formal water rate document and gain approval from all stakeholders.	to qualify for 4: Review the water rate structure and update formalize as needed. Assess billing operations to ensure that actual billing operations incorporate the established water rate structure.		to qualify for 6: Evaluate volume of water used in each usage block by residential users. Multiply volumes by full rate structure.	Meter customers and charge rates based upon water volumes	to qualify for 8: Evaluate volume of water used in each usage block by all classifications of users. Multiply volumes by full rate structure.		to qualify for 10: Conduct a periodic third-party audit of water used in each usage block by all classifications of users. Multiply volumes by full rate structure.		to maintain 10: Keep water rate structure current in addressing the water utility's revenue needs. Update the calculation of the customer unit rate as new rate components, customer classes, or other components are modified.
Variable production cost (applied to Real Losses):	Note: if the water utility purchases/imports its entire water supply, then enter the unit purchase cost of the bulk water supply in the Reporting Worksheet with a grading of 10	Incomplete paper records and lack of documentation on primary operating functions (electric power and treatment costs most importantly) makes calculation of variable production costs a pure guesstimate	Reasonably maintained, but incomplete, paper or electronic accounting provides data to roughly estimate the basic operations costs (pumping power costs and treatment costs) and calculate a unit variable production cost.	Conditions between 2 and 4	Electronic, industry-standard cost accounting system in place. Electric power and treatment costs are reliably tracked and allow accurate calculation of unit variable production costs based on these two inputs only. All costs are audited internally on a periodic basis.	Conditions between 4 and 6	Reliable electronic, industry-standard cost accounting system in place, with all pertinent water system operating costs tracked. Pertinent additional costs beyond power and treatment (ex: liability, residuals management, etc.) are included in the unit variable production cost. Data audited at least annually by utility personnel.	Conditions between 6 and 8	Reliable electronic, industry-standard cost accounting system in place, with all pertinent variable production costs tracked. Data audited at least annually by utility personnel, and periodically by third-party.	Conditions between 8 and 10	Either of two conditions can be met to obtain a grading of 10: 1) Third party CPA audit of all primary and secondary cost components on an annual basis. or: 2) Water supply is entirely purchased as bulk imported water, and unit purchase cost serves as the variable production cost.
Improvements to attain higher data grading for "Variable Production Cost" component:		to qualify for 2: Gather available records, institute new procedures to regularly collect and audit basic cost data and most important operations functions.	to qualify for 4: Implement an electronic cost accounting system, structured according to accounting standards for water utilities		to qualify for 6: Formalize process for regular internal audits of production costs. Assess whether additional costs (liability, residuals management, etc.) should be included to calculate a more accurate variable production cost.		to qualify for 8: Formalize the accounting process to include primary cost components (power, treatment) as well as secondary components (liability, residuals management, etc.) Conduct periodic third-party audits.		to qualify for 10: Standardize the process to conduct a third-party financial audit by a CPA on an annual basis.		to maintain 10: Maintain program, stay abreast of expenses subject to erratic cost changes and budget track costs proactively

Appendix F: SB X7-7 gpcd Verification Forms

This page intentionally left blank.

SB X7-7 Table 0: Units of Measure Used in UWMP* *(select one from the drop down list)*
Acre Feet
**The unit of measure must be consistent with Table 2-3*
NOTES:

SB X7-7 Table-1: Baseline Period Ranges			
Baseline	**Parameter**	**Value**	**Units**
10- to 15-year baseline period	2008 total water deliveries	10,388	Acre Feet
	2008 total volume of delivered recycled water		Acre Feet
	2008 recycled water as a percent of total deliveries	0.00%	Percent
	Number of years in baseline period[1]	10	Years
	Year beginning baseline period range	1999	
	Year ending baseline period range[2]	2008	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2004	
	Year ending baseline period range[3]	2008	

[1] *If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period.*

[2] *The ending year must be between December 31, 2004 and December 31, 2010.*

[3] *The ending year must be between December 31, 2007 and December 31, 2010.*

NOTES:

SB X7-7 Table 2: Method for Population Estimates	
Method Used to Determine Population (may check more than one)	
☐	**1. Department of Finance** (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
☐	**2. Persons-per-Connection Method**
☑	**3. DWR Population Tool**
☐	**4. Other** DWR recommends pre-review
NOTES:	

SB X7-7 Table 3: Service Area Population		
Year		**Population**
10 to 15 Year Baseline Population		
Year 1	1999	29,753
Year 2	2000	29,984
Year 3	2001	30,175
Year 4	2002	30,300
Year 5	2003	30,322
Year 6	2004	30,737
Year 7	2005	30,900
Year 8	2006	31,053
Year 9	2007	31,141
Year 10	2008	31,204
Year 11		
Year 12		
Year 13		
Year 14		
Year 15		
5 Year Baseline Population		
Year 1	2004	30,737
Year 2	2005	30,900
Year 3	2006	31,053
Year 4	2007	31,141
Year 5	2008	31,204
2015 Compliance Year Population		
2015		30,808
NOTES:		

SB X7-7 Table 4: Annual Gross Water Use *								
	Baseline Year *Fm SB X7-7 Table 3*	**Volume Into Distribution System** *Fm SB X7-7 Table(s) 4-A*	**Deductions**					**Annual Gross Water Use**
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water *Fm SB X7-7 Table 4-B*	Water Delivered for Agricultural Use	Process Water *Fm SB X7-7 Table(s) 4-D*	
10 to 15 Year Baseline - Gross Water Use								
Year 1	1999	9552.33			0		0	9,552
Year 2	2000	9803.55			0		0	9,804
Year 3	2001	9326.22			0		0	9,326
Year 4	2002	10402.98			0		0	10,403
Year 5	2003	10306.93			0		0	10,307
Year 6	2004	10714.45			0		0	10,714
Year 7	2005	9817.47			0		0	9,817
Year 8	2006	10241			0		0	10,241
Year 9	2007	10969.33			0		0	10,969
Year 10	2008	10387.9			0		0	10,388
Year 11	0	0			0		0	0
Year 12	0	0			0		0	0
Year 13	0	0			0		0	0
Year 14	0	0			0		0	0
Year 15	0	0			0		0	0
10 - 15 year baseline average gross water use								**6,768**
5 Year Baseline - Gross Water Use								
Year 1	2004	10,714			0		0	10,714
Year 2	2005	9,817			0		0	9,817
Year 3	2006	10,241			0		0	10,241
Year 4	2007	10,969			0		0	10,969
Year 5	2008	10,388			0		0	10,388
5 year baseline average gross water use								**10,426**
2015 Compliance Year - Gross Water Use								
2015		8,428			0		0	8,428
* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3								
NOTES:								

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)

Complete one table for each source.

Name of Source	Source 1
This water source is:	
☐	The supplier's own water source
☑	A purchased or imported source

Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System	Meter Error Adjustment* *Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1999	9,552		9,552
Year 2	2000	9,804		9,804
Year 3	2001	9,326		9,326
Year 4	2002	10,403		10,403
Year 5	2003	10,307		10,307
Year 6	2004	10,714		10,714
Year 7	2005	9,817		9,817
Year 8	2006	10,241		10,241
Year 9	2007	10,969		10,969
Year 10	2008	10,388		10,388
Year 11	0			0
Year 12	0			0
Year 13	0			0
Year 14	0			0
Year 15	0			0
5 Year Baseline - Water into Distribution System				
Year 1	2004	10,714		10,714
Year 2	2005	9,817		9,817
Year 3	2006	10,241		10,241
Year 4	2007	10,969		10,969
Year 5	2008	10,388		10,388
2015 Compliance Year - Water into Distribution System				
2015		8428		8,428

** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Annual Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1999	29,753	9,552	287
Year 2	2000	29,984	9,804	292
Year 3	2001	30,175	9,326	276
Year 4	2002	30,300	10,403	307
Year 5	2003	30,322	10,307	303
Year 6	2004	30,737	10,714	311
Year 7	2005	30,900	9,817	284
Year 8	2006	31,053	10,241	294
Year 9	2007	31,141	10,969	314
Year 10	2008	31,204	10,388	297
Year 11	0	0	0	
Year 12	0	0	0	
Year 13	0	0	0	
Year 14	0	0	0	
Year 15	0	0	0	
10-15 Year Average Baseline GPCD				**297**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2004	30,737	10,714	311
Year 2	2005	30,900	9,817	284
Year 3	2006	31,053	10,241	294
Year 4	2007	31,141	10,969	314
Year 5	2008	31,204	10,388	297
5 Year Average Baseline GPCD				**300**
2015 Compliance Year GPCD				
2015		30,808	8,428	244
NOTES:				

SB X7-7 Table 6: Gallons per Capita per Day *Summary From Table SB X7-7 Table 5*	
10-15 Year Baseline GPCD	297
5 Year Baseline GPCD	300
2015 Compliance Year GPCD	244
NOTES:	

SB X7-7 Table 7: 2020 Target Method *Select Only One*		
Target Method		Supporting Documentation
☑	Method 1	SB X7-7 Table 7A
☐	Method 2	SB X7-7 Tables 7B, 7C, and 7D *Contact DWR for these tables*
☐	Method 3	SB X7-7 Table 7-E
☐	Method 4	Method 4 Calculator
NOTES:		

SB X7-7 Table 7-A: Target Method 1 20% Reduction	
10-15 Year Baseline GPCD	2020 Target GPCD
297	237
NOTES:	

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target			
5 Year Baseline GPCD *From SB X7-7 Table 5*	Maximum 2020 Target*	Calculated 2020 Target *Fm Appropriate Target Table*	Confirmed 2020 Target
300	285	237	237
** Maximum 2020 Target is 95% of the 5 Year Baseline GPCD*			
NOTES:			

SB X7-7 Table 8: 2015 Interim Target GPCD		
Confirmed 2020 Target *Fm SB X7-7 Table 7-F*	10-15 year Baseline GPCD *Fm SB X7-7 Table 5*	2015 Interim Target GPCD
237	297	267
NOTES:		

SB X7-7 Table 9: 2015 Compliance								
Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments *(in GPCD)*					2015 GPCD *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015?
		Extraordinary Events	Weather Normalization	Economic Adjustment	TOTAL Adjustments	Adjusted 2015 GPCD		
244	267	*From Methodology 8 (Optional)*	*From Methodology 8 (Optional)*	*From Methodology 8 (Optional)*	0	244.2233674	244.2233674	YES
NOTES:								

This page intentionally left blank.

Appendix G: Agreement with West Basin

This page intentionally left blank.

AMENDMENT NO. 3
TO
AGREEMENT NO.W1922

PURCHASE AGREEMENT FOR IMPORTED WATER
TO BE PROVIDED BY
WEST BASIN MUNICIPAL WATER DISTRICT

PURCHASER: **Los Angeles County Waterworks District #29 & Marina del Rey**

TIER 1 ANNUAL MAXIMUM: **10,506** acre-feet

PURCHASE COMMITMENT: **31,518** acre-feet

INITIAL TERM: 5 Years - January 1, 2003 through December 31, 2007

SECOND TERM: 5 Years – January 1, 2008 through December 31, 2012

EFFECTIVE DATE OF THIS AMENDMENT: January 1, 2008

THIS AMENDMENT TO THE PURCHASE AGREEMENT FOR IMPORTED WATER TO BE PROVIDED BY WEST BASIN MUNICIPAL WATER DISTRICT is entered into on January 15, 2008 between West Basin Municipal Water District and Los Angeles County Waterworks District #29 & Marina del Rey.

It is mutually agreed that the following changes and additions are hereby made to the Agreement:

A. Base Allocation has been eliminated.

B. Tier 1 Annual Maximum is increased from 10,428 acre-feet to 10,506 acre-feet, as shown above under "TIER 1 ANNUAL MAXIMUM".

C. Purchase Commitment is decreased from 34,380 acre-feet to 31,518 acre-feet, as shown above under "PURCHASE COMMITMENT".

D. Initial Term is five (5) years commencing on January 1, 2003 and concluding December 31, 2007, as indicated by "INITIAL TERM" above, and reflects the original term of this agreement.

E. Second Term is five (5) years commencing on January 1, 2008 and concluding December 31, 2012, as indicated by "SECOND TERM" above, and reflects the extension of term incorporated by this amendment.

F. Effective date of the modifications to the Tier 1 Annual Maximum and Purchase Commitment is January 1, 2008, as shown above under "EFFECTIVE DATE OF THIS AMENDMENT".

G. For administrative purposes, an agreement number has been assigned to this agreement as indicated above by "AGREEMENT NO.".

WEST BASIN MUNICIPAL
WATER DISTRICT

By: _____
Richard Nagel
General Manager

Date: 1/15/08

LOS ANGELES COUNTY WATERWORKS
DISTRICT # 29 AND MARINA DEL REY

By: _____

Title: PRINCIPAL ENGINEER

Date: 01/07/08

Exhibit 1
Imported Water Purchase Agreement
DEFINITIONS

"Imported Water" means imported water supplied by Metropolitan and sold by the District to Purchaser. Imported Water does not include Long-Term Seasonal Storage Service and other surplus categories of supplies.

"Purchaser" means a customer of the District that has entered into a Purchase Agreement with the District.

"Purchase Commitment" means the amount of Imported Water that Purchaser agrees to purchase from District. Deliveries of surplus imported water supplies, including but not limited to Long-Term Seasonal Storage Service, will not count towards the Purchase Commitment.

"Initial Term" reflects the original term of this agreement.

"Second Term" reflects the extension of term incorporated by this amendment.

"Tier 1 Annual Maximum" means the allowable purchase of Imported Water in a given year at the Tier 1 Rate.

"Tier 1 Rate" means the price charged by the District for deliveries of Imported Water to Purchaser in an amount up to the Tier 1 Annual Maximum. The initial Tier 1 Rate is $606 per acre-foot. Tier 1 Rates are subject to change on an annual basis.

"Tier 2 Rate" means the price charged by the District for deliveries of Imported Water to Purchaser in an amount greater than the Tier 1 Annual Maximum. The initial Tier 2 Rate is $704 per acre-foot. Tier 2 Rates are subject to change on an annual basis.

"Tier 1 Supply Rate" means Metropolitan's per acre-foot Tier 1 Supply Rate, as determined from time to time by Metropolitan's Board of Directors. The initial Tier 1 Supply Rate is $73 per acre-foot. Tier 1 Supply Rates are subject to change on an annual basis.

"Tier 2 Supply Rate" means Metropolitan's per acre-foot Tier 2 Supply Rate, as determined from time to time by Metropolitan's Board of Directors. The initial Tier 2 Supply Rate is $171 per acre-foot. Tier 2 Supply Rates are subject to change on an annual basis.

This page intentionally left blank.

Appendix H: Phased Water Conservation Plan

This page intentionally left blank.

PART 5 - PHASED WATER CONSERVATION PLAN

SECTION A - STATEMENT OF POLICY DECLARATION OF PURPOSE, AND GENERAL PROHIBITION

5-A-1 STATEMENT OF POLICY AND DECLARATION OF PURPOSE:

Because of the water supply conditions prevailing in any or all of the County Waterworks Districts and/or in the area from which any or all of the Districts obtain all or a portion of their supply, the general welfare requires that the water resources available to any or all of the Districts be put to the maximum beneficial use to the extent to which they are capable, and that the unreasonable use, or unreasonable method of use of water be discouraged and that the conservation of such water be practiced with a view to the reasonable and beneficial use thereof in the interest of the people of any or all of the Districts and for the public welfare. The purpose of this Phased Water Conservation Plan is to minimize the effect of a shortage of water supplies on the customers of any or all of the Districts during a water shortage emergency.

5-A-2 GENERAL PROHIBITION

5-A-2a No customer of the District or Districts shall make, cause, use, or permit the use of water from the District or Districts in a manner contrary to any provision of this ordinance.

5-A-2b In the area of District No. 40, Antelope Valley; Region 34, Desert View Highlands, known as Ritter Ranch, as defined in Agreement No. 66407 as amended between the District and Ritter Park Associates, the water use limitations contained in Agreement No. 66407 as amended shall be implemented in addition to those required by this Part of these rules.

SECTION B – PHASE I SHORTAGE

5-B-1 PHASE I SHORTAGE – DESCRETIONARY RESTRICTIONS BY THE DISTRICT ENGINEER

If the Engineer determines that over consumption of water, loss of pressure in a system, breakdown, drought conditions or any similar occurrence, requires emergency restrictions upon the use of water from any system, he shall order such restrictions, including, but not limited to, any or all of the restrictions contained in Sections 5-B-1a through 5-B-1f.

Part 5 Added 5/23/91 Ordinance No. 91-0075M
Added 5-A-2, 5-A-2a & 5-A-2b 10/14
5-A-1 Rev 7/25/91, 10/14
5-B-1 Rev. 7/25/91, Rev. 10/14

Any such order shall be communicated by the Engineer, either in writing or orally to water consumers served by the affected system. Water supply to any premises where use of water is being made in violation of an order of the Engineer may be shut off.

When the engineer determines that the emergency no longer exists, he shall issue an order relieving the restrictions of prohibitions previously ordered under this Section. Such order shall be communicated to affected water consumers in the same manner in which the order instituting the restrictions or prohibitions was communicated.

5-B-1a The use of water for watering of lawn, landscape or other turf area with water supplied by the District may be limited to specified days or hours of a day or altogether prohibited, except that the use of water for drinking, cooking, and sanitary purposes. The watering of lawn, landscape or other turf area with water supplied by the District shall be limited to not more than every other day and shall be prohibited between the hours of 10:00 a.m. and 5:00 p.m.

5-B-1b New meters to provide construction water service shall not be issued

5-B-1c Water Service (“Will Serve”) letters will be issued but such letters will be issued with the condition that permanent metered service to any newly created lot will be prohibited until the Board of Directors determines that the provisions of the Phased Water Conservation Plan are no longer in effect or that the severity of the water supply condition may be reduced to a Phase I or Phase II shortage.

5-B-1d Existing meters providing construction water service shall be removed.

5-B-1e No new permanent meters shall be installed.

5-B-1f Any restrictions placed on the District by State of California

5-B-1a	Rev. 10/14
5-B-1b	Rev. 10/14
5-B-1c	Rev. 10/14
5-B-1d	Rev. 10/14
5-B-1e	Rev. 10/14
5-B-1f	Rev. 10/14

PART 5 - PHASED WATER CONSERVATION PLAN (CONTINUED)

SECTION C – AUTHORIZATION TO IMPLEMENT WATER CONSERVATION FOR PHASE II SHORTAGES THROUGH PHASE X SHORTAGES

5-C-1 AUTHORIZATION TO IMPLEMENT WATER CONSERVATION

5-C-1a The Board of Directors of the Waterworks Districts may implement the applicable provisions of this conservation plan, following the public hearing required by Rule 5-C-1b, upon its determination that such implementation is necessary to protect the public welfare and safety.

5-C-1b The Board of Directors of the Waterworks Districts shall hold a public hearing for the purpose of determining whether a shortage exists in any or all of the Districts and which measures provided by this ordinance should be implemented. Notice of the time and place of the public hearing shall be published not less than ten (10) days before the hearing in a newspaper of general circulation within the affected District or Districts.

5-C-1c The Board of Directors shall issue its determination of shortage and corrective measures by resolution published in a daily newspaper of general circulation within the affected District or Districts. Conservation surcharges assessed per Rule 5-O-1 shall become effective on or after the date of such publication.

SECTION D – PHASE III SHORTAGE

5-D-1 PHASE II SHORTAGE:

5-D-1a A Phase II Shortage shall be declared whenever the Board of Directors determines that it is likely that the District will suffer a ten percent (10%) shortage in its water supplies.

5-D-1b A customer with a meter size of one and one-half (1-1/2) inches or larger shall be billed at his or her normal established water rate for all water used up to a target quantity of ninety percent (90%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-O-1. The base quantity shall be determined by the amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.

5-D-1c For meter sizes of one (1) inch or less, a base quantity shall be the average of the water usage for all similar sized meters during the corresponding billing period of a base period to be defined by the BOARD.

5-C-1 Rev.10/14
5-C-1b Rev.10/14
5-C-1c Rev. 10/14, 6/2/15
5-D-1 Rev. 7/24/91, Rev. 1/09, Rev. 10/14

A customer with a meter size of one (1) inch or less shall be billed at his or her normal established water rate for all water used up to a target quantity of ninety percent (90%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-O-1.

SECTION E - PHASE III SHORTAGE

5-E-1 PHASE III SHORTAGE:

5-E-1a A Phase III Shortage shall be declared whenever the Board of Directors determines that it is likely that the District will suffer a shortage of between ten percent (10%) and fifteen percent (15%) in its water supplies.

5-E-1b A customer with a meter size of one and one-half (1 1/2) inches or larger shall be billed at his or her normal established water rate for all water used up to a target quantity of eighty-five percent (85%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-O-1. The base quantity shall be determined by the amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.

5-E-1c For meter sizes of one (1) inch or less, a base quantity shall be the average of the water usage for all similar sized meters during the corresponding billing period of a base period to be defined by the BOARD.

A customer with a meter size of one (1) inch or less shall be billed at his or her normal established water rate for all water used up to a target quantity of eighty-five percent (85%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-O-1.

PART 5 - PHASED WATER CONSERVATION PLAN (CONTINUED)

SECTION F – PHASE IV SHORTAGE

5-F-1 PHASE IV SHORTAGE:

5-F-1a A Phase IV Shortage shall be declared whenever the Board of Directors determines that it is likely that the District will suffer a shortage of between fifteen percent (15%) and twenty percent (20%) in its water supplies.

5-F-1b A customer with a meter size of one and one-half (1-1/2) inches or larger shall be billed at his or her normal established water rate for all water used up to a target quantity of eighty percent (80%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-O-1. The base quantity shall be determined by the amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.

5-F-1c For meter sizes of one (1) inch or less, a base quantity shall be the average of the water usage for all similar sized meters during the corresponding billing period of a base period to be defined by the BOARD.

A customer with a meter size of one (1) inch or less shall be billed at his or her normal established water rate for all water used up to a target quantity of eighty percent (80%) of the base quantity. All water used in excess of the target quantity shall be subject to a surcharge per Rule 5-O-1.

SECTION G - PHASE V SHORTAGE

5-G-1 PHASE V SHORTAGE:

5-G-1a A Phase V Shortage shall be declared whenever the Board of Directors determines that it is likely that the District will suffer a shortage of between twenty percent (20%) and twenty-five percent (25%) in its water supplies

5-G-1b A customer with a meter size of one and one-half (1-1/2) inches or larger shall be billed at his or her normal established water rate for all water used up to a target quantity of seventy-five percent (75%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-O-1. The base quantity shall be determined by the amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.

5-F-1 Rev.10/14
5-F-1c Rev. 7/91, Rev. 1/09
5-F-1d Deleted.10/14
5-F-1e Deleted.10/14
5-G-1 Rev.10/14

SECTION G - PHASE V SHORTAGE (CONTINUED)

5-G-1c For meter sizes of one (1) inch or less, a base quantity shall be the average of the water usage for all similar sized meters during the corresponding billing period of a base period to be defined by the BOARD.

A customer with a meter size of one (1) inch or less shall be billed at his or her normal established water rate for all water used up to a target quantity of seventy-five percent (75%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-O-1.

5-G-1d The watering of lawn, landscape or other turf area with water supplied by the District shall be limited to not more than every other day and shall be prohibited between the hours of 10:00 a.m. and 5:00 p.m.

SECTION H - PHASE VI SHORTAGE

5-H-1 PHASE VI SHORTAGE:

5-H-1a A Phase VI Shortage shall be declared whenever the Board of Directors determines that it is likely that the District will suffer a shortage of between twenty-five (25%) and thirty percent (30%) in its water supplies.

5-H-1b A customer with a meter size of one and one-half (1-1/2) inches or larger shall be billed at his or her normal established water rate for all water used up to a target quantity of seventy percent (70%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-O-1. The base quantity shall be determined by the amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Supervisors.

5-H-1c For meter sizes of one (1) inch or less, a base quantity shall be the average of the water usage for all similar sized meters during the corresponding billing period of a base period to be defined by the BOARD.

A customer with a meter size of one (1) inch or less shall be billed at his or her normal established water rate for all water used up to a target quantity of seventy percent (70%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-O-1.

5-G-1c	Rev. 7/91, Rev. 1/09
5-G-1e	Deleted.10/14
5-G-1f	Deleted.10/14
5-H-1	Rev.10/14
5-H0-1c	Rev. 7/91, Rev. 1/09
5-H-1d	Deleted.10/14
5-H-1e	Deleted.10/14
5-H-1f	Deleted.10/14

PART 5 - PHASED WATER CONSERVATION PLAN (CONTINUED)

SECTION I - PHASE VII SHORTAGE

5-I-1 PHASE VII SHORTAGE:

5-I-1a A Phase VII Shortage shall be declared whenever the Board of Directors determines that it is likely that the District will suffer a shortage of between thirty (30%) and thirty-five percent (35%) in its water supplies.

5-I-1b A customer with a meter size of one and one-half (1-1/2) inches or larger shall be billed at his or her normal established water rate for all water used up to a target quantity of sixty-five percent (65%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-O-1. The base quantity shall be determined by the amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.

5-I-1c For meter sizes of one (1) inch or less, a base quantity shall be the average of the water usage for all similar sized meters during the corresponding billing period of a base period to be defined by the BOARD.

A customer with a meter size of one (1) inch or less shall be billed at his or her normal established water rate for all water used up to a target quantity of sixty-five percent (65%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-O-1.

SECTION J - PHASE VIII SHORTAGE

5-J-1 PHASE VIII SHORTAGE:

5-J-1a A Phase VIII Shortage shall be declared whenever the Board of Directors determined that it is likely that the District will suffer a shortage of between thirty-five (35%) and forty percent (40%) in its water supplies.

5-J-1b A customer with a meter size of one and one-half (1-1/2) inches or larger shall be billed at his or her normal established water rate for all water used up to a target quantity of sixty percent (60%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-O-1. The base quantity shall be determined by the amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.

5-I-1 Rev.10/14
5-I-1d Deleted.10/14
5-I-1e Deleted.10/14
5-I-1f Deleted.10/14
5-J-1 Rev.10/14

SECTION J - PHASE VIII SHORTAGE (CONTINUED)

5-J-1c For meter sizes of one (1) inch or less, a base quantity shall be computed by averaging the water usage for all similar sized meters during the corresponding billing period of a base period to be defined by the Board of Directors. A customer with a meter size of one (1) inch or less shall be billed at his or her normal established water rate for all water used up to a target quantity of sixty percent (60%) of the base quantity. All water used in excess of the target quantity shall be subject to a surcharge per Rule 5-O-1.

SECTION K - PHASE IX SHORTAGE

5-K-1 PHASE IX SHORTAGE

5-K-1a A Phase IX Shortage shall be declared whenever the Board of Directors determines that it is likely that the District will suffer a shortage of between forty percent (40%) and forty-five percent (45%) in its water supplies.

5-K-1b A customer with a meter size of one and one-half (1-1/2) inches or larger shall be billed at his or her normal established water rate for all water used up to a target quantity of fifty-five percent (55%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-O-1. The base quantity shall be determined by the amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.

5-K-1c For meter sizes of one (1) inch or less, a base quantity shall be computed by averaging the water usage for all similar sized meters during the corresponding billing period of a base period to be defined by the Board of Directors. A customer with a meter size of one (1) inch or less shall be billed at his or her normal established water rate for all water used up to fifty-five percent (55%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-O-1.

5-J-1	Rev.10/14
5-J-1d	Deleted.10/14
5-J-1e	Deleted.10/14
5-J-1f	Deleted.10/14
5-K-1	Rev.10/14
5-K-1d	Deleted.10/14
5-K-1e	Deleted.10/14
5-K-1f	Deleted.10/14
5-K-1g	Deleted.10/14

PART 5 - PHASED WATER CONSERVATION PLAN (CONTINUED)

SECTION L - PHASE X SHORTAGE

5-L-1 PHASE X SHORTAGE

5-L-1a A Phase X Shortage shall be declared whenever the Board of Directors determines that it is likely that the District will suffer a shortage of between forty-five (45%) and fifty percent (50%) in its water supplies.

5-L-1b A customer with a meter size of one and one-half (1-1/2) inches or larger shall be billed at his or her normal established water rate for all water used up to a target quantity of fifty percent (50%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-O-1. The base quantity shall be determined by the amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.

5-L-1c For meter sizes of one (1) inch or less, a base quantity shall be computed by averaging the water usage for all similar sized meters during the corresponding billing period of a base period to be defined by the Board of Directors. A customer with a meter size of one (1) inch or less shall be billed at his or her normal established water rate for all water used up to a target quantity of fifty percent (50%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-O-1.

SECTION M - RELIEF FROM COMPLIANCE

5-M-1 RELIEF FROM COMPLIANCE:

5-M-1a A customer may file an application for relief from any provisions of this ordinance. The Director of Public Works shall develop such procedures as he or she considers necessary to resolve such applications and shall, upon the filling by a customer of an application for relief, take such steps as he or she deems reasonable to resolve the application for relief. The decision of the Director of Public Works shall be final. The Director of Public Works may delegate his or her duties and responsibilities under this Rule as appropriate.

5-M-1b The application for relief may include a request that the customer be relieved, in whole or in part, from the conservation surcharge provisions of Rules 5-D-1b, 5-D-1c, 5-E-1b, 5-E-1c, 5-F-1b, 5-F-1c, 5-G-1b, 5-G-1c, 5-H-1b, 5-H-1c, 5-I-1b, 5-I-1c, 5-J-1b, 5-J-1c, 5-K-1b, 5-K-1c, 5-L-1b, and 5-L-1c.

5-L-1 Rev.10/14
5-L-1d Deleted.10/14
5-L-1e Deleted.10/14
5-L-1f Deleted.10/14
5-L-1g Deleted.10/14

5-M-1c In determining whether to grant relief, and the nature of any relief, the Director of Public Works shall take into consideration all relevant factors including, but not limited to:

1. Whether any additional reduction in water consumption will result in unemployment;

2. Whether additional members have been added to the household;

3. Whether any additional landscaped property has been added to the property since the corresponding billing period of the base year;

4. Changes in vacancy factors in multi-family housing;

5. Increased number of employees in commercial, industrial, and governmental offices;

6. Increased production requiring increased process water;

7. Water uses during new construction;

8. Adjustments to water use caused by emergency health or safety hazards;

9. First filling of a permit-constructed swimming pool; and

10. Water use necessary for reasons related to family illness or health.

11. Whether the basic period for billing should be adjusted due to the unique circumstances of the type of facility, such as a boat, which results in irregular, intermittent periods of consumption.

5-M-1d In order to be considered, an application for relief must be filed with the District within twenty (20) days from the date the provision from which relief is sought becomes applicable to the applicant. No relief shall be granted unless the customer shows that he or she has achieved the maximum practical reduction in water consumption other than in the specific areas in which relief is being sought. No relief shall be granted to any customer who, when requested by the Director of Public Works or designee, fails to provide any information necessary for resolution of the customer's application for relief. The decision shall be issued within twenty (20) days and provided to the customer.

PART 5 - PHASED WATER CONSERVATION PLAN (CONTINUED)

SECTION N - NOTIFICATION OF CUSTOMERS

5-N-1 NOTIFICATION OF CUSTOMERS:

5-N-1a Each customer will be notified on his or her bill as to what the target quantity and the base quantity will be for the applicable billing period.

SECTION O - CONSERVATION SURCHARGES

5-O-1 CONSERVATION SURCHARGES:

5-O-1a Water use up to the target quantities specified in Rules 5-D-1b, 5-D-1c, 5-E-1b, 5-E-1c, 5-F-1b, 5-F-1c, 5-G-1b, 5-G-1c, 5-H-1b, 5-H-1c, 5-I-1b, 5-I-1c, 5-J-1b, 5-J-1c, 5-K-1b, 5-K-1c, 5-L-1b, and 5-L-1c shall be billed at the established QUANTITY CHARGE or NORMAL USE CHARGE. Water use in excess of the aforementioned target quantities shall be subject to the following conservation surcharges in addition to the established QUANTITY CHARGE or NORMAL USE CHARGE

:

1. For all customers within Los Angeles County Waterworks Districts and Marina Del Rey Water System, an additional conservation surcharge of 0.5 times the established QUANTITY CHARGE or NORMAL USE CHARGE will be assessed for water use in excess of the target quantity, up to 115 percent of the target quantity.

2. For all customers within Los Angeles County Waterworks Districts and Marina Del Rey Water System, an additional conservation surcharge of 1.0 times the established QUALITY CHARGE or NORMAL USE CHARGE will be assessed for water use in excess of 115 percent of the target quantity.

3. If cost of purchased water obtained from the water wholesalers that sell water to the Los Angeles County Waterworks Districts increases beyond the amounts that can be offset and collected through the rates set in 1 and 2 of this provision, then the District Engineer is hereby authorized to revise the rates set in 1 and 2 of this provision in amounts necessary to offset the cost to purchase the water.

The foregoing amendments to Rule 5-O-1a, as enacted on June 2, 2015, shall expire on June 1, 2016, on which date Rule 5-O-1a shall revert to the provisions of Rule 5-O-1a as enacted on May 22, 1991, by Ordinance No 91-0075M.

5-O-1b Violation by any customer of the water use prohibitions of Rules 5-B-1a, 5-B-1b, 5-B-1c, 5-B-1d, 5-B-1e, and 5-B-1f shall be penalized as follows:

1. First violation. The Director of Public Works or designee shall issue a written notice of the fact of a first violation to the customer.

2. Second violation. For a second violation during any one water shortage emergency, the Director of Public Works or designee shall issue a written notice of the fact of a second violation to the customer.

3. Third and subsequent violations. For a third and each subsequent violation during any one water shortage emergency, the Director of Public Works or designee may install a flow-restricting device or the service of the customer at the premises at which the violation occurred for installing and for removing the flow-restricting devices and for restoration of normal service. The charge shall be paid before normal service can be restored.

5-O-1c All monies collected by a District pursuant to this ordinance shall be deposited in that District's General Fund as reimbursement for the District's costs and expenses of administering this conservation plan.

5-O-1d The District shall give notice to customer of water conservation surcharges or of water usage violations as follows:

a. Notice of water conservation surcharges or of first and second violations of the water use prohibitions of Rules 5-B-1a, 5-B-1b, 5-B-1c, 5-B-1d, 5-B-1e, and 5-B-1f shall be given to the customer in person or by regular mail.

b. If the customer is absent from or unavailable at the premises at which the violation occurred, by leaving a copy with some person of suitable age and discretion at the premises and sending a copy through the regular mail to the address at which the customer is normally billed; or

c. If a person of suitable age or discretion cannot be found, then by affixing a copy in a conspicuous place at the premises at which the violation occurred and also sending a copy through the regular mail to the address at which the customer is normally billed.

5-O-1e The notice of a violation of the water use prohibitions of Rules 5-B-1a, 5-B-1b, 5-B-1c, 5-B-1d, 5-B-1e, and 5-B-1f shall contain a description of the facts of the violation, a statement of the possible penalties for each violation and a statement informing the customer of his right to a hearing on the merits of the violation pursuant to Rule 5-P-1.

5-O-1f Nothing in these regulations shall prohibit any customer from either installing sub-meters or from pro-rating and collecting from the ultimate users any conservation surcharges assessed when the customer's master meter measures consumption of water for multiple tenancy facilities. However, unless the sub-meters are subsequently billed directly by the District, the customer responsible for the master meter shall continue to be responsible directly to the District for all payments including conservation surcharges.

SECTION P - HEARING REGARDING VIOLATIONS

5-P-1 HEARING REGARDING VIOLATIONS:

5-P-1a Any customer receiving notice of a third or subsequent violations of the water use prohibitions of Rules 5-B-1a, 5-B-1b, 5-B-1c, 5-B-1d, 5-B-1e and 5-B-1f shall have a right to a hearing by the Director of Public Works or his designee within fifteen (15) days of a mailing or other delivery of the notice of violation.

5-P-1b The customer's written request for a hearing must be received within ten (10) days of the issuance of the notice of violation. This request shall stay installation of a flow-restricting device on the customer's premises and the assessment of any surcharge until the Director of Public Works or designee renders his or her decision. The decision shall be issued within ten (10) days of the hearing, a copy of which shall be provided to the customer.

5-P-1c The decision of the Director of Public Works shall be final except for judicial review.

PART 5 - PHASED WATER CONSERVATION PLAN (CONTINUED)

SECTION Q - ADDITIONAL WATER SHORTAGE MEASURES

5-Q-1 ADDITIONAL WATER SHORTAGE MEASURES:

The Board of Directors may order implementation of water conservation measures in addition to those set forth in Rules 5-B-1, 5-D-1, 5-E-1, 5-F-1, 5-G-1, 5-H-1, 5-I-1, 5-J-1, 5-K-1, and 5-L-1. Such additional water conservation measures shall be implemented in the manner provided in Rule 5-C-1.

SECTION R - PUBLIC HEALTH AND SAFETY NOT TO BE AFFECTED

5-R-1 PUBLIC HEALTH AND SAFETY NOT TO BE AFFECTED:

Nothing in this ordinance shall be construed to require the District to curtail the supply of water to any customer when such water is required by that customer to maintain an adequate level of public health and safety.

SECTION S - SEVERABILITY

5-S-1 SEVERABILITY:

If any part of this ordinance or the application thereof to any person or circumstances is for any reason held invalid or unconstitutional by a decision of any court of competent jurisdiction, the validity of the remainder of the ordinance or the application of such provision to other persons or circumstances shall not be affected. The Board of Directors of the District or Districts declares that it would have adopted this ordinance and all provisions hereof irrespective of the fact that any one or more of the provisions be declared invalid or unconstitutional.

Appendix I: CUWCC Online Reports 2013/2014

This page intentionally left blank.

ON TRACK

BMP1.1 Operation Practices - Retail Only 2013

Reporting unit name (District name): Los Angeles County Waterworks District 29 - Malibu & Marina del Rey

Reporting unit number: 5026

Conservation Coordinator: Yes

Contact Information

First Name: Iwen

Last Name: Tseng

Title: Water Conservation Coordinator

Phone: 626-300-4688

Email: itseng@dpw.lacounty.gov

Water Waste Prevention

WW Document Name	WWP File Name	WW Prevention URL	WW Prevention Ordinance Terms Description
Option A Describe the ordinances or terms of service adopted by your agency to meet the water waste prevention requirements of this BMP.		http://library.municode.com/index.aspx?clientId=16274	Water Conservation Requirements for the Unincorporated Los Angeles County Area Title 11- Health and Safety of the Los Angeles County Code, Ordinance No. 91-0046U
Option B Describe any water waste prevention ordinances or requirements adopted by your local jurisdiction or regulatory agencies within your service area.	CityofMalibu emergency water conservation ordinance 390U 1991March.pdf	http://qcode.us/codes/malibu/revisions/390U.pdf	City of Malibu Emergency Water Conservation Ordinance
Option C Describe any documentation of support for legislation or regulations that prohibit water waste.	LACWaterworksRulesAndRegulationsPart5.pdf	http://dpw.lacounty.gov/wwd/web/Documents/part5.pdf	Los Angeles County Waterworks Districts Rules and Regulations Part 5: Phased Water Conservation Plan
Option D Describe your agency efforts to cooperate with other entities in the adoption or enforcement of local requirements consistent with this BMP.			
Option E Describe your agency support positions with respect to adoption of legislation or regulations that are consistent with this BMP.			
Option F Describe your agency efforts to support local ordinances that establish permits requirements for water efficient design in new development.			

ON TRACK

BMP1.1 Operation Practices - Retail Only 2013

At Least As effective As No

Exemption No

Comments:

CUWCC BMP Coverage Report 2013

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.2 Water Loss Control **ON TRACK**

Los Angeles County Waterworks District 29 - Malibu &
5026 Marina del Rey

Completed Standard Water Audit Using AWWA Software?	Yes
AWWA File provided to CUWCC?	Yes
District 29 2013.xls	
AWWA Water Audit Validity Score?	87
Complete Training in AWWA Audit Method	Yes
Complete Training in Component Analysis Process?	Yes
Component Analysis?	Yes
Repaired all leaks and breaks to the extent cost effective?	Yes
Locate and Repar unreported leaks to the extent cost effective?	Yes
Maintain a record keeping system for the repair of reported leaks, including time of report, leak location, type of leaking pipe segment or fitting, and leak running time from report to repair.	Yes

Provided 7 Types of Water Loss Control Info

Leaks Repairs	Value Real Losses	Value Apparent Losses	Miles Surveyed	Press Reduction	Cost Of Interventions	Water Saved (AF)
63	15918	1318699	17.45	False		

At Least As effective As No

Exemption No

Comments: NOTE: Change cost of repair answer to Yes.
Program bug prohibiting change at this time.

CUWCC BMP Coverage Report 2013

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.3 Metering With Commodity

ON TRACK

5026 Los Angeles County Waterworks District 29 - Malibu & Marina del Rey

Numbered Unmetered Accounts	No
Metered Accounts billed by volume of use	Yes
Number of CII Accounts with Mixed Use Meters	0
Conducted a feasibility study to assess merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters?	Yes
Feasibility Study provided to CUWCC?	Yes

Date: 1/1/0001

Uploaded file name:

Completed a written plan, policy or program to test, repair and replace meters	Yes

At Least As effective As No

Exemption No

Comments:

CUWCC BMP Coverage Report 2013

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.4 Retail Conservation Pricing

On Track

5026 Los Angeles County Waterworks District 29 - Malibu & Marina del Rey

Implementation (Water Rate Structure)

Customer Class	Water Rate Type	Conserving Rate?	(V) Total Revenue Comodity Charges	(M) Total Revenue Fixed Carges
Single-Family	Increasing Block Seasonal	Yes	13316946	3939970
Multi-Family	Increasing Block Seasonal	Yes	4112858	1006212
Industrial	Increasing Block Seasonal	Yes	359794	13355
Commercial	Increasing Block Seasonal	Yes	2460703	684506
Institutional	Increasing Block Seasonal	Yes	3841169	169750
Other	Increasing Block Seasonal	Yes	76973	80259
			24168443	**5894052**

Calculate: V / (V + M) **80 %**

Implementation Option: Use Annual Revenue As Reported

☐ Use 3 years average instead of most recent year

Canadian Water and Wastewater Association

Upload file:

Agency Provide Sewer Service: No

At Least As effective As No

Exemption No

Comments:

CUWCC BMP Coverage Report 2013

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.1 Public Outreach

ON TRACK

5026 **Los Angeles County Waterworks District 29 - Malibu & Marina del Rey** **Retail**

Does your agency perform Public Outreach programs? Yes

The list of wholesale agencies performing public outreach which can be counted to help the agency comply with the BMP

West Basin MWD

The name of agency, contact name and email address if not CUWCC Group 1 members

Did at least one contact take place during each quater of the reporting year? Yes

Public Outreach Program List	Number
Website	1
Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets	3
Newsletter articles on conservation	1
General water conservation information	3
Total	**8**

Did at least one contact take place during each quater of the reporting year? Yes

Number Media Contacts	Number
Newspaper contacts	5
Online Advertisings	2
Total	**7**

Did at least one website update take place during each quater of the reporting year? Yes

Public Information Program Annual Budget

Annual Budget Category	Annual Budget Amount
Consultant Expenses	25000
Total Amount:	**25000**

Public Outreah Additional Programs
Community Events

Description of all other Public Outreach programs

Ocean Friendly Garden Workshops

Comments:

At Least As effective As No

CUWCC BMP Coverage Report 2013

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.1 Public Outreach

ON TRACK

Exemption	No	0

CUWCC BMP Coverage Report 2013

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.2 School Education Programs

ON TRACK

5026 **Los Angeles County Waterworks District 29 - Malibu & Marina del Rey** **Retail**

Does your agency implement School Education programs? Yes

The list of wholesale agencies performing public outreach which can be counted to help the agency comply with the BMP

West Basin MWD

Materials meet state education framework requirements? Yes

Materials distributed to K-6? Yes

Materials distributed to 7-12 students? No (Info Only)

Annual budget for school education program:

Description of all other water supplier education programs

Comments:

At Least As effective As No

Exemption No 0

ON TRACK

BMP1.1 Operation Practices - Retail Only 2014

Reporting unit name (District name): Los Angeles County Waterworks District 29 - Malibu & Marina del Rey

Reporting unit number: 5026

Conservation Coordinator: Yes

Contact Information

First Name: Kirk

Last Name: Allen

Title: Water Conservation Coordinator

Phone: 626-300-3389

Email: kallen@dpw.lacounty.gov

Water Waste Prevention

WW Document Name	WWP File Name	WW Prevention URL	WW Prevention Ordinance Terms Description
Option A Describe the ordinances or terms of service adopted by your agency to meet the water waste prevention requirements of this BMP.		http://library.municode.com/index.aspx?clientId=16274	Water Conservation Requirements for the Unincorporated Los Angeles County Area Title 11- Health and Safety of the Los Angeles County Code, Ordinance No. 91-0046U
Option B Describe any water waste prevention ordinances or requirements adopted by your local jurisdiction or regulatory agencies within your service area.		http://qcode.us/codes/malibu/revisions/390U.pdf	City of Malibu Emergency Water Conservation Ordinance
Option C Describe any documentation of support for legislation or regulations that prohibit water waste.		http://dpw.lacounty.gov/wwd/web/Documents/part5.pdf	Los Angeles County Waterworks Districts Rules and Regulations Part 5: Phased Water Conservation Plan
Option D Describe your agency efforts to cooperate with other entities in the adoption or enforcement of local requirements consistent with this BMP.			
Option E Describe your agency support positions with respect to adoption of legislation or regulations that are consistent with this BMP.			
Option F Describe your agency efforts to support local ordinances that establish permits requirements for water efficient design in new development.			

ON TRACK

BMP1.1 Operation Practices - Retail Only 2014

At Least As effective As No

Exemption No

Comments:

CUWCC BMP Coverage Report 2014

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.2 Water Loss Control **ON TRACK**

Los Angeles County Waterworks District 29 - Malibu &
5026 Marina del Rey

Completed Standard Water Audit Using AWWA Software?	Yes
AWWA File provided to CUWCC?	Yes
District 29 2014.xls	
AWWA Water Audit Validity Score?	87
Complete Training in AWWA Audit Method	Yes
Complete Training in Component Analysis Process?	Yes
Component Analysis?	Yes
Repaired all leaks and breaks to the extent cost effective?	Yes
Locate and Repar unreported leaks to the extent cost effective?	Yes
Maintain a record keeping system for the repair of reported leaks, including time of report, leak location, type of leaking pipe segment or fitting, and leak running time from report to repair.	Yes

Provided 7 Types of Water Loss Control Info

Leaks Repairs	Value Real Losses	Value Apparent Losses	Miles Surveyed	Press Reduction	Cost Of Interventions	Water Saved (AF)
70	215725	1451099		False		

At Least As effective As No

Exemption No

Comments: NOTE: Change cost of repair answer to Yes.
Program bug prohibiting change at this time.
Agency on-track

CUWCC BMP Coverage Report 2014

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.3 Metering With Commodity

ON TRACK

5026 Los Angeles County Waterworks District 29 - Malibu & Marina del Rey

Numbered Unmetered Accounts	No
Metered Accounts billed by volume of use	Yes
Number of CII Accounts with Mixed Use Meters	0
Conducted a feasibility study to assess merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters?	Yes
Feasibility Study provided to CUWCC?	Yes

Date: 1/1/0001

Uploaded file name:

Completed a written plan, policy or program to test, repair and replace meters	Yes

At Least As effective As No

Exemption No

Comments:

CUWCC BMP Coverage Report 2014

Foundational Best Management Practices For Urban Water Efficiency

BMP 1.4 Retail Conservation Pricing

On Track

5026 Los Angeles County Waterworks District 29 - Malibu & Marina del Rey

Implementation (Water Rate Structure)

Customer Class	Water Rate Type	Conserving Rate?	(V) Total Revenue Comodity Charges	(M) Total Revenue Fixed Carges
Single-Family	Increasing Block Seasonal	Yes	16168115	4335510
Multi-Family	Increasing Block Seasonal	Yes	4739787	1107086
Industrial	Increasing Block Seasonal	Yes	385774	14197
Commercial	Increasing Block Seasonal	Yes	2739909	746185
Institutional	Increasing Block Seasonal	Yes	3871889	191476
Other	Increasing Block Seasonal	Yes	84985	84732
			27990459	**6479186**

Calculate: V / (V + M) **81 %**

Implementation Option: Use Annual Revenue As Reported

☐ Use 3 years average instead of most recent year

Canadian Water and Wastewater Association

Upload file:

Agency Provide Sewer Service: No

At Least As effective As No

Exemption No

Comments:

CUWCC BMP Coverage Report 2014

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.1 Public Outreach

ON TRACK

5026 **Los Angeles County Waterworks District 29 - Malibu & Marina del Rey** **Retail**

Does your agency perform Public Outreach programs? Yes

The list of wholesale agencies performing public outreach which can be counted to help the agency comply with the BMP

West Basin MWD

The name of agency, contact name and email address if not CUWCC Group 1 members

Did at least one contact take place during each quater of the reporting year? Yes

Public Outreach Program List	Number
Website	1
Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets	3
Newsletter articles on conservation	1
General water conservation information	3
Total	**8**

Did at least one contact take place during each quater of the reporting year? Yes

Number Media Contacts	Number
Newspaper contacts	5
Online Advertisings	2
Total	**7**

Did at least one website update take place during each quater of the reporting year? Yes

Public Information Program Annual Budget

Annual Budget Category	Annual Budget Amount
Consultant Expenses	25000
Total Amount:	**25000**

Public Outreah Additional Programs
Community Events

Description of all other Public Outreach programs

Ocean Friendly Garden Workshops

Comments:

At Least As effective As No

CUWCC BMP Coverage Report 2014

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.1 Public Outreach

ON TRACK

Exemption	No	0

CUWCC BMP Coverage Report 2014

Foundational Best Management Practices For Urban Water Efficiency

BMP 2.2 School Education Programs

ON TRACK

5026 **Los Angeles County Waterworks District 29 - Malibu & Marina del Rey** **Retail**

Does your agency implement School Education programs? Yes

The list of wholesale agencies performing public outreach which can be counted to help the agency comply with the BMP

West Basin MWD

Agencies Name	ID number
West Basin MWD	259

Materials meet state education framework requirements? Yes

Materials distributed to K-6? Yes

Materials distributed to 7-12 students? No (Info Only)

Annual budget for school education program:

Description of all other water supplier education programs

Comments:

At Least As effective As No

Exemption No 0

CUWCC BMP Coverage Report 2014

5026 Los Angeles County Waterworks District 29 - Malibu & Marina del Rey

Baseline GPCD: 306.26

GPCD in 2014 307.6

GPCD Target for 2018: 251.10

Biennial GPCD Compliance Table

NOT ON TRACK

		Target		Highest Acceptable Bound	
Year	Report	% Base	GPCD	% Base	GPCD
2010	1	96.4%	**295.20**	100%	**306.30**
2012	2	92.8%	**284.20**	96.4%	**295.20**
2014	3	89.2%	**273.20**	92.8%	**284.20**
2016	4	85.6%	**262.20**	89.2%	**273.20**
2018	5	82.0%	**251.10**	82.0%	**251.10**

This page intentionally left blank.